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January 21, 2026

Richard Woodfin, Chair  
Concord Planning Board  
41 Green Street  
Concord, NH 03301

**RE: Major Site Plan Application  
94-98 Manchester Street – 94 Manchester Street, LLC  
Tax Map 781Z Lots 12, 12-1, 12-2, 12-3  
TFM Project #95513.11**

Dear Mr. Woodfin:

On behalf of our client, 94 Manchester Street, LLC, please find a Major Site Plan Application submission relative to the above-referenced project. The following materials are included in this submission:

- **Site Plan Application & Checklist (1 copy);**
- **Letter of Authorization (1 copy);**
- **Check for Site Plan Review Fee Paid to “City of Concord” (\$9,375.00)**
- **Abutter’s List (1 copy);**
- **Abutter’s List (3 set of labels);**
- **Stormwater Management Plan (2 copies);**
- **Traffic Study (2 copies);**
- **Waiver Requests (2 copies);**
- **Conditional Use Permit (1 copy);**
- **Architectural Elevations (2 copies); and**
- **Site Development Plans entitled “Site Development Plans, Tax Map 781Z Lots 12, 12-1, 12-2, 12-3, Proposed 4-Story Hotel, 94-98 Manchester Street, Concord, New Hampshire”, prepared by TFMoran, Inc., dated January 20, 2026 (5 copies at 22”x34, 1 digital copy at 11”x17”, 1 reduced set at 8.5”x11”).**

#### Project Description

The project includes the development of a hotel at 94-98 Manchester Street. Tax Map 781Z Lots 12, 12-1, 12-2, 12-3 total approximately 11.08 acres and currently contains an auto repair shop (to remain). The site is within the Highway Commercial District and Office Park Performance District and is located between the Merrimack River and Concord Municipal Airport. A majority of the proposed development occurs within the Highway Commercial District.

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**Major Site Plan Application**

**January 21, 2026**

**94-98 Manchester Street - 94 Manchester Street, LLC – Tax Map 781Z Lots 12, 12-1, 12-2, 12-3**

**Project #95513.11**

The proposed project is to construct 4-story building. Associated improvements include and are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a 14,768 SF building footprint and total 166,407 SF of impervious area (including existing structures to remain) upon the property and approximately 115,408 SF of disturbance to facilitate the development. The area of work is previously disturbed area.

The project does not propose any wetland or wetland buffer impacts. There is also no impact proposed within the area of the lot under conservation restrictions, located to the rear of the existing development. The project will be undergoing additional review by NHDES Sewer, NHDES Alteration of Terrain (AoT), NHDOT, and EPA's NOI for Construction General Permit.

Based on our review of the City of Concord's Site Plan Review Regulations, we are requesting relief in the form of waivers from the following sections as part of this submission.

- Section 15, Note 15.03(4) – Existing Conditions Plan Soils
- Section 15, Note 15.03(5) - Existing Conditions Plan Natural Features
- Section 18, Note 18.17 – Tree Plantings
- Section 18, Note 18.19 – Curbing and Guardrails

The waiver requests have been included as attachments in this submittal package.

We respectfully request that we be placed on the upcoming agenda for the Planning Board meeting on February 18, 2026.

If you have any questions or concerns, please do not hesitate to contact us.

Respectfully,  
**TFMoran, Inc.**

**Christopher Rice**  
*Senior Project Manager*



Civil Engineers  
 Structural Engineers  
 Traffic Engineers  
 Land Surveyors  
 Landscape Architects  
 Scientists



January 21, 2026

Richard Woodfin, Chair  
 Concord Planning Board  
 41 Green Street  
 Concord, NH 03301

**RE: Waiver Requests from Concord Site Plan Regulations  
 94-98 Manchester Street – Key Auto Group – Tax Map 781Z Lots 12, 12-1, 12-2, 12-3  
 TFM Project #95513.11**

Dear Mr. Woodfin:

On behalf of our client, Key Auto Group, LLC, we respectfully submit the following waiver requests to the City of Concord Site Plan Regulations as a part of the Site Plan Application for the above-referenced project:

**Waiver Request #1**

Requirement: Concord Site Plan Regulations, Section 15, Note 15.03 Existing Condition Plan:  
 (4) Soils: The identification and classification of the extent and type of soils using the USDA Natural Resources Conservation Service system.

*Reason for Waiver: The soils on site have been identified by certified soil scientist, James P. Gove in a Site-Specific Soil Survey Report on 10-21-24 and consist of Urban Land and Udorthents, smoothed with a Hydrologic Soil Group of A. As the Site Specific Soil Survey provides a higher level of detail than the published data from Natural Resources Conservation Service system.*

**Waiver Request #2**

Requirement: Concord Site Plan Regulations, Section 15, Note 15.03 Existing Condition Plan:  
 (5) Natural Features: The location of all significant natural features including, but not limited to, ledge outcroppings, streams and water bodies, wetlands, bluffs and ravines, steep slopes in excess of fifteen (15%) percent and twenty-five (25%) percent.

*Reason for Waiver: A full site survey has been completed although a significant portion of the rear of the site, behind the existing auto repair shop, is an area subject to conservation restrictions. Significant features are not depicted within the boundaries of the conservation restriction.*

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## Waiver Request from

94-98 Manchester Street – Key Auto Group – Tax Map 781Z Lots 12, 12-1, 12-2, 12-3

TFM Project #95513.11

January 21, 2026

## Waiver Request #3

### Requirement: Concord Site Plan Regulations, Section 18, Note, 18.17 Tree Plantings:

Tree plantings in and around parking areas shall be provided as set forth in Article 28-7, Access Circulation and Parking of the City of Concord Zoning Ordinance, and Section 27, Landscaping and Erosion Control of these regulations. One tree shall be planted for each 1000 square feet of any proposed parking area including parking spaces, internal landscape islands, access aisles, driveways, fire lanes, and other vehicular circulation areas. Perimeter landscaping, sidewalks, patios, impervious vehicular storage areas for the sale and rental of vehicles, and paved outside storage areas, where allowed, shall not be included in the area used to determine the amount of tree planting required. Trees required shall be planted within the internal parking lot islands, around the perimeter of the parking area within twenty (20) feet of the parking lot, or in landscaped areas between buildings and the parking field. Existing trees preserved on the site may count on a one for one basis when located within twenty (20) feet of any parking lot, access aisle, vehicular sale or rental area, driveway or loading area.

*Reason for Waiver: The proposed project adheres to the Zoning Ordinance Chapter 28 Article 28-7 Note, 28-7-10-Parking Areas Design Standards (d) Landscape Material Standards that states; "All landscaped areas required by this Article shall contain no less than one live shade or ornamental tree for every two thousand (2,000) square feet of parking area. Such trees shall have a minimum trunk diameter (measured twelve (12) inches above the ground level) of not less than two (2) inches and shall be planted not more than fifty (50) feet apart within each contiguous landscaped area. All landscaped areas shall contain shrub and ground cover plantings and shall not be paved except for walkways necessary for pedestrian safety."*

*The Concord Site Plan Regulations require fifty-six (56) trees to be planted as a result of the proposed layout. A total of thirty-one (31) trees are proposed within twenty (20) feet of the parking lot or within landscaped areas between the buildings and parking field. The existing site does not have any vegetation in the area where the hotel is proposed. Granting this waiver will not be detrimental to public safety and the proposed plantings will carry out the intent of the regulations as it is a large improvement over what exists today.*



**Waiver Request from**

94-98 Manchester Street – Key Auto Group – Tax Map 781Z Lots 12, 12-1, 12-2, 12-3

**TFM Project #95513.11**

**January 21, 2026**

**Waiver Request #4**

Requirement: Concord Site Plan Regulations, Section 18, Note, 18.19 Curbing and Guardrails:

Curbing and guard rails shall be installed as set in Article 28-7, Access Circulation and Parking of the City of Concord Zoning Ordinance and the City of Concord Construction Standards and Details, as most recently adopted. Curbing may be excluded from perimeter landscaping in loading areas in industrial zoning districts, or around the perimeter of paved outside material storage areas. Perimeter curbing or guardrails shall be provided around all vehicular sales and display area in the same manner as parking areas. Curbing or other barriers shall be installed around interior parking lot islands to prevent snowplow or vehicular encroachment. The Planning Board may specify the use of sloped curbing or guardrail near, or adjacent to, open space areas to allow for the movement of small animals through the site.

*Reason for Waiver: The project proposes the use of vertical granite curbing throughout the site with the exception of concrete curbing where a sidewalk abuts a parking area. The concrete curbing will not be detrimental to public safety as the associated sidewalks remain 5' wide per City standards. All curbing proposed, both granite and concrete, meets the intent of the regulation as it will be installed around all internal landscape islands to prevent encroachment on to landscaping. Granite curbs are also proposed along the access drive leading to the existing auto repair shop.*

We appreciate your review and consideration of these matters. If you require additional information, please let us know.

Respectfully,  
**TFMoran, Inc.**

**Christopher Rice**  
*Senior Project Manager*

# ***DRAINAGE ANALYSIS REPORT***

**F O R**

## **PROPOSED 4-STORY HOTEL**

**94 Manchester Street  
Concord, New Hampshire  
Merrimack County**

**Tax Map 781Z, Lots 12, 12-1, 12-2, 12-3**

**Owned by & Prepared for Key Auto  
Group**

**January 21, 2025**

**Prepared By:**



Civil Engineers  
Structural Engineers  
Traffic Engineers  
Land Surveyors  
Landscape Architects  
Scientists

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## **1.0 - SUMMARY & PROJECT DESCRIPTION**

The project includes the development of a 4-Story Hotel at 94 Manchester Street. The existing Tax Map 781Z Lots 12, 12-1, 12-2, and 12-3 are approximately 11.08 acres and currently contains a Key Collision of Concord. The site is within the Highway Commercial/Office Park performance Zone and is adjacent to Old Suncook Road.

The proposed project is to construct a 4-story building. Associated improvements include and are not limited to access, grading, utilities, stormwater management system, lighting, and landscaping. The project proposes a 14,768 SF building footprint and a total of 69,731 SF of impervious area within the property lines and approximately 146,292 SF of disturbance to facilitate the development.

This analysis has been completed to verify the project will not pose adverse stormwater effects on-site and off-site. Compared to the pre-development conditions, the post-development stormwater management system has been designed to maintain the peak runoff rates and runoff volumes, reduces the risk of erosion and sedimentation, and improves stormwater runoff quality. In addition, Best Management Practices are employed to formulate a plan that assures stormwater quality both during and after construction. The following summarizes the findings from the study.

## **2.0 - CALCULATION METHODS**

The design storms analyzed in this study are the 2-year, 10-year, 25-year and 100-year 24-hour storm events. The software program, HydroCAD version 10.00<sup>1</sup> was utilized to calculate the peak runoff rates from these storm events. The program estimates the peak rates using the TR-20 method. A Type III storm pattern was used in the model. Rainfall frequencies for the analyzed region were also incorporated into the model. Rainfall frequencies from the higher of the Extreme Precipitation Rates from Cornell University's Northeast Regional Climate Center (see Appendix A) and City Site Plan Review Regulations were used to determine the storm-event intensities, see Table 1. Design standards were taken from the New Hampshire Stormwater Manual, December 2008<sup>2</sup>.

<b>24-HOUR RAINFALL RATES</b>	
<b>Storm-Event (year)</b>	<b>Northeast Regional Climate Center Extreme Precipitation (in)</b>
2	2.82
10	4.16
25	5.20
100	7.31

**Table 1 – 24-Hour Rainfall Rates**

Time of Concentration is the time it takes for water to flow from the hydraulically most remote point in the watershed (with the longest travel time) to the watershed outlet. This time is

<sup>1</sup> HydroCAD version 10.00, HydroCAD Software Solutions LLC, Chocorua, NH, 2013.

<sup>2</sup> New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

determined by calculating the time it takes runoff to travel this route under one of three hydrologic conditions: sheet flow, shallow concentrated flow, or channel flow. Because the Intensity-Duration-Frequency (IDF) curve is steep with short TC's, estimating the actual intensity is subject to error and overestimates actual runoff. Due to this, the TC's are adjusted to a minimum of 6 minutes.

### **3.0 – EXISTING SITE CONDITIONS**

The soil within the proposed area of disturbance are identified in accordance with the Site-Specific Soil Survey (see Appendix B for detail and soil locations). The Site-Specific Soil Survey identifies the soils within the disturbed project area as primarily Udorthents, smoothed (HSG A). These soils are classified as moderately well drained to excessively drained.

All other areas that contribute runoff to the project site are identified per the NRCS Web Soil (see Appendix B detail and soil locations). The soils are composed of Windsor loamy sand (HSG A) and Windsor-Urban land complex (HSG A). These soils are classified as excessively drained.

See Appendix C for the related testing and data. Eight test pits and infiltration tests, at least three in/near each basin area, were conducted. In nearly all test pit locations, fill material was discovered. Infiltration tests were determined per Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d). The highest Estimated Seasonal High-Water Table (ESWT) observed were: elevation 318.50 at Subsurface Infiltration Basin (Stormtech) #1, elevation, 317.50' at Subsurface Infiltration Basin (Stormtech) #2, elevation 518.5' at Infiltration Basin #1, and elevation 519.5' at Infiltration Basin #2.

### **4.0 - PRE-DEVELOPMENT CONDITIONS**

The pre-development condition is characterized by 14 subcatchments composing one watershed. Pre-development subcatchment areas are depicted on the attached plan entitled "Pre-Development Drainage Map," Sheet D-01 in Appendix H.

Stormwater runoff from the site primarily infiltrates into the excessively-drained soils on-site. The remaining stormwater runoff discharges towards the existing municipal stormwater drainage system (POI-1), Map 781Z Lot 13. In total, only three areas from the existing conditions leave the site and are modelled as EPOI-1, EPOI-2, and EPOI-3. There is inconsistent and incomplete information to model the other areas of the site, and therefore it is assumed that there is no runoff volume. The proposed system has been designed to have no outflow, except for the three areas the outflow into PPOI-1, PPOI-2, and PPOI-3. Only the flows going to these three points were analyzed in the pre-development calculations.

In the pre-development condition, the total impervious area on the lot is 114,118 SF.

### **5.0 - POST-DEVELOPMENT CONDITIONS**

The post-development condition is characterized by one watershed divided into many subcatchment areas. Post-development subcatchment areas are depicted on the attached plan entitled "Post-Development Drainage Map," sheet D-02 in Appendix H.

In the post-development condition, the total impervious area is 166,407 SF existing and proposed on the lot. In the drainage analysis area of 156,358 SF there is 104,040 SF of impervious cover. Impervious area of the project consists of a 14,768 SF footprint 4-Story Hotel

and associated improvements. The Effective Impervious Cover (EIC) for the 482,886 SF lot is 34.4%.

Two Subsurface Infiltration Basins (Stormtech) and two small Infiltration Basins are proposed to treat and mitigate the stormwater runoff from the impact of the new impervious area from the proposed development.

8 test pits and infiltration tests, at least two in each basin area, were conducted. In nearly all test pit locations, fill material was discovered. Infiltration tests were determined per Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d).

Table 2 summarizes the pre- and post-development peak runoff rates for the 2-year, 10-year, 25-year, 50-year, and 100-year 24-hour Type III storm events for all discharges. Table 3 summarizes the pre- and post-development peak runoff volumes for the 2-year 24-hour Type III storm events for all discharge.

		TABLE 2 – SURFACE WATER PEAK RUNOFF RATE COMPARISON (CF)				
POINT OF INTEREST		DESIGN STORM				
		2-year	10-year	25-year	50-year	100-year
POI 1	Pre	0.00	0.02	0.08	0.19	0.39
	Post	0.13	0.19	0.24	0.28	0.33
POI 2	Pre	0.00	0.01	0.09	0.28	0.67
	Post	0.00	0.00	0.00	0.01	0.03
POI 3	Pre	0.00	0.00	0.01	0.05	0.11
	Post	0.00	0.00	0.02	0.06	0.07
INF-01	Pre	NA	NA	NA	NA	NA
	Post	0	0	0	0	0
INF-02	Pre	NA	NA	NA	NA	NA
	Post	0	0	0	0	0
ST-01	Pre	NA	NA	NA	NA	NA
	Post	0	0	0	0	0
ST-02	Pre	NA	NA	NA	NA	NA
	Post	0	0	0	0	0

**Table 2 - Pre and Post- Development Peak Runoff Rate Comparison**

TABLE 3 – SURFACE WATER PEAK RUNOFF VOLUME COMPARISON (CF)		
POINT OF INTEREST		DESIGN STORM
		2-year
POI 1	Pre	25
	Post	447
POI 2	Pre	0
	Post	0
POI 3	Pre	0
	Post	0
INF-01	Pre	0
	Post	0
INF-02	Pre	0
	Post	0
ST-01	Pre	0
	Post	0
ST-02	Pre	0
	Post	0

**Table 3 - Pre and Post- Development Peak Runoff Volume Comparison**

The proposed project outflows are relatively the same (<0.2 cfs) or reduces peak rates of runoff compared to existing conditions for all storm events, in accordance with AoT regulations and City stormwater regulations. Additionally, per NHDES, the 2-year 24-hour storm increased volumes are within the limits of Env-Wq 1507.05(b)(1) from the pre-development to post-development condition. There will be no adverse effects on the abutting properties from the proposed stormwater management system.

Appendices D and F summarize all 24-hour storm events for pre- and post-development drainage calculations using HydroCAD analysis. Appendices E and G provide a full summary of the 10-year, 24-hour storm for the pre- and post-development drainage calculations using HydroCAD analysis.

There were several warning messages for the 10-year storm event related to the proposed treatment systems:

- [80] Warning: Pond DMH-02 Exceeded Pond PCB-03 by 0.01' @ 12.05 hrs (0.16 cfs 45 cf)
- [80] Warning: Pond DMH-04 Exceeded Pond PCB-10 by 0.02' @ 22.95 hrs (0.19 cfs 792 cf)
- [80] Warning: Pond DMH-05 Exceeded Pond PCB-11 by 0.41' @ 17.60 hrs (0.51 cfs 6,469 cf)
- [80] Warning: Pond DMH-05 Exceeded Pond PCB-17 by 0.22' @ 18.45 hrs (0.19 cfs 1,477 cf)
- [80] Warning: Pond DMH-07 Exceeded Pond CB-16 by 0.05' @ 20.55 hrs (0.01 cfs 35 cf)
- [80] Warning: Pond PCB-07 Exceeded Pond PCB-06 by 0.04' @ 12.05 hrs (0.31 cfs 148 cf)
- [80] Warning: Pond PCB-10 Exceeded Pond PCB-08 by 0.02' @ 22.90 hrs (0.00 cfs 14 cf)
- [80] Warning: Pond PCB-10 Exceeded Pond PSB-09 by 0.24' @ 21.40 hrs (0.19 cfs 1,166 cf)
- [80] Warning: Pond ST-02 Exceeded Pond DMH-04 by 0.02' @ 22.90 hrs (0.29 cfs 1,743 cf)
- [80] Warning: Pond ST-02 Exceeded Pond DMH-05 by 0.62' @ 18.10 hrs (0.88 cfs 9,402 cf)
- [80] Warning: Pond ST-02 Exceeded Pond DMH-07 by 0.60' @ 20.50 hrs (0.81 cfs 6,467 cf)
- [80] Warning: Pond PP-1 Exceeded Pond PC-02 by 0.03' @ 12.25 hrs (0.3 cfs 273 af)
- [87] Warning: Pond DMH-04 Oscillations may require smaller dt or Finer Routing (severity=11)

- [87] Warning: Pond DMH-07 Oscillations may require smaller dt or Finer Routing (severity=56)
- [87] Warning: Pond PCB-11 Oscillations may require smaller dt or Finer Routing (severity=76)
- [87] Warning: Pond PSB-09 Oscillations may require smaller dt or Finer Routing (severity=44)
- [87] Warning: Pond PP-3: Oscillations may require smaller dt or Finer Routing (severity=24)

Warning 80 occurs when stormwater is staging in the Subsurface Infiltration Basins, causing some adjacent stormwater drainage systems to also stage stormwater. The exceeded catch basins and manholes are located where inverts into the basins are similar to the bottom of the chambers.

Warning 87 occurs when the water there are quick decreases in stormwater outflows. As seen in the zoomed in hydrograph on figure 1 below, these are occurring at the end of the storm events and are not affecting the peak flows.

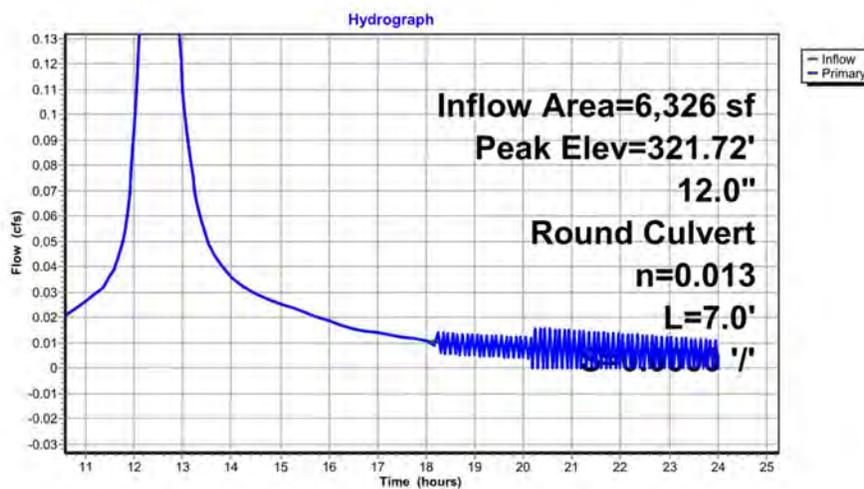


Figure 1: View of the Hydrographs with Oscillation Warning

## 6.0 – REGULATORY COMPLIANCE

The project meets the stricter of the stormwater standards identified in the New Hampshire Department of Environmental Services (DES) Env-Wq 1500 Alteration of Terrain Regulations and Concord stormwater management regulations.

## 6.1 – ALTERATION OF TERRAIN (AOT) CRITERIA

The following regulatory requirements are provided to show the project conformance to the applicable criteria of the NHDES Env-Wq 1500 Alteration of Terrain Regulations which include and are not limited to the following:

*Env-Wq 1507.03(a) Pollutant Discharge Minimization Requirements: Stormwater treatment practices described in Env-Wq 1508.03 through Env-Wq 1508.10 shall be acceptable methods for minimizing pollutant discharges to surface waters.*

Stormwater is treated using an infiltration practice, specifically a subsurface infiltration basin. The subsurface infiltration basins are designed in accordance with the applicable criteria of Env-Wq 1508.06 as follows:

*Per 1508.06(a), the design infiltration rate of underlying native soil was considered in accordance with Env-Wq 1504.14. The design infiltration rate for each subsurface infiltration basin is the average from each infiltration test in each basin.*

*Per 1508.06(c), the system is pretreated via deep sump, hooded catch basins per Env-Wq 1508.15. Refer to the attached TFMoran Site Development Plans for verification.*

*Per 1508.06(e), the volume of the practice is large enough to contain the WQV without depending on infiltration.*

*Per 1508.06(f), the practice completely drains the WQV within 72 hours or less*

*Env-Wq 1507.03(c) Pollutant Discharge Minimization Requirements: Stormwater treatment practices shall be designed with infiltration rates in accordance with Env-Wq 1504.14*

Per 1508.06(a), the design infiltration rate of underlying native soil was considered in accordance with Env-Wq 1504.14. The design infiltration rate for each subsurface infiltration basin is the average from each infiltration test in each basin.

*Env-Wq 1507.03(e) Pollutant Discharge Minimization Requirements: Stormwater treatment practices shall be designed for the WQV/WQF, calculated in accordance with Env-Wq 1504.10 and Env-Wq 1504.11.*

The regulation is met. The complete runoff for the storm events is infiltrated. More than the required WQV.

*Env-Wq 1507.04(a) Groundwater Recharge Requirements: The proposed development shall reduce runoff to the maximum extent practicable by using groundwater recharge practices as described in Env-Wq 1508.16.*

The regulation is met.

*Env-Wq 1507.04(b) Groundwater Recharge Requirements: The proposed development shall infiltrate the GRV per Env-Wq 1504.12.*

The regulation is met.

*Env-Wq 1507.04(c) Groundwater Recharge Requirements: Design Infiltration rates for groundwater recharge practices shall be determined in accordance with Env-Wq 1504.14.*

Design infiltration rates were obtained per Ksat testing using a Compact Constant Head Permeameter (Amoozemeter) per Env-Wq 1504.14(d). The design infiltration rate for each subsurface infiltration basin is the average from each infiltration test in each basin.

*Env-Wq 1507.05 Channel Protection Requirements: The 2-year 24-hour post development peak rate shall not exceed the pre-development peak flow rate for all flows leaving the site and the conditions of Env-Wq 1507.05(b), Env-Wq 1507.05(b)(2), or Env-Wq 1507.05(b)(3).*

The 2-year 24-hour post development peak rate and volume is less than the pre-development rate per Env-Wq 1507.05(b)(1)(a). Refer to 5.0 Post Development Conditions.

*Env-Wq 1507.06 Control Peak Runoff: The 10-year and 50-year 24-hour post development peak rate shall not exceed the pre-development peak flow rate for all flows leaving the site.*

The regulation is met. Refer to Table 2 for peak discharge rate comparison.

## **6.2 – CITY STORMWATER MANAGEMENT STANDARDS**

The following regulatory requirements are provided to show project conformance to the applicable criteria of Concord stormwater management regulations defined in Concord Site Plan Review Regulations Section 22.07. All regulations are met. The following regulations which are stricter than the Alteration of Terrain Regulations are also discussed below:

*Section 22.07 (3): Off-Site Flows: For new development, the volume of off-site discharge after project development shall not exceed the volume of discharge before development for the 10-year storm event. The peak rate of discharge after project development shall not exceed the peak rate of discharge before development for the 2-year, 10-year, 25-year and 100-year storms. On-site retention or detention facilities shall be provided as necessary to manage the off-site flows, and to prevent the overloading of existing downstream facilities.*

The regulation is met. Refer to Table 2 for peak runoff rate comparison. Refer to Table 3 for peak runoff volume comparison. Refer to Appendices F and G for further verification.

## **7.0 – BEST MANAGEMENT PRACTICES**

Best Management Practices will be developed in accordance with the New Hampshire Stormwater Manual, Volumes Two and Three, December 2008<sup>3</sup> to formulate a plan that assures stormwater quality both during and after construction. The intent of the outlined measures is to minimize erosion and sedimentation during construction, stabilize and protect the site from erosion after construction is complete and mitigate any adverse impacts to stormwater quality resulting from development. Best Management Practices for this project include:

- Temporary practices to be implemented during construction.
- Permanent practices to be implemented after construction.

### **7.1 – TEMPORARY PRACTICES**

1. Erosion, sediment, and stormwater detention measures must be installed as directed by the engineer.
2. All disturbed areas, as well as loam stockpiles, shall be seeded and contained by a silt barrier.
3. Silt barriers must be installed prior to any construction commencing. All erosion control devices including silt barriers and storm drain inlet filters shall be inspected at least once per week and following any rainfall. All necessary maintenance shall be completed within twenty-four (24) hours.

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<sup>3</sup> New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

4. Any silt barriers found to be failing must be replaced immediately. Sediment is to be removed from behind the silt fence if found to be one-third the height of the silt barrier or greater.
5. Any area of the site, which has been disturbed and where construction activity will not occur for more than twenty-one (21) days, shall be temporarily stabilized by mulching and seeding.
6. No construction materials shall be buried on-site.
7. After all areas have been stabilized, temporary practices are to be removed, and the area they are removed from must be smoothed and revegetated.
8. Areas must be temporarily stabilized within 14 days of disturbance or seeded and mulched within 3 days of final stabilization.
9. After November 15<sup>th</sup>, incomplete driveways or parking areas must be protected with a minimum of 3" of crushed gravel, meeting the standards of NHDOT item 304.3.
10. An area shall be considered stable if one of the following has occurred:
  - a) Base course gravels are installed in areas to be paved.
  - b) A minimum of 85% vegetated growth has been established.
  - c) A minimum of 3" of non-erosive material such as stone or rip rap has been installed.
  - d) Erosion control blankets have been properly installed.

## **7.2 – PERMANENT PRACTICES**

The objectives for developing permanent Best Management Practices for this site include the following:

1. Maintain existing runoff flow characteristics.
  - a) Drainage is structured to minimize any offsite increase in runoff
2. Treatment BMPs are established to ensure the water quality.
3. Maintenance schedules are set to safeguard the long-term working of the stormwater BMP's.

A Stormwater Management Operations & Maintenance Manual is provided to ensure the proper functioning of the system over time.

## **7.3 – BEST MANAGEMENT PRACTICE EFFICIENCIES**

Appendix E of Volume 2 of the New Hampshire Stormwater <sup>4</sup> lists the pollutant removal efficiencies of various BMP's. All proposed BMP's meet all state and Concord requirements for total suspended solids (TSS) and pollutant removal, Total Nitrogen (TN), and Total Phosphorous (TP).

---

<sup>4</sup> New Hampshire Stormwater Manual: Volume One - Stormwater and Antidegradation, December 2008; Volume Two - Post-Construction Best Management Practices Selection and Design, December 2008; Volume Three - Erosion and Sediment Controls During Construction, December 2008.

In-Ground and Subsurface Infiltration Basins (greater than 75 FT from surface water) have a 90% TSS removal efficiency, 60% TN removal efficiency, and 65% TP efficiency.

All the stormwater entering the BMP's Subsurface Infiltration Basin and Infiltration Pond are pretreated with either isolation rows and overland flow prior to entering the primary stormwater treatment areas. The pretreatment areas help to settle sediment and prevent clogging of treatment areas.

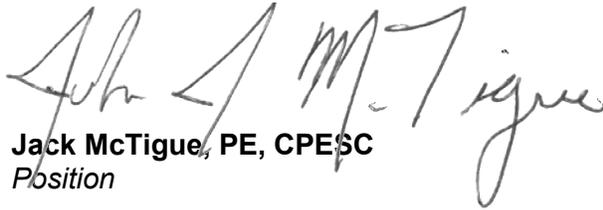
## **8.0 – GENERAL CONSTRUCTION SEQUENCING**

XXX

## **9.0 – CONCLUSION**

The proposed stormwater management system will treat, infiltrate, and mitigate the runoff generated from the proposed development and provide protection of groundwater and surface waters as required through the Alteration of Terrain Bureau Concord stormwater management regulations. The project has been designed in accordance with NHDES and Concord regulations. There is little change in the flow characteristics of the site. The proposed project has been designed to pose no adverse effects on surrounding properties.

Respectfully,  
**TFMoran, Inc. Seacoast Division**

  
**Jack McTigue, PE, CPESC**  
*Position*



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## **APPENDIX A – EXTREME PRECIPITATION RATES**

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## Extreme Precipitation Tables

### Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point	
Smoothing	Yes
State	
Location	
Latitude	43.188 degrees North
Longitude	71.509 degrees West
Elevation	90 feet
Date/Time	Mon Nov 04 2024 09:49:01 GMT-0500 (Eastern Standard Time)

### Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.39	0.49	0.64	0.80	1.00	1yr	0.69	0.98	1.16	1.47	1.86	2.37	2.57	1yr	2.09	2.47	2.90	3.59	4.13	1yr
2yr	0.31	0.48	0.60	0.79	1.00	1.25	2yr	0.86	1.15	1.45	1.81	2.26	2.82	3.15	2yr	2.50	3.03	3.51	4.20	4.79	2yr
5yr	0.37	0.58	0.73	0.98	1.25	1.58	5yr	1.08	1.44	1.83	2.29	2.84	3.52	4.00	5yr	3.12	3.85	4.44	5.22	5.91	5yr
10yr	0.42	0.66	0.84	1.14	1.48	1.89	10yr	1.28	1.71	2.19	2.74	3.38	4.16	4.79	10yr	3.68	4.61	5.31	6.16	6.93	10yr
25yr	0.50	0.79	1.01	1.39	1.85	2.38	25yr	1.60	2.15	2.77	3.45	4.26	5.20	6.09	25yr	4.61	5.86	6.73	7.67	8.56	25yr
50yr	0.57	0.91	1.17	1.63	2.19	2.84	50yr	1.89	2.55	3.31	4.13	5.08	6.16	7.31	50yr	5.46	7.03	8.05	9.06	10.04	50yr
100yr	0.64	1.04	1.35	1.91	2.60	3.39	100yr	2.25	3.02	3.96	4.94	6.04	7.31	8.77	100yr	6.47	8.43	9.64	10.70	11.79	100yr
200yr	0.74	1.21	1.57	2.24	3.09	4.05	200yr	2.67	3.59	4.73	5.89	7.19	8.66	10.53	200yr	7.67	10.12	11.54	12.65	13.85	200yr
500yr	0.89	1.46	1.91	2.77	3.88	5.11	500yr	3.34	4.51	5.98	7.44	9.06	10.86	13.41	500yr	9.61	12.90	14.64	15.80	17.13	500yr

### Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.20	0.32	0.39	0.52	0.64	0.87	1yr	0.55	0.86	1.06	1.37	1.59	2.04	2.43	1yr	1.80	2.34	2.66	3.29	3.88	1yr
2yr	0.30	0.47	0.58	0.78	0.96	1.15	2yr	0.83	1.12	1.31	1.72	2.19	2.75	3.06	2yr	2.44	2.94	3.42	4.08	4.67	2yr
5yr	0.34	0.53	0.66	0.91	1.15	1.37	5yr	0.99	1.34	1.54	2.00	2.56	3.30	3.71	5yr	2.92	3.57	4.14	4.89	5.56	5yr
10yr	0.38	0.59	0.73	1.01	1.31	1.55	10yr	1.13	1.52	1.75	2.25	2.87	3.78	4.32	10yr	3.35	4.15	4.77	5.59	6.37	10yr
25yr	0.44	0.67	0.83	1.19	1.56	1.81	25yr	1.35	1.77	2.07	2.62	3.34	4.53	5.24	25yr	4.01	5.04	5.73	6.69	7.61	25yr
50yr	0.48	0.74	0.92	1.32	1.77	2.04	50yr	1.53	1.99	2.36	2.95	3.76	5.19	6.07	50yr	4.59	5.84	6.57	7.65	8.72	50yr
100yr	0.54	0.82	1.03	1.48	2.04	2.31	100yr	1.76	2.26	2.70	3.32	4.23	5.95	7.04	100yr	5.27	6.77	7.55	8.76	9.99	100yr
200yr	0.60	0.91	1.15	1.66	2.32	2.59	200yr	2.00	2.53	3.07	3.74	4.77	6.83	8.15	200yr	6.04	7.84	8.64	10.05	11.44	200yr
500yr	0.70	1.04	1.34	1.95	2.77	3.03	500yr	2.39	2.96	3.66	4.38	5.60	8.17	9.90	500yr	7.23	9.52	10.28	12.07	13.74	500yr

### Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.45	0.54	0.73	0.90	1.08	1yr	0.78	1.06	1.19	1.59	1.99	2.50	2.75	1yr	2.21	2.64	3.14	3.82	4.33	1yr
2yr	0.33	0.50	0.62	0.84	1.03	1.24	2yr	0.89	1.21	1.39	1.82	2.32	2.90	3.25	2yr	2.57	3.13	3.64	4.32	4.94	2yr
5yr	0.41	0.63	0.78	1.07	1.36	1.57	5yr	1.17	1.53	1.78	2.28	2.90	3.75	4.30	5yr	3.32	4.14	4.76	5.54	6.28	5yr
10yr	0.49	0.75	0.92	1.29	1.67	1.90	10yr	1.44	1.86	2.15	2.71	3.46	4.36	5.32	10yr	4.03	5.11	5.88	6.70	7.57	10yr
25yr	0.52	0.94	1.17	1.68	2.21	2.47	25yr	1.90	2.41	2.75	3.39	4.33	5.80	7.05	25yr	5.27	6.78	7.76	8.61	9.67	25yr
50yr	0.54	1.12	1.40	2.01	2.71	3.01	50yr	2.34	2.94	3.31	4.04	5.13	7.19	8.72	50yr	6.36	8.39	9.58	10.43	11.64	50yr
100yr	0.60	1.35	1.69	2.45	3.35	3.67	100yr	2.89	3.58	4.00	4.80	6.10	8.77	10.83	100yr	7.76	10.41	11.85	12.63	14.00	100yr
200yr	0.67	1.61	2.05	2.96	4.13	4.47	200yr	3.56	4.37	4.82	5.71	7.25	10.69	13.42	200yr	9.46	12.90	14.70	15.30	16.84	200yr
500yr	0.78	2.05	2.64	3.84	5.46	5.83	500yr	4.71	5.70	6.18	7.19	9.33	13.91	17.85	500yr	12.31	17.11	19.56	19.73	21.51	500yr



**APPENDIX B – SITE-SPECIFIC SOIL SURVEY &  
NRCS WEB SOIL REPORT**

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GOVE ENVIRONMENTAL SERVICES, INC

**SITE-SPECIFIC SOIL SURVEY REPORT**

**For**

**94 Manchester Street, Concord, NH**

**By**

**GES, Inc.**

**Project # 2024101**

**Date: 10-21-2024**

**1. MAPPING STANDARDS**

*Site-Specific Soil Mapping Standards for New Hampshire and Vermont.* SSSNNE Special Publication No. 3, Version 7.0, July, 2021.

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. The soil map was produced by a professional soil scientist and is not a product of the USDA Natural Resources Conservation Service. This report accompanies the soil map.

The site-specific soil map (SSSM) was produced 10-21-2024; prepared by JP Gove, CSS #004, GES, Inc.

Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Map symbols, based upon SSSNNE Special Publication 1, December 2017, were added to the Soil Legend.

Scale of soil map: Approximately 1" = 20'

Contours Interval: 1 foot

**2. LANDFORMS & EXISTING CONDITIONS:**

The site is located on a large, glaciofluvial (sandy) plain. The area subject to soil mapping has been completely altered by grading, pavement and building. The rear of the lot remains in woodland. The entirety of the plain is excessively drained, very deep, sandy deposits.

**3. DATE SOIL MAP PRODUCED**

Date(s) of on-site field work: 10-21-2024  
Date(s) of test pits: 10-04-2024  
Test pits recorded by: B. Levesque, PE, TFM

**4. GEOGRAPHIC LOCATION AND SIZE OF SITE**

City or town where soil mapping was conducted: Concord  
Location: Tax Map 1100, Block 3, Lot 10  
Size of area: Approximately 4 acres  
Was the map for the entire lot? No  
If no, where was the mapping conducted on the parcel: Redevelopment Area

**5. PURPOSE OF THE SOIL MAP**

Was the map prepared to meet the requirement of Alteration of Terrain? Yes  
If no, what was the purpose of the map? n/a  
Who was the map prepared for? TFM



**6. SOIL IDENTIFICATION LEGEND**

Map Unit Symbol	Map Unit Name	HISS Symbol	Hydrologic Soil Group
699	Urban Land	n/a	n/a (impervious)
299/abaaa	Udorthents, smoothed	161	A

Supplement Symbols: a = excessively drained, b = glaciofluvial deposits, a = no restrictive/impervious layers, a = estimated Ksat of high, a = hydrologic soil group A

**SLOPE PHASE:**

0-8%	B	8-15%	C	15-25%	D
25%-50%	E	50%+	F		

**7. NARRATIVE MAP UNIT DESCRIPTIONS**

SITE-SPECIFIC MAP UNIT: 299

CORRELATED SOIL SERIES: Udorthents, smoothed

LANDSCAPE SETTING: Plain

CHARACTERISTIC SURFACE FEATURES: Graded/paved/building

DRAINAGE CLASS: Excessively drained

PARENT MATERIAL: Outwash

NATURE OF DISSIMILAR INCLUSIONS: Moderately well drained

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

Fill 0 to 15" 5YR8/6, s, om, fr

C 15 to 84", 7.5YR5/8, s, om, fr,

ESHWT = 5.5', no OBSWT, apparent water table, no lithic contact

SITE-SPECIFIC MAP UNIT: 699  
CORRELATED SOIL SERIES: Urban Land  
LANDSCAPE SETTING: Plain  
CHARACTERISTIC SURFACE FEATURES: Impervious  
DRAINAGE CLASS: n/a  
PARENT MATERIAL: n/a  
NATURE OF DISSIMILAR INCLUSIONS: 299  
ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%



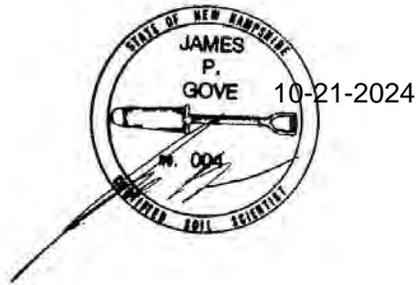
**8. RESPONSIBLE SOIL SCIENTIST**

Name: James Gove

Certified Soil Scientist Number: 004

**9. OTHER DISTINGUISHING FEATURES OF SITE**

Is the site in a natural condition? No, only in wooded rear of lot.





10/21/2024  
SSSM  
GES, IN  
JPG

10

699 - URBAN LAND

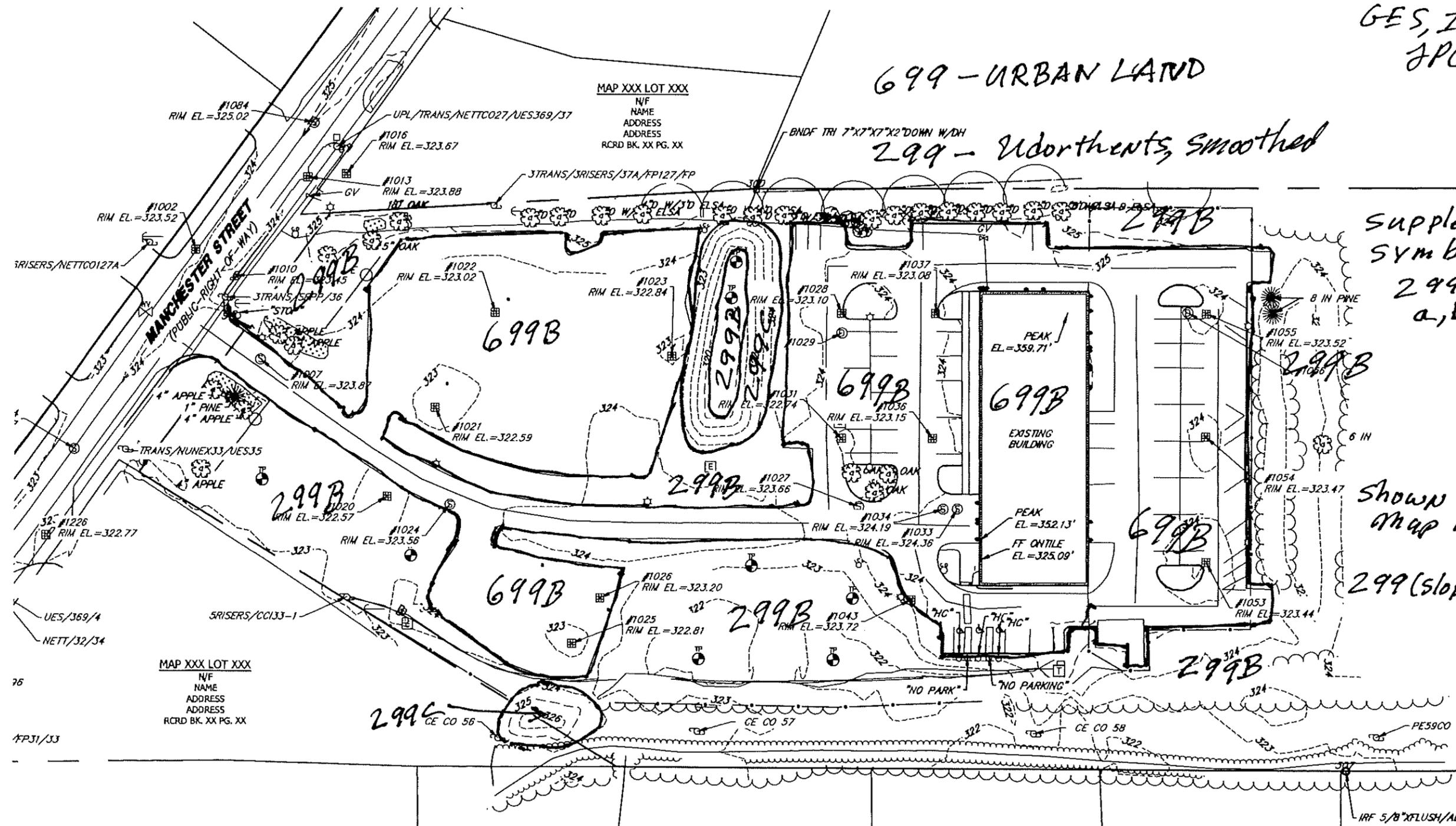
299 - Elevation, smoothed

MAP XXX LOT XXX  
N/F  
NAME  
ADDRESS  
ADDRESS  
RCRD BK. XX PG. XX

Supplemental  
symbols for  
299:  
a, b, a, a, a

Shown on  
map as:  
299 (slope) / a b a a a

MAP XXX LOT XXX  
XXX S.F.  
(XXXX ACRES)



MAP XXX LOT XXX  
N/F  
NAME  
ADDRESS  
ADDRESS  
RCRD BK. XX PG. XX

MAP XXX LOT XXX  
N/F  
NAME  
ADDRESS  
ADDRESS  
RCRD BK. XX PG. XX

MAP XXX LOT XXX  
N/F  
NAME  
ADDRESS  
ADDRESS  
RCRD BK. XX PG. XX

MAP XXX LOT XXX  
N/F  
NAME  
ADDRESS  
ADDRESS  
RCRD BK. XX PG. XX

MAP XXX LOT XXX  
N/F  
NAME  
ADDRESS  
ADDRESS  
RCRD BK. XX PG. XX

PURSUANT TO NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES LAN 503.09(24):  
I CERTIFY THAT THIS SURVEY AND PLAN WERE PREPARED BY THOSE UNDER MY  
DIRECT SUPERVISION AND ARE THE RESULT OF A FIELD SURVEY CONDUCTED ON  
XXXXXXXX XX, YEAR. THIS SURVEY CONFORMS TO THE ACCURACY REQUIREMENTS  
OF AN URBAN SURVEY OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES  
OF THE BOARD OF LICENSURE FOR LAND SURVEYORS. THIS SURVEY IS CORRECT  
TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, AND THE FIELD TRAVERSE  
SURVEY EXCEEDS A PRECISION OF 1:15,000.



PROGRESS  
PRINT

513 - Manchester St, Concord, NH 03301\95513-11 DiLorenzo 94-98 Manchester St, Concord, NH\Carlson Survey\Drawings\95513-11 Survey.dwg



United States  
Department of  
Agriculture

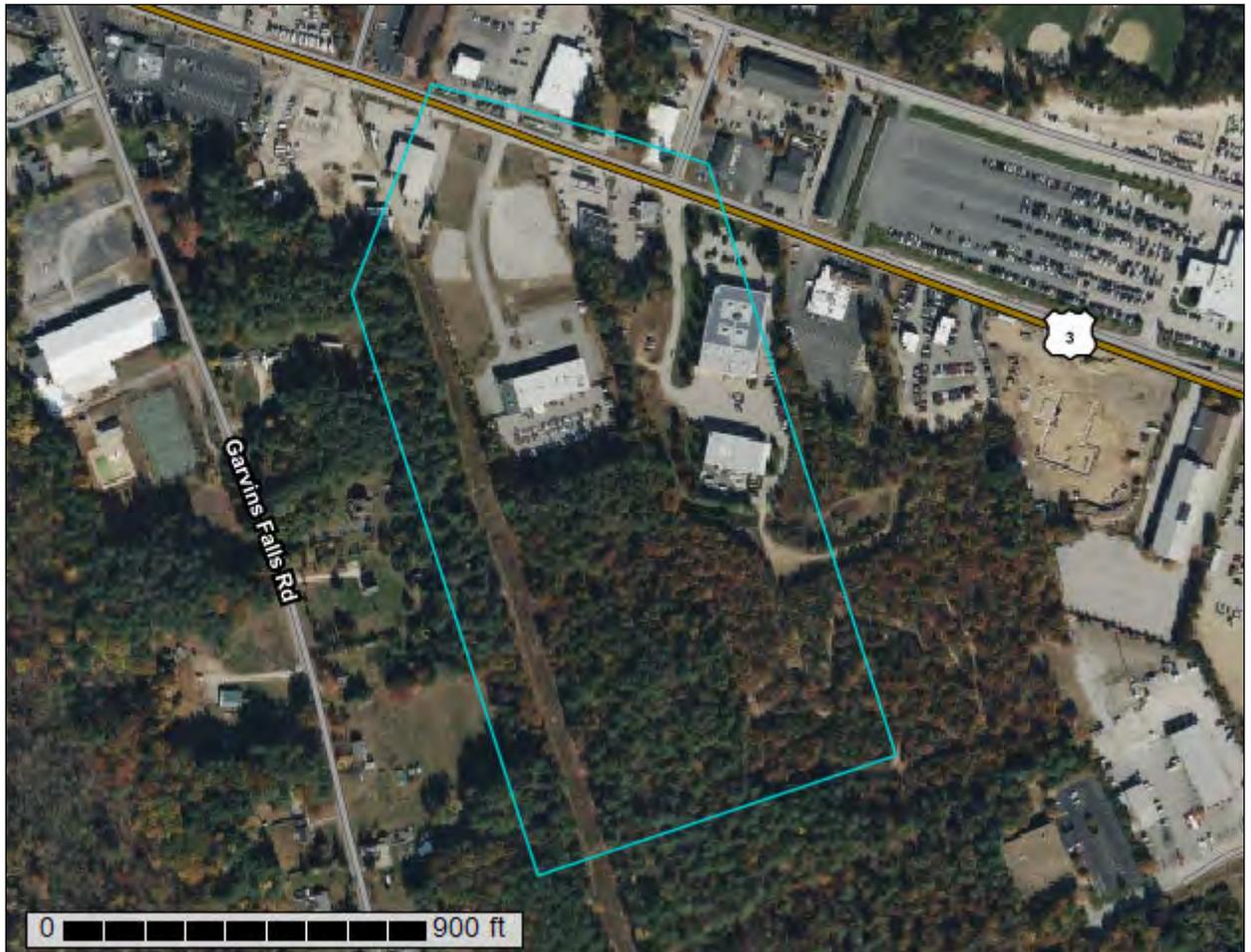
**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Merrimack and Belknap Counties, New Hampshire

95513.03



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

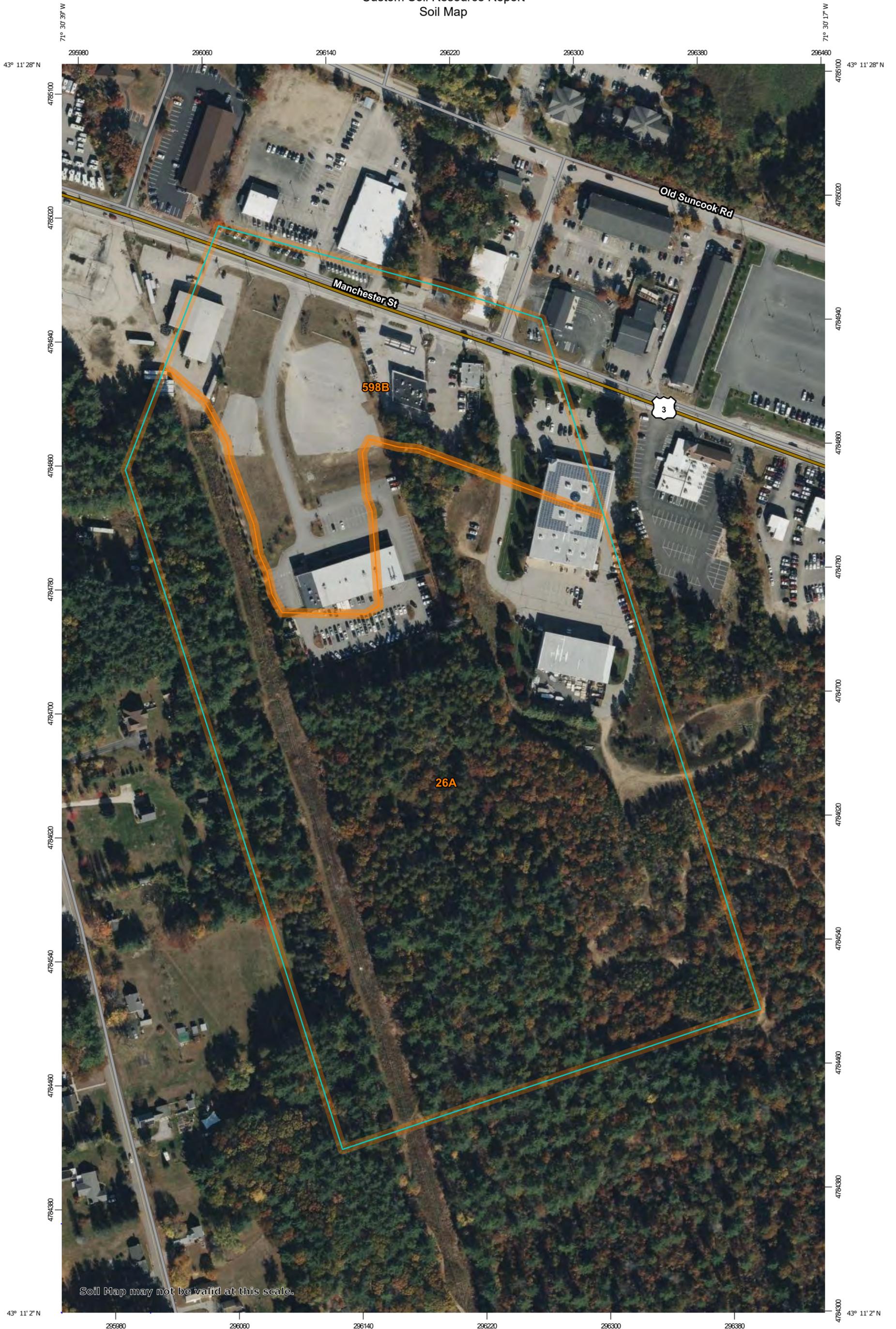
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

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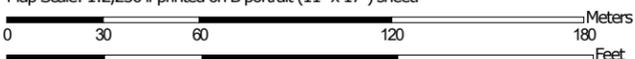
The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report  
Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:2,250 if printed on B portrait (11" x 17") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

**Special Point Features**

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Merrimack and Belknap Counties, New Hampshire  
 Survey Area Data: Version 29, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
26A	Windsor loamy sand, 0 to 3 percent slopes	28.1	75.1%
598B	Windsor-Urban land complex, 0 to 8 percent slopes	9.3	24.9%
<b>Totals for Area of Interest</b>		<b>37.4</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

## Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Merrimack and Belknap Counties, New Hampshire

### 26A—Windsor loamy sand, 0 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2svkg  
*Elevation:* 0 to 990 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 240 days  
*Farmland classification:* Farmland of local importance

#### Map Unit Composition

*Windsor, loamy sand, and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Windsor, Loamy Sand

##### Setting

*Landform:* Dunes, deltas, outwash terraces, outwash plains  
*Landform position (three-dimensional):* Tread, riser  
*Down-slope shape:* Convex, linear  
*Across-slope shape:* Convex, linear  
*Parent material:* Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

##### Typical profile

*O - 0 to 1 inches:* moderately decomposed plant material  
*A - 1 to 3 inches:* loamy sand  
*Bw - 3 to 25 inches:* loamy sand  
*C - 25 to 65 inches:* sand

##### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Excessively drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (1.42 to 99.90 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 3.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2s  
*Hydrologic Soil Group:* A  
*Ecological site:* F144AY022MA - Dry Outwash  
*Hydric soil rating:* No

### Minor Components

#### Deerfield, loamy sand

*Percent of map unit:* 10 percent  
*Landform:* Outwash plains, terraces, deltas  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Tread, tal  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

#### Hinckley, loamy sand

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, eskers, kames, deltas  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Head slope, nose slope, side slope, crest,  
rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear, convex  
*Hydric soil rating:* No

## 598B—Windsor-Urban land complex, 0 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 2w2wq  
*Elevation:* 0 to 920 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 240 days  
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Windsor and similar soils:* 45 percent  
*Urban land:* 35 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Windsor

#### Setting

*Landform:* Outwash plains, outwash terraces, deltas, dunes  
*Landform position (three-dimensional):* Tread, riser  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Linear, convex  
*Parent material:* Loose sandy glaciofluvial deposits derived from granite and/or  
loose sandy glaciofluvial deposits derived from schist and/or loose sandy  
glaciofluvial deposits derived from gneiss

#### Typical profile

*A - 0 to 3 inches:* loamy sand

## Custom Soil Resource Report

*Bw - 3 to 25 inches: loamy sand*

*C - 25 to 65 inches: sand*

### Properties and qualities

*Slope: 0 to 8 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Excessively drained*

*Runoff class: Low*

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)*

*Available water supply, 0 to 60 inches: Low (about 4.4 inches)*

### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 2s*

*Hydrologic Soil Group: A*

*Ecological site: F144AY022MA - Dry Outwash*

*Hydric soil rating: No*

## Description of Urban Land

### Typical profile

*M - 0 to 10 inches: cemented material*

### Properties and qualities

*Slope: 0 to 8 percent*

*Depth to restrictive feature: 0 inches to manufactured layer*

*Runoff class: Very high*

*Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)*

*Available water supply, 0 to 60 inches: Very low (about 0.0 inches)*

### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 8*

*Hydrologic Soil Group: D*

*Hydric soil rating: Unranked*

## Minor Components

### Udorthents

*Percent of map unit: 10 percent*

*Landform: Outwash plains, outwash terraces, deltas, dunes*

*Landform position (three-dimensional): Tread, riser*

*Down-slope shape: Linear, convex*

*Across-slope shape: Linear, convex*

*Hydric soil rating: No*

### Hinckley

*Percent of map unit: 5 percent*

*Landform: Outwash plains, eskers, kames, deltas*

*Landform position (two-dimensional): Summit, shoulder, backslope*

*Landform position (three-dimensional): Head slope, nose slope, side slope, crest, rise*

## Custom Soil Resource Report

*Down-slope shape:* Convex  
*Across-slope shape:* Linear, convex  
*Hydric soil rating:* No

### **Deerfield**

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, terraces, deltas  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Tread, talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

# Soil Information for All Uses

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## Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

## Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

## Hydrologic Soil Group (95513.03)

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

## Custom Soil Resource Report

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

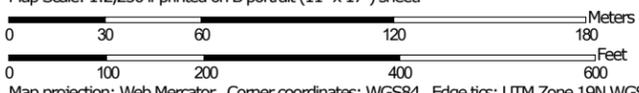
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report  
Map—Hydrologic Soil Group (95513.03)



Map Scale: 1:2,250 if printed on B portrait (11" x 17") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

### MAP LEGEND

**Area of Interest (AOI)**  
 Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Lines**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

**Soil Rating Points**

-  A
-  A/D
-  B
-  B/D

 C

 C/D

 D

 Not rated or not available

**Water Features**

-  Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

-  Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Merrimack and Belknap Counties, New Hampshire  
 Survey Area Data: Version 29, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

**MAP LEGEND**

**MAP INFORMATION**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

**Table—Hydrologic Soil Group (95513.03)**

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
26A	Windsor loamy sand, 0 to 3 percent slopes	A	28.1	75.1%
598B	Windsor-Urban land complex, 0 to 8 percent slopes	A	9.3	24.9%
<b>Totals for Area of Interest</b>			<b>37.4</b>	<b>100.0%</b>

**Rating Options—Hydrologic Soil Group (95513.03)**

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* Higher

# References

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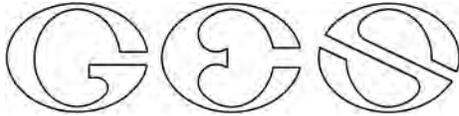
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## Custom Soil Resource Report

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**GOVE ENVIRONMENTAL  
SERVICES, INC**

**SITE-SPECIFIC SOIL SURVEY REPORT**

**For**

**94 Manchester Street, Concord, NH**

**By**

**GES, Inc.**

**Project # 2024101**

**Date: 10-21-2024**

**1. MAPPING STANDARDS**

*Site-Specific Soil Mapping Standards for New Hampshire and Vermont.* SSSNNE Special Publication No. 3, Version 7.0, July, 2021.

This map product is within the technical standards of the National Cooperative Soil Survey. It is a special purpose product, intended for infiltration requirements by the NH DES Alteration of Terrain Bureau. The soil map was produced by a professional soil scientist and is not a product of the USDA Natural Resources Conservation Service. This report accompanies the soil map.

The site-specific soil map (SSSM) was produced 10-21-2024; prepared by JP Gove, CSS #004, GES, Inc.

Soils were identified with the New Hampshire State-wide Numerical Soils Legend, USDA NRCS, Durham, NH. Issue # 10, January 2011.

Hydrologic Soil Group was determined using SSSNNE Special Publication No. 5, Ksat Values for New Hampshire Soils, September 2009.

High Intensity Soil Map symbols, based upon SSSNNE Special Publication 1, December 2017, were added to the Soil Legend.

Scale of soil map: Approximately 1”

= 20’ Contours Interval: 1 foot

**2. LANDFORMS & EXISTING CONDITIONS:**

The site is located on a large, glaciofluvial (sandy) plain. The area subject to soil mapping has been completed altered by grading, pavement and building. The rear of the lot remains in woodland. The entirety of the plain is excessively drained, very deep, sandy deposits.

**3. DATE SOIL MAP PRODUCED**

Date(s) of on-site field work: 10-21-

2024 Date(s) of test pits: 10-04-

2024

Test pits recorded by: B. Levesque, PE, TFM

**4. GEOGRAPHIC LOCATION AND SIZE OF SITE**

City or town where soil mapping was conducted:

Concord Location: Tax Map 1100, Block 3, Lot 10

Size of area: Approximately 4

acres Was the map for the entire lot?

No

If no, where was the mapping conducted on the parcel: Redevelopment Area

**5. PURPOSE OF THE SOIL MAP**

Was the map prepared to meet the requirement of Alteration of

Terrain? Yes If no, what was the purpose of the map? n/a

Who was the map prepared for? TFM

**6. SOIL IDENTIFICATION LEGEND**

Map Unit	Map Unit Name	HISS Symbol	Hydrologic Soil Group
699	Urban Land	n/a	n/a (impervious)
299/abaaa	Udorthents, smoothed	161	A

Supplement Symbols: a = excessively drained, b = glaciofluvial deposits, a = no restrictive/impervious layers, a = estimated Ksat of high, a = hydrologic soil group A

**SLOPE  
 PHASE:**

0-8%	B	8-15%	C	15-25%	D
25%-50%	E	50%+	F		

**7. NARRATIVE MAP UNIT DESCRIPTIONS**

SITE-SPECIFIC MAP UNIT: 299

CORRELATED SOIL SERIES: Udorthents, smoothed

LANDSCAPE SETTING: Plain

CHARACTERISTIC SURFACE FEATURES: Graded/paved/building

DRAINAGE CLASS: Excessively drained

PARENT MATERIAL: Outwash

NATURE OF DISSIMILAR INCLUSIONS: Moderately well drained

ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

SOIL PROFILE DESCRIPTIONS- horizon designation, depth, soil texture, Munsell color notation, Munsell color of redox features, soil structure, soil consistence, estimated coarse fragments, estimated seasonal high water table (ESHWT), observed water table (OBSWT), kind of water table (perched, apparent, or both), depth to lithic or paralithic contact:

Fill 0 to 15" 5YR8/6, s, om, fr  
C 15 to 84", 7.5YR5/8, s, om, fr,  
ESHWT = 5.5', no OBSWT, apparent water table, no lithic contact

SITE-SPECIFIC MAP UNIT: 699  
CORRELATED SOIL SERIES: Urban Land  
LANDSCAPE SETTING: Plain  
CHARACTERISTIC SURFACE FEATURES: Impervious  
DRAINAGE CLASS: n/a  
PARENT MATERIAL: n/a  
NATURE OF DISSIMILAR INCLUSIONS: 299  
ESTIMATED PERCENTAGE OF DISSIMILAR INCLUSIONS: 5%

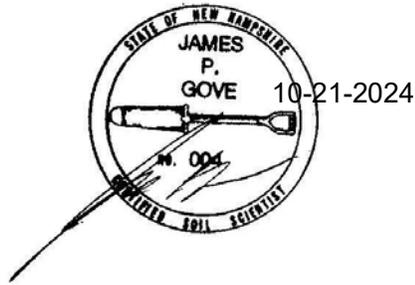
**8. RESPONSIBLE SOIL SCIENTIST**

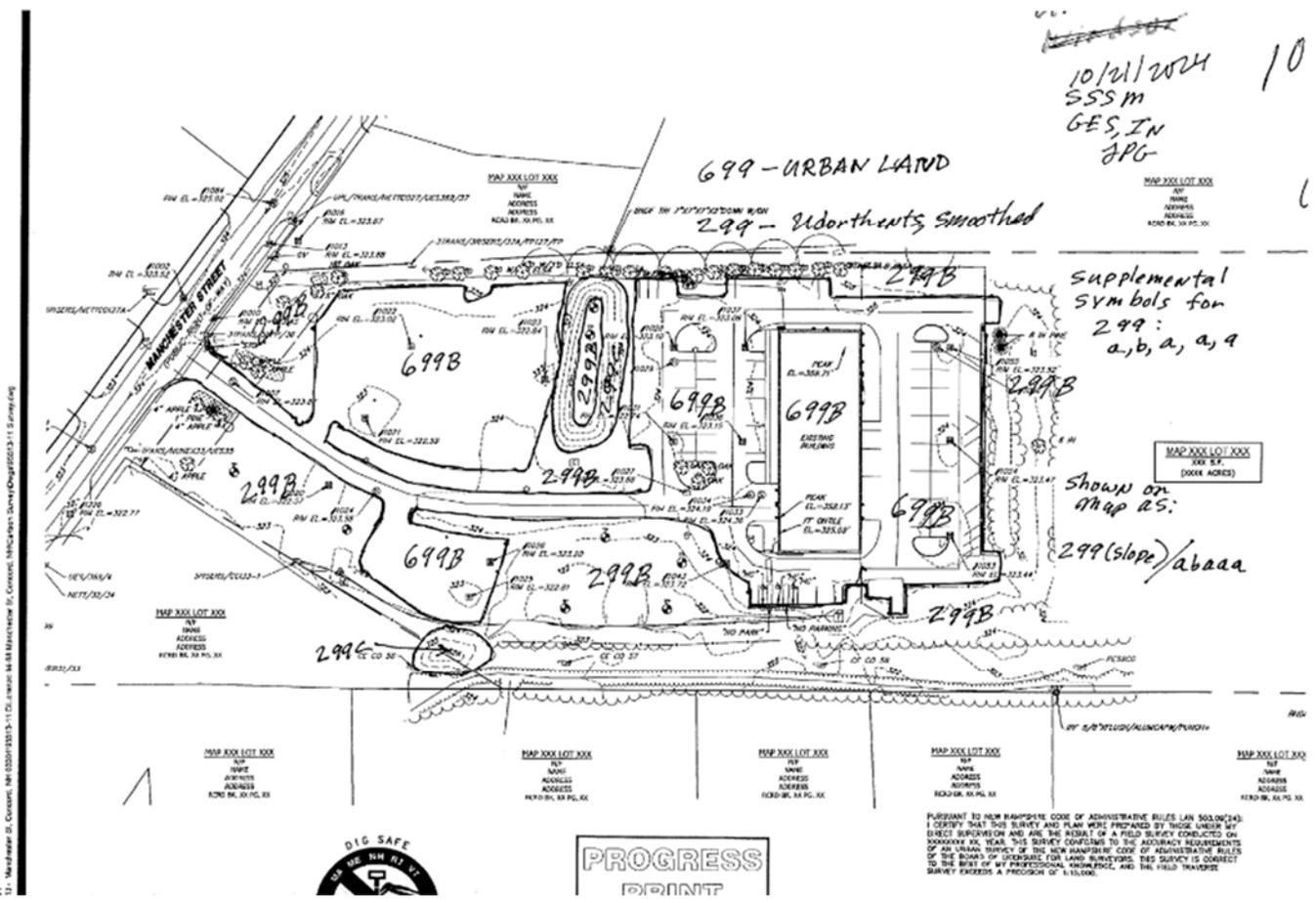
Name: James Gove

Certified Soil Scientist Number: 004

**9. OTHER DISTINGUISHING FEATURES OF SITE**

Is the site in a natural condition? No, only in wooded rear of lot.



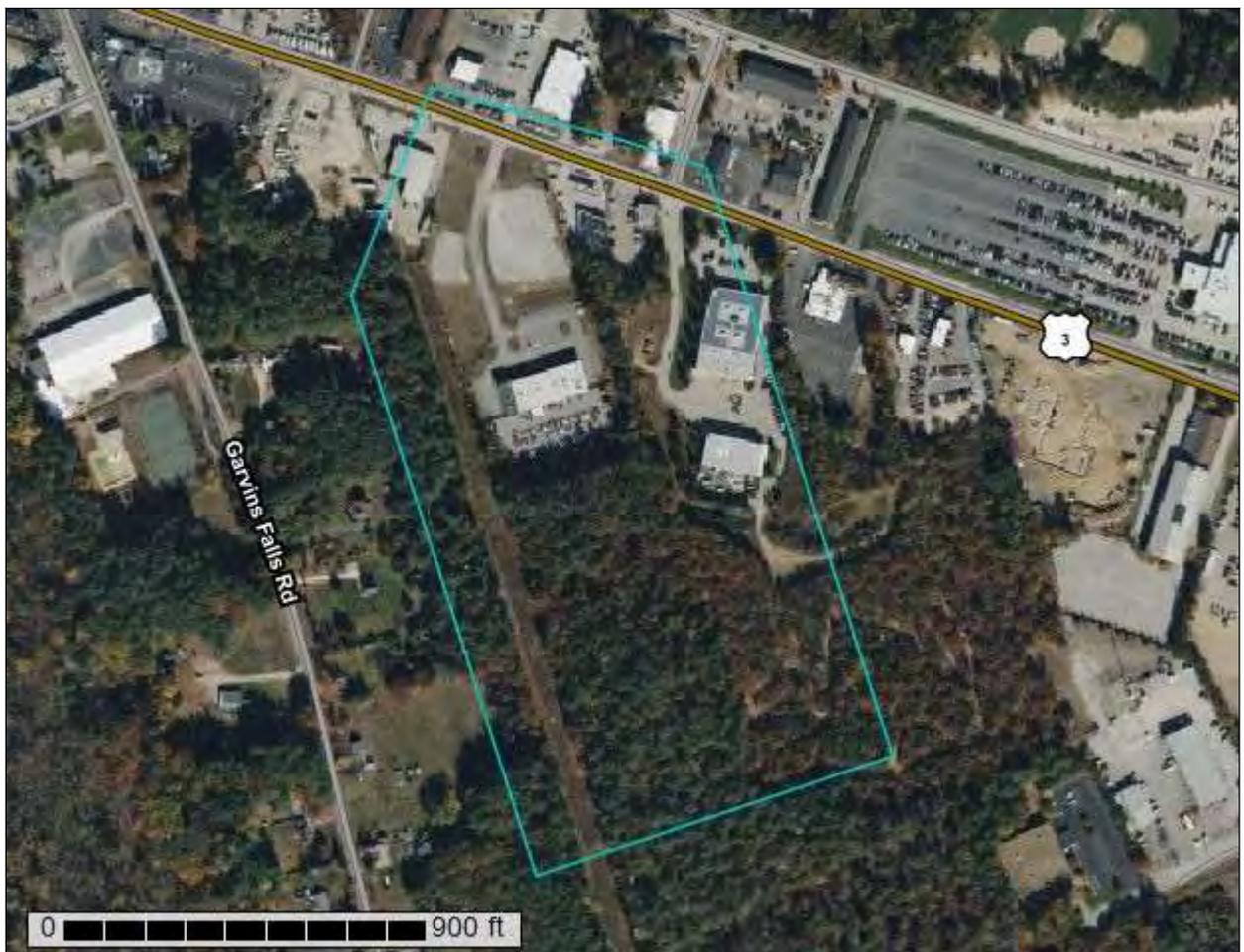




A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Merrimack and Belknap Counties, New Hampshire

95513.03



August 16, 2024

## **Preface**

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions.

The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The

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Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

## **How Soil Surveys Are Made**

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units).

Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist.

Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded.

These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

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Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

## **Soil Map**

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

### Water Features

 Streams and Canals

### Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web

Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Merrimack and Belknap Counties, New Hampshire

Survey Area Data: Version 29, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

## Custom Soil Resource

### MAP LEGEND

### MAP

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

**Map Unit Legend**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
26A	Windsor loamy sand, 0 to 3 percent slopes	28.1	75.1%
598B	Windsor-Urban land complex, 0 to 8 percent slopes	9.3	24.9%
<b>Totals for Area of Interest</b>		<b>37.4</b>	<b>100.0%</b>

**Map Unit Descriptions**

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class.

Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was

### Custom Soil Resource

impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

## Custom Soil Resource

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Custom Soil Resource

### Merrimack and Belknap Counties, New Hampshire

*26A—Windsor loamy sand, 0 to 3 percent slopes*

#### Map Unit Setting

*National map unit symbol: 2svkg*

*Elevation: 0 to 990 feet*

*Mean annual precipitation: 36 to 71 inches*

*Mean annual air temperature: 39 to 55 degrees F*

*Frost-free period: 140 to 240 days*

*Farmland classification: Farmland of local importance*

#### Map Unit Composition

*Windsor, loamy sand, and similar soils: 85 percent*

*Minor components: 15 percent*

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Windsor, Loamy Sand Setting

*Landform: Dunes, deltas, outwash terraces, outwash plains*

*Landform position (three-dimensional): Tread, riser*

*Down-slope shape: Convex, linear*

*Across-slope shape: Convex, linear*

*Parent material: Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss*

#### Typical profile

*O - 0 to 1 inches: moderately decomposed plant material*

*A - 1 to 3 inches: loamy sand Bw -*

*3 to 25 inches: loamy sand C - 25*

*to 65 inches: sand*

#### Properties and qualities

*Slope: 0 to 3 percent*

*Depth to restrictive feature: More than 80 inches*

*Drainage class: Excessively drained*

*Runoff class: Low*

*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)*

*Depth to water table: More than 80 inches*

*Frequency of flooding: None*

*Frequency of ponding: None*

*Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)*

*Available water supply, 0 to 60 inches: Low (about 3.6 inches)*

#### Interpretive groups

*Land capability classification (irrigated): None specified*

*Land capability classification (nonirrigated): 2s Hydrologic*

*Soil Group: A*

*Ecological site: F144AY022MA - Dry Outwash*

*Hydric soil rating: No*

## Custom Soil Resource

### Minor Components Deerfield, loamy sand

*Percent of map unit:* 10 percent  
*Landform:* Outwash plains, terraces, deltas  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Tread, talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### Hinckley, loamy sand

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, eskers, kames, deltas  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Head slope, nose slope, side slope, crest, rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear, convex  
*Hydric soil rating:* No

### 598B—Windsor-Urban land complex, 0 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2w2wq  
*Elevation:* 0 to 920 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 240 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Windsor and similar soils:* 45 percent  
*Urban land:* 35 percent  
*Minor components:* 20 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Windsor

##### Setting

*Landform:* Outwash plains, outwash terraces, deltas, dunes  
*Landform position (three-dimensional):* Tread, riser  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Linear, convex  
*Parent material:* Loose sandy glaciofluvial deposits derived from granite and/or loose sandy glaciofluvial deposits derived from schist and/or loose sandy glaciofluvial deposits derived from gneiss

##### Typical profile

*A - 0 to 3 inches:* loamy sand

## Custom Soil Resource

*Bw - 3 to 25 inches:* loamy sand  
*C - 25 to 65 inches:* sand

### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Excessively drained  
*Runoff class:* Low  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to very high (1.42 to 99.90 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 4.4 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2s Hydrologic  
*Soil Group:* A  
*Ecological site:* F144AY022MA - Dry Outwash  
*Hydric soil rating:* No

### Description of Urban Land Typical profile

*M - 0 to 10 inches:* cemented material

### Properties and qualities

*Slope:* 0 to 8 percent  
*Depth to restrictive feature:* 0 inches to manufactured layer  
*Runoff class:* Very high  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low (0.00 to 0.00 in/hr)  
*Available water supply, 0 to 60 inches:* Very low (about 0.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 8 Hydrologic  
*Soil Group:* D  
*Hydric soil rating:* Unranked

### Minor Components Udorthents

*Percent of map unit:* 10 percent  
*Landform:* Outwash plains, outwash terraces, deltas, dunes  
*Landform position (three-dimensional):* Tread, riser  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Linear, convex  
*Hydric soil rating:* No

### Hinckley

*Percent of map unit:* 5 percent  
*Landform:* Outwash plains, eskers, kames, deltas  
*Landform position (two-dimensional):* Summit, shoulder, backslope  
*Landform position (three-dimensional):* Head slope, nose slope, side slope, crest, rise

## Custom Soil Resource

*Down-slope shape:* Convex

*Across-slope shape:* Linear, convex

*Hydric soil rating:* No

### Deerfield

*Percent of map unit:* 5 percent

*Landform:* Outwash plains, terraces, deltas *Landform*

*position (two-dimensional):* Footslope *Landform*

*position (three-dimensional):* Tread, talf *Down-slope*

*shape:* Linear

*Across-slope shape:* Linear

*Hydric soil rating:* No

## **Soil Information for All Uses**

### **Soil Properties and Qualities**

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

### **Soil Qualities and Features**

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

### **Hydrologic Soil Group (95513.03)**

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

## Custom Soil Resource Report

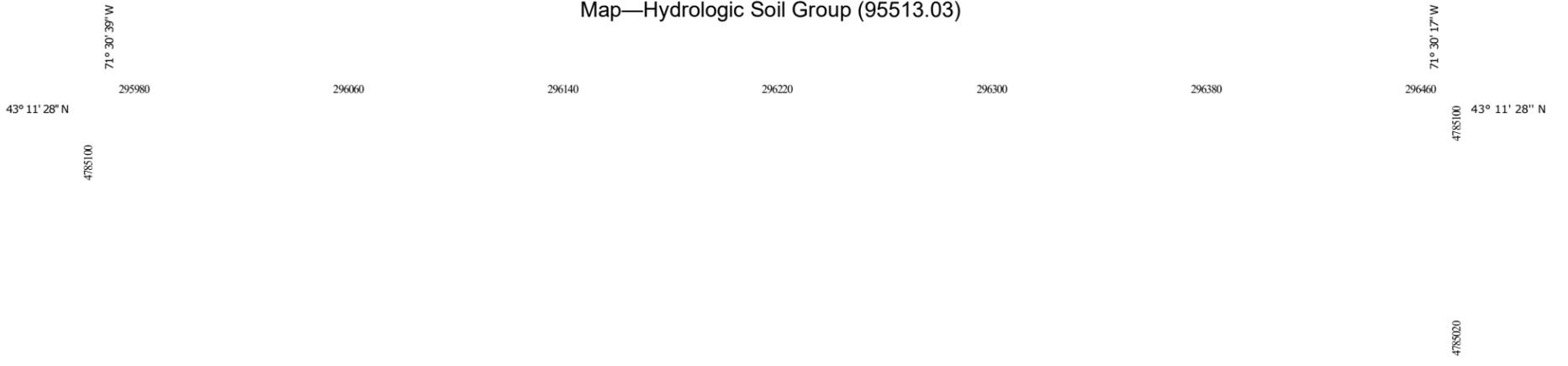
Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

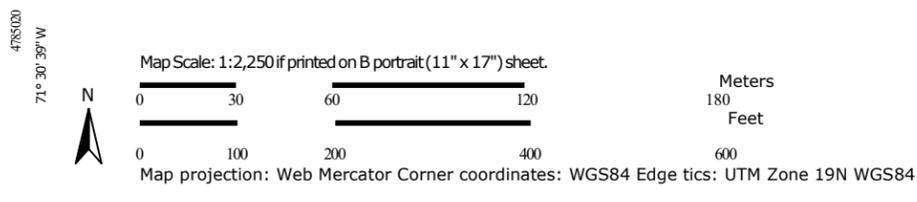
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material.

These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Custom Soil Resource Report  
Map—Hydrologic Soil Group (95513.03)





# Custom Soil Resource

## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

#### Soil Rating Polygons

 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Lines

 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Points

 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available

### Water Features

 Streams and Canals

### Transportation

 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

### Background

 Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web

Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Merrimack and Belknap Counties, New Hampshire

Survey Area Data: Version 29, Aug 22, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 6, 2022—Oct 22, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

## Custom Soil Resource

### **MAP LEGEND**

### **MAP**

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Custom Soil Resource Report

Table—Hydrologic Soil Group (95513.03)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
26A	Windsor loamy sand, 0 to 3 percent slopes	A	28.1	75.1%
598B	Windsor-Urban land complex, 0 to 8 percent slopes	A	9.3	24.9%
<b>Totals for Area of Interest</b>			<b>37.4</b>	<b>100.0%</b>

### Rating Options—Hydrologic Soil Group (95513.03)

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified Tie-

*break Rule:* Higher

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## Custom Soil Resource Report

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**APPENDIX C – TEST PIT LOGS & INFILTRATION**  
**TEST DATA**

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## TEST PIT INSPECTION REPORT

### **OBSERVATIONS:**

The undersigned traveled to the site to observe and document the excavation of 6 test pits at locations previously marked to ascertain soil conditions and permeability for proposed stormwater systems for the property at 94 Manchester Street in Concord, New Hampshire. The test pits, TP-1 through TP-8, were excavated to depths indicated as measured from the existing ground surface. It is noted that at test pit locations TP-5 and TP-6, explorations were not made as these were within an active storm water system (swale), but that testing for saturated permeability in the swale was made as it had for the other test pit locations.

The site has been previously developed and is relatively flat throughout the area. Currently it is developed for parking and access for the adjoining buildings.

The first test pit, TP-1, approximately 3' x 7' x 7' (Width x Length x Depth) was excavated at the location shown on the test pit plan. Seasonal High-Water Table was estimated at about 7 ft. below the existing ground surface; groundwater was not encountered, but increasing soil moisture content was encountered with the depth of excavation. The following strata were noted:

SECTION DEPTH (in)	SOIL DESCRIPTION
0 to 4 inches	A7.5YR 7/2 - damp, loose, f-m SAND, little f Gravel, little to trace Silt, little to trace Organics (roots) (TOPSOIL/FILL)
4 to 15 inches	A5YR 8/6 to A7.5YR 6/8 – damp, loose, f-c SAND, trace f-c Gravel, little Silt (FILL/GLACIO-FLUVIAL DEPOSITS)
15 to 60 inches	A5 8/8 – damp, loose to med. dense, f-c SAND, trace f Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
60 to 75 inches	A7.5YR 5/8 – damp, med. dense, f-c SAND, little to trace f Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
75 to 84 inches	A7.5YR 5/3 – damp to moist, med. dense, f-c SAND, little f-c Gravel, trace Silt (GLACIO-LACUASTRINE DEPOSITS)
	Groundwater was not encountered
	Estimated SHWT approximately at 5.5 ft
	B.O.E. @ 7 ft below existing grade

Photo 1: View of TP-1



The second test pit, TP-2, approximately 4' x 8' x 9' (Width x Length x Depth) was excavated at the location shown on the test pit plan. Seasonal High-Water Table was estimated at 7.5 ft as measured from the adjacent ground surface. It is noted that groundwater was not encountered, but increasing soil moisture was encountered with the depth of excavation. The following strata were noted:

SECTION DEPTH (in)	SOIL DESCRIPTION
0 to 4 inches	A7.5YR 7/2 - damp, loose, f-m SAND, little f Gravel, little to trace Silt, little to trace Organics (roots) (TOPSOIL/FILL)
4 to 30 inches	A5YR 8/6 to A7.5YR 6/8 – damp, loose, f-c SAND, trace f-c Gravel, little Silt (FILL/GLACIO-FLUVIAL DEPOSITS)
30 to 48 inches	A7.5YR 5/3 – damp, loose to med. dense, f-c SAND, trace f Gravel, trace Silt (FILL/GLACIO-FLUVIAL DEPOSITS)
48 to 60 inches	A7.5YR 6/6 to A7.5YR 5/8 – damp, med. dense, f-c SAND, little to trace f Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
60 to 84 inches	A7.5YR 5/8 to A7.5YR 5/3 – damp, med. dense, f-c SAND, little f-c Gravel, trace Silt (GLACIO-LACUASTRINE DEPOSITS)
	Groundwater was not encountered
	Estimated SHWT approximately at 6.0 ft
	B.O.E. @ 7 ft below existing grade

Photo 2: View of TP-2



Note: the conduit appeared to have been empty and/or abandoned but will be reconnected by the excavation contractor on the assumption that this is still active.

The third test pit, TP-3, approximately 4' x 8' x 8' (Width x Length x Depth) was excavated at the location shown on the test pit plan. Seasonal High-Water Table was estimated at 7.0 ft below the existing ground surface; groundwater was not encountered, but increasing soil moisture content was encountered with the depth of excavation. The following strata were noted:

SECTION DEPTH (in)	SOIL DESCRIPTION
0 to 4 inches	A7.5YR 7/2 - damp, loose, f-m SAND, little f Gravel, little to trace Silt, little to trace Organics (roots) (TOPSOIL/FILL)
4 to 15 inches	A5YR 8/6 to A7.5YR 6/8 – damp, loose, f-c SAND, trace f-c Gravel, little Silt (FILL/GLACIO-FLUVIAL DEPOSITS)
15 to 75 inches	A7.5YR 5/8 – damp, med. dense, f-c SAND, little to trace f Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
75 to 84 inches	A7.5YR 5/3 – damp to moist, med. dense, f-c SAND, little f-c Gravel, trace Silt (GLACIO-LACUASTRINE DEPOSITS)
	Groundwater was not encountered
	Estimated SHWT approximately at 5.5 ft
	B.O.E. @ 7 ft below existing grade

Photo 3: View of TP-3



Sand is particularly loose and unconsolidated in this test pit, sidewalls collapsing almost immediately with opening the excavation.

The fourth test pit, TP-4, approximately 4' x 8' x 8' (Width x Length x Depth) was excavated at the location shown on the test pit plan. Seasonal High-Water Table was estimated to be 7 ft below the existing ground surface; groundwater was not encountered, but increasing soil moisture content was encountered with the depth of excavation. The following strata were noted:

SECTION DEPTH (in)	SOIL DESCRIPTION
0 to 4 inches	A7.5YR 7/2 - damp, loose, f-m SAND, little f Gravel, little to trace Silt, little to trace Organics (roots) (TOPSOIL/FILL)
4 to 15 inches	A5YR 8/6 to A7.5YR 6/8 – damp, loose, f-c SAND, trace f-c Gravel, little Silt (FILL/GLACIO-FLUVIAL DEPOSITS)
15 to 60 inches	A5 8/8 – damp, loose to med. dense, f-c SAND, trace f Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
60 to 75 inches	A7.5YR 5/8 – damp, med. dense, f-c SAND, little to trace f Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
72 to 84 inches	A7.5YR 5/3 – damp to moist, med. dense, f-c SAND, little f-c Gravel, trace Silt (GLACIO-LACUASTRINE DEPOSITS)
	Groundwater was not encountered
	Estimated SHWT approximately at 5.5 ft
	B.O.E. @ 7 ft below existing grade

Photo 4: View of TP-4



The fifth test pit, TP-7, approximately 4' x 8' x 8' (Width x Length x Depth) was excavated at the location shown on the test pit plan. Seasonal High-Water Table was estimated at 7 ft below existing ground surface elevation; groundwater was not encountered but increasing soil moisture encountered with depth. The following strata were noted:

SECTION DEPTH (in)	SOIL DESCRIPTION
-----------------------	------------------

0 to 4 inches	A7.5YR 7/2 - damp, loose, f-m SAND, little f Gravel, little to trace Silt, little to trace Organics (roots) (TOPSOIL/FILL)
4 to 12 inches	A7.5YR 5/4 to A7.5YR 6/6 – damp, loose, f-c SAND, trace f-c Gravel, little Silt (FILL/SUBSOIL/GLACIO-FLUVIAL DEPOSITS)
12 to 30 inches	A7.5 YR 6/6 to A7.5YR 4/6 – damp, med. dense, f-c SAND, little f-c Gravel, trace Silt (GLACIO-FLUIVAL DEPOSITS)
30 to 75 inches	A7.5YR 6/6 – damp, med. dense, f-c SAND, little to trace f Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
72 to 84 inches	A7.5YR 4/6 – damp, med. dense, f-c SAND, little f-c Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
	Groundwater was not encountered
	Estimated SHWT approximately at 5.5 ft
	B.O.E. @ 7 ft below existing grade

Photo 5: View of TP-7



The sixth test pit, TP-8, approximately 4' x 8' x 8.5' (Width x Length x Depth) was excavated at the location shown on the test pit plan. Seasonal High-Water Table estimated at 7 ft below existing grade; groundwater was not encountered but increasing soil moisture encountered with depth. The following strata were noted:

SECTION DEPTH (in)	SOIL DESCRIPTION
-----------------------	------------------

0 to 4 inches	A7.5YR 7/2 - damp, loose, f-m SAND, little f Gravel, little to trace Silt, little to trace Organics (roots) (TOPSOIL/FILL)
4 to 15 inches	A5YR 8/6 to A7.5YR 6/8 – damp, loose, f-c SAND, trace f-c Gravel, little Silt (FILL/GLACIO-FLUVIAL DEPOSITS)
15 to 60 inches	A5 8/8 – damp, loose to med. dense, f-c SAND, trace f Gravel, trace Silt (GLACIO-FLUIVAL DEPOSITS)
60 to 75 inches	A7.5YR 5/8 – damp, med. dense, f-c SAND, little to trace f Gravel, trace Silt (GLACIO-FLUVIAL DEPOSITS)
72 to 84 inches	A7.5YR 5/3 – damp, med. dense, f-c SAND, little f-c Gravel, trace Silt (GLACIO-LACUASTRINE DEPOSITS)
	Groundwater was not encountered
	Estimated SHWT approximately at 5.5 ft
	B.O.E. @ 7 ft below existing grade

Photo 6: View of TP-8



**ANALYSIS:** Site soils should be fairly permeable given that they are fairly well-graded with generally little to trace amounts of silt. The saturated permeabilities or  $k_{sat}$  based on field testing of the soils in the anticipated drainage strata are anticipated to be high based on the material gradations encountered in the test pits, potentially in the range of 4 to 8 inches/hour.

**CONCLUSIONS:** The site soils should not present a problem with stormwater infiltration, however given their variability, consideration should be made to utilize a soil layer or infiltration soil mix having an in-place permeability that is more consistent that may be required for the local and state design requirements.



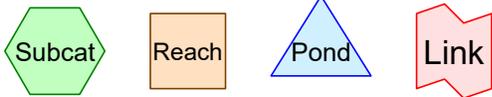
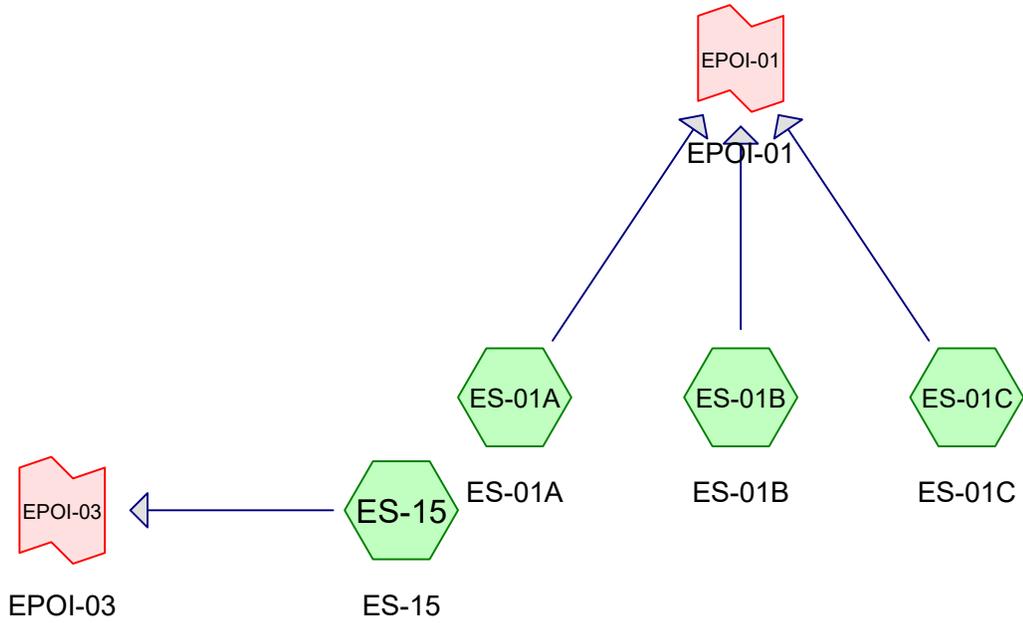
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Bryan Levesque, PE, CPESC  
*Geotechnical Engineer*

**APPENDIX D – PRE-DEVELOPMENT**  
**CALCULATIONS**

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Pre Drainage



**95513-11\_Drainage Analysis Phase I\_Existing**

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**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
60,038	39	>75% Grass cover, Good, HSG A (ES-01A, ES-01B, ES-01C, ES-08, ES-15)
3,587	98	Paved parking, HSG A (ES-01B, ES-08)
12,169	30	Woods, Good, HSG A (ES-08)
<b>75,794</b>	<b>40</b>	<b>TOTAL AREA</b>

**95513-11\_Drainage Analysis Phase I\_Existing**

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**Soil Listing (all nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
75,794	HSG A	ES-01A, ES-01B, ES-01C, ES-08, ES-15
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
<b>75,794</b>		<b>TOTAL AREA</b>

**95513-11\_Drainage Analysis Phase I\_Existing**

Prepared by T F Moran Inc

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Pre-Development  
Type III 24-hr 2-Year Rainfall=2.82"

Printed 1/21/2026

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment ES-01A: ES-01A** Runoff Area=2,771 sf 0.00% Impervious Runoff Depth=0.00"  
Flow Length=37' Slope=0.0100 '/' Tc=6.2 min CN=39 Runoff=0.00 cfs 0 cf

**Subcatchment ES-01B: ES-01B** Runoff Area=8,235 sf 15.57% Impervious Runoff Depth>0.04"  
Flow Length=48' Slope=0.0200 '/' Tc=6.0 min CN=48 Runoff=0.00 cfs 25 cf

**Subcatchment ES-01C: ES-01C** Runoff Area=4,182 sf 0.00% Impervious Runoff Depth=0.00"  
Flow Length=37' Slope=0.0100 '/' Tc=6.2 min CN=39 Runoff=0.00 cfs 0 cf

**Subcatchment ES-08: ES-08** Runoff Area=49,715 sf 4.64% Impervious Runoff Depth=0.00"  
Flow Length=139' Tc=9.0 min CN=40 Runoff=0.00 cfs 0 cf

**Subcatchment ES-15: ES-15** Runoff Area=10,891 sf 0.00% Impervious Runoff Depth=0.00"  
Flow Length=118' Slope=0.0100 '/' Tc=14.0 min CN=39 Runoff=0.00 cfs 0 cf

**Link EPOI-01: EPOI-01** Inflow=0.00 cfs 25 cf  
Primary=0.00 cfs 25 cf

**Link EPOI-02: EPOI-02** Inflow=0.00 cfs 0 cf  
Primary=0.00 cfs 0 cf

**Link EPOI-03: EPOI-03** Inflow=0.00 cfs 0 cf  
Primary=0.00 cfs 0 cf

**Total Runoff Area = 75,794 sf Runoff Volume = 25 cf Average Runoff Depth = 0.00"**  
**95.27% Pervious = 72,207 sf 4.73% Impervious = 3,587 sf**

# 95513-11\_Drainage Analysis Phase I\_Existing

Prepared by T F Moran Inc

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Pre-Development  
Type III 24-hr 10-Year Rainfall=4.16"

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Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment ES-01A: ES-01A** Runoff Area=2,771 sf 0.00% Impervious Runoff Depth>0.06"  
Flow Length=37' Slope=0.0100 '/' Tc=6.2 min CN=39 Runoff=0.00 cfs 15 cf

**Subcatchment ES-01B: ES-01B** Runoff Area=8,235 sf 15.57% Impervious Runoff Depth>0.31"  
Flow Length=48' Slope=0.0200 '/' Tc=6.0 min CN=48 Runoff=0.02 cfs 212 cf

**Subcatchment ES-01C: ES-01C** Runoff Area=4,182 sf 0.00% Impervious Runoff Depth>0.06"  
Flow Length=37' Slope=0.0100 '/' Tc=6.2 min CN=39 Runoff=0.00 cfs 22 cf

**Subcatchment ES-08: ES-08** Runoff Area=49,715 sf 4.64% Impervious Runoff Depth>0.08"  
Flow Length=139' Tc=9.0 min CN=40 Runoff=0.01 cfs 343 cf

**Subcatchment ES-15: ES-15** Runoff Area=10,891 sf 0.00% Impervious Runoff Depth>0.06"  
Flow Length=118' Slope=0.0100 '/' Tc=14.0 min CN=39 Runoff=0.00 cfs 57 cf

**Link EPOI-01: EPOI-01** Inflow=0.02 cfs 249 cf  
Primary=0.02 cfs 249 cf

**Link EPOI-02: EPOI-02** Inflow=0.01 cfs 343 cf  
Primary=0.01 cfs 343 cf

**Link EPOI-03: EPOI-03** Inflow=0.00 cfs 57 cf  
Primary=0.00 cfs 57 cf

**Total Runoff Area = 75,794 sf Runoff Volume = 649 cf Average Runoff Depth = 0.10"**  
**95.27% Pervious = 72,207 sf 4.73% Impervious = 3,587 sf**

# 95513-11\_Drainage Analysis Phase I\_Existing

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Pre-Development  
Type III 24-hr 25-Year Rainfall=5.20"

Printed 1/21/2026

Page 6

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment ES-01A: ES-01A** Runoff Area=2,771 sf 0.00% Impervious Runoff Depth>0.24"  
Flow Length=37' Slope=0.0100 '/ Tc=6.2 min CN=39 Runoff=0.00 cfs 56 cf

**Subcatchment ES-01B: ES-01B** Runoff Area=8,235 sf 15.57% Impervious Runoff Depth>0.66"  
Flow Length=48' Slope=0.0200 '/ Tc=6.0 min CN=48 Runoff=0.08 cfs 455 cf

**Subcatchment ES-01C: ES-01C** Runoff Area=4,182 sf 0.00% Impervious Runoff Depth>0.24"  
Flow Length=37' Slope=0.0100 '/ Tc=6.2 min CN=39 Runoff=0.01 cfs 84 cf

**Subcatchment ES-08: ES-08** Runoff Area=49,715 sf 4.64% Impervious Runoff Depth>0.28"  
Flow Length=139' Tc=9.0 min CN=40 Runoff=0.09 cfs 1,161 cf

**Subcatchment ES-15: ES-15** Runoff Area=10,891 sf 0.00% Impervious Runoff Depth>0.24"  
Flow Length=118' Slope=0.0100 '/ Tc=14.0 min CN=39 Runoff=0.01 cfs 218 cf

**Link EPOI-01: EPOI-01** Inflow=0.08 cfs 595 cf  
Primary=0.08 cfs 595 cf

**Link EPOI-02: EPOI-02** Inflow=0.09 cfs 1,161 cf  
Primary=0.09 cfs 1,161 cf

**Link EPOI-03: EPOI-03** Inflow=0.01 cfs 218 cf  
Primary=0.01 cfs 218 cf

**Total Runoff Area = 75,794 sf Runoff Volume = 1,974 cf Average Runoff Depth = 0.31"**  
**95.27% Pervious = 72,207 sf 4.73% Impervious = 3,587 sf**

# 95513-11\_Drainage Analysis Phase I\_Existing

Prepared by T F Moran Inc

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Pre-Development  
Type III 24-hr 50-Year Rainfall=6.16"

Printed 1/21/2026

Page 7

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment ES-01A: ES-01A** Runoff Area=2,771 sf 0.00% Impervious Runoff Depth>0.49"  
Flow Length=37' Slope=0.0100 '/ Tc=6.2 min CN=39 Runoff=0.01 cfs 113 cf

**Subcatchment ES-01B: ES-01B** Runoff Area=8,235 sf 15.57% Impervious Runoff Depth>1.07"  
Flow Length=48' Slope=0.0200 '/ Tc=6.0 min CN=48 Runoff=0.18 cfs 737 cf

**Subcatchment ES-01C: ES-01C** Runoff Area=4,182 sf 0.00% Impervious Runoff Depth>0.49"  
Flow Length=37' Slope=0.0100 '/ Tc=6.2 min CN=39 Runoff=0.02 cfs 171 cf

**Subcatchment ES-08: ES-08** Runoff Area=49,715 sf 4.64% Impervious Runoff Depth>0.55"  
Flow Length=139' Tc=9.0 min CN=40 Runoff=0.28 cfs 2,270 cf

**Subcatchment ES-15: ES-15** Runoff Area=10,891 sf 0.00% Impervious Runoff Depth>0.49"  
Flow Length=118' Slope=0.0100 '/ Tc=14.0 min CN=39 Runoff=0.05 cfs 444 cf

**Link EPOI-01: EPOI-01** Inflow=0.19 cfs 1,022 cf  
Primary=0.19 cfs 1,022 cf

**Link EPOI-02: EPOI-02** Inflow=0.28 cfs 2,270 cf  
Primary=0.28 cfs 2,270 cf

**Link EPOI-03: EPOI-03** Inflow=0.05 cfs 444 cf  
Primary=0.05 cfs 444 cf

**Total Runoff Area = 75,794 sf Runoff Volume = 3,736 cf Average Runoff Depth = 0.59"**  
**95.27% Pervious = 72,207 sf 4.73% Impervious = 3,587 sf**

# 95513-11\_Drainage Analysis Phase I\_Existing

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Pre-Development  
Type III 24-hr 100-Year Rainfall=7.31"

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Page 8

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment ES-01A: ES-01A** Runoff Area=2,771 sf 0.00% Impervious Runoff Depth>0.88"  
Flow Length=37' Slope=0.0100 '/' Tc=6.2 min CN=39 Runoff=0.03 cfs 203 cf

**Subcatchment ES-01B: ES-01B** Runoff Area=8,235 sf 15.57% Impervious Runoff Depth>1.65"  
Flow Length=48' Slope=0.0200 '/' Tc=6.0 min CN=48 Runoff=0.31 cfs 1,135 cf

**Subcatchment ES-01C: ES-01C** Runoff Area=4,182 sf 0.00% Impervious Runoff Depth>0.88"  
Flow Length=37' Slope=0.0100 '/' Tc=6.2 min CN=39 Runoff=0.05 cfs 307 cf

**Subcatchment ES-08: ES-08** Runoff Area=49,715 sf 4.64% Impervious Runoff Depth>0.96"  
Flow Length=139' Tc=9.0 min CN=40 Runoff=0.67 cfs 3,974 cf

**Subcatchment ES-15: ES-15** Runoff Area=10,891 sf 0.00% Impervious Runoff Depth>0.88"  
Flow Length=118' Slope=0.0100 '/' Tc=14.0 min CN=39 Runoff=0.11 cfs 797 cf

**Link EPOI-01: EPOI-01** Inflow=0.39 cfs 1,645 cf  
Primary=0.39 cfs 1,645 cf

**Link EPOI-02: EPOI-02** Inflow=0.67 cfs 3,974 cf  
Primary=0.67 cfs 3,974 cf

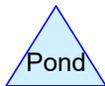
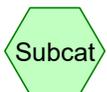
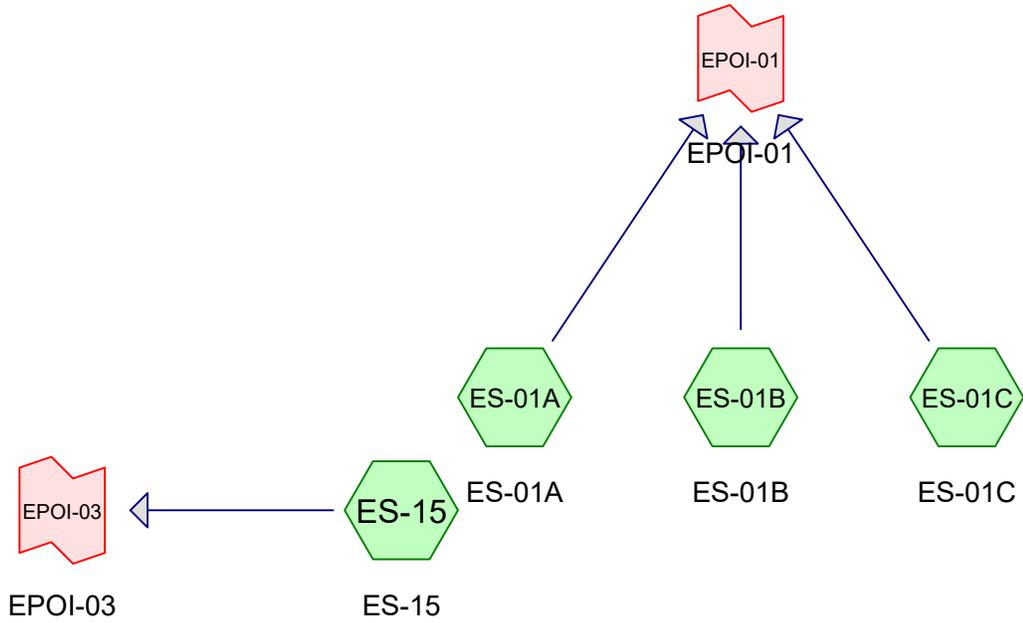
**Link EPOI-03: EPOI-03** Inflow=0.11 cfs 797 cf  
Primary=0.11 cfs 797 cf

**Total Runoff Area = 75,794 sf Runoff Volume = 6,415 cf Average Runoff Depth = 1.02"**  
**95.27% Pervious = 72,207 sf 4.73% Impervious = 3,587 sf**

**APPENDIX E – PRE-DEVELOPMENT  
CALCULATIONS (10-YEAR STORM EVENT)**

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Pre Drainage



Routing Diagram for 95513-11\_Drainage Analysis Phase I\_Existing

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**95513-11\_Drainage Analysis Phase I\_Existing**

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Page 2

**Area Listing (all nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
60,038	39	>75% Grass cover, Good, HSG A (ES-01A, ES-01B, ES-01C, ES-08, ES-15)
3,587	98	Paved parking, HSG A (ES-01B, ES-08)
12,169	30	Woods, Good, HSG A (ES-08)
<b>75,794</b>	<b>40</b>	<b>TOTAL AREA</b>

**95513-11\_Drainage Analysis Phase I\_Existing**

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Page 3

**Soil Listing (all nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
75,794	HSG A	ES-01A, ES-01B, ES-01C, ES-08, ES-15
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
<b>75,794</b>		<b>TOTAL AREA</b>

# 95513-11\_Drainage Analysis Phase I\_Existing

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Pre-Development (10 Yr)  
Type III 24-hr 10-Year Rainfall=4.16"

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Page 4

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment ES-01A: ES-01A** Runoff Area=2,771 sf 0.00% Impervious Runoff Depth>0.06"  
Flow Length=37' Slope=0.0100 '/' Tc=6.2 min CN=39 Runoff=0.00 cfs 15 cf

**Subcatchment ES-01B: ES-01B** Runoff Area=8,235 sf 15.57% Impervious Runoff Depth>0.31"  
Flow Length=48' Slope=0.0200 '/' Tc=6.0 min CN=48 Runoff=0.02 cfs 212 cf

**Subcatchment ES-01C: ES-01C** Runoff Area=4,182 sf 0.00% Impervious Runoff Depth>0.06"  
Flow Length=37' Slope=0.0100 '/' Tc=6.2 min CN=39 Runoff=0.00 cfs 22 cf

**Subcatchment ES-08: ES-08** Runoff Area=49,715 sf 4.64% Impervious Runoff Depth>0.08"  
Flow Length=139' Tc=9.0 min CN=40 Runoff=0.01 cfs 343 cf

**Subcatchment ES-15: ES-15** Runoff Area=10,891 sf 0.00% Impervious Runoff Depth>0.06"  
Flow Length=118' Slope=0.0100 '/' Tc=14.0 min CN=39 Runoff=0.00 cfs 57 cf

**Link EPOI-01: EPOI-01** Inflow=0.02 cfs 249 cf  
Primary=0.02 cfs 249 cf

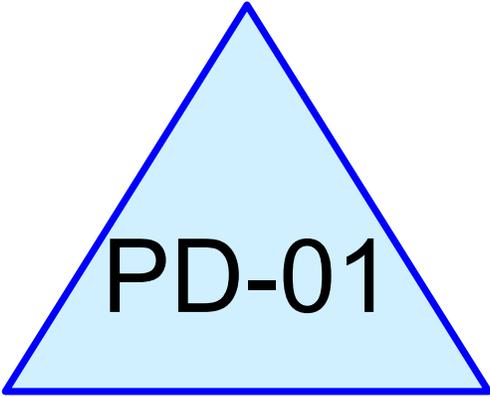
**Link EPOI-02: EPOI-02** Inflow=0.01 cfs 343 cf  
Primary=0.01 cfs 343 cf

**Link EPOI-03: EPOI-03** Inflow=0.00 cfs 57 cf  
Primary=0.00 cfs 57 cf

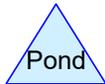
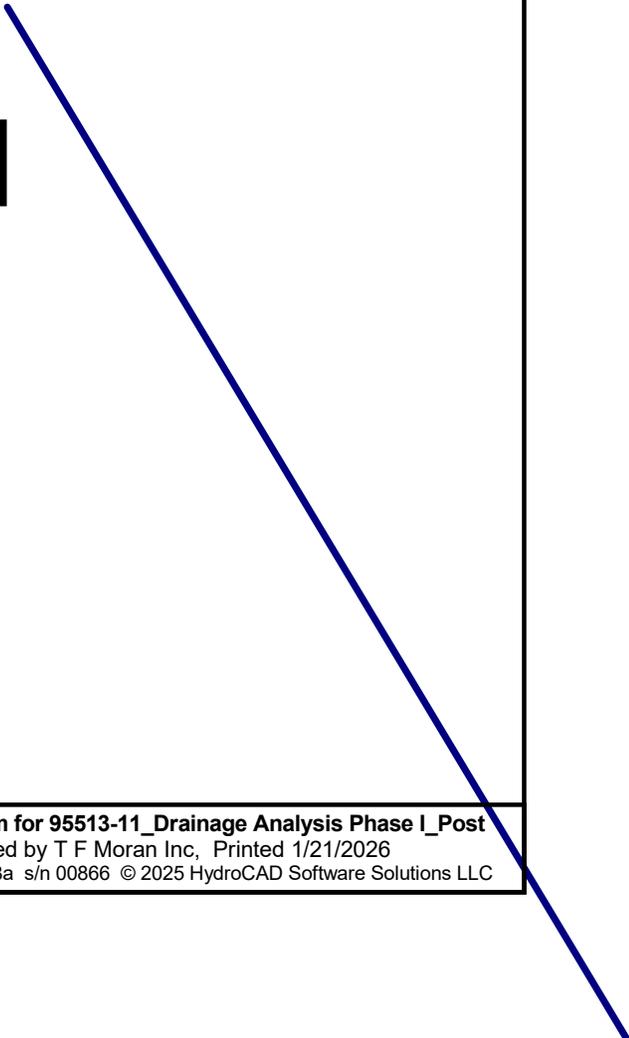
**Total Runoff Area = 75,794 sf Runoff Volume = 649 cf Average Runoff Depth = 0.10"**  
**95.27% Pervious = 72,207 sf 4.73% Impervious = 3,587 sf**

**APPENDIX F – POST-DEVELOPMENT**  
**CALCULATIONS**

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PD-01



**95513-11\_Drainage Analysis Phase I\_Post**

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Page 2

**Area Listing (selected nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
<b>0</b>	<b>0</b>	<b>TOTAL AREA</b>

**95513-11\_Drainage Analysis Phase I\_Post**

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Page 3

**Soil Listing (selected nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
<b>0</b>		<b>TOTAL AREA</b>

**95513-11\_Drainage Analysis Phase I\_Post**

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Post-Development

*Type III 24-hr 2-Year Rainfall=2.82"*

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Page 4

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Pond PD-01: PD-01**

Peak Elev=320.00' Storage=0 cf Inflow=0.00 cfs 0 cf

Outflow=0.00 cfs 0 cf

**95513-11\_Drainage Analysis Phase I\_Post**

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Post-Development

*Type III 24-hr 10-Year Rainfall=4.16"*

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Page 5

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Pond PD-01: PD-01**

Peak Elev=320.00' Storage=0 cf Inflow=0.00 cfs 0 cf

Outflow=0.00 cfs 0 cf

**95513-11\_Drainage Analysis Phase I\_Post**

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Post-Development

*Type III 24-hr 25-Year Rainfall=5.20"*

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Page 6

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Pond PD-01: PD-01**

Peak Elev=320.00' Storage=0 cf Inflow=0.00 cfs 0 cf

Outflow=0.00 cfs 0 cf

**95513-11\_Drainage Analysis Phase I\_Post**

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Post-Development

*Type III 24-hr 50-Year Rainfall=6.16"*

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Page 7

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Pond PD-01: PD-01**

Peak Elev=320.00' Storage=0 cf Inflow=0.00 cfs 0 cf

Outflow=0.00 cfs 0 cf

**95513-11\_Drainage Analysis Phase I\_Post**

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Post-Development

*Type III 24-hr 100-Year Rainfall=7.31"*

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Page 8

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Pond PD-01: PD-01**

Peak Elev=320.00' Storage=0 cf Inflow=0.00 cfs 0 cf

Outflow=0.00 cfs 0 cf

**APPENDIX G – POST-DEVELOPMENT  
CALCULATIONS (10-YEAR STORM EVENT)**

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**95513-11\_Drainage Analysis Phase I\_Post**

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Post-Development (10 Yr)  
Type III 24-hr 10-Year Rainfall=4.16"

Printed 1/21/2026

Page 1

**Summary for Pond PD-01: PD-01**

Inflow Area = 42,200 sf, 85.13% Impervious, Inflow Depth = 0.00" for 10-Year event  
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Routed to Link PPOI-02 : PPOI-02

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs  
 Peak Elev= 320.00' @ 0.00 hrs Surf.Area= 243 sf Storage= 0 cf  
 Flood Elev= 325.04' Surf.Area= 1,864 sf Storage= 2,372 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)  
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	320.00'	2,372 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.00	243	0	0
321.00	596	420	420
322.00	1,584	1,090	1,510
322.50	1,864	862	2,372

Device	Routing	Invert	Outlet Devices
#1	Primary	322.00'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=320.00' TW=0.00' (Dynamic Tailwater)  
 ↑1=**Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**APPENDIX H – PRE AND POST-DEVELOPMENT  
DRAINAGE PLANS**

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### LEGEND

- PROPERTY LINE
- LIMITS OF DRAINAGE SUBCATCHMENT
- SOIL GROUP BREAKLINE
- FLOW PATH (TO LINE)
- REACH
- POINT OF INTEREST
- SUBCATCHMENT AREA
- POND, CULVERT, OR CATCH BASIN
- REACH

- ### NOTES
- THE SITE SPECIFIC SOIL MAP WAS PREPARED ON OCTOBER 21, 2024 BY JAMES GOVE OF GOVE ENVIRONMENTAL SERVICES, INC.
  - ALL SITE SOILS WERE FOUND TO BE UDORTHENTS (SOIL SYMBOL 299B, HSG A) ASIDE FROM EXISTING IMPERVIOUS AREA.

### SOIL LEGEND (PER SITE SPECIFIC SOIL SURVEY)

SYMBOL	DESCRIPTION	HYDROLOGIC SOIL GROUP	DRAINAGE CLASS
299B	UDORTHENTS, SMOOTHED	A	EXCESSIVE
699B	URBAN LAND	N/A	IMPERVIOUS

## SITE DEVELOPMENT PLANS

TAX MAP 781Z LOTS 12, 12-1, 12-2, 12-3  
**POST DEVELOPMENT DRAINAGE MAP**  
**PROPOSED 4-STORY HOTEL**  
**94-98 MANCHESTER STREET**  
 OWNED BY & PREPARED FOR  
**KEY AUTO GROUP**

**1"=60' (11"X17')**  
**SCALE: 1"=30' (22"X34')** **JANUARY 23, 2025**

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This plan is not effective unless signed by a duly authorized officer of TFMoran, Inc.



REV	DATE	DESCRIPTION	DR	CK

Civil Engineers  
Structural Engineers  
Traffic Engineers  
Land Surveyors  
Landscape Architects  
Scientists

170 Commerce Way  
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Phone (603) 431-2222  
Fax (603) 431-0910  
www.tfmoran.com

95513.11	DR BOH	FB	95513.11-POST-DRAINAGE-PHASE I	D-02
	CK CRR	CADFILE		

Jan 21, 2026 - 2:15pm  
 F:\MISC Projects\95513 - Manchester St - Manchester St, Concord, NH 03301\95513-11 Post Drainage Phase I.dwg

# Traffic Report



## Traffic Impact and Access Study

Proposed Hotel  
94 Manchester Street  
Concord, New Hampshire

TFM Project #95513.11

November 14, 2025

Prepared for:  
**Key Auto Group**

Submitted to:  
**City of Concord**

Prepared by:



Civil Engineers  
Structural Engineers  
Traffic Engineers  
Land Surveyors  
Landscape Architects  
Scientists

48 Constitution Drive, Bedford, NH 03110  
(603) 472-4488 [www.tfmoran.com](http://www.tfmoran.com)



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## APPENDICES

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  - Growth
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<b>APPENDIX J</b>	<b><u>Lane Warrant Analyses</u></b> <ul style="list-style-type: none"><li>• Warrant Volumes</li><li>• Fig. 2-5 Left Turn Lane Warrants</li><li>• Fig. 2-6 Right Turn Lane Warrants</li><li>• Fig. 2-4 Second Lane on Minor Road</li></ul>
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Civil Engineers  
Structural Engineers  
Traffic Engineers  
Land Surveyors  
Landscape Architects  
Scientists

## Traffic Impact and Access Study

**Proposed Hotel**  
**94 Manchester Street**  
**Concord, NH**  
*14 October 2025*  
*TFM # 95513.11*

### 1. Introduction

TFMoran Inc. has completed this traffic impact and access study to determine traffic impacts associated with a proposed hotel on Manchester Street in Concord. The objectives of the study are:

- To estimate trip generation and distribution for the proposed development.
- To perform capacity analyses for the project study area to determine potential traffic impacts of the proposal
- To provide recommendations for operational improvements within the study area to mitigate the proposed development's traffic impacts

### ***Proposal***

Key Auto Group is proposing a 4-story business hotel at 94 Manchester Street in Concord. The existing Key Collision of Concord driveway will be relocated to split the development with the hotel to the south of the driveway. Adequate parking and vehicular circulation are provided for the site.

The site (Map 781Z, Lots 12, 12-1, 12-2, 12-3) is located within the Highway Commercial zoning district. The project area is about 11.08 Acres with currently a vacant paved lot east of the private driveway that provides access to Key Collision of Concord.

A site layout plan of the hotel project is provided on the following page:

## Site Layout



### **Scope of Study**

*The following scope of study was agreed at a Traffic Scoping Meeting with Town staff and consultants, and TFMoran held on September 20, 2024.*

#### **Analysis Periods:**

- Weekday AM and PM roadway peak hours
- Saturday Midday peak hour

#### **Volume Adjustments:**

- New Counts – Covid Adjustment no longer necessary.

**Background growth:** Average annual growth rate to be verified, but no less than 1%

**Seasonal Adjustment:** NHDOT Group 4 data for seasonal adjustment

#### **Opening Year/Future Year:**

- 2025: Opening year – existing conditions
- 2035; Future year (Opening +10) – includes City improvement project for widening Manchester Street

**Other Developments:**

1. Nault – Black Hill Road: Phase 1A (opening) and Full Build (future)
2. PITCO Warehouse on Integra Drive *[added after the meeting]*

**Site Trip Generation/Composition: - ITE 11<sup>th</sup> Edition**

- LUC 312 Business Hotel *[type of hotel confirmed with client after meeting]*

**Composition: All trips will be considered Primary**

**Distribution:**

- Review based on new counts, pro-rata or use judgement.
- Most traffic is expected to originate from I93.

**Study Area::**

- Manchester Street at Shared Site Driveway / Volvo Driveway

**Other Items:**

- Documenting existing conditions and sight distances at existing driveway.
  - Show distances between existing driveways for separation.
  - Supply support to defend location of driveway because it may not be in compliance. Reference national standards. Driveway policy at NHDOT, check sketches on the back of the permit.
    - Make sure all driveways meet widths, radii, fire truck requirements. Driveway width at ROW is a CUP item, internal would be a waiver. Check on truck movements before and after City widening.
    - A Conditional Use permit may be needed because of driveway separation to abutting driveways. ZBA relief is not required. A second CUP application may be necessary to cover driveway width
- Manchester Street is a project in the City 5year plan for improvements. Widening. They are acquiring/requesting ROW. AnnMarie will do research for plans of Manchester Street project and share what is being proposed.
- Crash Data – ask Concord PD if there are any safety issues at the intersection.
- Two proposed driveways internal on site, make sure there is proper internal sight distance based on 25mph.
- At a prior City staff meeting, a possible future re-routing of Garvins Falls Road was discussed. It was agreed that the project is too speculative to be considered as part of this traffic study.
- NHDOT driveway permit is not needed, this section of roadway is under City jurisdiction.

## **2. Existing Conditions**

**Description of Roadways and Intersections:**

Study Area Roadway

**Manchester Street**

- Classification. Manchester Street is a City-maintained principal arterial roadway that provides east-west travel through commercial and residential areas between Water Street to the west and the Concord/Pembroke Townline to the east. The following descriptions apply within the study area.

- Lane widths and usage. In the project vicinity, the roadway generally provides one 12' travel lanes in each direction and 4'-8' wide paved shoulders with vertical granite curbing.
- Pedestrian facilities. There are no sidewalks in the study area.
- Signage. The speed limit is posted at 30 mph. There is no other traffic signage except a stop sign at the site driveway. Pavement markings consist of double-yellow centerline and white shoulder markings, in generally good condition.
- Sight Distance. Sight distance along the roadway is adequate for the posted speed.
- Lighting. There is no roadway lighting provided in the study area.
- Road conditions. The roadway is flat with closed drainage and normal crown throughout. The pavement is in fair condition. There is cracking and patching in the area. .
- Adjacent uses and driveways. Adjacent uses include various commercial uses such as gas stations, restaurants, car dealers, etc.

### Study Area Intersection

#### *Manchester Street at Shared Site Driveway / Volvo Driveway (Unsignalized)*

- Traffic Control. This is an existing 4-way unsignalized intersection. Manchester Street forms the eastbound and westbound approaches with the Shared Site Driveway forming the northbound approach and the Volvo Driveway forming the southbound approach.
- Pedestrian facilities. None.
- Approaches. Each approach accommodates two way traffic. All approaches consist of a single lane for all movements.
- Signage. There is a stop sign at the shared site driveway.
- Lighting. No lighting at the intersection.

### **3. Background Volumes:**

To quantify existing peak hour traffic volumes within the study area, turning movement counts were taken at the study intersections. These counts are tabulated in Appendix L. Counts were taken on:

- Saturday October 5, 2024 – 11am to 1pm
- Tuesday October 8, 2024 – 7am to 9am and 4pm to 6pm.

#### ***Seasonal Adjustment.***

To account for seasonal variations, the data was seasonally adjusted upward by a factor of 1% during October for all peak hours to reflect peak month traffic volume published by NHDOT for 2024.

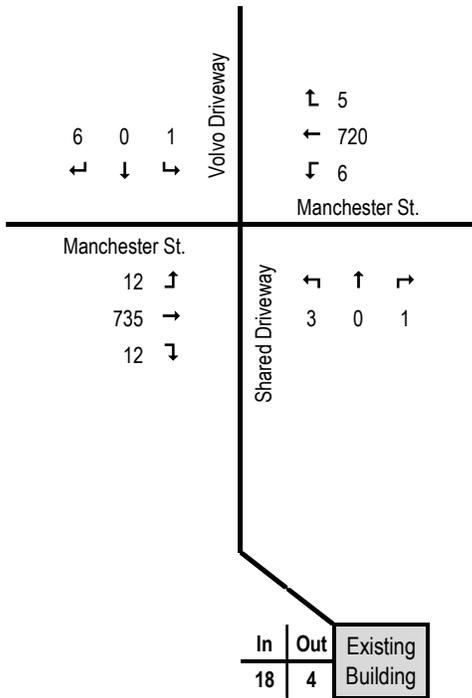
#### ***Heavy Vehicles***

Heavy vehicle adjustments for the analysis uses the weighted approach percentages for each approach per the NHDOT Synchro checklist.

Base volumes are presented in the following figures.

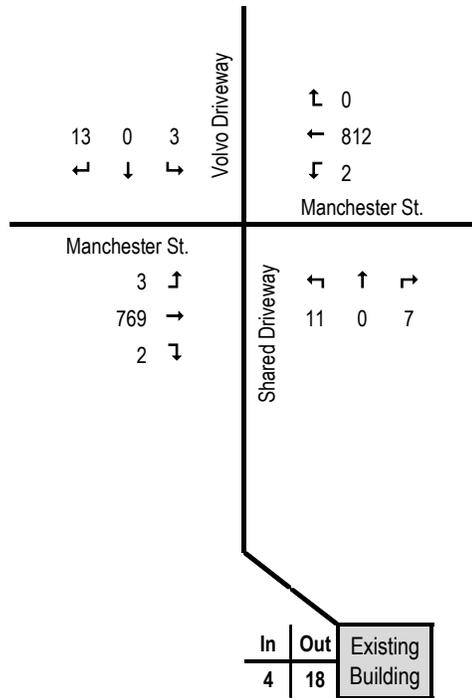
2024 BASE  
 AM Peak Hour

XX Volumes



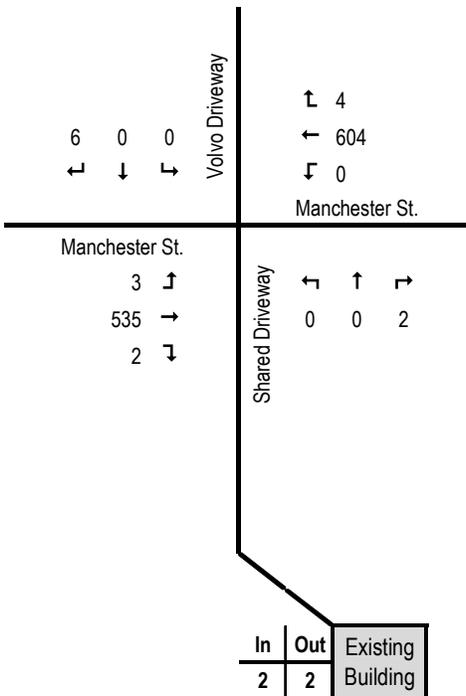
2024 BASE  
 PM Peak Hour

XX Volumes



2024 BASE  
 SAT Peak Hour

XX Volumes



#### **4. No-Build Volumes:**

To establish No-Build traffic volumes for this study, the following adjustments were made to the seasonally adjusted 2024 Base volumes:

##### ***Growth Factor.***

A 1% compound annual growth rate was used to account for general population growth and possible traffic generated by smaller future developments in the area. Since average growth calculated at three nearby NHDOT MS2 stations was less than 1%, we used the minimum growth rate.

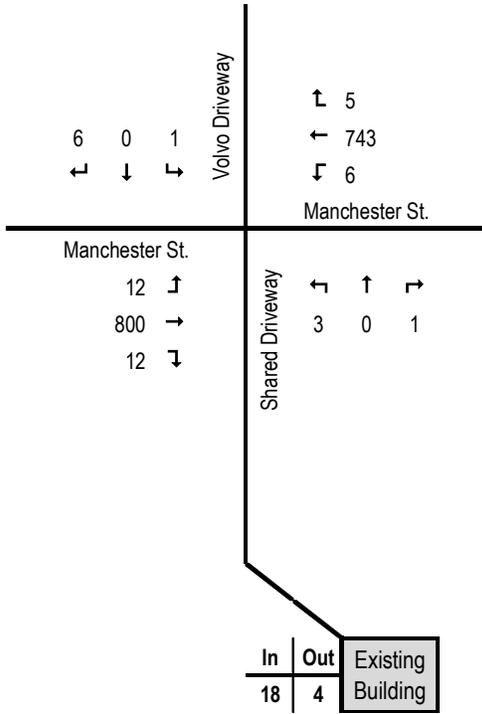
##### ***Other Developments.***

Per the scoping meeting, several proposed or approved developments in Concord were identified as generating traffic volumes that should be accounted for in the no-build volumes for this traffic study. These developments, as well as the trip generation methodology for the peak hours, are described below and data and distribution are in Appendix D:

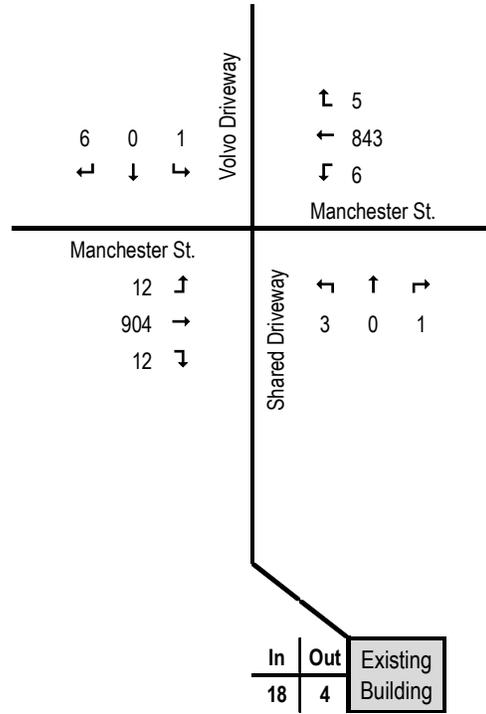
- Black Hill Road – Nault Mixed Use Development (Traffic Studies by TFMoran Inc.)
  - Phase 1A: Includes the development of a branch bank and a gas station convenience store with drive-thru and car wash. Phase 1A is currently under construction and will be included in Opening Year analyses.
  - Full Build: Includes the Phase 1A uses and adds a Restaurant, an Office Building, a Retail building, Residential Apartments and an Elderly Independent/Assisted development. The remaining Full Build uses will be added to the Future Year analyses.
- Integra Drive – PITCO Warehouse (Traffic Impact Assessment by Stephen G. Pernaw & Company Inc, July 2021)
  - Traffic study for a 356,224 sf warehouse building at the end of Integra Drive in Concord.

The total No-Build volumes for the opening (2026) and future (2036) years are presented in the figures below.

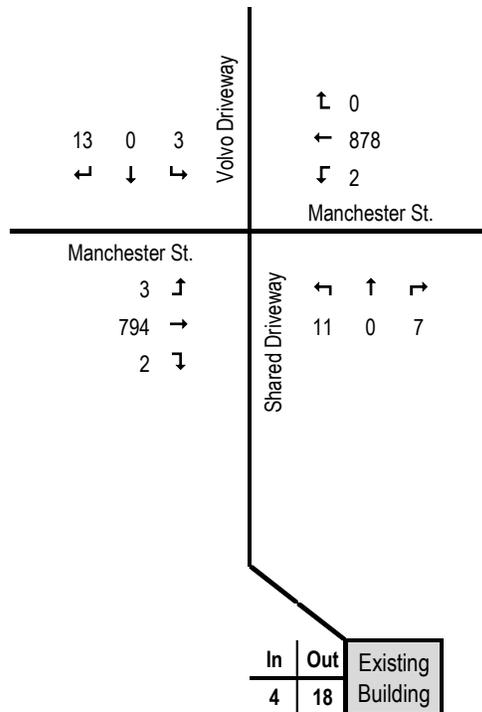
2026 No-BUILD  
 AM Peak Hour XX Volumes



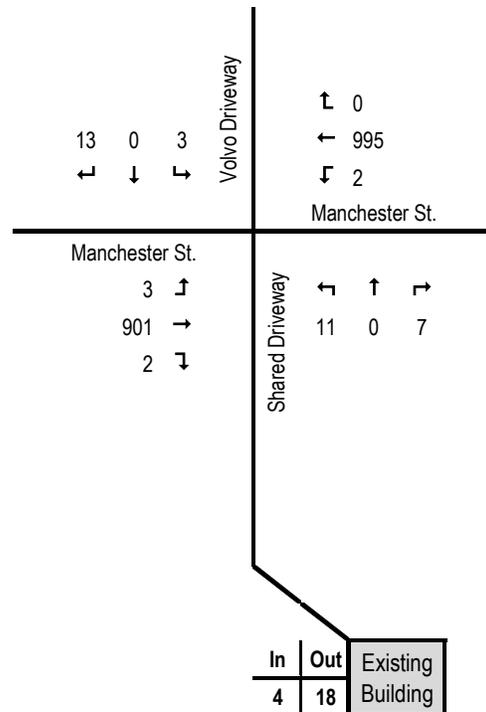
2036 No-BUILD  
 AM Peak Hour XX Volumes



2026 No-BUILD  
 PM Peak Hour XX Volumes

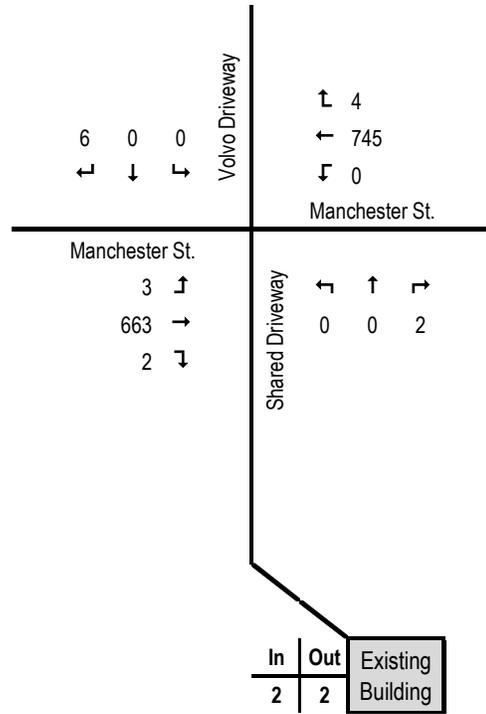
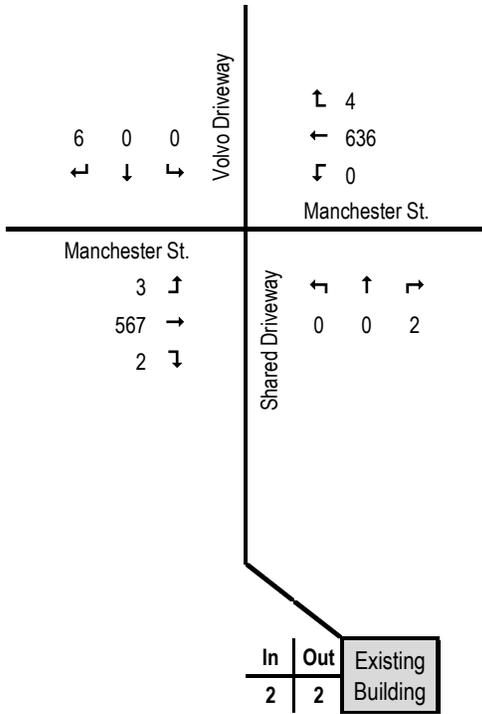


2036 No-BUILD  
 PM Peak Hour XX Volumes



2026 No-BUILD  
 SAT Peak Hour XX Volumes

2036 No-BUILD  
 SAT Peak Hour XX Volumes



## 5. Trip Generation, Composition, Distribution and Assignment:

### *Proposed Trips*

Trip generation rates published by the ITE (12<sup>th</sup> Edition) for Land Use Code (LUC) 312 Limited Service Hotel, was used to calculate the vehicle trips for the proposed development at the site. The table below shows the proposed trips.

**Table 1: Trip Generation**

Land Use	In	Out	Total
<b>Proposed 116 Room Hotel (LUC 312)</b>			
Weekday AM Peak Hour Adjacent Street	16	26	42
Weekday PM Peak Hour Adjacent Street	20	16	36
Weekend Midday Peak Hour of the Generator	26	27	53

### *Composition*

All hotel trips will be primary trips.

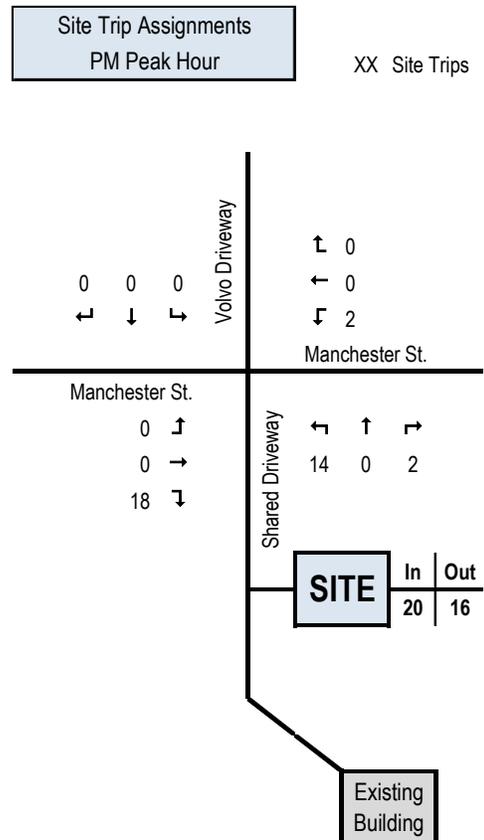
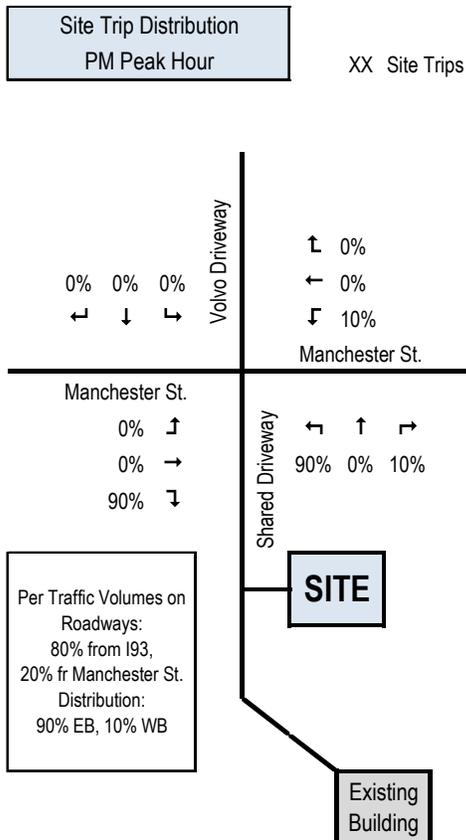
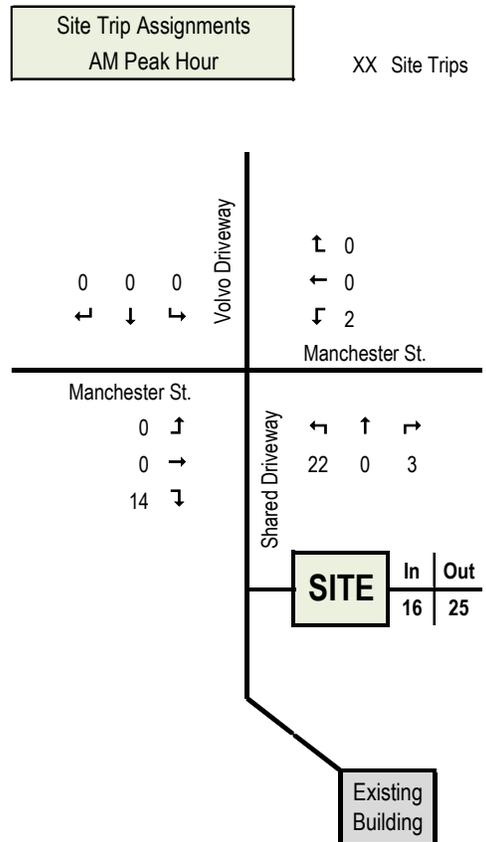
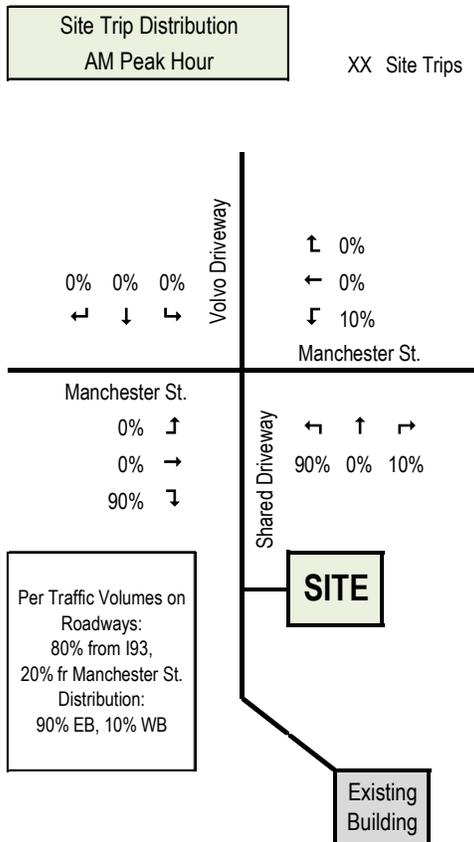
### *Distribution*

Using prorata distribution, eastbound and westbound traffic is fairly even along Manchester Street. However, this hotel use would be expected to draw substantially more from I93 than adjacent street volumes.

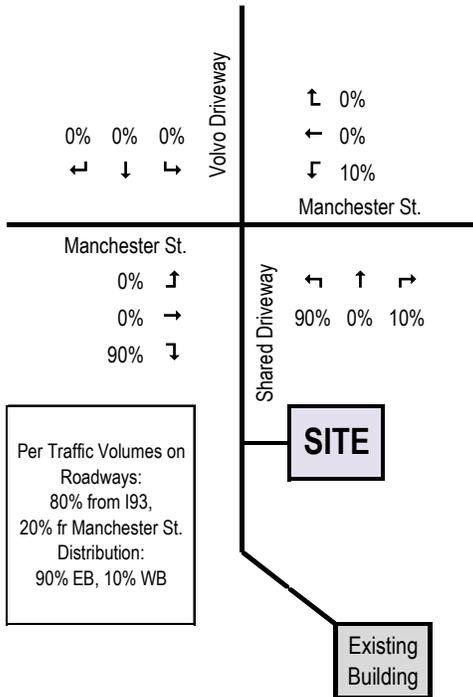
Using the ATR data collected on Manchester Street and MS2 data for I93, we compared volumes for the same day in 2022. The I93 volume was about 4 times the volume on Manchester Street, that is: to/from I93 = 80%; to/from Manchester Street = 20%

### To/From the site:

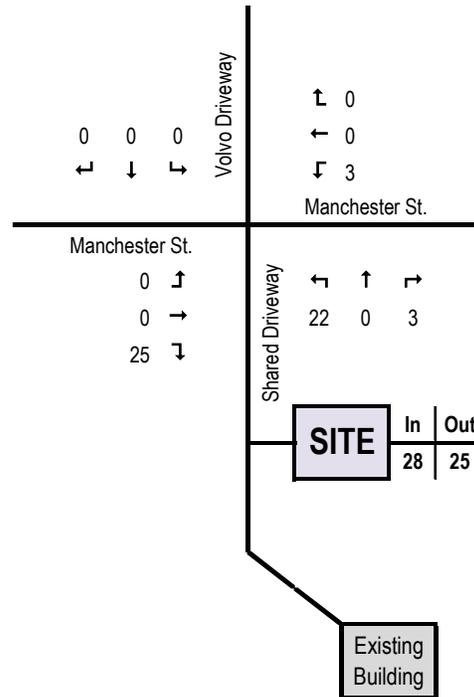
- Eastbound: 90% (80% from I93, 10% Manchester Street)
- Westbound: 10% (10% Manchester Street)



**Site Trip Distribution**  
 SAT Peak Hour  
 XX Site Trips

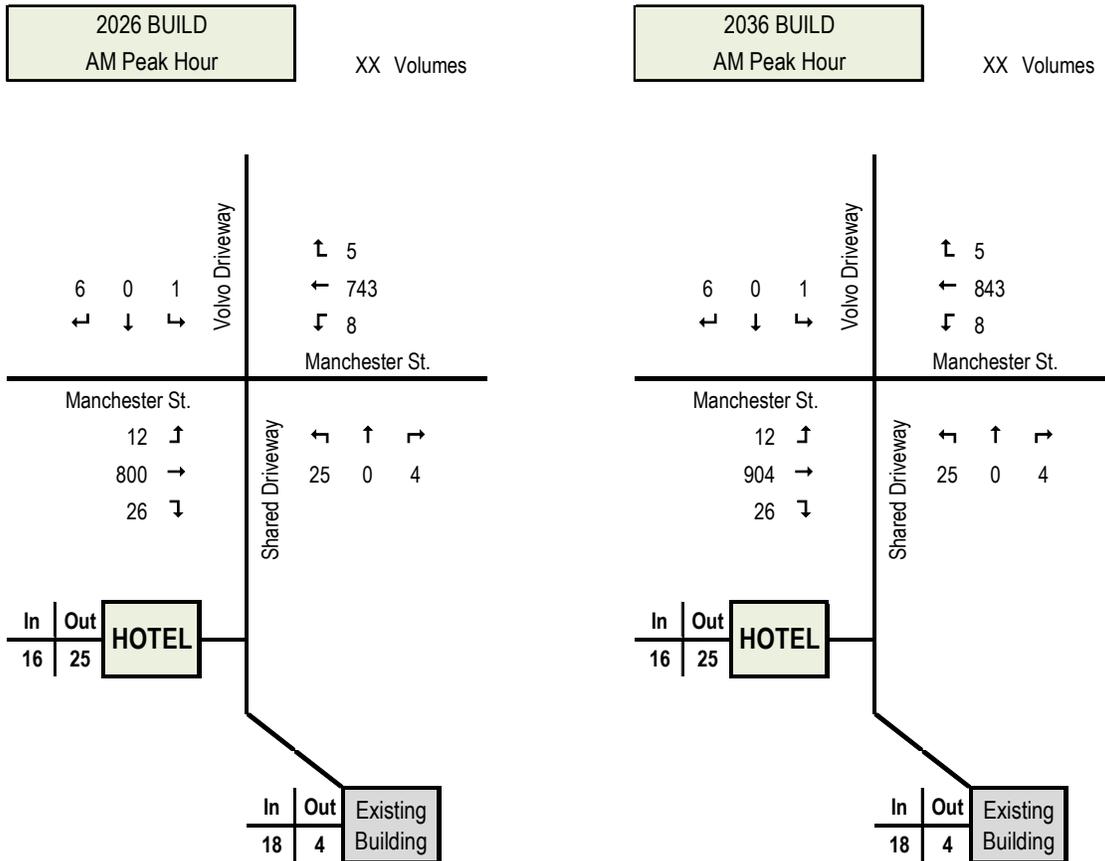


**Site Trip Assignments**  
 SAT Peak Hour  
 XX Site Trips

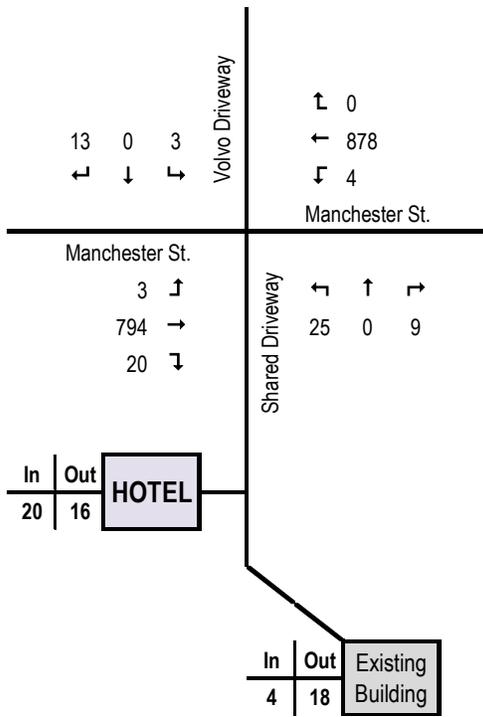


**6. Build Volumes:**

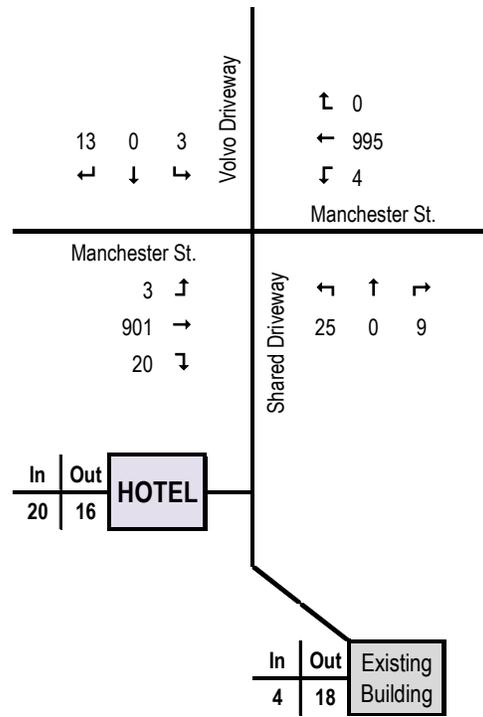
Site trips generated as per the above were added to No-Build traffic volumes within the study area to produce the 2026 and 2036 Build diagrams for the roadway network for each peak hour:



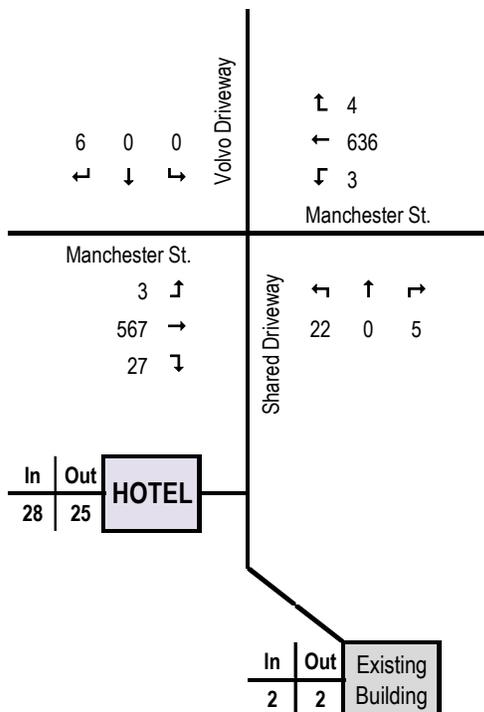
2026 BUILD  
 PM Peak Hour  
 XX Volumes



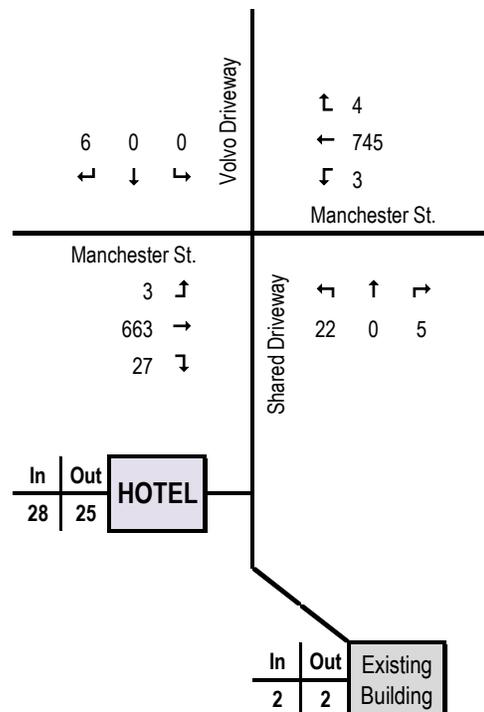
2036 BUILD  
 PM Peak Hour  
 XX Volumes



2026 BUILD  
 SAT Peak Hour  
 XX Volumes



2036 BUILD  
 SAT Peak Hour  
 XX Volumes



## 7. Level of Service Analysis:

### *Level of Service Analysis:*

Level of service (LOS) is a qualitative description of operational conditions within a traffic stream measured in terms of control delay, a function of capacity, degree of saturation, and delay associated with traffic signals and “STOP” signs. Control delay includes initial deceleration, delay approaching a control device, stopped delay, queue move-up time, and acceleration delay from a stopped condition. The relationship between control delay and LOS is shown in the following table.

Level of Service (LOS)	Unsignalized Control Delay (sec)
A	≤10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Over 50.0

### *Methodology.*

Trafficware “Synchro” v11 software was used to analyze signalized and unsignalized intersections (based on HCM 2000) within the study area intersections during the weekday AM, PM and Saturday peak hours.

### *Queue Analysis.*

Vehicle queue lengths are reported as the 95<sup>th</sup> percentile queue, that is, the queue that will be exceeded no more than 5% of the time during peak hour periods.

### *Future City Improvements*

Manchester Street is a project in the City 5-year plan for widening improvements. The City is proposing to extend the Two-Way Left Turn Lane (TWLTL) along the length of Manchester Street, including in front of this project site. This project is anticipated to begin in 2027. The future year (2036) No-Build, Build and Build-Mit include the TWLTL as constructed.

Volume to capacity (v/c) ratios, Level of Service (LOS), delays and queue results (Q) are summarized in the following tables.

**Table 2. Level of Service Analysis Summary (2024/2026/2036)**

Movement	2024 BASE				2026 No-Build*				2026 Build*				2036 No-Build**				2036 Build**			
	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>
<b>3: Manchester Street at Shared Site Driveway / Volvo Driveway [Unsignalized]</b>																				
<b>AM Peak OVERALL</b>	---	0.5	A	---	---	0.5	A	---	---	1.7	A	---	---	0.4	A	---	---	2.4	A	---
EB L	0.02	9.4	A	0	0.02	9.5	A	0	0.02	9.5	A	0	0.02	9.9	A	3	0.02	9.9	A	3
WB L	0.01	9.4	A	0	0.01	9.7	A	0	0.01	9.8	A	0	0.01	10.2	B	0	0.01	10.3	B	0
NB L	0.08	42.1	E	5	0.09	48.9	E	8	0.41	78.9	F	40	0.07	64.4	F	5	0.56	130.5	F	58
SB L	0.05	19.2	C	3	0.05	20.6	C	5	0.05	20.8	C	5	0.04	24.5	C	3	0.04	25.2	D	3
<b>PM Peak OVERALL</b>	---	1.3	A	---	---	1.5	A	---	---	3.3	A	---	---	1.4	A	---	---	4.5	A	---
EB L	0.01	10.1	B	0	0.01	10.4	B	0	0.01	10.4	B	0	0.1	10.7	B	0	0.01	10.7	B	0
WB L	0.00	9.5	A	0	0.00	9.6	A	0	0.01	9.7	A	0	0.00	10.1	B	0	0.01	10.2	B	0
NB L	0.29	66.1	F	28	0.34	81.2	F	33	0.66	149.1	F	70	0.38	109.4	F	35	0.86	235.6	F	85
SB L	0.16	30.0	D	15	0.19	34.9	D	18	0.19	35.4	E	18	0.15	39.8	E	13	0.15	40.5	E	13
<b>SAT Peak OVERALL</b>	---	0.2	A	---	---	0.2	A	---	---	0.9	A	---	---	0.1	A	---	---	1.1	A	---
EB L	0.00	8.9	A	0	0.00	9.0	A	0	0.00	9.0	A	0	0.00	9.4	A	0	0.00	9.4	A	0
WB L	0.00	0.0	A	0	0.00	0.0	A	0	0.00	8.9	A	0	0.00	0.0	A	0	0.00	9.3	A	0
NB L	0.01	12.2	B	0	0.01	12.5	B	0	0.21	36.5	E	20	0.01	13.7	B	0	0.28	55.0	F	28
SB L	0.03	13.0	B	3	0.03	13.4	B	3	0.03	13.3	B	3	0.02	14.7	B	3	0.02	14.7	B	3

<sup>a</sup> Volume-to-capacity ratio - <sup>b</sup> Average control delay (sec/veh) - <sup>c</sup> Level of service - <sup>d</sup> 95<sup>th</sup> percentile queue in feet

\* Prior to TWLTL construction (scheduled for 2027, 1 year after project opening)

\*\*With TWLTL

**8. Sight Distance:**

One Shared driveway is proposed to serve the new hotel and the existing Key Collision business. The driveway curb cut is existing and with the straight roadway of Manchester Street in the project area, there is over 400' all-season sight distance in both directions.

**9. Accident Evaluation:**

Crash data requested for the study intersections was received from the Concord Police Department for the years 2019-2024 and is provided in Appendix K. A summary of the crash data is provided in the table below.

**Table 3 – Crash Data Summary**

Manchester Street at Shared Site Driveway / Volvo Driveway (Unsignalized)	
<b>CRASH FREQUENCY</b>	
Total Crashes	2
Crashes per Year (Avg)	0.40
<b>CRASH SEVERITY</b>	
Property Damage Only	2
Injury	0
Fatalities	0
<b>CRASH TYPE</b>	
Rear End/Unsafe Backing	1
Parked Car / Motor Vehicle in Transport	1
<b>WEEKDAY COMMUTER PEAK</b>	
Weekday AM (7-9am)	0
Weekday PM (4-6pm)	0
Non-Commuter Peak	2

### 10. Warrant Analysis: Auxiliary Lanes

#### *Right Turn Lane Warrant*

A right turn lane (RTL) warrant analysis was performed for the eastbound turn into the site driveway from Manchester Street; a 2-lane roadway at posted speed of 30 mph.

NCHRP 457 Figure 2-6 shows that the development does not meet the warrant for a RTL in opening or future years. See calculation tables in Appendix J.

**Table 4: Right Turn Lane Warrant  
 Manchester Street at Site Driveway**

	Right-Turn Lane Warrant					
	2026 Opening			2036 Future		
	AM	PM	SAT	AM	PM	SAT
<b>Limiting Right Turn Volume</b>	57	65	293	32	36	141
<b>Number of Right Turns</b>	26	20	27	26	20	27
<b>Is Warrant Met?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

#### *Left Turn Lane Warrant*

A left turn lane (LTL) warrant analysis was performed for the westbound left turn into the site driveway from Manchester Street; 2-lane roadway at posted speed of 30 mph.

NCHRP 457 Figure 2-5 shows that the development does meet the warrant for a LTL in the AM peak hour for future year. See calculation tables in Appendix J.

**Table 5: Left Turn Lane Warrant  
 Manchester Street at Site Driveway**

	Left-Turn Lane Warrant					
	2026 Opening			2036 Future		
	AM	PM	SAT	AM	PM	SAT
<b>Left Turns</b>						
<b>Limiting Advancing Volume</b>	825	1190	1466	748	1203	1490
<b>Advancing Volume</b>	720	842	613	816	954	718
<b>Is Warrant Met?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>YES</b>	<b>NO</b>	<b>NO</b>

**Second Lane - Minor Road Warrant**

A warrant analysis for determining the need for a second lane on a minor road was performed per NCHRP 457 for the northbound approach of the site driveway; a 2-lane roadway at speed of 30 mph. See calculation tables in Appendix J.

Figure 2-4 shows that the development does meet the warrant for a second lane on a minor road in all peak hours in opening year.

**Table 6: Second Lane on a Minor Road Warrant  
 Manchester Street at Site Driveway**

	<i>2026 Opening</i>					
	<b>Second Lane Warrant</b>					
	<b>AM</b>	<b>PM</b>	<b>SAT</b>	<b>AM</b>	<b>PM</b>	<b>SAT</b>
<b>Major Road Volume</b>	1521	1621	1183	1718	1835	1382
<b>Limiting Minor Rd Volume</b>	52	50	96	37	35	69
<b>Minor Road Volume</b>	29	31	27	29	31	27
<b>Is Warrant Met?</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>	<b>NO</b>

**11. Mitigation.**

**Auxiliary Lanes:**

The lane warrant analysis presented above suggests auxiliary lanes “should be considered” at the Manchester Street/site driveway intersection. The following is recommended:

- Left Turn Lane: The City is proposing a Two-Way Left Turn Lane (TWLTL), which will satisfy the left turn lane warrant in future year.
- Second Lane in Driveway: The proposed driveway includes two exiting lanes, a left-through and right turn lane.

In the following table, the 2026 Build mitigation includes the second lane at the driveway. The 2036 Build mitigation includes the second lane at the driveway and the City’s TWLTL.

**Table 7. Level of Service Analysis Summary - Mitigation**

Movement	2026 Build*				2026 Build* MIT				2036 Build**				2036 Build** MIT			
	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>	v/c <sup>a</sup>	Del <sup>b</sup>	LOS <sup>c</sup>	Q <sup>d</sup>
<b>3: Manchester Street at Shared Site Driveway / Volvo Driveway [Unsignalized]</b>																
<b>AM Peak OVERALL</b>	---	1.7	A	---	---	1.7	A	---	---	2.4	A	---	---	2.3	A	---
EB L	0.02	9.5	A	0	0.2	9.5	A	0	0.02	9.9	A	3	0.02	9.9	A	3
WB L	0.01	9.8	A	0	0.01	9.8	A	0	0.01	10.3	B	0	0.01	10.3	B	0
NB L	0.41	78.9	F	40	0.40	86.9	F	38	0.56	130.5	F	58	0.56	144.3	F	53
NB R	-	-	-	-	0.01	15.1	C	0	-	-	-	-	0.01	16.7	C	0
SBL	0.05	20.8	C	5	0.05	20.8	C	5	0.04	25.2	D	3	0.04	25.2	D	3
<b>PM Peak OVERALL</b>	---	3.3	A	---	---	3.1	A	---	---	4.5	A	---	---	3.9	A	---
EB L	0.01	10.4	B	0	0.01	10.4	B	0	0.01	10.7	B	0	0.01	10.7	B	0
WB L	0.01	9.7	A	0	0.01	9.7	A	0	0.01	10.2	B	0	0.01	10.2	B	0
NB L	0.66	149.1	F	70	0.63	177.4	F	60	0.86	235.6	F	85	0.82	271.3	F	73
NB R	-	-	-	-	0.03	15.5	C	3	-	-	-	-	0.03	17.3	C	3
SBL	0.19	35.4	E	18	0.20	34.6	D	18	0.15	40.5	E	13	0.15	40.5	E	13
<b>SAT Peak OVERALL</b>	---	0.9	A	---	---	0.9	A	---	---	1.1	A	---	---	1.1	A	---
EB L	0.00	9.0	A	0	0.00	9.0	A	0	0.00	9.4	A	0	0.00	9.4	A	0
WB L	0.00	8.9	A	0	0.00	8.9	A	0	0.00	9.3	A	0	0.00	9.3	A	0
NB L	0.21	36.5	E	20	0.20	41.8	E	18	0.28	55.0	F	28	0.28	62.7	F	25
NB R	-	-	-	-	0.01	12.7	B	0	-	-	-	-	0.01	13.9	B	0
SBL	0.03	13.3	B	3	0.03	13.4	B	3	0.02	14.7	B	3	0.02	14.7	B	3

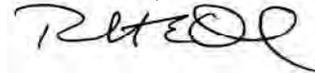
<sup>a</sup> Volume-to-capacity ratio - <sup>b</sup> Average control delay (sec/veh) - <sup>c</sup> Level of service - <sup>d</sup> 95<sup>th</sup> percentile queue in feet  
\* Prior to TWLTL construction (scheduled for 2027, 1 year after project opening)  
\*\*With TWLTL

## 12. Conclusions:

- Existing Conditions. Existing background traffic volumes in the study area are relatively high, creating lengthy delays for exiting left turns at all driveways.
- Crash History. Our evaluation of accident history at all study area intersections over the past five years (2019-2024) is favorable (0.4 reported crashes per year), with no high-accident locations nor safety deficiencies identified.
- Trip Generation. The hotel will attract a total of 42 new trips in the AM peak hour, 36 in the PM peak hour, and 53 trips in the Saturday peak hour. That works out to about two minutes between trips in any one direction.
- Operationally, as stated above, background traffic on Manchester Street causes lengthy delays for exiting left turns. However, v/c ratios show adequate capacity even in future years, and queues are only 2 or 3 cars in all scenarios. adequate storage on site. Entering left turn delays operate at favorable A/B levels. Through traffic on Manchester Street is unaffected.
- Future Year (2036) Build conditions are further improved for driveway left turns due to the proposed TWLTL on Manchester Street proposed for 2027.

In summary, with the addition of separate left and right turn lanes at the site driveway, the access drive will operate acceptably in opening and future years. The City's TWLTL project in 2027 will further improve operating conditions at the driveway.

Respectfully Submitted,  
**TFMORAN, INC.**



Robert Duval, PE  
Chief Engineer

## **APPENDIX A**

### **Site Trips**

#### Trip Generation



**Proposed Trip Generation**  
*Based on ITE Trip Generation 12th Edition*

**ITE LUC 312 - Limited Service Hotel: 116 rooms [ 4-story, 14,500 sf footprint]**

	Variable: Rooms		Rate/ Eq	Trip Ends	Directional Split		Directional Distribution	
	X		Used		In	Out	In	Out
Weekday AM Peak Hour of the Generator	116	0.35	Rate	41	39%	61%	16	25
Weekday PM Peak Hour Adjacent Street	116	0.31	Rate	36	55%	45%	20	16
Weekend SAT Peak Hour of the Generator	116	0.46	Rate	53	53%	47%	28	25
Weekday Daily	116	2.90(X) + 151.69	EQ	488	50%	50%	244	244
Weekend (SAT) Daily	116	5.79	Rate	672	50%	50%	336	336

**Description of LUC 312:**

A limited-service hotel provides overnight accommodation and other limited facilities, such as a swimming pool or fitness room. A limited-service hotel typically does not have a doorman, bellhop, or concierge; has little or no meeting room space; and does not have a full-service restaurant. Food service options are typically limited to a small food pantry that offers items for sale on a retail basis; a complimentary breakfast buffet or afternoon beverage bar for hotel guests; or a limited-menu, order-at-the-counter restaurant.



## **APPENDIX B**

### **Distribution**

Site Trip Distribution

Highway Distribution for Hotel



<b>Site Trip Distribution</b>
<b>ProRata</b>

<b>TOTAL: Site Trip Assignment</b>
--

Primary	In	Out
AM Peak Hour	16	25

TOTAL	TOTAL
AM Peak Hour	41

<b>Manchester Street at Shared Driveway/Volvo Driveway</b>				
	PERCENTAGES		TRIPS	
<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
EBL			0	0
EBT			0	0
EBR	<b>90%</b>		14	0
WBL	<b>10%</b>		2	0
WBT			0	0
WBR			0	0
NBL		90%	0	22
NBT			0	0
NBR		10%	0	3
SBL			0	0
SBT			0	0
SBR			0	0

<b>Manchester Street at Shared Driveway/Volvo Driveway</b>	
<u>Movement</u>	
EBL	0
EBT	0
EBR	14
WBL	2
WBT	0
WBR	0
NBL	22
NBT	0
NBR	3
SBL	0
SBT	0
SBR	0

<b>Site Trip Distribution</b>
<b>ProRata</b>

<b>TOTAL: Site Trip Assignment</b>
--

Primary	In	Out
PM Peak Hour	20	16

TOTAL	TOTAL
PM Peak Hour	36

<b>Manchester Street at Shared Driveway/Volvo Driveway</b>				
	PERCENTAGES		TRIPS	
<u>Movement</u>	<u>In</u>	<u>Out</u>	<u>In</u>	<u>Out</u>
EBL			0	0
EBT			0	0
EBR	<b>90%</b>		18	0
WBL	<b>10%</b>		2	0
WBT			0	0
WBR			0	0
NBL		90%	0	14
NBT			0	0
NBR		10%	0	2
SBL			0	0
SBT			0	0
SBR			0	0

<b>Manchester Street at Shared Driveway/Volvo Driveway</b>	
<u>Movement</u>	
EBL	0
EBT	0
EBR	18
WBL	2
WBT	0
WBR	0
NBL	14
NBT	0
NBR	2
SBL	0
SBT	0
SBR	0

**Site Trip Distribution**

**ProRata**

Primary

		In	Out
SAT Peak Hour		28	25
<b>Manchester Street at Shared Driveway/Volvo Driveway</b>			
	PERCENTAGES	TRIPS	
<u>Movement</u>	<u>In</u> <u>Out</u>	<u>In</u>	<u>Out</u>
EBL		0	0
EBT		0	0
EBR	<b>90%</b>	25	0
WBL	<b>10%</b>	3	0
WBT		0	0
WBR		0	0
NBL	90%	0	22
NBT		0	0
NBR	10%	0	3
SBL		0	0
SBT		0	0
SBR		0	0

**TOTAL:  
Site Trip Assignment**

TOTAL

		TOTAL
SAT Peak Hour		53
<b>Manchester Street at Shared Driveway/Volvo Driveway</b>		
<u>Movement</u>		
EBL		0
EBT		0
EBR		25
WBL		3
WBT		0
WBR		0
NBL		22
NBT		0
NBR		3
SBL		0
SBT		0
SBR		0

**ProRata - Wednesday June 22, 2022**

---

**02099092 Concord - I93 (Milepost 36.5 between Exits 12-13)**

---

NHDES MS2 Traffic Count

**Total: 81,544**

**81%**

Ratio of I93 traffic to Manchester Street Traffic

NB: 40,658

SB: 40,868

---

**ATR Concord - 36 Manchester Street**

---

PDI

**Total: 18,609**

**19%**

Ratio of I93 traffic to Manchester Street Traffic

EB: 9,349

WB: 9,260

Prorata of 2024 counts shows that the volumes on Manchester Street are near a 50/50 split. Due to the nature of a business hotel use, it is believed that more traffic volume will originate from I93 than Manchester Street. Comparing the Daily volumes of I93 and Manchester Street on June 22, 2022 when ATR counts were conducted on Manchester Street, shows that it would be expected to draw closer to 80% from the highway with 20% originating from Manchester Street.

Manchester Street: 10% eastbound, 10% from westbound  
I93: 80% eastbound from highway

---

**Eastbound to Site: 90%**

---

**Westbound to site: 10%**

---



## Traffic Count (TCDS)

Home Back Login + Locate + Locate All  
Auto-Locate OFF

### Volume Count Report

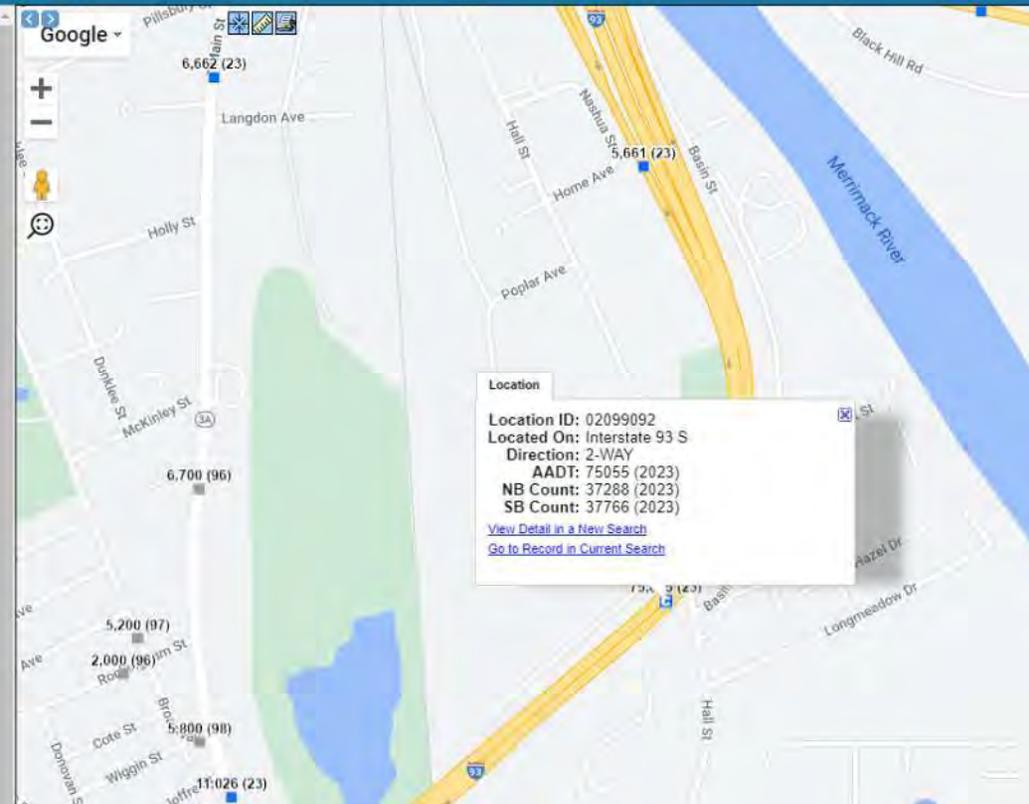
LOCATION INFO	
Location ID	02099092
Type	SPOT
Functl Class	1
Located On	Interstate 93 S
Loc On Alias	1.93 AT MILEPOST 36.5 BETWEEN EXITS 12-13 (SB-NB) (01099012-01099011)
Direction	2-WAY
County	MERRIMACK
Community	CONCORD
MPO ID	
HPMS ID	
Agency	New Hampshire DOT

INTERVAL:60-MIN	
Time	Hourly Count
0:00-1:00	679
1:00-2:00	245
2:00-3:00	252
3:00-4:00	309
4:00-5:00	785
5:00-6:00	1,974
6:00-7:00	3,946
7:00-8:00	6,115
8:00-9:00	5,374
9:00-10:00	4,485
10:00-11:00	4,519
11:00-12:00	4,612
12:00-13:00	4,832
13:00-14:00	4,948
14:00-15:00	5,558
15:00-16:00	6,207
16:00-17:00	7,120
17:00-18:00	6,777
18:00-19:00	4,126
19:00-20:00	3,091
20:00-21:00	2,457
21:00-22:00	1,595
22:00-23:00	980
23:00-24:00	556
<b>Total</b>	<b>81,544</b>
<b>AADT</b>	<b>75,265</b>
<b>AM Peak</b> 07:00-08:00	<b>6,115</b>
<b>PM Peak</b> 16:00-17:00	<b>7,120</b>

COUNT DATA INFO	
Count Status	Accepted
Holiday	No
Start Date	Wed 6/22/2022
End Date	Thu 6/23/2022
Start Time	12:00:00 AM
End Time	12:00:00 AM
Direction	2-WAY
Notes	
Station	EE4141
Study	
Speed Limit	
Description	
Sensor Type	ATR Class
Source	CombineVolumeCountsIncremental
Latitude,Longitude	



**Location**

Location ID: 02099092  
 Located On: Interstate 93 S  
 Direction: 2-WAY  
 AADT: 75055 (2023)  
 NB Count: 37288 (2023)  
 SB Count: 37766 (2023)

[View Detail in a New Search](#)  
[Go to Record in Current Search](#)

Count Navigation: |<< < > >>| Count Type: VOLUME

Directions: 2-WAY NB SB

Manchester Street (Route 3A)  
between K9 Club & Landscaping Driveway  
City, State: Concord, NH  
Client: TFMoran / J Porter  
Site Code: 95486.08



PDI File #: 228705 ATR A

Count Date: Wednesday, June 22, 2022  
Direction: EB

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total	PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total	
12:00 AM	0	0	0	0	0	2	8	12:00 PM	0	0	1	0	6	4	159	
12:15 AM	0	0	10	0	0	4	15	12:15 PM	0	0	1	0	4	5	173	
12:30 AM	0	0	2	0	0	7	6	12:30 PM	0	0	2	153	10	4	159	
12:45 AM	0	0	2	0	1	0	3	12:45 PM	0	0	1	144	0	7	3	155
1:00 AM	0	0	0	0	0	0	3	1:00 PM	0	0	1	164	0	3	3	172
1:15 AM	0	0	5	0	0	1	6	1:15 PM	0	0	2	145	0	3	4	154
1:30 AM	0	0	4	0	0	1	7	1:30 PM	0	0	0	160	1	4	5	170
1:45 AM	0	0	8	0	1	1	10	1:45 PM	0	0	2	140	0	8	6	162
2:00 AM	0	0	6	0	1	7	10	2:00 PM	0	0	0	140	0	5	6	151
2:15 AM	0	0	7	0	1	2	10	2:15 PM	0	0	0	147	0	6	3	153
2:30 AM	0	0	4	0	0	4	8	2:30 PM	0	0	3	146	0	1	2	152
2:45 AM	0	0	12	0	0	0	12	2:45 PM	0	0	0	149	0	6	3	160
3:00 AM	0	0	3	0	0	1	4	3:00 PM	0	0	1	150	0	4	7	163
3:15 AM	0	0	8	0	0	2	10	3:15 PM	0	0	0	147	0	4	2	188
3:30 AM	0	0	9	0	0	2	11	3:30 PM	0	0	0	173	0	7	1	188
3:45 AM	0	0	10	0	0	2	12	3:45 PM	0	0	3	166	0	5	2	170
4:00 AM	0	0	7	0	0	1	8	4:00 PM	0	0	2	202	0	4	0	209
4:15 AM	0	0	14	0	0	3	21	4:15 PM	0	0	3	181	0	3	1	188
4:30 AM	0	0	16	0	0	3	23	4:30 PM	0	0	2	183	0	3	2	190
4:45 AM	0	0	26	0	0	3	32	4:45 PM	0	0	6	246	0	5	1	259
5:00 AM	0	0	14	0	0	1	19	5:00 PM	0	0	10	240	0	2	1	253
5:15 AM	0	0	33	0	0	1	39	5:15 PM	0	0	1	200	0	5	3	209
5:30 AM	0	0	24	0	0	2	30	5:30 PM	0	0	2	173	0	1	4	181
5:45 AM	0	0	52	0	0	2	58	5:45 PM	0	0	1	110	0	1	1	122
6:00 AM	0	0	51	0	0	2	58	6:00 PM	0	0	1	120	0	1	0	122
6:15 AM	0	0	57	0	0	2	64	6:15 PM	0	0	2	127	0	0	1	130
6:30 AM	0	0	84	0	0	2	88	6:30 PM	0	0	0	104	0	1	0	107
6:45 AM	0	0	120	0	0	3	131	6:45 PM	0	0	0	100	0	2	1	103
7:00 AM	0	0	107	0	0	4	110	7:00 PM	0	0	1	89	0	1	0	91
7:15 AM	0	0	155	0	0	1	159	7:15 PM	0	0	0	98	0	1	0	91
7:30 AM	0	0	192	0	0	3	203	7:30 PM	0	0	0	79	0	0	1	78
7:45 AM	0	0	204	0	0	7	210	7:45 PM	0	0	2	60	0	2	1	71
8:00 AM	0	0	158	0	0	3	169	8:00 PM	0	0	2	70	0	1	0	78
8:15 AM	0	0	131	0	0	4	141	8:15 PM	0	0	2	51	0	0	0	53
8:30 AM	0	0	141	0	0	2	147	8:30 PM	0	0	0	56	0	0	1	51
8:45 AM	0	0	145	1	11	1	159	8:45 PM	0	0	0	54	0	1	0	55
9:00 AM	0	0	141	1	7	2	153	9:00 PM	0	0	1	47	0	0	1	49
9:15 AM	0	0	113	0	7	6	126	9:15 PM	0	0	0	39	0	1	0	40
9:30 AM	0	0	135	0	3	2	140	9:30 PM	0	0	1	39	0	1	1	41
9:45 AM	0	0	147	0	3	1	155	9:45 PM	0	0	0	31	0	0	3	34
10:00 AM	0	0	119	0	4	1	138	10:00 PM	0	0	1	22	0	0	0	23
10:15 AM	0	0	144	0	0	3	156	10:15 PM	0	0	0	23	0	0	2	25
10:30 AM	0	0	119	0	11	2	133	10:30 PM	0	0	0	15	0	0	1	16
10:45 AM	0	0	149	0	4	0	153	10:45 PM	0	0	0	21	0	1	1	23
11:00 AM	0	0	108	0	0	1	113	11:00 PM	0	0	1	15	0	0	3	19
11:15 AM	0	0	120	0	3	5	130	11:15 PM	0	0	0	17	0	0	2	19
11:30 AM	0	0	150	0	3	7	168	11:30 PM	0	0	0	14	0	0	1	15
11:45 AM	0	0	152	0	4	8	168	11:45 PM	0	0	1	14	0	0	1	16

AM Total	2	35	3427	4	158	135	3761	PM Total	4	64	5301	2	120	97	5588
Percentage	0.05%	0.93%	91.12%	0.11%	4.20%	3.59%		Percentage	0.07%	1.15%	94.86%	0.04%	2.15%	1.74%	
AM Peak	4:30 AM	6:45 AM	7:15 AM	6:45 AM	8:45 AM	11:00 AM	7:15 AM	PM Peak	3:15 PM	4:15 PM	4:30 PM	12:45 PM	12:00 PM	1:30 PM	4:30 PM
Volume	1	7	709	2	34	21	750	Volume	2	11	869	1	27	22	911
Day Total								6	99	8728	6	278	232	9349	

Manchester Street (Route 3A)  
between K9 Club & Landscaping Driveway  
City, State: Concord, NH  
Client: TFMoran / J Porter  
Site Code: 95486.08



PDI File #: 228705 ATR A

Count Date: Wednesday, June 22, 2022  
Direction: WB

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total	PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total	
12:00 AM	0	0	1	0	0	0	6	12:00 PM	0	0	2	150	0	1	154	
12:15 AM	0	0	4	0	0	2	11	12:15 PM	0	0	2	127	0	4	9	147
12:30 AM	0	0	3	0	0	0	3	12:30 PM	0	0	2	148	0	3	7	160
12:45 AM	0	0	0	0	0	0	0	12:45 PM	0	0	3	160	0	7	7	176
1:00 AM	0	0	9	0	0	0	9	1:00 PM	0	0	1	157	0	5	6	169
1:15 AM	0	0	1	0	0	0	1	1:15 PM	0	0	0	152	0	8	2	162
1:30 AM	0	0	5	0	0	2	7	1:30 PM	0	0	2	133	0	2	3	140
1:45 AM	0	0	2	0	0	0	2	1:45 PM	0	0	1	150	0	5	3	141
2:00 AM	0	0	0	0	0	0	0	2:00 PM	0	0	2	175	0	7	3	186
2:15 AM	0	0	6	0	1	1	8	2:15 PM	0	0	2	143	0	4	3	152
2:30 AM	0	0	6	0	0	4	10	2:30 PM	0	0	1	145	0	8	2	156
2:45 AM	0	0	1	4	0	3	2	2:45 PM	0	0	2	153	0	3	2	160
3:00 AM	0	0	2	0	0	4	6	3:00 PM	0	0	1	160	0	2	2	174
3:15 AM	0	0	7	0	0	2	9	3:15 PM	0	0	2	167	0	4	2	175
3:30 AM	0	0	4	0	0	4	8	3:30 PM	0	0	3	146	0	4	0	153
3:45 AM	0	0	5	0	0	3	10	3:45 PM	0	0	1	180	0	4	4	194
4:00 AM	0	0	8	0	0	2	10	4:00 PM	0	0	0	187	0	3	4	194
4:15 AM	0	0	12	0	0	2	15	4:15 PM	0	0	2	180	0	10	3	195
4:30 AM	0	0	20	0	0	6	31	4:30 PM	0	0	4	182	0	4	0	186
4:45 AM	0	0	30	0	0	1	31	4:45 PM	0	0	0	189	1	3	7	190
5:00 AM	0	0	24	0	0	1	25	5:00 PM	0	0	2	236	0	2	1	241
5:15 AM	0	0	45	0	0	2	49	5:15 PM	0	0	4	182	0	0	1	187
5:30 AM	0	0	44	0	0	3	49	5:30 PM	0	0	2	169	0	4	1	177
5:45 AM	0	0	61	0	0	3	66	5:45 PM	0	0	3	117	0	0	1	124
6:00 AM	0	0	70	0	0	4	78	6:00 PM	0	0	3	151	0	0	1	153
6:15 AM	0	0	77	0	0	5	86	6:15 PM	0	0	3	122	0	2	0	128
6:30 AM	0	0	109	0	0	6	122	6:30 PM	0	0	0	100	0	0	1	106
6:45 AM	0	0	141	0	0	5	149	6:45 PM	0	0	2	114	0	0	1	117
7:00 AM	0	0	141	0	0	11	160	7:00 PM	0	0	0	119	0	0	0	120
7:15 AM	0	0	168	0	0	5	183	7:15 PM	0	0	1	81	0	1	1	84
7:30 AM	0	0	172	0	0	6	184	7:30 PM	0	0	1	93	0	0	1	95
7:45 AM	0	0	179	0	0	4	188	7:45 PM	0	0	0	72	0	0	1	73
8:00 AM	0	0	149	0	0	3	162	8:00 PM	0	0	2	80	0	0	0	86
8:15 AM	0	0	117	0	0	7	125	8:15 PM	0	0	0	82	0	0	0	85
8:30 AM	0	0	127	0	0	8	138	8:30 PM	0	0	1	60	0	0	1	61
8:45 AM	0	0	139	0	0	5	152	8:45 PM	0	0	0	45	0	0	1	46
9:00 AM	0	0	121	0	0	6	136	9:00 PM	0	0	2	50	0	0	0	51
9:15 AM	0	0	113	0	0	12	136	9:15 PM	0	0	0	54	0	0	1	55
9:30 AM	0	0	124	0	0	6	131	9:30 PM	0	0	0	29	0	0	0	29
9:45 AM	0	0	133	0	0	2	137	9:45 PM	0	0	0	30	0	0	0	30
10:00 AM	0	0	157	0	0	9	167	10:00 PM	0	0	12	0	0	0	0	12
10:15 AM	0	0	132	0	0	3	140									

## **APPENDIX C**

### **Volume Adjustments**

Seasonal Adjustment

Growth

Heavy Vehicles



Year 2024 Monthly Data

Group 4 Averages: Urban Highways

Month	MADT	AVERAGE FOR	PEAK FOR	
		WARRANTS	TRAFFIC	
		Adjustment to Av	adjustment to Peak	
<u>January</u>	<u>14555.9</u>	<u>1.03909108</u>	<u>1.093545009</u>	
February	15,385	0.98	1.03	
March	14,276	1.06	1.11	
April	14,515	1.04	1.10	
May	15,571	0.97	1.02	
June	15,918	0.95	1.00	
July	15,765	0.96	1.01	
August	15,856	0.95	1.00	
September	15,571	0.97	1.02	
October	15,698	0.96	1.01	
November	14,429	1.05	1.10	-
December	13,960	1.08	1.14	
Average ADT:	15124.88			-
Peak ADT:	15,918			
Peak ADT:	15,918			

**Growth**

**Rockingham County - Group 4 Highway Station**  
 NH 3A  
 02051003 Bow south of Robinson Road

VOLUME TREND ?	
Year	Annual Growth
2023	-1%
2022	5%
2021	8%
2020	-13%
2019	0%
2018	0%
2017	2%
2016	3%
2015	-3%
2014	1%

**Average Growth: 0.20%**

**Rockingham County - Group 4 Highway Station**  
 NH 28 (Suncook Valley Rd)  
 02089001 Chichester north of Bear Hill Road

VOLUME TREND ?	
Year	Annual Growth
2023	1%
2022	0%
2021	10%
2020	-11%
2019	0%
2018	0%
2017	0%
2016	3%
2015	1%
2014	1%

**Average Growth: 0.56%**

**Merrimack County - Group 4 Highway Station**  
 US3 (Fisherville Road)  
 72099278 Concord north of Sewalls Falls Rd

VOLUME TREND ?	
Year	Annual Growth
2023	-1%
2022	-1%
2021	7%
2020	-9%
2019	0%
2018	0%
2017	-5%
2016	2%
2015	4%
2014	4%

**Average Growth: 0.10%**

**Background Traffic Volumes - HEAVY VEHICLE CALCULATIONS**

**NOTE: For calculated HV weighted average per NHDOT Synchro Checklist, Heavy vehicle percentages >8% are not Volumes with strikethrough are not included in weighted average**

AM Peak Hour	Existing 2024 (Raw data) [10/08/2024]	AM HEAVY	AM %Heavy	CALCULATED WEIGHTED AVERAGE	<i>If 0% calculated, use 2%</i>
<b>3: Manchester Street at Shared Driveway / Volvo Driveway 7:15 AM</b>					
	<u>Movement</u>				
	EBL	12	0	0%	
	EBT	728	38	5%	<b>5%</b>
	EBR	12	0	0%	
	WBL	6	0	0%	
	WBT	713	50	7%	<b>7%</b>
	WBR	5	0	0%	
	NBL	3	1	<del>33%</del>	
	NBT	0	0	0%	<b>2%</b>
	NBR	1	0	0%	
	SBL	1	0	0%	
	SBT	0	0	0%	<b>2%</b>
	SBR	6	0	0%	

**to be averaged into the approach value**

PM Peak Hour	Existing 2024 (Raw data) [10/08/2024]	PM HEAVY	PM %Heavy	CALCULATED WEIGHTED AVERAGE	<i>If 0% calculated, use 2%</i>
<b>3: Manchester Street at Shared Driveway / Volvo Driveway</b>					
	<b>4:05 PM</b>				
	<u>Movement</u>				
	EBL	3	0	0%	
	EBT	761	15	2%	<b>2%</b>
	EBR	2	0	0%	
	WBL	2	0	0%	
	WBT	804	9	1%	<b>1%</b>
	WBR	0	0	#DIV/0!	
	NBL	11	4	9%	
	NBT	0	0	#DIV/0!	<b>2%</b>
	NBR	7	0	0%	
	SBL	3	0	0%	
	SBT	0	0	#DIV/0!	<b>2%</b>
	SBR	13	0	0%	

SAT Peak Hour	Existing 2024 (Raw data) [10/05/2024]	SAT HEAVY	SAT %Heavy	CALCULATED WEIGHTED AVERAGE	<i>If 0% calculated , use 2%</i>
<b>3: Manchester Street at Shared Driveway / Volvo Driveway 11:30 AM</b>					
	<u>Movement</u>				
	EBL	3	0	0%	
	EBT	530	11	2%	<b>2%</b>
	EBR	2	0	0%	
	WBL	0	0	#DIV/0!	
	WBT	598	2	0%	<b>2%</b>
	WBR	4	0	0%	
	NBL	0	0	#DIV/0!	
	NBT	0	0	#DIV/0!	<b>2%</b>
	NBR	2	0	0%	
	SBL	0	0	#DIV/0!	
	SBT	0	0	#DIV/0!	<b>2%</b>
	SBR	6	0	0%	



## **APPENDIX D**

### **Other Developments**

Distribution

Trip Generation

Diagrams



PITCO Warehouse - Opening Year Integra Drive						
Traffic Impact Assessment, Proposed Integra Drive Warehouse, Concord, New Hampshire, July 2021 by Stepen G. Pernaw & Company, Inc.						
AM		PM		SAT		
In	Out	In	Out	In	Out	
85	1	1	81	17	15	
Trips distribution 50% to/from west per study						
Manchester Street at Shared Driveway/Volvo Driveway						
Movement	AM Trips		PM Trips		SAT Trips	
	In	Out	In	Out	In	Out
EBL						
EBT	43		1		9	
EBR						
WBL						
WBT		1		41		8
WBR						
NBL						
NBT						
NBR						
SBL						
SBT						
SBR						

NAULT - PHASE 1A Black Hill Road						
SUPPLEMENTAL TRAFFIC ANALYSIS "1A", 19 April 2024 Rev1, by TFMoran Inc, ROI Mixed-Use Development Phase 1A						
AM		PM		SAT		
In	Out	In	Out	In	Out	
184	178	196	195	234	232	
Trips distribution per report						
Manchester Street at Shared Driveway/Volvo Driveway						
Movement	AM Trips		PM Trips		SAT Trips	
	In	Out	In	Out	In	Out
EBL						
EBT		7		9		12
EBR						
WBL						
WBT	8		9		12	
WBR						
NBL						
NBT						
NBR						
SBL						
SBT						
SBR						

PITCO Warehouse - Future Year Integra Drive						
Traffic Impact Assessment, Proposed Integra Drive Warehouse, Concord, New Hampshire, July 2021 by Stepen G. Pernaw & Company, Inc.						
AM		PM		SAT		
In	Out	In	Out	In	Out	
106	1	1	102	24	22	
Trips distribution 50% to/from west per study						
Manchester Street at Shared Driveway/Volvo Driveway						
Movement	AM Trips		PM Trips		SAT Trips	
	In	Out	In	Out	In	Out
EBL						
EBT	53		1		12	
EBR						
WBL						
WBT		1		51		11
WBR						
NBL						
NBT						
NBR						
SBL						
SBT						
SBR						

NAULT - FULL BUILD Black Hill Road						
SUPPLEMENTAL TRAFFIC ANALYSIS "Full Build", 22 April 2024, by TFMoran Inc, ROI Mixed-Use Development Phase 2 - Full Build.						
AM		PM		SAT		
In	Out	In	Out	In	Out	
352	340	335	349	420	399	
Trips distribution per report						
Manchester Street at Shared Driveway/Volvo Driveway						
Movement	AM Trips		PM Trips		SAT Trips	
	In	Out	In	Out	In	Out
EBL						
EBT		23		33		48
EBR						
WBL						
WBT	31		29		53	
WBR						
NBL						
NBT						
NBR						
SBL						
SBT						
SBR						

**OPENING AM TOTAL:  
OTHER DEVELOPMENTS**

**OPENING PM TOTAL:  
OTHER DEVELOPMENTS**

**OPENING SAT TOTAL:  
OTHER DEVELOPMENTS**

TOTAL PM	
Other Development PM:	448
<b>Manchester Street at Shared Driveway/Volvo Driveway</b>	
<u>Movement</u>	
EBL	0
EBT	50
EBR	0
WBL	0
WBT	9
WBR	0
NBL	0
NBT	0
NBR	0
SBL	0
SBT	0
SBR	0

TOTAL PM	
Other Development PM:	473
<b>Manchester Street at Shared Driveway/Volvo Driveway</b>	
<u>Movement</u>	
EBL	0
EBT	10
EBR	0
WBL	0
WBT	50
WBR	0
NBL	0
NBT	0
NBR	0
SBL	0
SBT	0
SBR	0

TOTAL SAT	
Other Development SAT:	498
<b>Manchester Street at Shared Driveway/Volvo Driveway</b>	
<u>Movement</u>	
EBL	0
EBT	21
EBR	0
WBL	0
WBT	20
WBR	0
NBL	0
NBT	0
NBR	0
SBL	0
SBT	0
SBR	0

**FUTURE AM TOTAL:  
OTHER DEVELOPMENTS**

**FUTURE PM TOTAL:  
OTHER DEVELOPMENTS**

**FUTURE SAT TOTAL:  
OTHER DEVELOPMENTS**

TOTAL PM	
Other Development PM:	799
<b>Manchester Street at Shared Driveway/Volvo Driveway</b>	
<u>Movement</u>	
EBL	0
EBT	76
EBR	0
WBL	0
WBT	32
WBR	0
NBL	0
NBT	0
NBR	0
SBL	0
SBT	0
SBR	0

TOTAL PM	
Other Development PM:	787
<b>Manchester Street at Shared Driveway/Volvo Driveway</b>	
<u>Movement</u>	
EBL	0
EBT	34
EBR	0
WBL	0
WBT	80
WBR	0
NBL	0
NBT	0
NBR	0
SBL	0
SBT	0
SBR	0

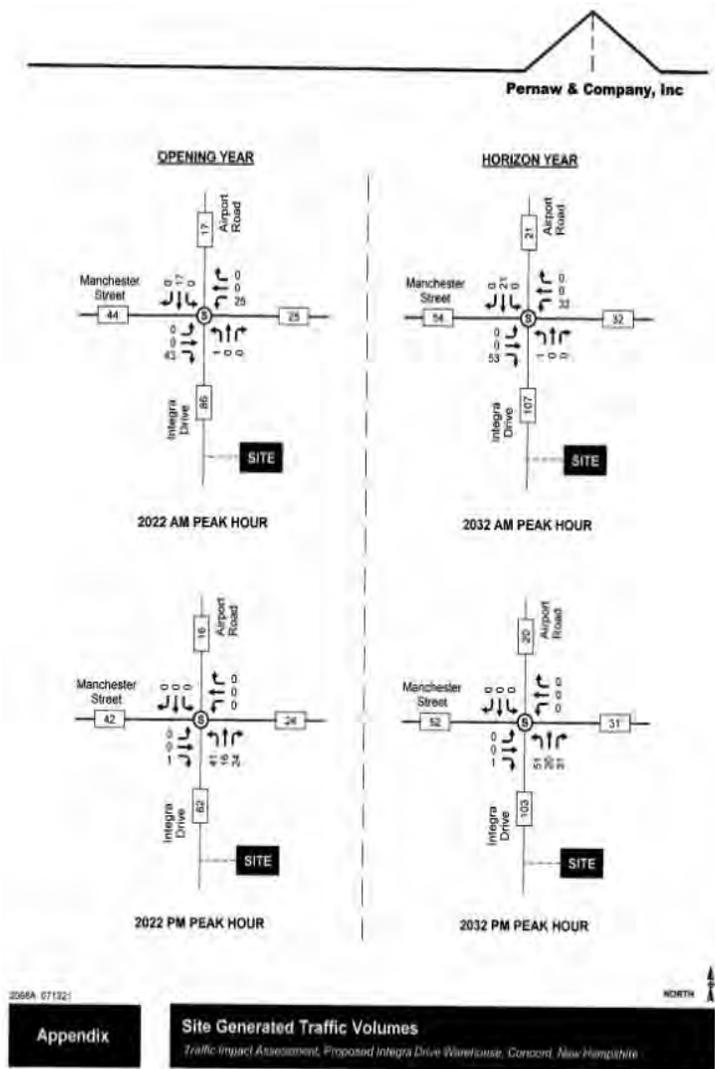
TOTAL SAT	
Other Development SAT:	865
<b>Manchester Street at Shared Driveway/Volvo Driveway</b>	
<u>Movement</u>	
EBL	0
EBT	60
EBR	0
WBL	0
WBT	64
WBR	0
NBL	0
NBT	0
NBR	0
SBL	0
SBT	0
SBR	0

**Other Development (Manufacturing/Warehouse on Integra Drive) - Pernaw Traffic Study**  
Based on ITE Trip Generation 11th Edition

*Submitted Traffic Study only analyzed AM & PM Peak Hours. Used ITE LUC 140 to calculate Saturday Distribution per Study*

ITE LUC 140 - Manufacturing: 320 employees opening, 461 employees horizon

Time Period	Rate/Equ		Rate/ Eq Used	Trip Ends	Directional Split		Directional Distribution	
	X	Rate			In	Out	In	Out
Weekend SAT Opening (320 Employees) Peak Hour of Generator	320	0.10	Rate	32	52%	48%	17	15
Weekend SAT Horizon (461 Employees) Peak Hour of Generator	461	0.10	Rate	46	52%	48%	24	22



**Other Development (Manufacturing/Warehouse on Integra Drive) - Pernaw Traffic Study**  
Based on ITE Trip Generation 11th Edition



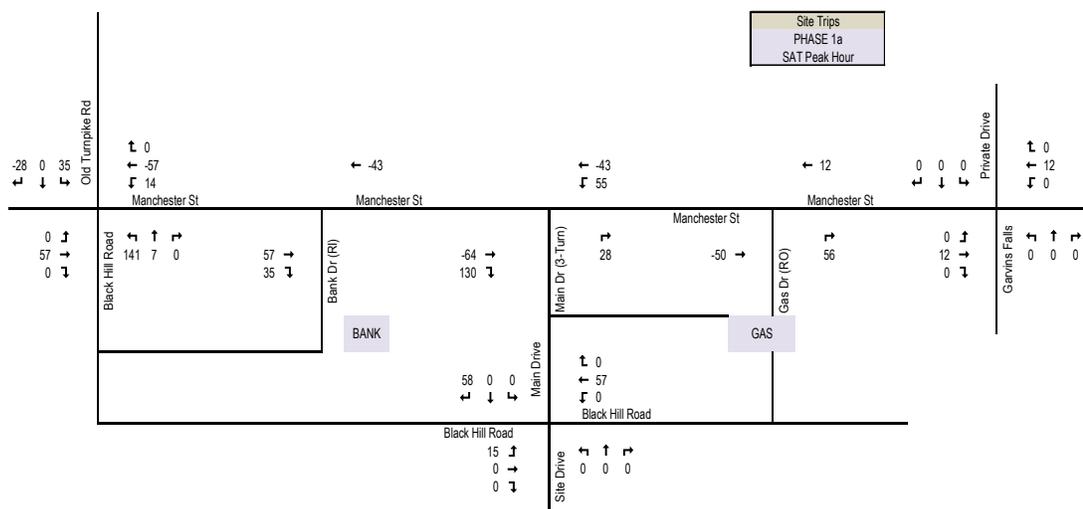
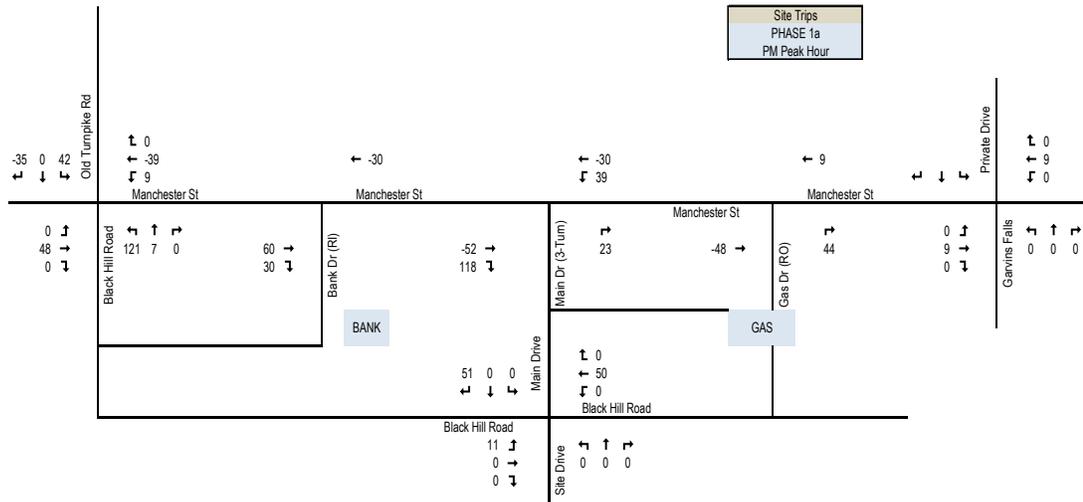
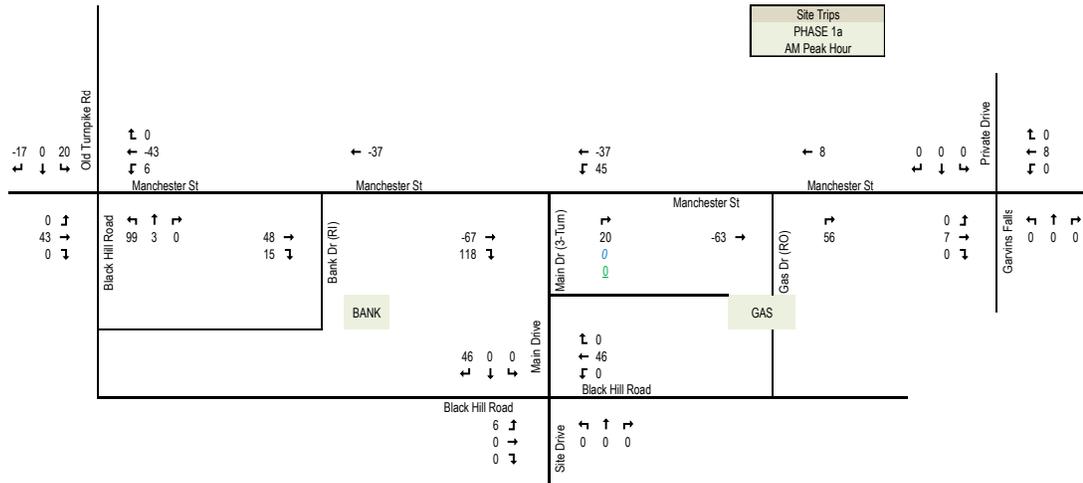
**CALCULATION SHEET**

Project: Relocation Job Number: 2066A  
Calculated By: SP Date: \_\_\_\_\_  
Checked By: CA Date: \_\_\_\_\_  
Sheet No: 1 Of: 1  
Subject: Trip Distribution Summary

**TRIP DISTRIBUTION SUMMARY**

	West	North	East	
Method A	51%	22%	27%	(Turning Movement Count Data)
Method B	53%	18%	29%	(Employee List by Town)
Average	52%	20%	28%	
Rounded Use	50%	20%	30%	

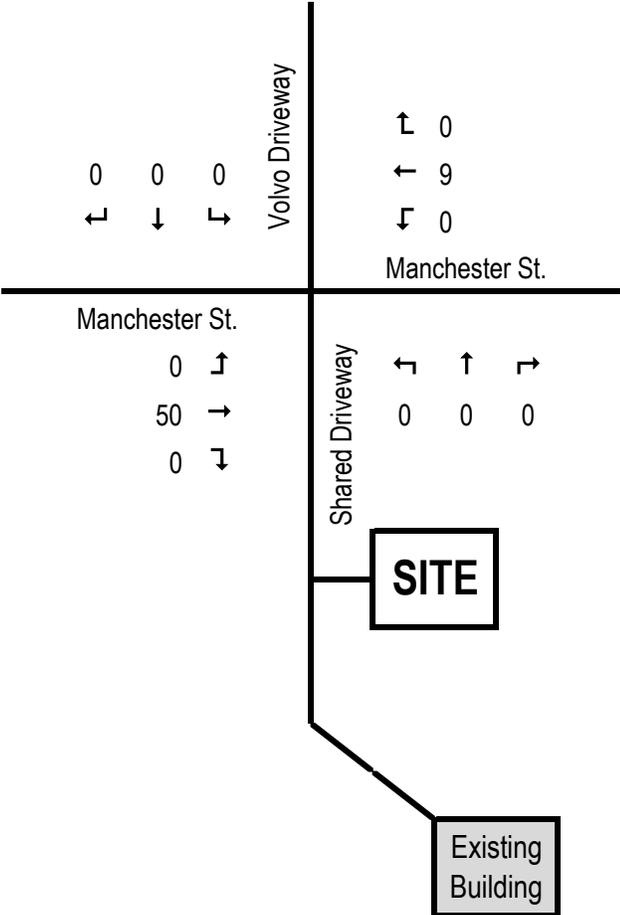
**Other Development (Nault Phase 1A) - TFM Traffic Supplement**  
Based on ITE Trip Generation 11th Edition





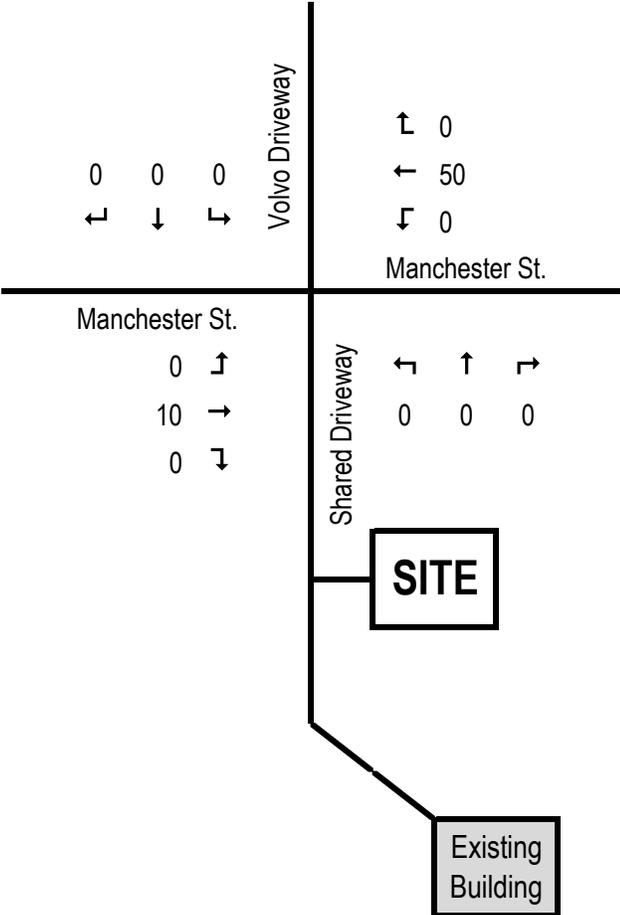
Site Trip Assignments  
**OTHER DEVELOPMENTS**  
AM Peak Hour

XX Trips



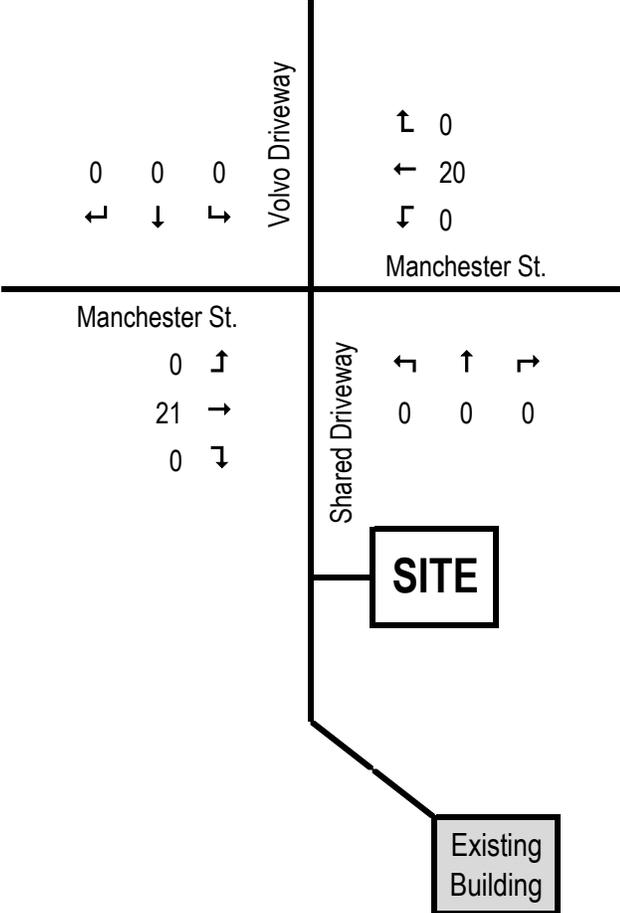
Site Trip Assignments  
**OTHER DEVELOPMENTS**  
PM Peak Hour

XX Trips



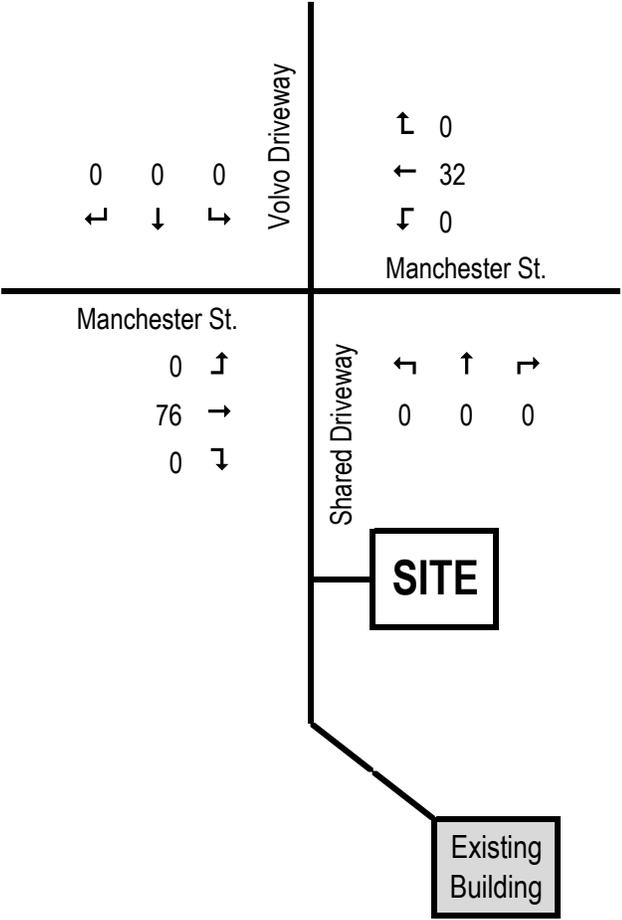
Site Trip Assignments  
**OTHER DEVELOPMENTS**  
SAT Peak Hour

XX Trips



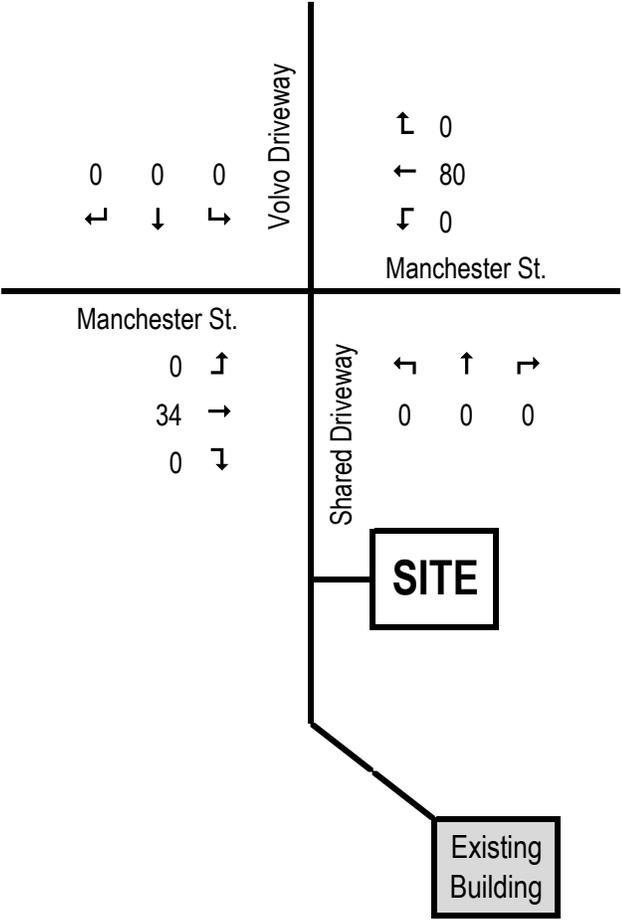
Site Trip Assignments  
**OTHER DEVELOPMENTS**  
AM Peak Hour

XX Trips



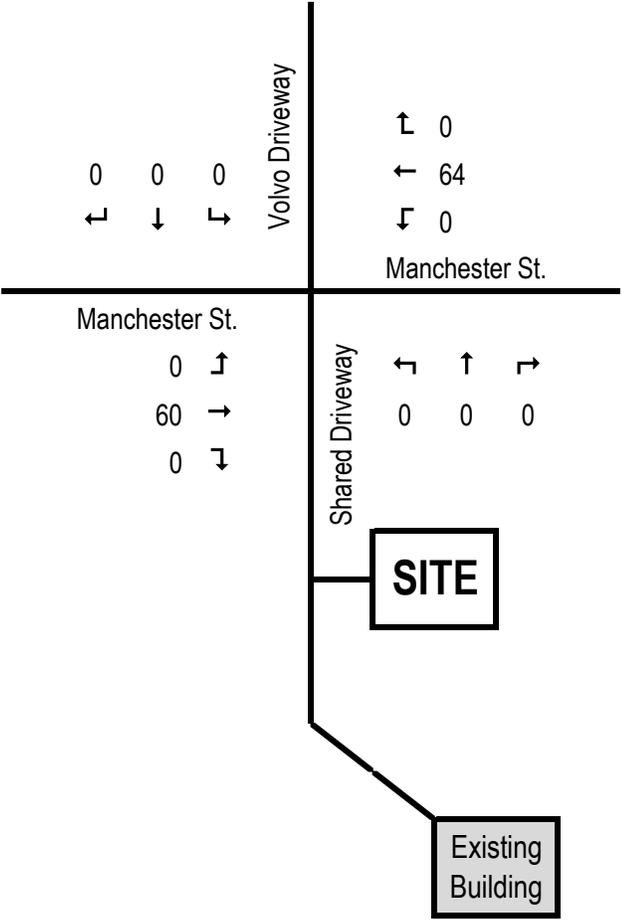
Site Trip Assignments  
**OTHER DEVELOPMENTS**  
PM Peak Hour

XX Trips



Site Trip Assignments  
**OTHER DEVELOPMENTS**  
SAT Peak Hour

XX Trips



## **APPENDIX E**

### **Volumes**

Calculations

Prorata



**Background Traffic Volumes**  
**AM Peak Hour**

Assumed growth rate 0.01  
October 2024 Seasonal Adjust 1.01 NHDOT Group 4

*Site Trips are not Seasonally Adjusted or Grown.*

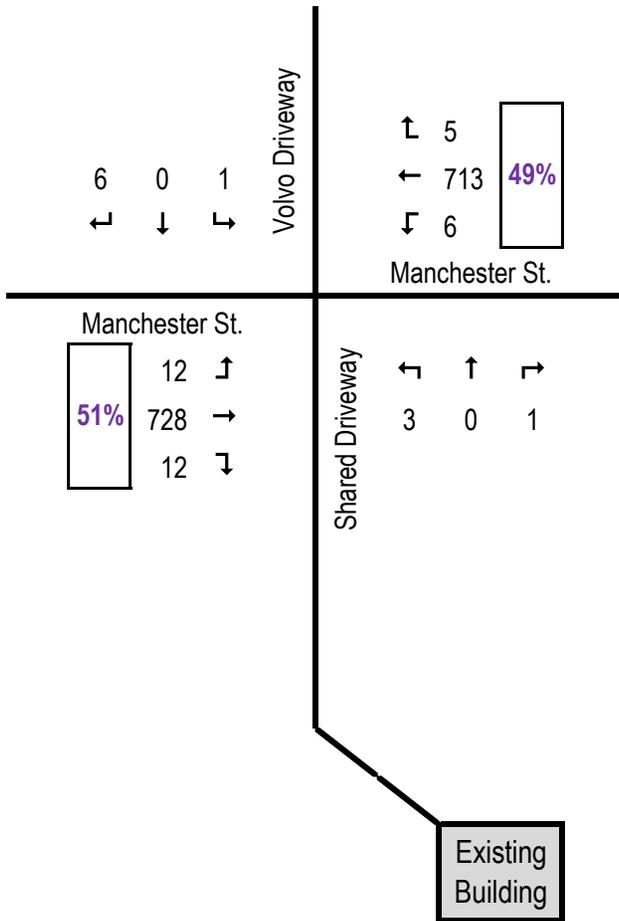
AM Peak Hour	Existing 2024 (Raw data) [10/08/2024]	Existing 2024 w/ Seasonal Adjustment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy	% Heavy Approach
<b>3: Manchester Street at</b>																			
<b>Shared Driveway / Volvo Driveway</b>																			
	<b>7:15 AM</b>																		
	<u>Movement</u>	<u>(A)</u>																	
	EBL	12	12.00	12	12	12	12	12	12	12	12	12	12	12	12		0%	0	
	EBT	728	735.00	742.35	749.77	757.27	764.84	772.49	780.21	788.01	795.89	803.85	811.89	820.01	828.21	0.96	5%	38	5%
	EBR	12	12.00	12	12	12	12	12	12	12	12	12	12	12	12		0%	0	
	WBL	6	6.00	6	6	6	6	6	6	6	6	6	6	6	6		0%	0	
	WBT	713	720.00	727.20	734.47	741.81	749.23	756.72	764.29	771.93	779.65	787.45	795.32	803.27	811.30	0.95	7%	50	7%
	WBR	5	5.00	5	5	5	5	5	5	5	5	5	5	5	5		0%	0	
	NBL	3	3.00	3	3	3	3	3	3	3	3	3	3	3	3		33%	1	
	NBT	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0%	0	2%
	NBR	1	1.00	1	1	1	1	1	1	1	1	1	1	1	1		0%	0	
	SBL	1	1.00	1	1	1	1	1	1	1	1	1	1	1	1		0%	0	
	SBT	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.58	0%	0	2%
	SBR	6	6.00	6	6	6	6	6	6	6	6	6	6	6	6		0%	0	

AM Peak Hour	2024 BASE	2026	Opening: Other Developments	2026 No-Build	Site Trip Distribution	2026 Build	BUILD PHF
<b>Shared Driveway / Volvo</b>							
<b>Driveway</b>							
<u>Movement</u>							
EBL	12	12	0	12	0	12	
EBT	735	750	50	800	0	800	0.96
EBR	12	12	0	12	14	26	
WBL	6	6	0	6	2	8	
WBT	720	734	9	743	0	743	0.95
WBR	5	5	0	5	0	5	
NBL	3	3	0	3	22	25	
NBT	0	0	0	0	0	0	0.90
NBR	1	1	0	1	3	4	
SBL	1	1	0	1	0	1	
SBT	0	0	0	0	0	0	0.58
SBR	6	6	0	6	0	6	

AM Peak Hour	2036	Future: Other Developments	2036 No-Build	Site Trip Distribution	2036 Build
<b>Shared Driveway / Volvo</b>					
<b>Driveway</b>					
<u>Movement</u>					
EBL	12	0	12	0	12
EBT	828	76	904	0	904
EBR	12	0	12	14	26
WBL	6	0	6	2	8
WBT	811	32	843	0	843
WBR	5	0	5	0	5
NBL	3	0	3	22	25
NBT	0	0	0	0	0
NBR	1	0	1	3	4
SBL	1	0	1	0	1
SBT	0	0	0	0	0
SBR	6	0	6	0	6

2024 RAW
<b>PRORATA</b>
AM Peak Hour

XX Volumes



**Background Traffic Volumes**  
**PM Peak Hour**

Assumed growth rate 0.01  
October 2024 Seasonal Adjust 1.01 NHDOT Group 4

*Site Trips are not Seasonally Adjusted or Grown.*

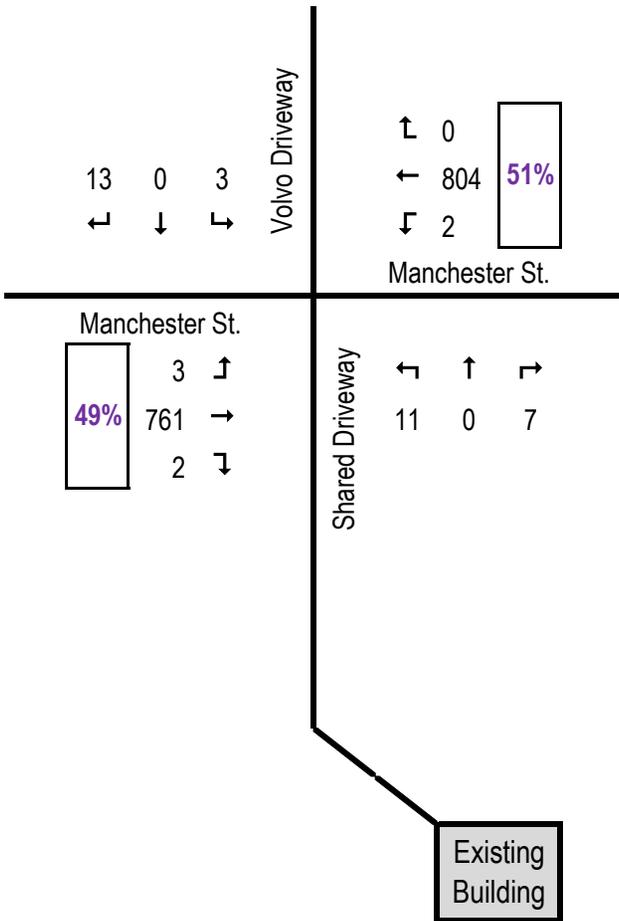
PM Peak Hour	Existing 2024 (Raw data) [10/08/2024]	Existing 2024 w/ Seasonal Adjustment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy	% Heavy Approach
<b>3: Manchester Street at Shared Driveway / Volvo Driveway</b>																			
	<b>4:05 PM</b>																		
	<u>Movement</u>	<u>(A)</u>																	
	EBL	3	3.00	3	3	3	3	3	3	3	3	3	3	3	3		0%	0	
	EBT	761	769.00	776.69	784.46	792.30	800.22	808.22	816.30	824.46	832.70	841.03	849.44	857.93	866.51	0.93	2%	15	2%
	EBR	2	2.00	2	2	2	2	2	2	2	2	2	2	2	2		0%	0	
	WBL	2	2.00	2	2	2	2	2	2	2	2	2	2	2	2		0%	0	
	WBT	804	812.00	820.12	828.32	836.60	844.97	853.42	861.95	870.57	879.28	888.07	896.95	905.92	914.98	0.84	1%	9	1%
	WBR	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0		0%	0	
	NBL	11	11.00	11	11	11	11	11	11	11	11	11	11	11	11		9%	1	
	NBT	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.75	0%	0	2%
	NBR	7	7.00	7	7	7	7	7	7	7	7	7	7	7	7		0%	0	
	SBL	3	3.00	3	3	3	3	3	3	3	3	3	3	3	3		0%	0	
	SBT	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.57	0%	0	2%
	SBR	13	13.00	13	13	13	13	13	13	13	13	13	13	13	13		0%	0	

PM Peak Hour	2024 BASE	2026	Opening: Other Developments	2026 No-Build	Site Trip Distribution	2026 Build	BUILD PHF
<b>Shared Driveway / Volvo</b>							
<b>Driveway</b>							
<u>Movement</u>							
EBL	3	3	0	3	0	3	
EBT	769	784	10	794	0	794	0.93
EBR	2	2	0	2	18	20	
WBL	2	2	0	2	2	4	
WBT	812	828	50	878	0	878	0.84
WBR	0	0	0	0	0	0	
NBL	11	11	0	11	14	25	
NBT	0	0	0	0	0	0	0.90
NBR	7	7	0	7	2	9	
SBL	3	3	0	3	0	3	
SBT	0	0	0	0	0	0	0.57
SBR	13	13	0	13	0	13	

PM Peak Hour	2036	Future: Other Developments	2036 No-Build	Site Trip Distribution	2036 Build
<b>Shared Driveway / Volvo</b>					
<b>Driveway</b>					
<u>Movement</u>					
EBL	3	0	3	0	3
EBT	867	34	901	0	901
EBR	2	0	2	18	20
WBL	2	0	2	2	4
WBT	915	80	995	0	995
WBR	0	0	0	0	0
NBL	11	0	11	14	25
NBT	0	0	0	0	0
NBR	7	0	7	2	9
SBL	3	0	3	0	3
SBT	0	0	0	0	0
SBR	13	0	13	0	13

2024 RAW  
**PRORATA**  
 PM Peak Hour

XX Volumes



Background Traffic Volumes

SAT Peak Hour

Assumed growth rate 0.01  
October 2024 Seasonal Adjust 1.01 NHDOT Group 4

Site Trips are not Seasonally Adjusted or Grown.

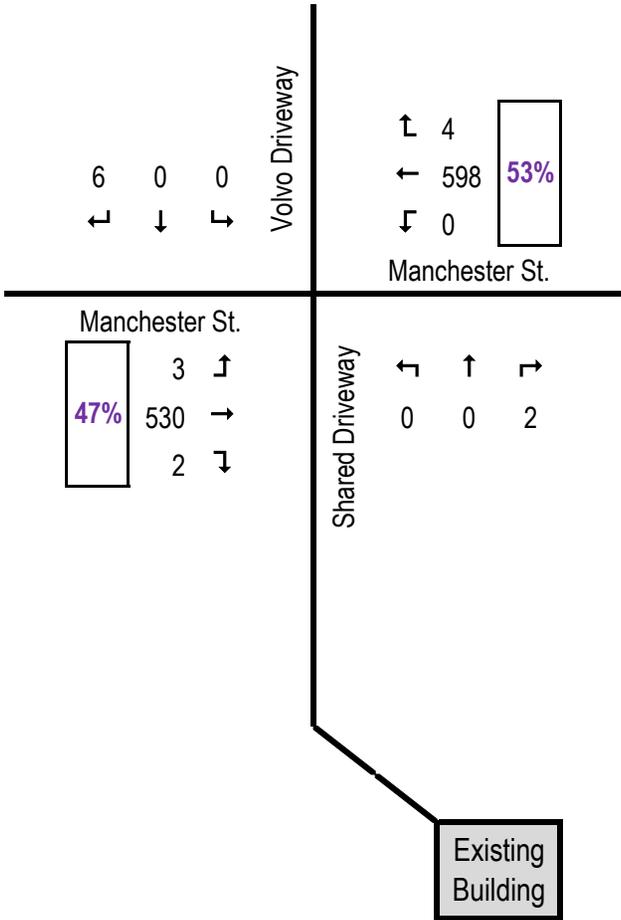
SAT Peak Hour	Existing 2024 (Raw data) [10/05/2024]	Existing 2024 w/ Seasonal Adjustment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy	% Heavy Approach
<b>3: Manchester Street at Shared Driveway / Volvo Driveway 11:30 AM</b>																			
<i>Movement (A)</i>																			
EBL	3	3	3.00	3	3	3	3	3	3	3	3	3	3	3	3		0%	0	
EBT	530	535	535.00	540.35	545.75	551.21	556.72	562.29	567.91	573.59	579.33	585.12	590.97	596.88	602.85	0.90	2%	11	2%
EBR	2	2	2.00	2	2	2	2	2	2	2	2	2	2	2	2		0%	0	
WBL	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0		0%	0	
WBT	598	604	604.00	610.04	616.14	622.30	628.52	634.81	641.16	647.57	654.05	660.59	667.20	673.87	680.61	0.92	0%	2	2%
WBR	4	4	4.00	4	4	4	4	4	4	4	4	4	4	4	4		0%	0	
NBL	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0		0%	0	
NBT	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0%	0	2%
NBR	2	2	2.00	2	2	2	2	2	2	2	2	2	2	2	2		0%	0	
SBL	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0		0%	0	
SBT	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0%	0	2%
SBR	6	6	6.00	6	6	6	6	6	6	6	6	6	6	6	6		0%	0	

SAT Peak Hour	2024 BASE	2026	Opening: Other Developments	2026 No-Build	Site Trip Distribution	2026 Build	BUILD PHF
<b>Shared Driveway / Volvo</b>							
<b>Driveway</b>							
<u>Movement</u>							
EBL	3	3	0	3	0	3	
EBT	535	546	21	567	0	567	0.90
EBR	2	2	0	2	25	27	
WBL	0	0	0	0	3	3	
WBT	604	616	20	636	0	636	0.92
WBR	4	4	0	4	0	4	
NBL	0	0	0	0	22	22	
NBT	0	0	0	0	0	0	0.90
NBR	2	2	0	2	3	5	
SBL	0	0	0	0	0	0	
SBT	0	0	0	0	0	0	0.50
SBR	6	6	0	6	0	6	

SAT Peak Hour	2036	Future: Other Developments	2036 No-Build	Site Trip Distribution	2036 Build
<b>Shared Driveway / Volvo</b>					
<b>Driveway</b>					
<u>Movement</u>					
EBL	3	0	3	0	3
EBT	603	60	663	0	663
EBR	2	0	2	25	27
WBL	0	0	0	3	3
WBT	681	64	745	0	745
WBR	4	0	4	0	4
NBL	0	0	0	22	22
NBT	0	0	0	0	0
NBR	2	0	2	3	5
SBL	0	0	0	0	0
SBT	0	0	0	0	0
SBR	6	0	6	0	6

2024 RAW  
**PRORATA**  
 SAT Peak Hour

XX Volumes





## **APPENDIX F**

### **AM Synchro**

BASE 2024

No-Build – 2026, 2036

Build – 2026, 2036



HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

AM 2024 BASE

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	735	12	6	720	5	3	0	1	1	0	6
Future Vol, veh/h	12	735	12	6	720	5	3	0	1	1	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	50	50	50	58	58	58
Heavy Vehicles, %	5	5	5	7	7	7	2	2	2	2	2	2
Mvmt Flow	13	766	13	6	758	5	6	0	2	2	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	763	0	0	779	0	0	1577	1574	773	1573	1578	761
Stage 1	-	-	-	-	-	-	799	799	-	773	773	-
Stage 2	-	-	-	-	-	-	778	775	-	800	805	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	836	-	-	816	-	-	89	110	399	89	109	405
Stage 1	-	-	-	-	-	-	379	398	-	392	409	-
Stage 2	-	-	-	-	-	-	389	408	-	379	395	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	836	-	-	816	-	-	84	106	399	86	105	405
Mov Cap-2 Maneuver	-	-	-	-	-	-	84	106	-	86	105	-
Stage 1	-	-	-	-	-	-	369	387	-	381	404	-
Stage 2	-	-	-	-	-	-	374	403	-	367	384	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			42.1			19.2		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	105	836	-	-	816	-	-	265
HCM Lane V/C Ratio	0.076	0.015	-	-	0.008	-	-	0.046
HCM Control Delay (s)	42.1	9.4	0	-	9.4	0	-	19.2
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.1



HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

AM 2026 NB

Intersection

Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	800	12	6	743	5	3	0	1	1	0	6
Future Vol, veh/h	12	800	12	6	743	5	3	0	1	1	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	50	50	50	58	58	58
Heavy Vehicles, %	5	5	5	7	7	7	2	2	2	2	2	2
Mvmt Flow	13	833	13	6	782	5	6	0	2	2	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	787	0	0	846	0	0	1668	1665	840	1664	1669	785
Stage 1	-	-	-	-	-	-	866	866	-	797	797	-
Stage 2	-	-	-	-	-	-	802	799	-	867	872	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	819	-	-	770	-	-	77	97	365	77	96	393
Stage 1	-	-	-	-	-	-	348	370	-	380	399	-
Stage 2	-	-	-	-	-	-	378	398	-	348	368	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	819	-	-	770	-	-	72	93	365	74	92	393
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	93	-	74	92	-
Stage 1	-	-	-	-	-	-	338	359	-	369	393	-
Stage 2	-	-	-	-	-	-	363	392	-	336	357	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			48.9			20.6		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	90	819	-	-	770	-	-	243
HCM Lane V/C Ratio	0.089	0.015	-	-	0.008	-	-	0.05
HCM Control Delay (s)	48.9	9.5	0	-	9.7	0	-	20.6
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.2

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

AM 2036 NB

Intersection

Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	12	904	12	6	843	5	3	0	1	1	0	6
Future Vol, veh/h	12	904	12	6	843	5	3	0	1	1	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	90	90	90	90	90	90
Heavy Vehicles, %	5	5	5	7	7	7	2	2	2	2	2	2
Mvmt Flow	13	942	13	6	887	5	3	0	1	1	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	892	0	0	955	0	0	1880	1879	949	1877	1883	890
Stage 1	-	-	-	-	-	-	975	975	-	902	902	-
Stage 2	-	-	-	-	-	-	905	904	-	975	981	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	748	-	-	700	-	-	54	71	316	55	71	342
Stage 1	-	-	-	-	-	-	303	330	-	332	356	-
Stage 2	-	-	-	-	-	-	331	356	-	303	328	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	748	-	-	700	-	-	51	68	316	53	68	342
Mov Cap-2 Maneuver	-	-	-	-	-	-	51	68	-	53	68	-
Stage 1	-	-	-	-	-	-	292	318	-	320	353	-
Stage 2	-	-	-	-	-	-	322	353	-	291	316	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			64.4			24.5		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	65	748	-	-	700	-	-	192
HCM Lane V/C Ratio	0.068	0.017	-	-	0.009	-	-	0.041
HCM Control Delay (s)	64.4	9.9	0	-	10.2	-	-	24.5
HCM Lane LOS	F	A	A	-	B	-	-	C
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.1

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

AM 2026 B

Intersection

Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	12	800	26	8	743	5	25	0	4	1	0	6
Future Vol, veh/h	12	800	26	8	743	5	25	0	4	1	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	90	90	90	58	58	58
Heavy Vehicles, %	5	5	5	7	7	7	2	2	2	2	2	2
Mvmt Flow	13	833	27	8	782	5	28	0	4	2	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	787	0	0	860	0	0	1679	1676	847	1676	1687	785
Stage 1	-	-	-	-	-	-	873	873	-	801	801	-
Stage 2	-	-	-	-	-	-	806	803	-	875	886	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	819	-	-	761	-	-	75	95	362	76	94	393
Stage 1	-	-	-	-	-	-	345	368	-	378	397	-
Stage 2	-	-	-	-	-	-	376	396	-	344	363	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	819	-	-	761	-	-	70	90	362	72	89	393
Mov Cap-2 Maneuver	-	-	-	-	-	-	70	90	-	72	89	-
Stage 1	-	-	-	-	-	-	334	357	-	366	389	-
Stage 2	-	-	-	-	-	-	359	388	-	329	352	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			78.9			20.8		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	79	819	-	-	761	-	-	240
HCM Lane V/C Ratio	0.408	0.015	-	-	0.011	-	-	0.05
HCM Control Delay (s)	78.9	9.5	0	-	9.8	0	-	20.8
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.6	0	-	-	0	-	-	0.2

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

AM 2036 B

Intersection

Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	12	904	26	8	843	5	25	0	4	1	0	6
Future Vol, veh/h	12	904	26	8	843	5	25	0	4	1	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	90	90	90	90	90	90
Heavy Vehicles, %	5	5	5	7	7	7	2	2	2	2	2	2
Mvmt Flow	13	942	27	8	887	5	28	0	4	1	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	892	0	0	969	0	0	1891	1890	956	1890	1901	890
Stage 1	-	-	-	-	-	-	982	982	-	906	906	-
Stage 2	-	-	-	-	-	-	909	908	-	984	995	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	748	-	-	691	-	-	53	70	313	53	69	342
Stage 1	-	-	-	-	-	-	300	327	-	331	355	-
Stage 2	-	-	-	-	-	-	329	354	-	299	323	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	748	-	-	691	-	-	50	67	313	50	66	342
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	67	-	50	66	-
Stage 1	-	-	-	-	-	-	289	315	-	318	351	-
Stage 2	-	-	-	-	-	-	319	350	-	284	311	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			130.5			25.2		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	57	748	-	-	691	-	-	186
HCM Lane V/C Ratio	0.565	0.017	-	-	0.012	-	-	0.042
HCM Control Delay (s)	130.5	9.9	0	-	10.3	-	-	25.2
HCM Lane LOS	F	A	A	-	B	-	-	D
HCM 95th %tile Q(veh)	2.3	0.1	-	-	0	-	-	0.1

## **APPENDIX G**

### **PM Synchro**

BASE 2024

No-Build – 2026, 2036

Build – 2026, 2036



HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

PM 2024 BASE

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	769	2	2	812	0	11	0	7	3	0	13
Future Vol, veh/h	3	769	2	2	812	0	11	0	7	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	84	84	84	75	75	75	57	57	57
Heavy Vehicles, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	3	827	2	2	967	0	15	0	9	5	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	967	0	0	829	0	0	1817	1805	828	1810	1806	967
Stage 1	-	-	-	-	-	-	834	834	-	971	971	-
Stage 2	-	-	-	-	-	-	983	971	-	839	835	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	712	-	-	807	-	-	60	79	371	61	79	308
Stage 1	-	-	-	-	-	-	362	383	-	304	331	-
Stage 2	-	-	-	-	-	-	299	331	-	360	383	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	712	-	-	807	-	-	55	78	371	59	78	308
Mov Cap-2 Maneuver	-	-	-	-	-	-	55	78	-	59	78	-
Stage 1	-	-	-	-	-	-	359	380	-	302	329	-
Stage 2	-	-	-	-	-	-	275	329	-	348	380	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			66.1			30		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	82	712	-	-	807	-	-	172
HCM Lane V/C Ratio	0.293	0.005	-	-	0.003	-	-	0.163
HCM Control Delay (s)	66.1	10.1	0	-	9.5	0	-	30
HCM Lane LOS	F	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0.6



HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

PM 2026 NB

Intersection

Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	794	2	2	878	0	11	0	7	3	0	13
Future Vol, veh/h	3	794	2	2	878	0	11	0	7	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	84	84	84	75	75	75	57	57	57
Heavy Vehicles, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	3	854	2	2	1045	0	15	0	9	5	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1045	0	0	856	0	0	1922	1910	855	1915	1911	1045
Stage 1	-	-	-	-	-	-	861	861	-	1049	1049	-
Stage 2	-	-	-	-	-	-	1061	1049	-	866	862	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	666	-	-	788	-	-	51	68	358	51	68	278
Stage 1	-	-	-	-	-	-	350	372	-	275	304	-
Stage 2	-	-	-	-	-	-	271	304	-	348	372	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	666	-	-	788	-	-	46	67	358	49	67	278
Mov Cap-2 Maneuver	-	-	-	-	-	-	46	67	-	49	67	-
Stage 1	-	-	-	-	-	-	347	369	-	273	302	-
Stage 2	-	-	-	-	-	-	247	302	-	336	369	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			81.2			34.9		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	70	666	-	-	788	-	-	148
HCM Lane V/C Ratio	0.343	0.005	-	-	0.003	-	-	0.19
HCM Control Delay (s)	81.2	10.4	0	-	9.6	0	-	34.9
HCM Lane LOS	F	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	1.3	0	-	-	0	-	-	0.7

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

PM 2036 NB

Intersection

Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔		↔	↔			↔			↔	
Traffic Vol, veh/h	3	901	2	2	995	0	11	0	7	3	0	13
Future Vol, veh/h	3	901	2	2	995	0	11	0	7	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	3	969	2	2	1106	0	12	0	8	3	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1106	0	0	971	0	0	2093	2086	970	2090	2087	1106
Stage 1	-	-	-	-	-	-	976	976	-	1110	1110	-
Stage 2	-	-	-	-	-	-	1117	1110	-	980	977	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	631	-	-	714	-	-	38	53	307	38	53	256
Stage 1	-	-	-	-	-	-	302	329	-	254	285	-
Stage 2	-	-	-	-	-	-	252	285	-	301	329	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	631	-	-	714	-	-	35	52	307	37	52	256
Mov Cap-2 Maneuver	-	-	-	-	-	-	35	52	-	37	52	-
Stage 1	-	-	-	-	-	-	299	326	-	251	284	-
Stage 2	-	-	-	-	-	-	237	284	-	290	326	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			109.4			39.8		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	53	631	-	-	714	-	-	121
HCM Lane V/C Ratio	0.377	0.005	-	-	0.003	-	-	0.147
HCM Control Delay (s)	109.4	10.7	0	-	10.1	-	-	39.8
HCM Lane LOS	F	B	A	-	B	-	-	E
HCM 95th %tile Q(veh)	1.4	0	-	-	0	-	-	0.5

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

PM 2026 B

Intersection

Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	794	20	4	878	0	25	0	9	3	0	13
Future Vol, veh/h	3	794	20	4	878	0	25	0	9	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	84	84	84	90	90	90	57	57	57
Heavy Vehicles, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	3	854	22	5	1045	0	28	0	10	5	0	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1045	0	0	876	0	0	1938	1926	865	1931	1937	1045
Stage 1	-	-	-	-	-	-	871	871	-	1055	1055	-
Stage 2	-	-	-	-	-	-	1067	1055	-	876	882	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	666	-	-	775	-	-	49	67	353	50	66	278
Stage 1	-	-	-	-	-	-	346	368	-	273	302	-
Stage 2	-	-	-	-	-	-	269	302	-	344	364	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	666	-	-	775	-	-	44	65	353	48	64	278
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	65	-	48	64	-
Stage 1	-	-	-	-	-	-	343	365	-	271	297	-
Stage 2	-	-	-	-	-	-	243	297	-	331	361	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			149.1			35.4		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	57	666	-	-	775	-	-	146
HCM Lane V/C Ratio	0.663	0.005	-	-	0.006	-	-	0.192
HCM Control Delay (s)	149.1	10.4	0	-	9.7	0	-	35.4
HCM Lane LOS	F	B	A	-	A	A	-	E
HCM 95th %tile Q(veh)	2.8	0	-	-	0	-	-	0.7

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

PM 2036 B

Intersection

Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	3	901	20	4	995	0	25	0	9	3	0	13
Future Vol, veh/h	3	901	20	4	995	0	25	0	9	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	3	969	22	4	1106	0	28	0	10	3	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1106	0	0	991	0	0	2107	2100	980	2105	2111	1106
Stage 1	-	-	-	-	-	-	986	986	-	1114	1114	-
Stage 2	-	-	-	-	-	-	1121	1114	-	991	997	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	631	-	-	702	-	-	37	52	303	38	51	256
Stage 1	-	-	-	-	-	-	298	326	-	253	284	-
Stage 2	-	-	-	-	-	-	250	284	-	296	322	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	631	-	-	702	-	-	34	51	303	36	50	256
Mov Cap-2 Maneuver	-	-	-	-	-	-	34	51	-	36	50	-
Stage 1	-	-	-	-	-	-	295	322	-	250	282	-
Stage 2	-	-	-	-	-	-	235	282	-	283	318	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			235.6			40.5		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	44	631	-	-	702	-	-	119
HCM Lane V/C Ratio	0.859	0.005	-	-	0.006	-	-	0.149
HCM Control Delay (s)	235.6	10.7	0	-	10.2	-	-	40.5
HCM Lane LOS	F	B	A	-	B	-	-	E
HCM 95th %tile Q(veh)	3.4	0	-	-	0	-	-	0.5

## **APPENDIX H**

### **SAT Synchro**

BASE 2024

No-Build – 2026, 2036

Build – 2026, 2036



HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

SAT 2024 BASE

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	535	2	0	604	4	0	0	2	0	0	6
Future Vol, veh/h	3	535	2	0	604	4	0	0	2	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	92	92	92	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	594	2	0	657	4	0	0	4	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	661	0	0	596	0	0	1266	1262	595	1262	1261	659
Stage 1	-	-	-	-	-	-	601	601	-	659	659	-
Stage 2	-	-	-	-	-	-	665	661	-	603	602	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	927	-	-	980	-	-	146	170	504	147	170	464
Stage 1	-	-	-	-	-	-	487	489	-	453	461	-
Stage 2	-	-	-	-	-	-	449	460	-	486	489	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	927	-	-	980	-	-	142	169	504	145	169	464
Mov Cap-2 Maneuver	-	-	-	-	-	-	142	169	-	145	169	-
Stage 1	-	-	-	-	-	-	485	487	-	451	461	-
Stage 2	-	-	-	-	-	-	437	460	-	480	487	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			12.2			13		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	504	927	-	-	980	-	-	464
HCM Lane V/C Ratio	0.008	0.004	-	-	-	-	-	0.026
HCM Control Delay (s)	12.2	8.9	0	-	0	-	-	13
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1



HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

SAT 2026 NB

Intersection

Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	567	2	0	636	4	0	0	2	0	0	6
Future Vol, veh/h	3	567	2	0	636	4	0	0	2	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	92	92	92	50	50	50	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	630	2	0	691	4	0	0	4	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	695	0	0	632	0	0	1336	1332	631	1332	1331	693
Stage 1	-	-	-	-	-	-	637	637	-	693	693	-
Stage 2	-	-	-	-	-	-	699	695	-	639	638	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	901	-	-	951	-	-	130	154	481	131	154	443
Stage 1	-	-	-	-	-	-	465	471	-	434	445	-
Stage 2	-	-	-	-	-	-	430	444	-	464	471	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	901	-	-	951	-	-	126	153	481	129	153	443
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	153	-	129	153	-
Stage 1	-	-	-	-	-	-	463	469	-	432	445	-
Stage 2	-	-	-	-	-	-	418	444	-	458	469	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			12.5			13.4		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	481	901	-	-	951	-	-	443
HCM Lane V/C Ratio	0.008	0.004	-	-	-	-	-	0.027
HCM Control Delay (s)	12.5	9	0	-	0	-	-	13.4
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

SAT 2036 NB

Intersection

Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	3	663	2	0	745	4	0	0	2	0	0	6
Future Vol, veh/h	3	663	2	0	745	4	0	0	2	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	92	92	92	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	737	2	0	810	4	0	0	2	0	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	814	0	0	739	0	0	1560	1558	738	1557	1557	812
Stage 1	-	-	-	-	-	-	744	744	-	812	812	-
Stage 2	-	-	-	-	-	-	816	814	-	745	745	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	813	-	-	867	-	-	91	112	418	92	113	379
Stage 1	-	-	-	-	-	-	407	421	-	373	392	-
Stage 2	-	-	-	-	-	-	371	391	-	406	421	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	813	-	-	867	-	-	89	111	418	91	112	379
Mov Cap-2 Maneuver	-	-	-	-	-	-	89	111	-	91	112	-
Stage 1	-	-	-	-	-	-	405	418	-	371	392	-
Stage 2	-	-	-	-	-	-	364	391	-	401	418	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			13.7			14.7		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	418	813	-	-	867	-	-	379
HCM Lane V/C Ratio	0.005	0.004	-	-	-	-	-	0.018
HCM Control Delay (s)	13.7	9.4	0	-	0	-	-	14.7
HCM Lane LOS	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.1

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

SAT 2026 B

Intersection

Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	567	27	3	636	4	22	0	5	0	0	6
Future Vol, veh/h	3	567	27	3	636	4	22	0	5	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	92	92	92	90	90	90	50	50	50
Heavy Vehicles, %	0	2	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	3	630	30	3	691	4	24	0	6	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	695	0	0	660	0	0	1356	1352	645	1353	1365	693
Stage 1	-	-	-	-	-	-	651	651	-	699	699	-
Stage 2	-	-	-	-	-	-	705	701	-	654	666	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	910	-	-	938	-	-	128	151	476	128	149	447
Stage 1	-	-	-	-	-	-	461	468	-	434	445	-
Stage 2	-	-	-	-	-	-	430	444	-	459	460	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	910	-	-	938	-	-	124	149	476	126	148	447
Mov Cap-2 Maneuver	-	-	-	-	-	-	124	149	-	126	148	-
Stage 1	-	-	-	-	-	-	459	466	-	432	443	-
Stage 2	-	-	-	-	-	-	416	442	-	451	458	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			36.5			13.3		
HCM LOS							E			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	144	910	-	-	938	-	-	447
HCM Lane V/C Ratio	0.208	0.004	-	-	0.003	-	-	0.027
HCM Control Delay (s)	36.5	9	0	-	8.9	0	-	13.3
HCM Lane LOS	E	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0	-	-	0	-	-	0.1

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

SAT 2036 B

Intersection

Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕			↕	
Traffic Vol, veh/h	3	663	27	3	745	4	22	0	5	0	0	6
Future Vol, veh/h	3	663	27	3	745	4	22	0	5	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	92	92	92	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	737	30	3	810	4	24	0	6	0	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	814	0	0	767	0	0	1580	1578	752	1579	1591	812
Stage 1	-	-	-	-	-	-	758	758	-	818	818	-
Stage 2	-	-	-	-	-	-	822	820	-	761	773	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	813	-	-	847	-	-	88	109	410	88	107	379
Stage 1	-	-	-	-	-	-	399	415	-	370	390	-
Stage 2	-	-	-	-	-	-	368	389	-	398	409	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	813	-	-	847	-	-	86	108	410	86	106	379
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	108	-	86	106	-
Stage 1	-	-	-	-	-	-	397	413	-	368	388	-
Stage 2	-	-	-	-	-	-	360	387	-	390	407	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			55			14.7		
HCM LOS							F			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	101	813	-	-	847	-	-	379
HCM Lane V/C Ratio	0.297	0.004	-	-	0.004	-	-	0.018
HCM Control Delay (s)	55	9.4	0	-	9.3	-	-	14.7
HCM Lane LOS	F	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-	-	0.1

## **APPENDIX I**

### **MIT Synchro**

Build MIT – 2026, 2036



HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

AM 2026 B\_MIT

Intersection												
Int Delay, s/veh	1.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	12	800	26	8	743	5	25	0	4	1	0	6
Future Vol, veh/h	12	800	26	8	743	5	25	0	4	1	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	90	90	90	58	58	58
Heavy Vehicles, %	5	5	5	7	7	7	2	2	2	2	2	2
Mvmt Flow	13	833	27	8	782	5	28	0	4	2	0	10

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	787	0	0	860	0	0	1679	1676	847	1676	1687	785
Stage 1	-	-	-	-	-	-	873	873	-	801	801	-
Stage 2	-	-	-	-	-	-	806	803	-	875	886	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	819	-	-	761	-	-	75	95	362	76	94	393
Stage 1	-	-	-	-	-	-	345	368	-	378	397	-
Stage 2	-	-	-	-	-	-	376	396	-	344	363	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	819	-	-	761	-	-	70	90	362	72	89	393
Mov Cap-2 Maneuver	-	-	-	-	-	-	70	90	-	72	89	-
Stage 1	-	-	-	-	-	-	334	357	-	366	389	-
Stage 2	-	-	-	-	-	-	359	388	-	329	352	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			77			20.8		
HCM LOS							F			C		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	70	362	819	-	-	761	-	-	240
HCM Lane V/C Ratio	0.397	0.012	0.015	-	-	0.011	-	-	0.05
HCM Control Delay (s)	86.9	15.1	9.5	0	-	9.8	0	-	20.8
HCM Lane LOS	F	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	1.5	0	0	-	-	0	-	-	0.2

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

AM 2036 B\_MIT

Intersection

Int Delay, s/veh	2.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Vol, veh/h	12	904	26	8	843	5	25	0	4	1	0	6
Future Vol, veh/h	12	904	26	8	843	5	25	0	4	1	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	90	90	90	90	90	90
Heavy Vehicles, %	5	5	5	7	7	7	2	2	2	2	2	2
Mvmt Flow	13	942	27	8	887	5	28	0	4	1	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	892	0	0	969	0	0	1891	1890	956	1890	1901	890
Stage 1	-	-	-	-	-	-	982	982	-	906	906	-
Stage 2	-	-	-	-	-	-	909	908	-	984	995	-
Critical Hdwy	4.15	-	-	4.17	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.245	-	-	2.263	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	748	-	-	691	-	-	53	70	313	53	69	342
Stage 1	-	-	-	-	-	-	300	327	-	331	355	-
Stage 2	-	-	-	-	-	-	329	354	-	299	323	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	748	-	-	691	-	-	50	67	313	50	66	342
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	67	-	50	66	-
Stage 1	-	-	-	-	-	-	289	315	-	318	351	-
Stage 2	-	-	-	-	-	-	319	350	-	284	311	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.1			0.1			126.7			25.2		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	50	313	748	-	-	691	-	-	186
HCM Lane V/C Ratio	0.556	0.014	0.017	-	-	0.012	-	-	0.042
HCM Control Delay (s)	144.3	16.7	9.9	0	-	10.3	-	-	25.2
HCM Lane LOS	F	C	A	A	-	B	-	-	D
HCM 95th %tile Q(veh)	2.1	0	0.1	-	-	0	-	-	0.1

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

PM 2026 B\_MIT

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	3	794	20	4	878	0	25	0	9	3	0	14
Future Vol, veh/h	3	794	20	4	878	0	25	0	9	3	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	84	84	84	90	90	90	57	57	57
Heavy Vehicles, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	3	854	22	5	1045	0	28	0	10	5	0	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1045	0	0	876	0	0	1939	1926	865	1931	1937	1045
Stage 1	-	-	-	-	-	-	871	871	-	1055	1055	-
Stage 2	-	-	-	-	-	-	1068	1055	-	876	882	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	666	-	-	775	-	-	49	67	353	50	66	278
Stage 1	-	-	-	-	-	-	346	368	-	273	302	-
Stage 2	-	-	-	-	-	-	268	302	-	344	364	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	666	-	-	775	-	-	44	65	353	48	64	278
Mov Cap-2 Maneuver	-	-	-	-	-	-	44	65	-	48	64	-
Stage 1	-	-	-	-	-	-	343	365	-	271	297	-
Stage 2	-	-	-	-	-	-	241	297	-	331	361	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			134.5			34.6		
HCM LOS							F			D		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	44	353	666	-	-	775	-	-	151
HCM Lane V/C Ratio	0.631	0.028	0.005	-	-	0.006	-	-	0.198
HCM Control Delay (s)	177.4	15.5	10.4	0	-	9.7	0	-	34.6
HCM Lane LOS	F	C	B	A	-	A	A	-	D
HCM 95th %tile Q(veh)	2.4	0.1	0	-	-	0	-	-	0.7

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

PM 2036 B\_MIT

Intersection

Int Delay, s/veh	3.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Vol, veh/h	3	901	20	4	995	0	25	0	9	3	0	13
Future Vol, veh/h	3	901	20	4	995	0	25	0	9	3	0	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	1	1	1	2	2	2	2	2	2
Mvmt Flow	3	969	22	4	1106	0	28	0	10	3	0	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1106	0	0	991	0	0	2107	2100	980	2105	2111	1106
Stage 1	-	-	-	-	-	-	986	986	-	1114	1114	-
Stage 2	-	-	-	-	-	-	1121	1114	-	991	997	-
Critical Hdwy	4.12	-	-	4.11	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.209	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	631	-	-	702	-	-	37	52	303	38	51	256
Stage 1	-	-	-	-	-	-	298	326	-	253	284	-
Stage 2	-	-	-	-	-	-	250	284	-	296	322	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	631	-	-	702	-	-	34	51	303	36	50	256
Mov Cap-2 Maneuver	-	-	-	-	-	-	34	51	-	36	50	-
Stage 1	-	-	-	-	-	-	295	322	-	250	282	-
Stage 2	-	-	-	-	-	-	235	282	-	283	318	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			204.1			40.5		
HCM LOS							F			E		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	34	303	631	-	-	702	-	-	119
HCM Lane V/C Ratio	0.817	0.033	0.005	-	-	0.006	-	-	0.149
HCM Control Delay (s)	271.3	17.3	10.7	0	-	10.2	-	-	40.5
HCM Lane LOS	F	C	B	A	-	B	-	-	E
HCM 95th %tile Q(veh)	2.9	0.1	0	-	-	0	-	-	0.5

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

SAT 2026 B\_MIT

Intersection												
Int Delay, s/veh	0.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕	↕		↕	
Traffic Vol, veh/h	3	567	27	3	636	4	22	0	5	0	0	6
Future Vol, veh/h	3	567	27	3	636	4	22	0	5	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	-	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	92	92	92	90	90	90	50	50	50
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	630	30	3	691	4	24	0	6	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	695	0	0	660	0	0	1356	1352	645	1353	1365	693
Stage 1	-	-	-	-	-	-	651	651	-	699	699	-
Stage 2	-	-	-	-	-	-	705	701	-	654	666	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	901	-	-	928	-	-	126	150	472	127	147	443
Stage 1	-	-	-	-	-	-	457	465	-	430	442	-
Stage 2	-	-	-	-	-	-	427	441	-	456	457	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	901	-	-	928	-	-	122	149	472	125	146	443
Mov Cap-2 Maneuver	-	-	-	-	-	-	122	149	-	125	146	-
Stage 1	-	-	-	-	-	-	455	463	-	428	440	-
Stage 2	-	-	-	-	-	-	413	439	-	448	455	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			36.4			13.4		
HCM LOS							E			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	122	472	901	-	-	928	-	-	443
HCM Lane V/C Ratio	0.2	0.012	0.004	-	-	0.004	-	-	0.027
HCM Control Delay (s)	41.8	12.7	9	0	-	8.9	0	-	13.4
HCM Lane LOS	E	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.7	0	0	-	-	0	-	-	0.1

HCM 6th TWSC  
 3: Shared Site Driveway/Volvo Driveway & Manchester Street

SAT 2036 B\_MIT

Intersection

Int Delay, s/veh	1.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↕	↕			↕	↕		↕	
Traffic Vol, veh/h	3	663	27	3	745	4	22	0	5	0	0	6
Future Vol, veh/h	3	663	27	3	745	4	22	0	5	0	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None									
Storage Length	-	-	-	25	-	-	-	-	100	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	92	92	92	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	737	30	3	810	4	24	0	6	0	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	814	0	0	767	0	0	1580	1578	752	1579	1591	812
Stage 1	-	-	-	-	-	-	758	758	-	818	818	-
Stage 2	-	-	-	-	-	-	822	820	-	761	773	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	813	-	-	847	-	-	88	109	410	88	107	379
Stage 1	-	-	-	-	-	-	399	415	-	370	390	-
Stage 2	-	-	-	-	-	-	368	389	-	398	409	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	813	-	-	847	-	-	86	108	410	86	106	379
Mov Cap-2 Maneuver	-	-	-	-	-	-	86	108	-	86	106	-
Stage 1	-	-	-	-	-	-	397	413	-	368	388	-
Stage 2	-	-	-	-	-	-	360	387	-	390	407	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			53.7			14.7		
HCM LOS							F			B		

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	86	410	813	-	-	847	-	-	379
HCM Lane V/C Ratio	0.284	0.014	0.004	-	-	0.004	-	-	0.018
HCM Control Delay (s)	62.7	13.9	9.4	0	-	9.3	-	-	14.7
HCM Lane LOS	F	B	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	1	0	0	-	-	0	-	-	0.1

## **APPENDIX J**

### **Lane Warrant Analyses**

#### Warrant Volumes

Fig. 2-5 Left Turn Lane Warrants

Fig. 2-6 Right Turn Lane Warrants

Fig. 2-4 Second Lane on Minor Road



Background Traffic Volumes

AM Peak Hour

Assumed growth rate 0.01  
October 2024 Seasonal Adjust 0.96 NHDOT Group 4

Site Trips are not Seasonally Adjusted or Grown.

AM Peak Hour	Existing 2024 (Raw data) [10/08/2024]	Existing 2024 w/ Seasonal Adjustment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy	
<b>3: Manchester Street at Shared Driveway / Volvo Driveway</b>																			
	<b>7:15 AM</b>																		
	<u>Movement</u>	<u>(A)</u>																	
	EBL	12	12	12.00	12	12	12	12	12	12	12	12	12	12	12		0%	0	
	EBT	728	699	699.00	705.99	713.05	720.18	727.38	734.65	742.00	749.42	756.91	764.48	772.12	779.84	787.64	0.96	5%	38
	EBR	12	12	12.00	12	12	12	12	12	12	12	12	12	12	12		0%	0	
	WBL	6	6	6.00	6	6	6	6	6	6	6	6	6	6	6		0%	0	
	WBT	713	684	684.00	690.84	697.75	704.73	711.78	718.90	726.09	733.35	740.68	748.09	755.57	763.13	770.76	0.95	7%	50
	WBR	5	5	5.00	5	5	5	5	5	5	5	5	5	5	5		0%	0	
	NBL	3	3	3.00	3	3	3	3	3	3	3	3	3	3	3		33%	1	
	NBT	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0		0.50	0%	0
	NBR	1	1	1.00	1	1	1	1	1	1	1	1	1	1	1		0%	0	
	SBL	1	1	1.00	1	1	1	1	1	1	1	1	1	1	1		0%	0	
	SBT	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0		0.58	0%	0
	SBR	6	6	6.00	6	6	6	6	6	6	6	6	6	6	6		0%	0	

**AM Peak Hour**

Assumed growth rate 0.01  
October 2024 Seasonal Adjust 0.96 NHDOT Group 4

Site Trips are not Seasonally Adjusted or Grown.

AM Peak Hour	Existing 2024 (Raw data) [10/08/2024]	Existing 2024 w/ Seasonal Adjustment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy
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**Background Traffic Volumes**

**PM Peak Hour**

Assumed growth rate 0.01  
October 2019 Seasonal Adjust 0.96 NHDOT Group 4 Average

Site Trips are not Seasonally Adjusted or Grown.

PM Peak Hour	Existing 2024 (Raw data) [10/08/2024]	Existing 2024 w/ Seasonal Adjustment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy
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**3: Manchester Street at  
Shared Driveway / Volvo Driveway**

4:05 PM

Movement

Movement	(A)		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy
EBL	3	3	3.00	3	3	3	3	3	3	3	3	3	3	3	3		0%	0
EBT	761	731	731.00	738.31	745.69	753.15	760.68	768.29	775.97	783.73	791.57	799.49	807.48	815.55	823.71	0.93	2%	15
EBR	2	2	2.00	2	2	2	2	2	2	2	2	2	2	2	2		0%	0
WBL	2	2	2.00	2	2	2	2	2	2	2	2	2	2	2	2		0%	0
WBT	804	772	772.00	779.72	787.52	795.40	803.35	811.38	819.49	827.68	835.96	844.32	852.76	861.29	869.90	0.84	1%	9
WBR	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0		0%	0
NBL	11	11	11.00	11	11	11	11	11	11	11	11	11	11	11	11		9%	1
NBT	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.75	0%	0
NBR	7	7	7.00	7	7	7	7	7	7	7	7	7	7	7	7		0%	0
SBL	3	3	3.00	3	3	3	3	3	3	3	3	3	3	3	3		0%	0
SBT	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.57	0%	0
SBR	13	13	13.00	13	13	13	13	13	13	13	13	13	13	13	13		0%	0

**AM Peak Hour**

Assumed growth rate 0.01  
October 2024 Seasonal Adjust 0.96 NHDOT Group 4

Site Trips are not Seasonally Adjusted or Grown.

AM Peak Hour	Existing 2024 (Raw data) [10/08/2024]	Existing 2024 w/ Seasonal Adjustment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy
--------------	---	--	------	------	------	------	------	------	------	------	------	------	------	------	------	-----	---------	------------------

**Background Traffic Volumes**

**SAT Peak Hour**

Assumed growth rate 0.01  
October 2019 Seasonal Adjust 0.96 NHDOT Group 4 Average

Site Trips are not Seasonally Adjusted or Grown.

SAT Peak Hour	Existing 2024 (Raw data) [10/05/2024]	Existing 2024 w/ Seasonal Adjustment	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy
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**3: Manchester Street at  
Shared Driveway / Volvo Driveway**

11:30 AM

Movement

Movement	(A)		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	PHF	% Heavy	Counted Heavy
EBL	3	3	3.00	3	3	3	3	3	3	3	3	3	3	3	3		0%	0
EBT	530	509	509.00	514.09	519.23	524.42	529.66	534.96	540.31	545.71	551.17	556.68	562.25	567.87	573.55	0.90	2%	11
EBR	2	2	2.00	2	2	2	2	2	2	2	2	2	2	2	2		0%	0
WBL	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0		0%	0
WBT	598	574	574.00	579.74	585.54	591.40	597.31	603.28	609.31	615.40	621.55	627.77	634.05	640.39	646.79	0.92	0%	2
WBR	4	4	4.00	4	4	4	4	4	4	4	4	4	4	4	4		0%	0
NBL	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0		0%	0
NBT	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0%	0
NBR	2	2	2.00	2	2	2	2	2	2	2	2	2	2	2	2		0%	0
SBL	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0		0%	0
SBT	0	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0.50	0%	0
SBR	6	6	6.00	6	6	6	6	6	6	6	6	6	6	6	6		0%	0

AM Peak Hour	2024 BASE	2026	Opening: Other Developments	2026 No-Build	Site Trip Distribution	2026 Build	BUILD PHF	BUILD HV
<b>Shared Driveway / Volvo Driveway</b>								
<u>Movement</u>								
EBL	12	12	0	12	0	12		0%
EBT	699	713	50	763	0	763	0.96	5%
EBR	12	12	0	12	14	26		0%
WBL	6	6	0	6	2	8		0%
WBT	684	698	9	707	0	707	0.95	7%
WBR	5	5	0	5	0	5		0%
NBL	3	3	0	3	22	25		4%
NBT	0	0	0	0	0	0	0.90	-
NBR	1	1	0	1	3	4		0%
SBL	1	1	0	1	0	1		0%
SBT	0	0	0	0	0	0	0.58	-
SBR	6	6	0	6	0	6		0%

AM Peak Hour	2036	Future: Other Developments	2036 No-Build	Site Trip Distribution	2036 Build	Future BUILD PHF
<b>Shared Driveway / Volvo Driveway</b>						
<u>Movement</u>						
EBL	12	0	12	0	12	
EBT	788	76	864	0	864	0.96
EBR	12	0	12	14	26	
WBL	6	0	6	2	8	
WBT	771	32	803	0	803	0.95
WBR	5	0	5	0	5	
NBL	3	0	3	22	25	
NBT	0	0	0	0	0	0.90
NBR	1	0	1	3	4	
SBL	1	0	1	0	1	
SBT	0	0	0	0	0	0.90
SBR	6	0	6	0	6	

AM Peak Hour	2024 BASE	2026	Opening: Other Developments	2026 No-Build	Site Trip Distribution	2026 Build	BUILD PHF	BUILD HV
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AM Peak Hour	2036	Future: Other Developments	2036 No-Build	Site Trip Distribution	2036 Build	Future BUILD PHF
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PM Peak Hour	2024 BASE	2026	Opening: Other Developments	2026 No-Build	Site Trip Distribution	2026 Build	BUILD PHF	BUILD HV
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PM Peak Hour	2036	Future: Other Developments	2036 No-Build	Site Trip Distribution	2036 Build	Future BUILD PHF
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**Shared Driveway / Volvo  
Driveway**

Movement

EBL	3	3	0	3	0	3		0%
EBT	731	746	10	756	0	756	0.93	0%
EBR	2	2	0	2	18	20		0%
WBL	2	2	0	2	2	4		0%
WBT	772	788	50	838	0	838	0.84	0%
WBR	0	0	0	0	0	0		0%
NBL	11	11	0	11	14	25		0%
NBT	0	0	0	0	0	0	0.90	0%
NBR	7	7	0	7	2	9		0%
SBL	3	3	0	3	0	3		0%
SBT	0	0	0	0	0	0	0.57	0%
SBR	13	13	0	13	0	13		0%

**Shared Driveway / Volvo  
Driveway**

Movement

EBL	3	0	3	0	3			
EBT	824	34	858	0	858	0.93		
EBR	2	0	2	18	20			
WBL	2	0	2	2	4			
WBT	870	80	950	0	950	0.90		
WBR	0	0	0	0	0			
NBL	11	0	11	14	25			
NBT	0	0	0	0	0	0.90		
NBR	7	0	7	2	9			
SBL	3	0	3	0	3			
SBT	0	0	0	0	0	0.90		
SBR	13	0	13	0	13			

AM Peak Hour	2024 BASE	2026	Opening: Other Developments	2026 No-Build	Site Trip Distribution	2026 Build	BUILD PHF	BUILD HV
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AM Peak Hour	2036	Future: Other Developments	2036 No-Build	Site Trip Distribution	2036 Build	Future BUILD PHF
--------------	------	-------------------------------	------------------	---------------------------	---------------	------------------------

SAT Peak Hour	2024 BASE	2026	Opening: Other Developments	2026 No-Build	Site Trip Distribution	2026 Build	BUILD PHF	BUILD HV
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SAT Peak Hour	2036	Future: Other Developments	2036 No-Build	Site Trip Distribution	2036 Build	Future BUILD PHF
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Shared Driveway / Volvo  
Driveway

Movement

EBL	3	3	0	3	0	3		0%
EBT	509	519	21	540	0	540	0.90	0%
EBR	2	2	0	2	25	27		0%
WBL	0	0	0	0	3	3		0%
WBT	574	586	20	606	0	606	0.92	0%
WBR	4	4	0	4	0	4		0%
NBL	0	0	0	0	22	22		0%
NBT	0	0	0	0	0	0	0.90	0%
NBR	2	2	0	2	3	5		0%
SBL	0	0	0	0	0	0		0%
SBT	0	0	0	0	0	0	0.50	0%
SBR	6	6	0	6	0	6		0%

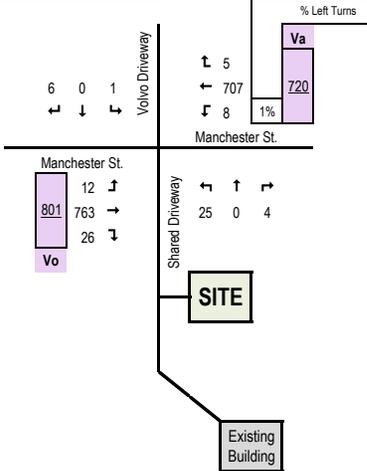
Shared Driveway / Volvo  
Driveway

Movement

EBL	3	0	3	0	3			
EBT	574	60	634	0	634	0.90		
EBR	2	0	2	25	27			
WBL	0	0	0	3	3			
WBT	647	64	711	0	711	0.92		
WBR	4	0	4	0	4			
NBL	0	0	0	22	22			
NBT	0	0	0	0	0	0.90		
NBR	2	0	2	3	5			
SBL	0	0	0	0	0			
SBT	0	0	0	0	0	0.90		
SBR	6	0	6	0	6			

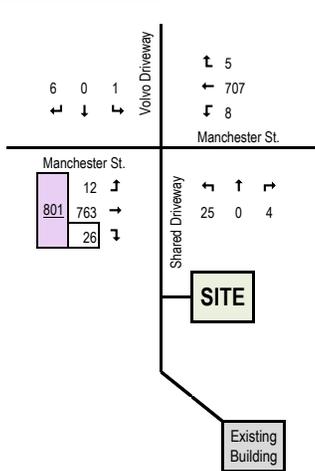
2026 BUILD (Opening)  
**LT WARRANT - AVE VOLS**  
 AM Peak Hour

XX Volumes



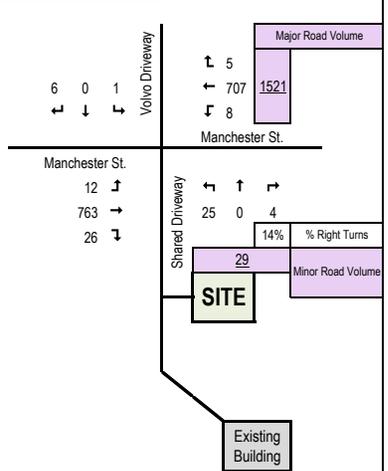
2026 BUILD (Opening)  
**RT WARRANT - AVE VOLS**  
 AM Peak Hour

XX Volumes



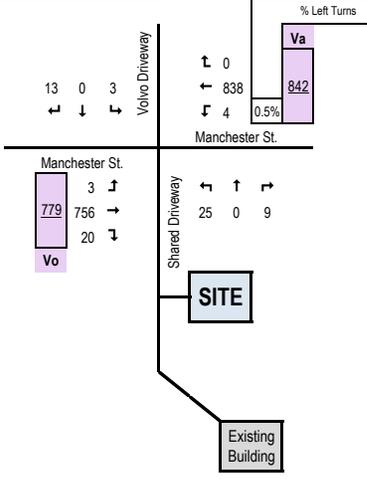
2026 BUILD (Opening)  
**MINOR RD WARRANT - AVE VOLS**  
 AM Peak Hour

XX Volumes



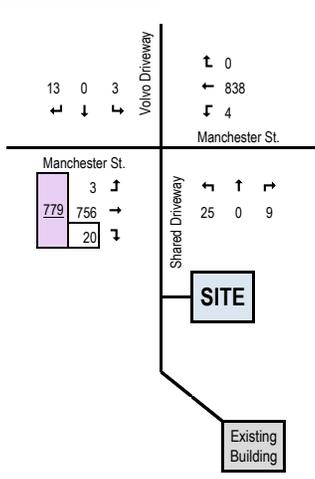
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**LT WARRANT - AVE VOLS**  
 PM Peak Hour

XX Volumes



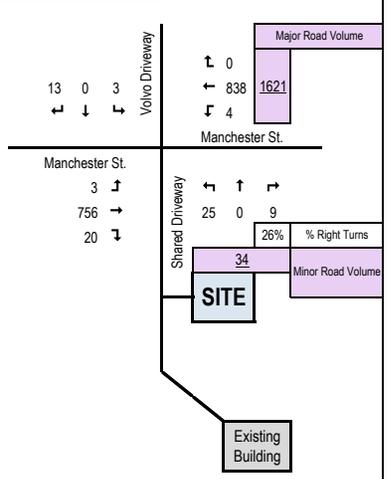
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**RT WARRANT - AVE VOLS**  
 PM Peak Hour

XX Volumes



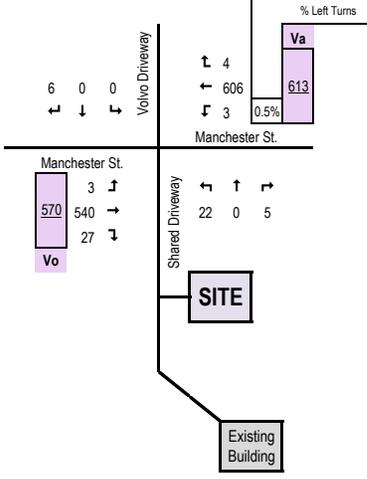
2026 BUILD (Opening)  
**MINOR RD WARRANT - AVE VOLS**  
 PM Peak Hour

XX Volumes



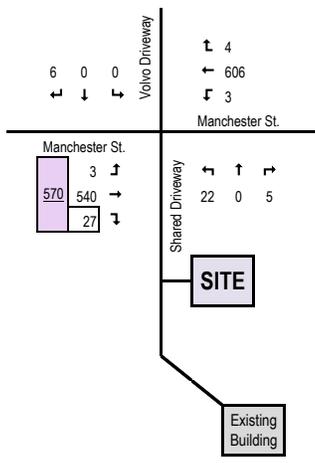
2026 BUILD (Opening)  
**LT WARRANT - AVE VOLS**  
 SAT Peak Hour

XX Volumes



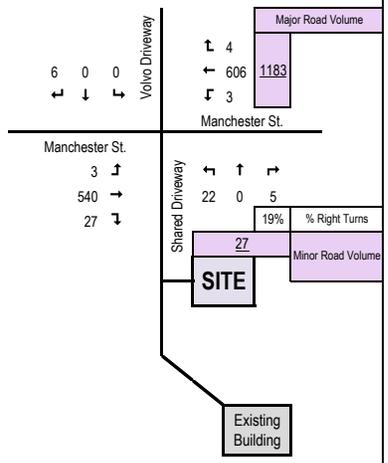
2026 BUILD (Opening)  
**RT WARRANT - AVE VOLS**  
 SAT Peak Hour

XX Volumes



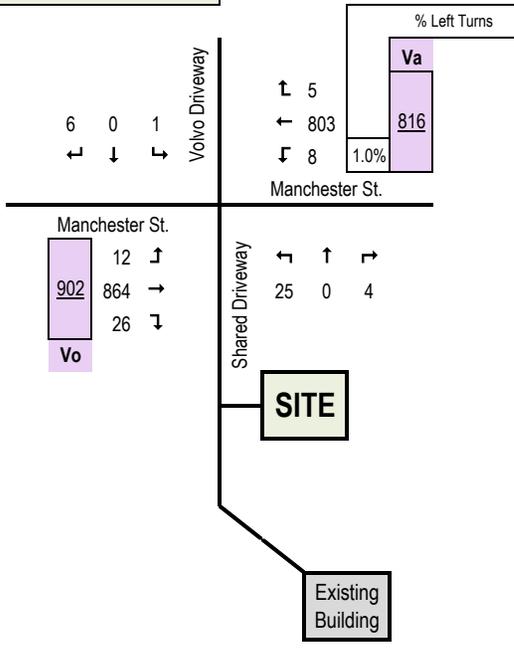
2026 BUILD (Opening)  
**MINOR RD WARRANT - AVE VOLS**  
 SAT Peak Hour

XX Volumes



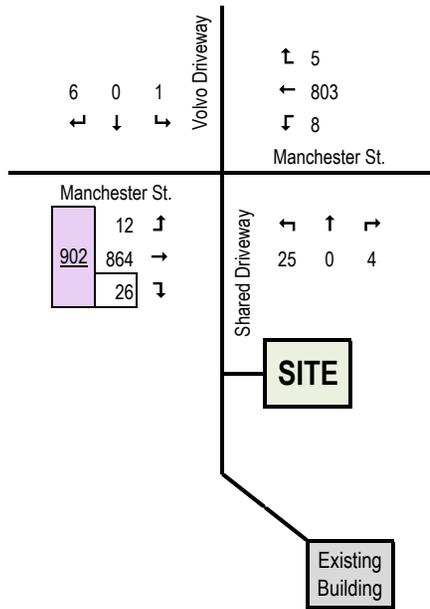
2036 BUILD (Future)  
**LT WARRANT - AVE VOLS**  
 AM Peak Hour

XX Volumes



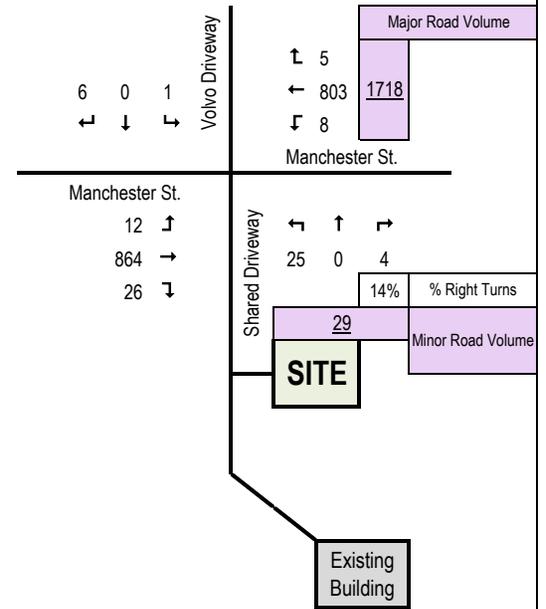
2036 BUILD (Future)  
**RT WARRANT - AVE VOLS**  
 AM Peak Hour

XX Volumes



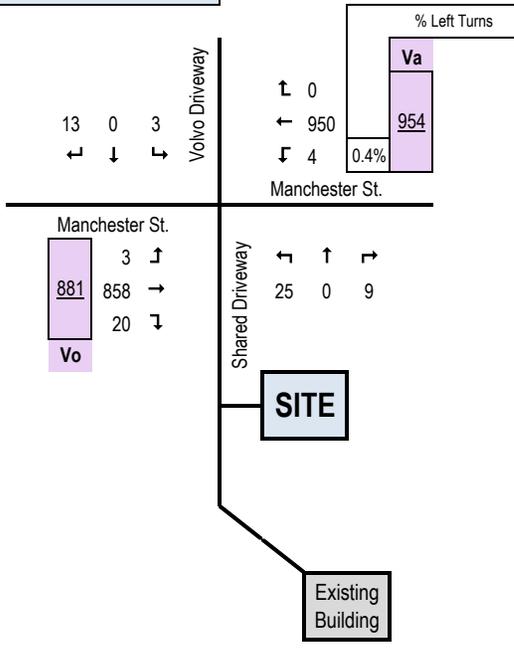
2036 BUILD (Future)  
**MINOR RD WARRANT - AVE VOLS**  
 AM Peak Hour

XX Volumes



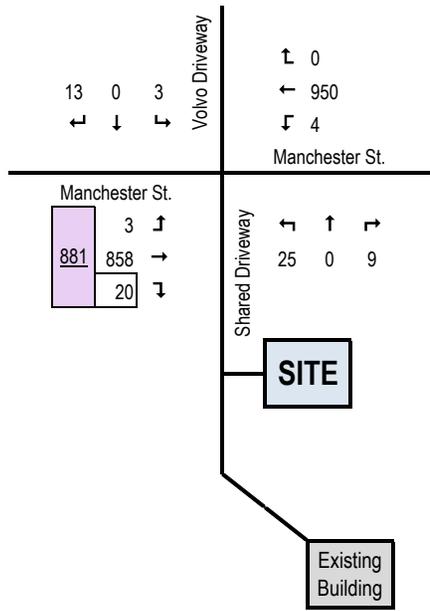
2036 BUILD (Future)  
**LT WARRANT - AVE VOLS**  
 PM Peak Hour

XX Volumes



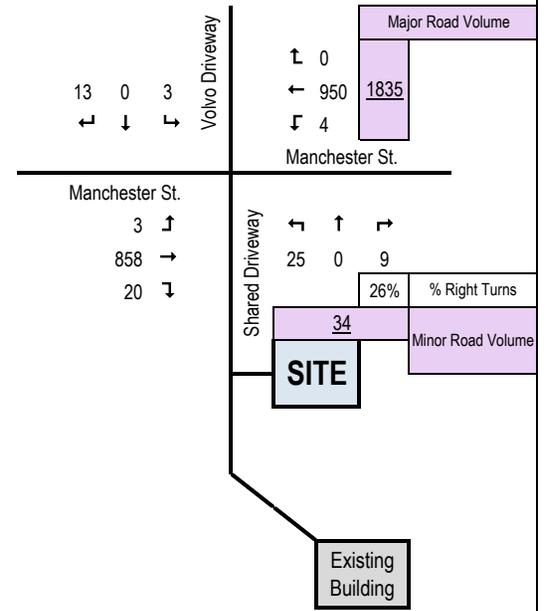
2036 BUILD (Future)  
**RT WARRANT - AVE VOLS**  
 PM Peak Hour

XX Volumes



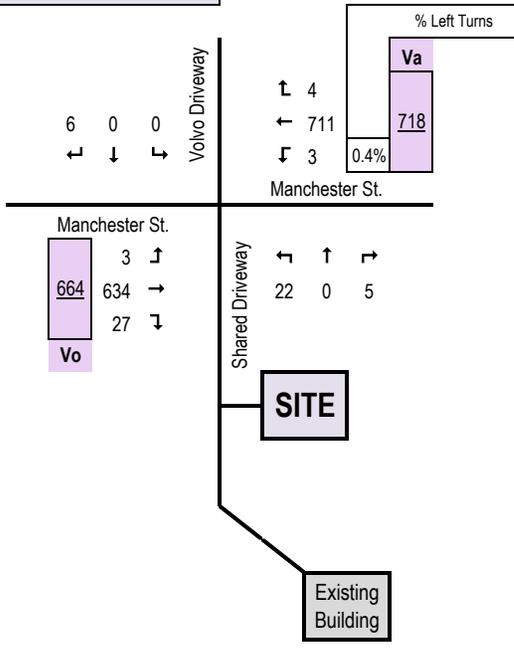
2036 BUILD (Future)  
**MINOR RD WARRANT - AVE VOLS**  
 PM Peak Hour

XX Volumes



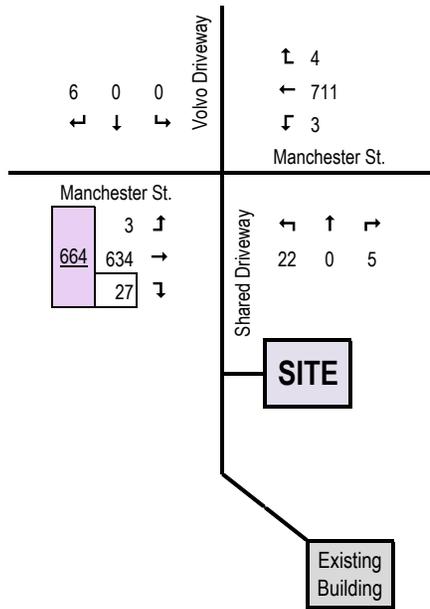
2036 BUILD (Future)  
**LT WARRANT - AVE VOLS**  
 SAT Peak Hour

XX Volumes



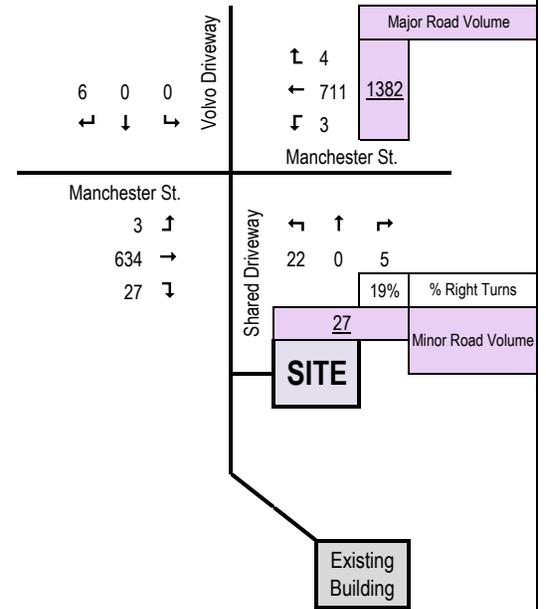
2036 BUILD (Future)  
**RT WARRANT - AVE VOLS**  
 SAT Peak Hour

XX Volumes



2036 BUILD (Future)  
**MINOR RD WARRANT - AVE VOLS**  
 SAT Peak Hour

XX Volumes



**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

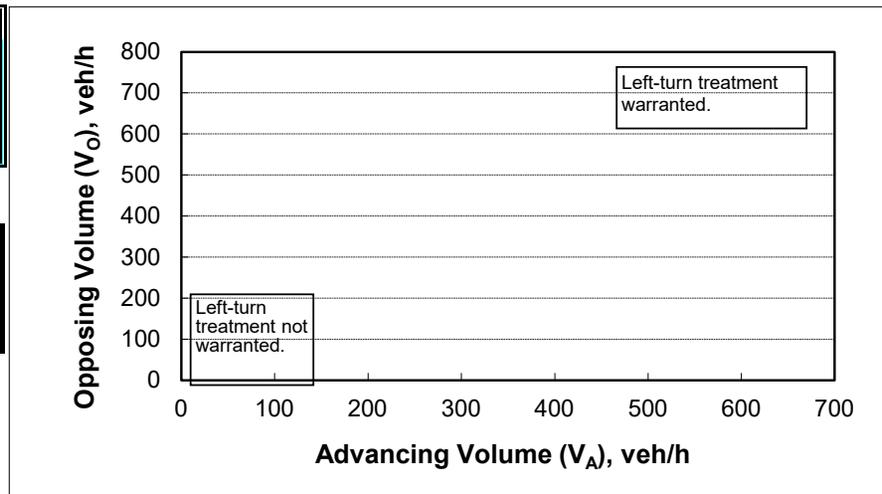
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	30
Percent of left-turns in advancing volume ( $V_A$ ), %:	1%
Advancing volume ( $V_A$ ), veh/h:	720
Opposing volume ( $V_O$ ), veh/h:	801

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	825
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

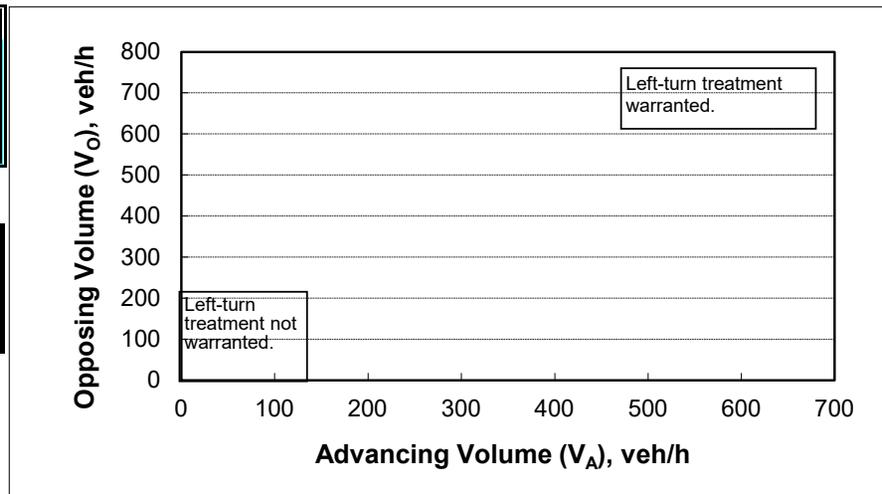
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	30
Percent of left-turns in advancing volume ( $V_A$ ), %:	1%
Advancing volume ( $V_A$ ), veh/h:	842
Opposing volume ( $V_O$ ), veh/h:	779

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	1190
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

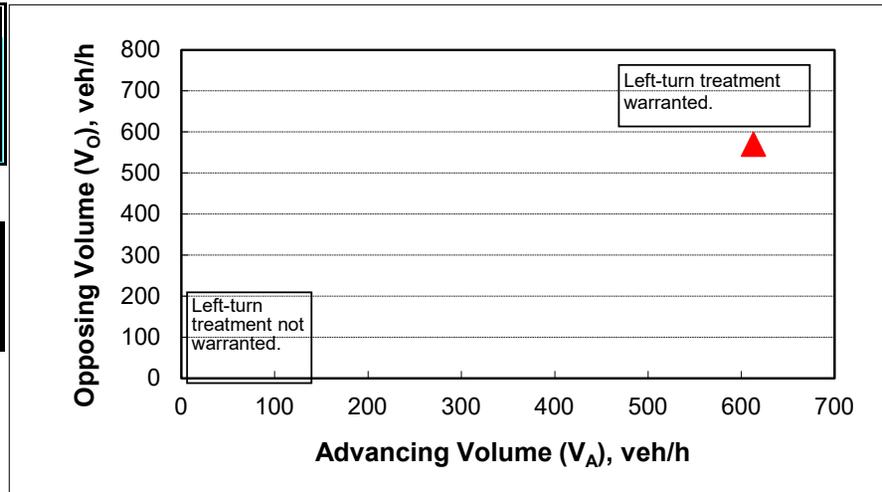
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	30
Percent of left-turns in advancing volume ( $V_A$ ), %:	1%
Advancing volume ( $V_A$ ), veh/h:	613
Opposing volume ( $V_O$ ), veh/h:	570

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	1466
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

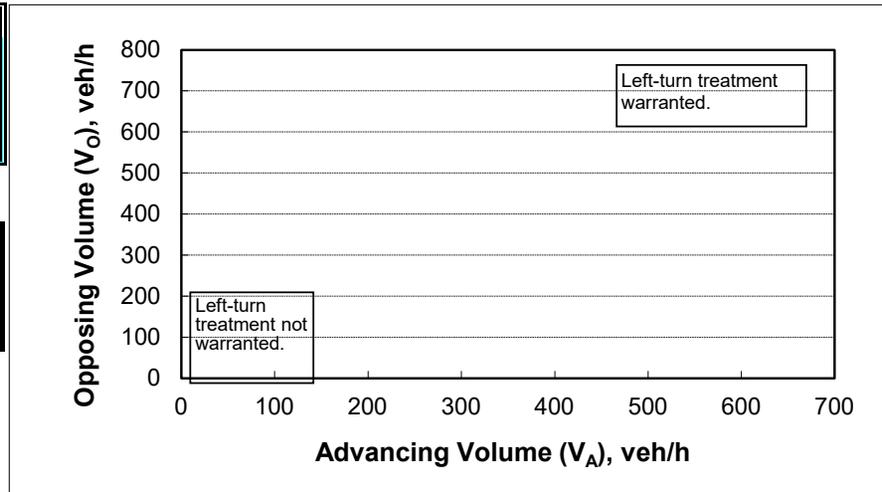
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	30
Percent of left-turns in advancing volume ( $V_A$ ), %:	1%
Advancing volume ( $V_A$ ), veh/h:	816
Opposing volume ( $V_O$ ), veh/h:	902

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	748
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

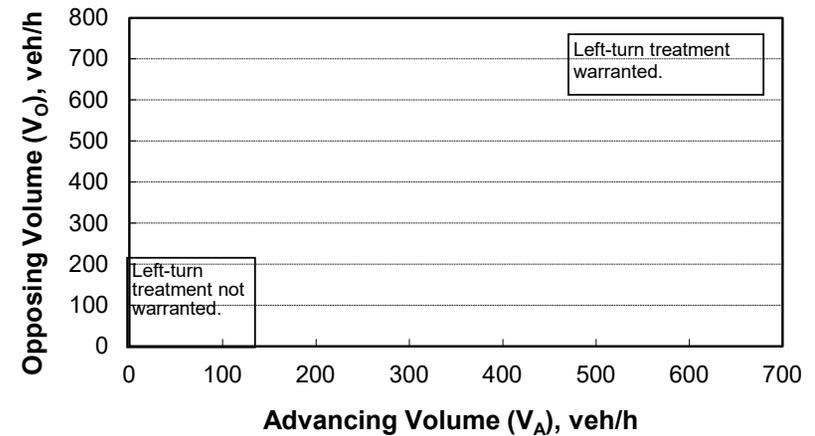
**2-lane roadway (English)**

INPUT

Variable	Value
85 <sup>th</sup> percentile speed, mph:	30
Percent of left-turns in advancing volume ( $V_A$ ), %:	0%
Advancing volume ( $V_A$ ), veh/h:	954
Opposing volume ( $V_O$ ), veh/h:	881

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	1203
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

**Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.**

**2-lane roadway (English)**

INPUT

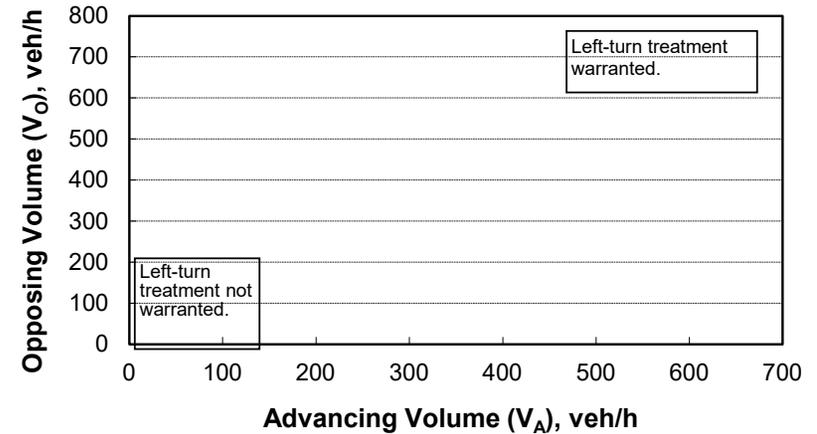
Variable	Value
85 <sup>th</sup> percentile speed, mph:	30
Percent of left-turns in advancing volume ( $V_A$ ), %:	0%
Advancing volume ( $V_A$ ), veh/h:	718
Opposing volume ( $V_O$ ), veh/h:	664

OUTPUT

Variable	Value
Limiting advancing volume ( $V_A$ ), veh/h:	1490
<b>Guidance for determining the need for a major-road left-turn bay:</b>	
<b>Left-turn treatment NOT warranted.</b>	

CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9



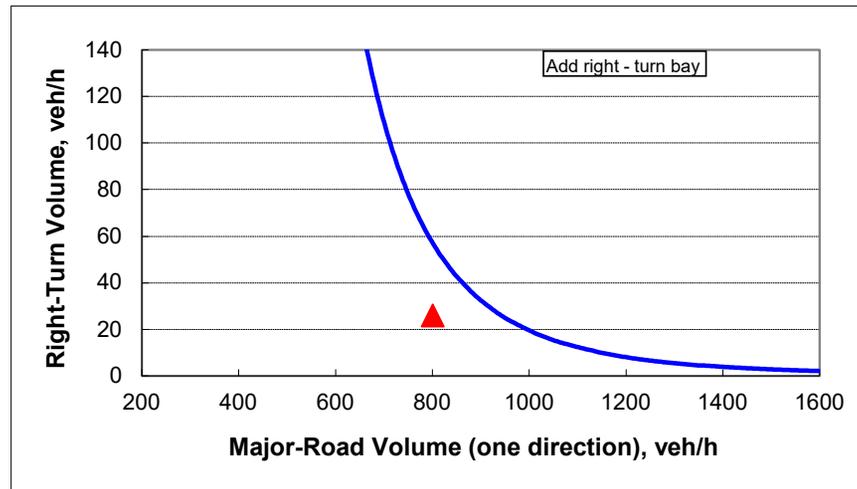
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	801
Right-turn volume, veh/h:	26

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	57
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



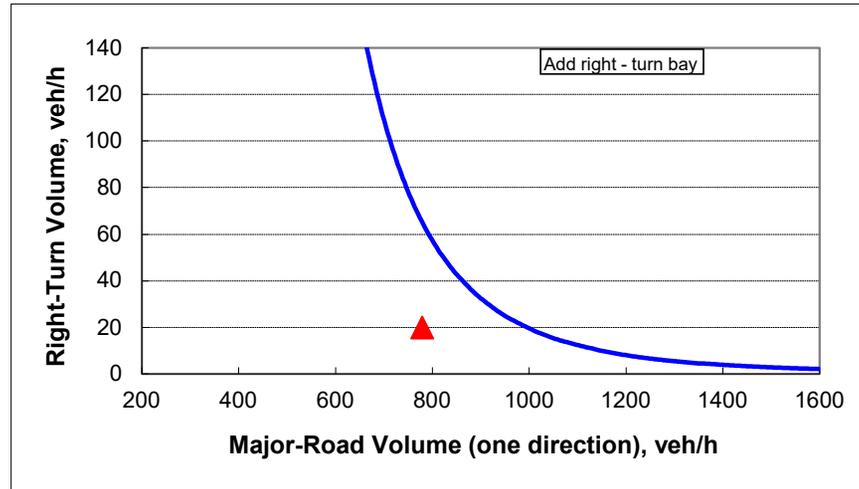
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	779
Right-turn volume, veh/h:	20

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	65
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



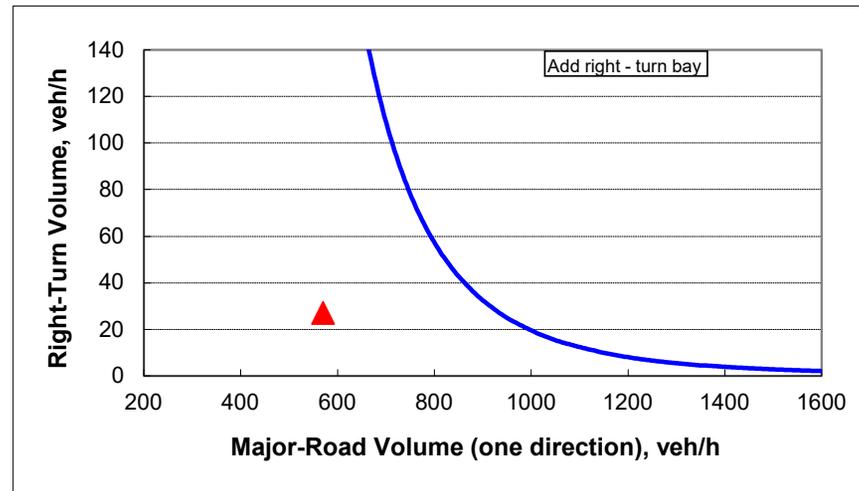
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	570
Right-turn volume, veh/h:	27

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	293
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



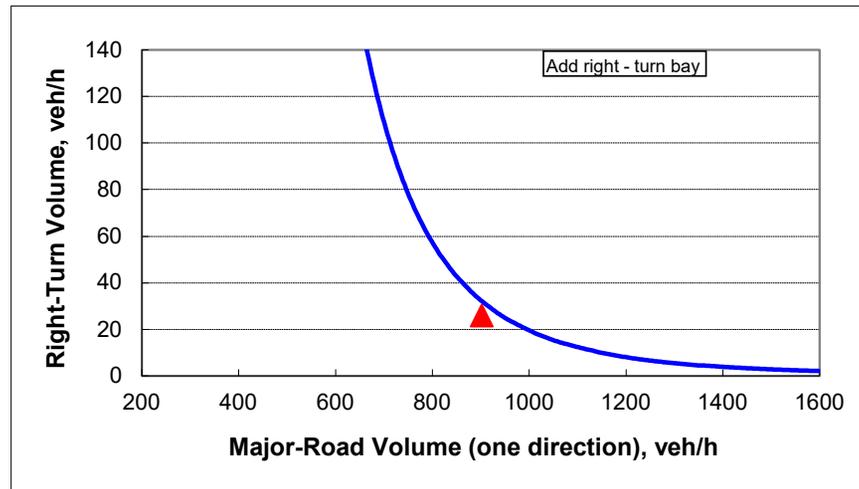
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	902
Right-turn volume, veh/h:	26

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	32
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
Do NOT add right-turn bay.	



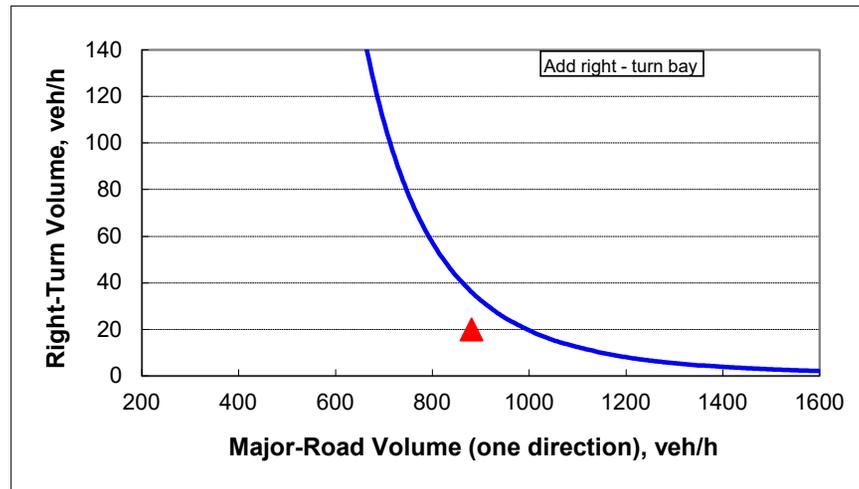
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	881
Right-turn volume, veh/h:	20

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	36
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



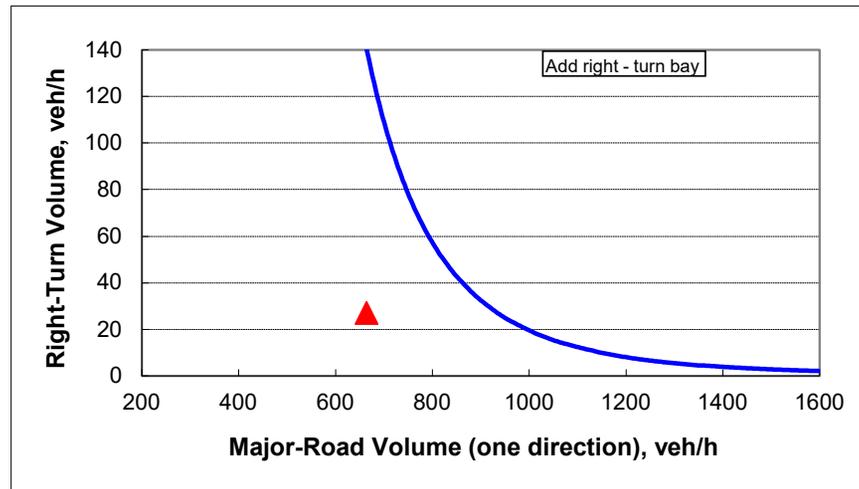
**Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.**

INPUT

Roadway geometry:	2-lane roadway
Variable	Value
Major-road speed, mph:	30
Major-road volume (one direction), veh/h:	664
Right-turn volume, veh/h:	27

OUTPUT

Variable	Value
Limiting right-turn volume, veh/h:	141
<b>Guidance for determining the need for a major-road right-turn bay for a 2-lane roadway:</b>	
<b>Do NOT add right-turn bay.</b>	



**Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.**

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1521
Percentage of right-turns on minor road, %:	14%
Minor-road volume (one direction), veh/h:	29

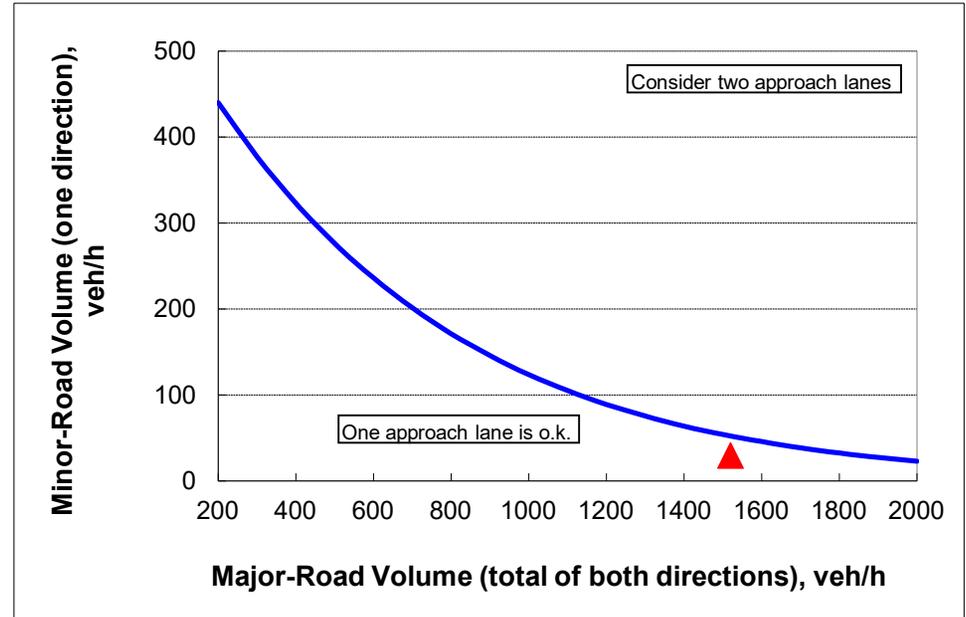
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	52
<b>Guidance for determining minor-road approach geometry:</b>	
<b>ONE approach lane is o.k.</b>	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.9	3.3
Left-turn and through capacity veh/h:	7.5	3.5

\* according to Table 17 - 5 of the HCM



**Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.**

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1621
Percentage of right-turns on minor road, %:	26%
Minor-road volume (one direction), veh/h:	31

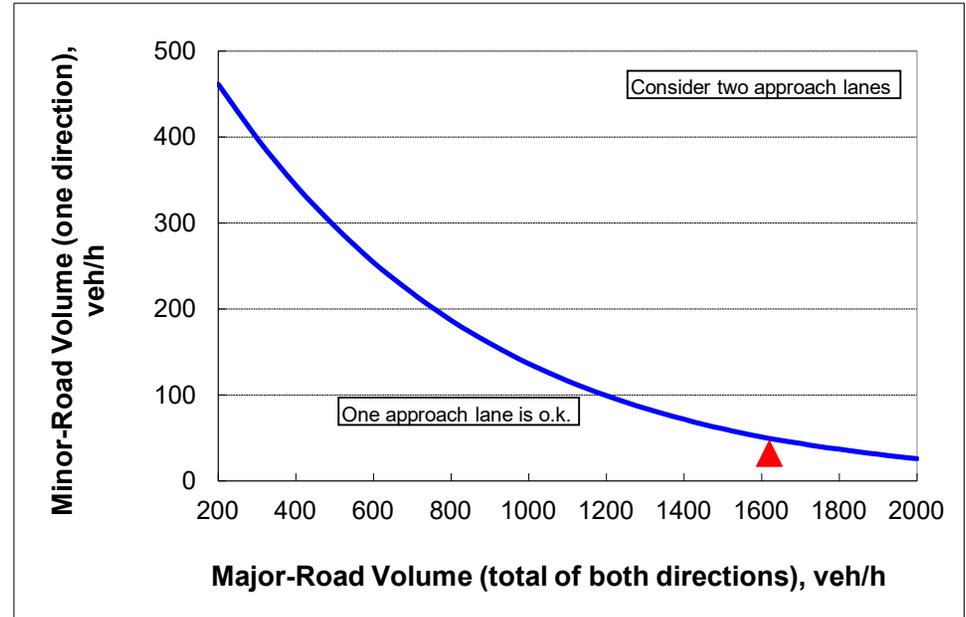
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	50
<b>Guidance for determining minor-road approach geometry:</b>	
<b>ONE approach lane is o.k.</b>	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.9	3.3
Left-turn and through capacity veh/h:	7.5	3.5

\* according to Table 17 - 5 of the HCM



**Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.**

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1183
Percentage of right-turns on minor road, %:	19%
Minor-road volume (one direction), veh/h:	27

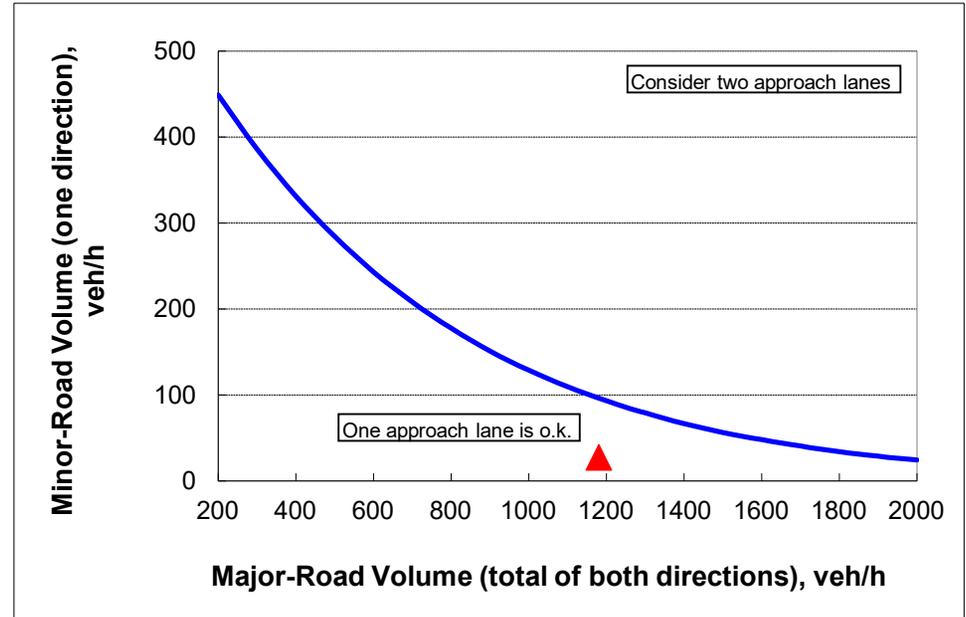
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	96
<b>Guidance for determining minor-road approach geometry:</b>	
<b>ONE approach lane is o.k.</b>	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.9	3.3
Left-turn and through capacity veh/h:	7.5	3.5

\* according to Table 17 - 5 of the HCM



**Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.**

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1718
Percentage of right-turns on minor road, %:	14%
Minor-road volume (one direction), veh/h:	29

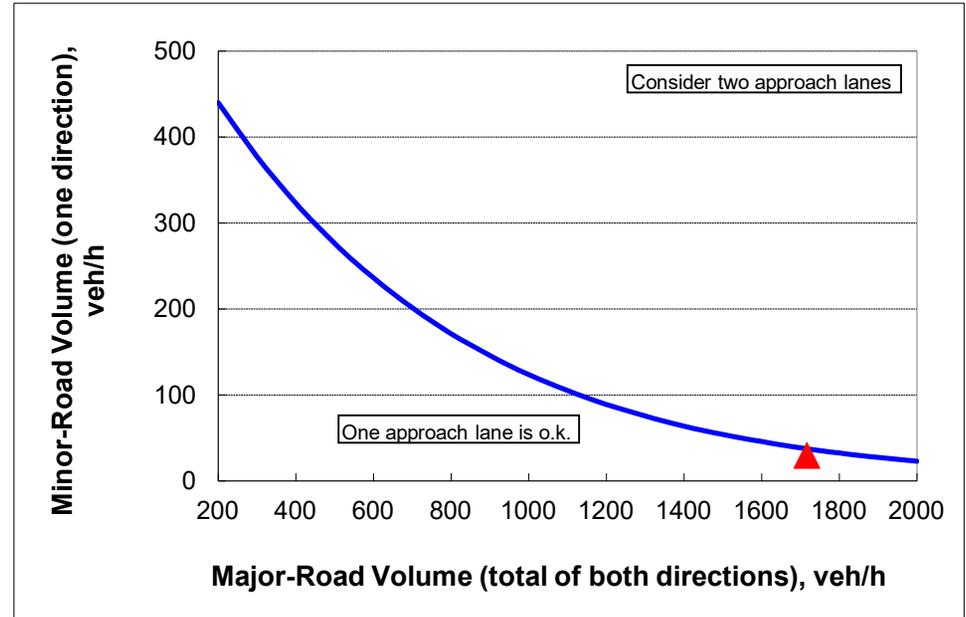
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	37
<b>Guidance for determining minor-road approach geometry:</b>	
<b>ONE approach lane is o.k.</b>	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.9	3.3
Left-turn and through capacity veh/h:	7.5	3.5

\* according to Table 17 - 5 of the HCM



**Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.**

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1835
Percentage of right-turns on minor road, %:	26%
Minor-road volume (one direction), veh/h:	31

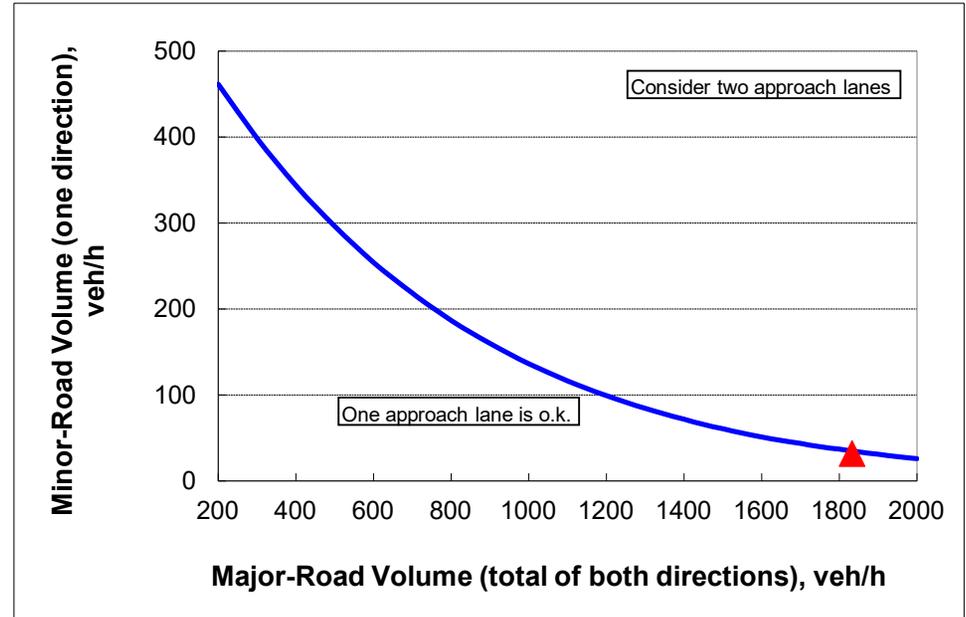
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	35
<b>Guidance for determining minor-road approach geometry:</b>	
<b>ONE approach lane is o.k.</b>	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.9	3.3
Left-turn and through capacity veh/h:	7.5	3.5

\* according to Table 17 - 5 of the HCM



**Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.**

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1382
Percentage of right-turns on minor road, %:	19%
Minor-road volume (one direction), veh/h:	27

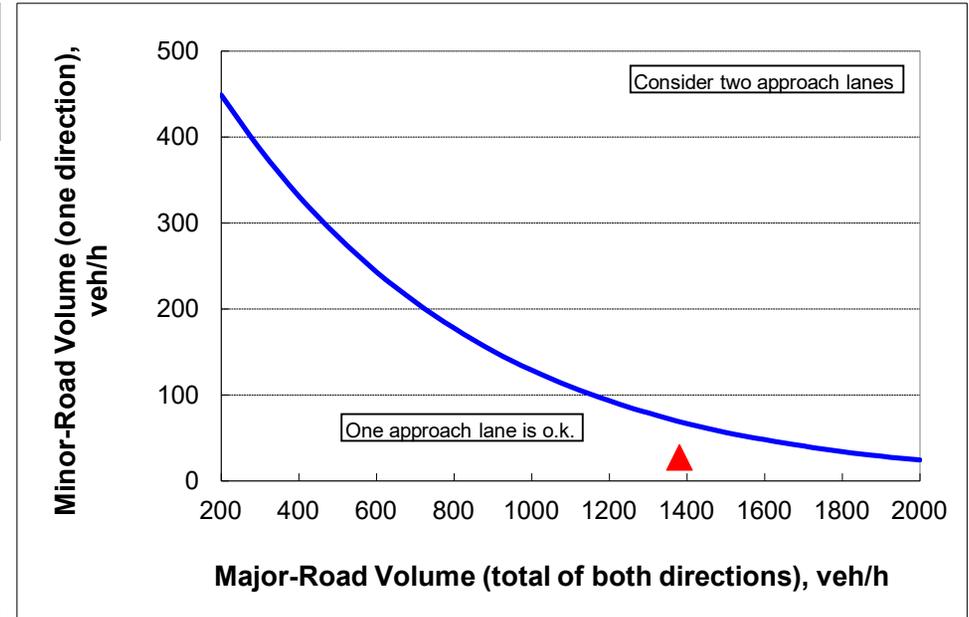
OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	69
<b>Guidance for determining minor-road approach geometry:</b>	
<b>ONE approach lane is o.k.</b>	

CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.9	3.3
Left-turn and through capacity veh/h:	7.5	3.5

\* according to Table 17 - 5 of the HCM



## **APPENDIX K**

### **Crash Data**

Data from Concord PD





Jurisdictions: ALL  
 Location: ALL  
 Street: ALL  
 Intersecting Street: CON > MANCHESTER ST (Odd # 95-95 Even # - Blanks Excluded)  
 Zones: ALL

**Accident Statistics By Time of Day**

	<u>SUN</u>	<u>MON</u>	<u>TUE</u>	<u>WED</u>	<u>THR</u>	<u>FRI</u>	<u>SAT</u>	<u>TOTALS</u>
1 AM	0	0	0	0	0	0	0	0
2 AM	0	0	0	0	0	0	0	0
3 AM	0	0	0	0	0	0	0	0
4 AM	0	0	0	0	0	0	0	0
5 AM	0	0	0	0	0	0	0	0
6 AM	0	0	0	0	0	0	0	0
7 AM	0	0	0	0	0	0	0	0
8 AM	0	0	0	0	0	0	0	0
9 AM	0	0	0	0	0	0	0	0
10 AM	0	0	0	0	0	0	0	0
11 AM	0	0	0	0	0	0	0	0
12 PM	0	0	0	0	0	0	0	0
1 PM	0	0	0	0	0	0	0	0
2 PM	0	0	0	0	0	0	0	0
3 PM	0	0	0	1	0	0	0	1
4 PM	0	0	0	0	0	0	0	0
5 PM	0	0	0	0	0	0	0	0
6 PM	0	0	0	0	0	0	0	0
7 PM	0	0	0	0	0	0	0	0
8 PM	0	0	0	0	0	0	0	0
9 PM	0	0	0	0	0	0	0	0
10 PM	0	0	0	0	0	0	0	0
11 PM	0	0	0	0	0	0	0	0
12 AM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	1	0	0	0	1

**Accident Particulars**

	Occurrence(s)	Percentage
Average posted speed at the accident scene		0 MPH
Occurred at On-ramps	0	0.0
Occurred at Off-ramps	0	0.0
Occurred at an intersection	0	0.0
Occurred at a rotary	0	0.0
Occurred on a one lane road/highway	0	0.0
Occurred on a two lane road/highway	0	0.0
Occurred on a three lane road/highway	0	0.0
Occurred on a four lane road/highway	0	0.0
Occurred on other number of lanes	1	100.0
Involved OUI violation(s)	0	0.0
Photos were taken	0	0.0
Measurements were taken	0	0.0

Investigation took place	0	0.0
Involved Injuries	0	0.0
Involved Fatalities	0	0.0

**Age and Sex Breakdown of Operators**

	<u>&lt; 19</u>	<u>19-21</u>	<u>22-25</u>	<u>26-35</u>	<u>36-45</u>	<u>46-60</u>	<u>&gt; 60</u>	<u>TOTALS</u>
Male	1	0	0	0	0	0	0	1
Female	0	0	0	1	0	0	0	1
Non-Binary	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0
<b>TOTALS</b>	<u>1</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>2</u>

**Occurrence (s)**

**Percentage**

---

Number of out of state operators	0	0.0
Number of operators who were cited	0	0.0

Point Of Impact (prior to 4.6.19)

	Occurrence(s)	Percentage
CENTER FRONT	1	50.0
CENTER REAR	1	50.0
Total Occurrences	2	100.0 %

Ejection Code (prior to 4.6.19)

	Occurrence(s)	Percentage
NOT EJECTED	1	100.0
Total Occurrences	1	100.0 %

Injury Severity (prior to 4.6.19)

	Occurrence(s)	Percentage
NO APPARENT INJURY	1	100.0
Total Occurrences	1	100.0 %

Restraint System (prior to 4.6.19)

	Occurrence(s)	Percentage
RESTRAINT INSTALLED-USED	1	100.0
Total Occurrences	1	100.0 %

Vehicle Occupied (prior to 4.6.19)

	Occurrence(s)	Percentage
USE UNIT (VEHICLE) NUMBER	1	100.0
Total Occurrences	1	100.0 %

Location Of Most Severe Injury (prior to 4.6.19)

	Occurrence(s)	Percentage
NONE	1	100.0
Total Occurrences	1	100.0 %

Injured Position in Vehicle (prior to 4.6.19)

	Occurrence(s)	Percentage
DRIVER	1	100.0
Total Occurrences	1	100.0 %

Collision With (prior to 4.6.19)

	Occurrence(s)	Percentage
OTHER MOTOR VEHICLE	1	100.0
Total Occurrences	1	100.0 %

Traffic Controls (prior to 4.6.19)

	Occurrence(s)	Percentage
NONE	1	100.0
Total Occurrences	1	100.0 %

Road Conditions (prior to 4.6.19)

	Occurrence(s)	Percentage
NORMAL	1	100.0
Total Occurrences	1	100.0 %

Light Conditions (prior to 4.6.19)

	Occurrence(s)	Percentage
DAYLIGHT	1	100.0
Total Occurrences	1	100.0 %

Weather Conditions (prior to 4.6.19)

	Occurrence(s)	Percentage
CLEAR	1	100.0
Total Occurrences	1	100.0 %

Road Alignment (prior to 4.6.19)

	Occurrence(s)	Percentage
STRAIGHT AND LEVEL	1	100.0
Total Occurrences	1	100.0 %

Road Design (prior to 4.6.19)

	Occurrence(s)	Percentage
DRIVEWAY OR ACCESS WAY	1	100.0
Total Occurrences	1	100.0 %

Apparant Roadway Features (prior to 4.6.19)

	Occurrence(s)	Percentage
NOT APPLICABLE	1	100.0
Total Occurrences	1	100.0 %

Location First Harmful Event (prior to 4.6.19)

	Occurrence(s)	Percentage
IN A PARKING LOT	1	100.0
Total Occurrences	1	100.0 %

Apparent Physical Condition (prior to 4.6.19)

	Occurrence(s)	Percentage
APPARENTLY NORMAL	2	100.0
Total Occurrences	2	100.0 %

Vision Obscurement (prior to 4.6.19)

	Occurrence(s)	Percentage
NO APPARENT OBSCUREMENT	2	100.0
Total Occurrences	2	100.0 %

Road Surface (prior to 4.6.19)

	Occurrence(s)	Percentage
DRY	1	100.0
Total Occurrences	1	100.0 %

Veh. Action Prior To Accident (prior to 4.6.19)

	Occurrence(s)	Percentage
FOLLOWING ROADWAY	2	100.0
Total Occurrences	2	100.0 %

Apparent Contributing Factors (prior to 4.6.19)

	Occurrence(s)	Percentage
UNSAFE BACKING	1	50.0
NO IMPROPER DRIVING	1	50.0
Total Occurrences	2	100.0 %

Vehicle Defects (prior to 4.6.19)

	Occurrence(s)	Percentage
NO APPARENT DEFECTS	2	100.0
Total Occurrences	2	100.0 %

Hazardous Material Code (prior to 4.6.19)

	Occurrence(s)	Percentage
N - Not On File	2	100.0
Total Occurrences	2	100.0 %



Jurisdictions: ALL  
 Location: ALL  
 Street: ALL  
 Intersecting Street: CON > MANCHESTER ST (Odd # 95-95 Even # - Blanks Excluded)  
 Zones: ALL

**Accident Statistics By Time of Day**

	<u>SUN</u>	<u>MON</u>	<u>TUE</u>	<u>WED</u>	<u>THR</u>	<u>FRI</u>	<u>SAT</u>	<u>TOTALS</u>
1 AM	0	0	0	0	0	0	0	0
2 AM	0	0	0	0	0	0	0	0
3 AM	0	0	0	0	0	0	0	0
4 AM	0	0	0	0	0	0	0	0
5 AM	0	0	0	0	0	0	0	0
6 AM	0	0	0	0	0	0	0	0
7 AM	0	0	0	0	0	0	0	0
8 AM	0	0	0	0	0	0	0	0
9 AM	0	0	0	0	0	0	0	0
10 AM	0	0	0	0	0	0	0	0
11 AM	0	0	0	0	0	0	0	0
12 PM	0	0	0	0	0	0	0	0
1 PM	0	0	0	0	1	0	0	1
2 PM	0	0	0	0	0	0	0	0
3 PM	0	0	0	0	0	0	0	0
4 PM	0	0	0	0	0	0	0	0
5 PM	0	0	0	0	0	0	0	0
6 PM	0	0	0	0	0	0	0	0
7 PM	0	0	0	0	0	0	0	0
8 PM	0	0	0	0	0	0	0	0
9 PM	0	0	0	0	0	0	0	0
10 PM	0	0	0	0	0	0	0	0
11 PM	0	0	0	0	0	0	0	0
12 AM	0	0	0	0	0	0	0	0
TOTALS	0	0	0	0	1	0	0	1

**Crash Particulars**

	Occurrence(s)	Percentage
Average posted speed at the crash scene	0	0 MPH
Involved OUI violation(s)	0	0.0
Involved Injuries	0	0.0
Involved Fatalities	0	0.0
Involved Pedestrians	0	0.0
Involved Bicyclists	0	0.0
Not Involving Pedestrians or Bicyclists	1	100.0

**Age and Sex Breakdown of Operators**

	<u>&lt; 19</u>	<u>19-21</u>	<u>22-25</u>	<u>26-35</u>	<u>36-45</u>	<u>46-60</u>	<u>&gt; 60</u>	<u>TOTALS</u>
Male	0	0	0	0	0	0	0	0
Female	0	0	0	0	0	1	0	1
Non-Binary	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0
<b>TOTALS</b>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>

**Occurrence (s)**

**Percentage**

---

Number of out of state operators	0	0.0
Number of operators who were cited	1	100.0

Contributing Circumstances - Environment (Rev. 01/2023)

	Occurrence (s)	Percentage
Ruts, Holes, Bumps	1	100.0
Total Occurrences	1	100.0 %

Junction Specific Location (Rev. 01/2023)

	Occurrence(s)	Percentage
Not an Interchange Area	1	100.0
Total Occurrences	1	100.0 %

Condition (Rev. 01/2023)

	Occurrence(s)	Percentage
Apparently Normal	1	100.0
Total Occurrences	1	100.0 %

**First Harmful Event (Rev. 01/2023)**

	Occurrence(s)	Percentage
Cargo/Equipment Loss or Shift	1	100.0
Total Occurrences	1	100.0 %

Intersection (Rev. 01/2023)

	Occurrence(s)	Percentage
Not an Intersection	1	100.0
Total Occurrences	1	100.0 %

Crash Severity (Rev. 01/2023)

	Occurrence(s)	Percentage
(O) Property-Damage-Only	1	100.0
Total Occurrences	1	100.0 %

Distracted By Source (Rev. 01/2023)

	Occurrence(s)	Percentage
Not Applicable (Not Distracted)	1	100.0
Total Occurrences	1	100.0 %

Driver License Type (Rev. 01/2023)

	Occurrence(s)	Percentage
Non-CDL Driver license	1	100.0
Total Occurrences	1	100.0 %

Light (Rev. 01/2023)

	Occurrence(s)	Percentage
Daylight	1	100.0
Total Occurrences	1	100.0 %

Restraint System/Motorcycle Helmet Use (Rev. 01/2023)

	Occurrence(s)	Percentage
Shoulder and Lap Belt Used	1	100.0
Total Occurrences	1	100.0 %

Trafficway Divided (Rev. 01/2023)

	Occurrence(s)	Percentage
Not Divided	1	100.0
Total Occurrences	1	100.0 %

Barrier Type (Rev. 01/2023)

	Occurrence(s)	Percentage
No Barrier	1	100.0
Total Occurrences	1	100.0 %

HOV/HOT Lanes (Rev. 01/2023)

	Occurrence(s)	Percentage
None present	1	100.0
Total Occurrences	1	100.0 %

Crash Related to HOV/HOT Lanes (Rev. 01/2023)

	Occurrence(s)	Percentage
No	1	100.0
Total Occurrences	1	100.0 %

Levels in Vehicle (Rev. 01/2023)

	Occurrence(s)	Percentage
No Automation	1	100.0
Total Occurrences	1	100.0 %

**Levels Engaged At Time of Crash (Rev. 01/2023)**

	Occurrence(s)	Percentage
No Automation	1	100.0
Total Occurrences	1	100.0 %

Type Of Roadway (Rev. 01/2023)

	Occurrence(s)	Percentage
Two-Way	1	100.0
Total Occurrences	1	100.0 %

Drug Test Result (Rev. 01/2023)

	Occurrence(s)	Percentage
Not Applicable (Test Not Given)	1	100.0
Total Occurrences	1	100.0 %

Location First Harmful Event (Rev. 01/2023)

	Occurrence(s)	Percentage
On Shoulder, Right Side	1	100.0
Total Occurrences	1	100.0 %

Seating Position (Rev. 01/2023)

	Occurrence (s)	Percentage
Front	1	50.0
Left	1	50.0
Total Occurrences	2	100.0 %

Air Bag Deployed (Rev. 01/2023)

	Occurrence(s)	Percentage
Not Deployed	1	100.0
Total Occurrences	1	100.0 %

Unit Type (Rev. 01/2023)

	Occurrence(s)	Percentage
Motor Vehicle in Transport	2	66.7
Parked Motor Vehicle	1	33.3
Total Occurrences	3	100.0 %

Traffic Controls (Rev. 01/2023)

	Occurrence(s)	Percentage
No Controls	3	100.0
Total Occurrences	3	100.0 %

**Construction Zone Crash (Rev. 01/2023)**

	Occurrence(s)	Percentage
No	1	100.0
Total Occurrences	1	100.0 %

**Speeding Related**

	Occurrence(s)	Percentage
No	1	100.0
Total Occurrences	1	100.0 %



**Age and Sex Breakdown of Operators**

	<u>&lt; 19</u>	<u>19-21</u>	<u>22-25</u>	<u>26-35</u>	<u>36-45</u>	<u>46-60</u>	<u>&gt; 60</u>	<u>TOTALS</u>
Male	0	0	0	0	0	0	0	0
Female	0	0	0	0	0	0	0	0
Non-Binary	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0
TOTALS	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

**Occurrence (s)**

**Percentage**

---

Number of out of state operators	0	0.0
Number of operators who were cited	0	0.0





**Age and Sex Breakdown of Operators**

	<u>&lt; 19</u>	<u>19-21</u>	<u>22-25</u>	<u>26-35</u>	<u>36-45</u>	<u>46-60</u>	<u>&gt; 60</u>	<u>TOTALS</u>
Male	0	0	0	0	0	0	0	0
Female	0	0	0	0	0	0	0	0
Non-Binary	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0
TOTALS	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

**Occurrence (s)**

**Percentage**

---

Number of out of state operators	0	0.0
Number of operators who were cited	0	0.0

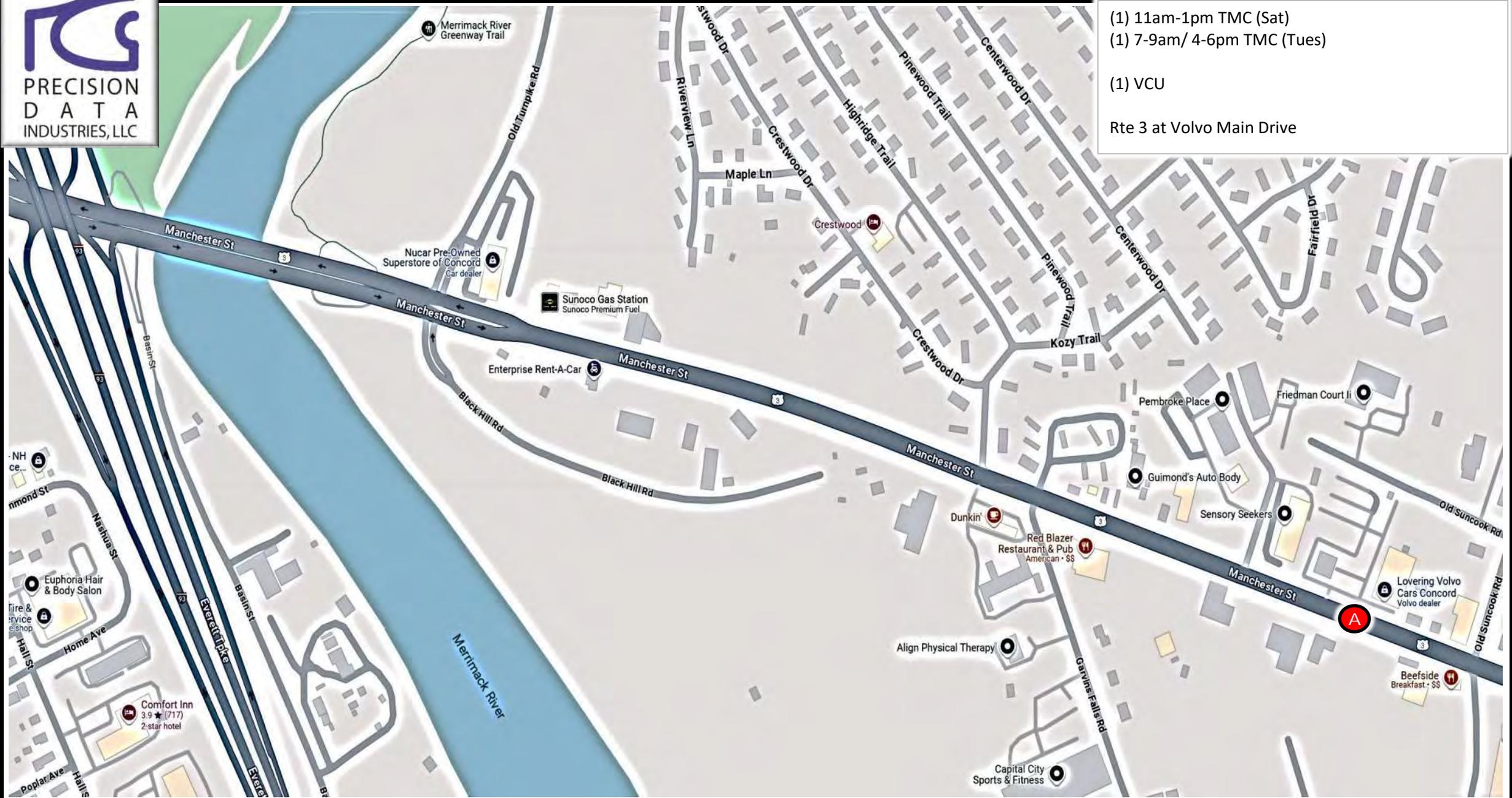
**APPENDIX L**  
**Turning Movement Counts**





# Location Map: 240234 Concord, NH

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: [datarequests@pdillc.com](mailto:datarequests@pdillc.com)



- (1) 11am-1pm TMC (Sat)
- (1) 7-9am/ 4-6pm TMC (Tues)
- (1) VCU
- Rte 3 at Volvo Main Drive

<b>Client:</b> TF Moran	<b>Engineer:</b> J. Porter	<b>Site Code:</b> 95513.11	<b>Date:</b> Saturday 10/5 and Tues 10/8/2024	<b>PDI Job #</b> 240234	<b>City, State:</b> Concord, NH
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PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Saturday, October 5, 2024**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	159	0	0	159	0	0	0	0	0	0	116	0	0	116	275
11:15 AM	1	0	1	0	2	0	119	0	0	119	0	0	0	0	0	0	121	0	0	121	242
11:30 AM	0	0	0	0	0	2	141	0	0	143	1	0	0	0	1	1	126	1	0	128	272
11:45 AM	3	0	0	0	3	0	158	0	0	158	0	0	0	0	0	1	124	0	0	125	286
<b>Total</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>577</b>	<b>0</b>	<b>0</b>	<b>579</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>487</b>	<b>1</b>	<b>0</b>	<b>490</b>	<b>1075</b>
12:00 PM	1	0	0	0	1	2	162	0	0	164	1	0	0	0	1	0	148	0	0	148	314
12:15 PM	2	0	0	0	2	0	137	0	0	137	0	0	0	0	0	0	132	2	0	134	273
12:30 PM	0	0	0	0	0	0	136	0	0	136	0	0	0	0	0	0	123	0	0	123	259
12:45 PM	0	0	1	0	1	0	119	0	0	119	0	0	1	0	1	1	112	1	0	114	235
<b>Total</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>554</b>	<b>0</b>	<b>0</b>	<b>556</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>515</b>	<b>3</b>	<b>0</b>	<b>519</b>	<b>1081</b>
Grand Total	7	0	2	0	9	4	1131	0	0	1135	2	0	1	0	3	3	1002	4	0	1009	2156
Approach %	77.8	0.0	22.2	0.0		0.4	99.6	0.0	0.0		66.7	0.0	33.3	0.0		0.3	99.3	0.4	0.0		
Total %	0.3	0.0	0.1	0.0	0.4	0.2	52.5	0.0	0.0	52.6	0.1	0.0	0.0	0.0	0.1	0.1	46.5	0.2	0.0	46.8	
Exiting Leg Total	8					1006					3					1139					2156
Cars	7	0	2	0	9	4	1123	0	0	1127	2	0	1	0	3	3	987	4	0	994	2133
% Cars	100.0	0.0	100.0	0.0	100.0	100.0	99.3	0.0	0.0	99.3	100.0	0.0	100.0	0.0	100.0	100.0	98.5	100.0	0.0	98.5	98.9
Exiting Leg Total	8					991					3					1131					2133
Heavy Vehicles	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	15	0	0	15	23
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	1.5	1.1
Exiting Leg Total	0					15					0					8					23

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

11:30 AM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North <b>SB</b>					from East <b>WB</b>					from South <b>NB</b>					from West <b>EB</b>					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:30 AM	0	0	0	0	0	2	141	0	0	143	1	0	0	0	1	1	126	1	0	128	272
11:45 AM	3	0	0	0	3	0	158	0	0	158	0	0	0	0	0	1	124	0	0	125	286
12:00 PM	1	0	0	0	1	2	162	0	0	164	1	0	0	0	1	0	148	0	0	148	314
12:15 PM	2	0	0	0	2	0	137	0	0	137	0	0	0	0	0	0	132	2	0	134	273
Total Volume	6	0	0	0	6	4	598	0	0	602	2	0	0	0	2	2	530	3	0	535	1145
% Approach Total	100.0	0.0	0.0	0.0		0.7	99.3	0.0	0.0		100.0	0.0	0.0	0.0		0.4	99.1	0.6	0.0		
PHF	0.500	0.000	0.000	0.000	0.500	0.500	0.923	0.000	0.000	0.918	0.500	0.000	0.000	0.000	0.500	0.500	0.895	0.375	0.000	0.904	0.912
Cars	6	0	0	0	6	4	596	0	0	600	2	0	0	0	2	2	519	3	0	524	1132
Cars %	100.0	0.0	0.0	0.0	100.0	100.0	99.7	0.0	0.0	99.7	100.0	0.0	0.0	0.0	100.0	100.0	97.9	100.0	0.0	97.9	98.9
Heavy Vehicles	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	11	0	0	11	13
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	2.1	1.1
Cars Enter Leg	6	0	0	0	6	4	596	0	0	600	2	0	0	0	2	2	519	3	0	524	1132
Heavy Enter Leg	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	11	0	0	11	13
Total Entering Leg	6	0	0	0	6	4	598	0	0	602	2	0	0	0	2	2	530	3	0	535	1145
Cars Exiting Leg	7					521					2					602					1132
Heavy Exiting Leg	0					11					0					2					13
Total Exiting Leg	7					532					2					604					1145

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Saturday, October 5, 2024**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Cars**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total					
	from North					from East					from South					from West										
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total						
11:00 AM	0	0	0	0	0	0	158	0	0	158	0	0	0	0	0	0	115	0	0	115	273					
11:15 AM	1	0	1	0	2	0	118	0	0	118	0	0	0	0	0	0	119	0	0	119	239					
11:30 AM	0	0	0	0	0	2	141	0	0	143	1	0	0	0	1	1	120	1	0	122	266					
11:45 AM	3	0	0	0	3	0	158	0	0	158	0	0	0	0	0	1	122	0	0	123	284					
<b>Total</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>575</b>	<b>0</b>	<b>0</b>	<b>577</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>476</b>	<b>1</b>	<b>0</b>	<b>479</b>	<b>1062</b>					
12:00 PM	1	0	0	0	1	2	160	0	0	162	1	0	0	0	1	0	146	0	0	146	310					
12:15 PM	2	0	0	0	2	0	137	0	0	137	0	0	0	0	0	0	131	2	0	133	272					
12:30 PM	0	0	0	0	0	0	135	0	0	135	0	0	0	0	0	0	123	0	0	123	258					
12:45 PM	0	0	1	0	1	0	116	0	0	116	0	0	1	0	1	1	111	1	0	113	231					
<b>Total</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>2</b>	<b>548</b>	<b>0</b>	<b>0</b>	<b>550</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>511</b>	<b>3</b>	<b>0</b>	<b>515</b>	<b>1071</b>					
Grand Total	7	0	2	0	9	4	1123	0	0	1127	2	0	1	0	3	3	987	4	0	994	2133					
Approach %	77.8	0.0	22.2	0.0		0.4	99.6	0.0	0.0		66.7	0.0	33.3	0.0		0.3	99.3	0.4	0.0							
Total %	0.3	0.0	0.1	0.0	0.4	0.2	52.6	0.0	0.0	52.8	0.1	0.0	0.0	0.0	0.1	0.1	46.3	0.2	0.0	46.6						
Exiting Leg Total						8					991					3					1131					2133

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

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total					
	from North					from East					from South					from West										
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total						
11:30 AM	0	0	0	0	0	2	141	0	0	143	1	0	0	0	1	1	120	1	0	122	266					
11:45 AM	3	0	0	0	3	0	158	0	0	158	0	0	0	0	0	1	122	0	0	123	284					
12:00 PM	1	0	0	0	1	2	160	0	0	162	1	0	0	0	1	0	146	0	0	146	310					
12:15 PM	2	0	0	0	2	0	137	0	0	137	0	0	0	0	0	0	131	2	0	133	272					
Total Volume	6	0	0	0	6	4	596	0	0	600	2	0	0	0	2	2	519	3	0	524	1132					
% Approach Total	100.0	0.0	0.0	0.0		0.7	99.3	0.0	0.0		100.0	0.0	0.0	0.0		0.4	99.0	0.6	0.0							
PHF	0.500	0.000	0.000	0.000	0.500	0.500	0.931	0.000	0.000	0.926	0.500	0.000	0.000	0.000	0.500	0.500	0.889	0.375	0.000	0.897	0.913					
Entering Leg	6	0	0	0	6	4	596	0	0	600	2	0	0	0	2	2	519	3	0	524	1132					
Exiting Leg						7					521					2					602					1132
Total						13					1121					4					1126					2264

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Saturday, October 5, 2024**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**



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

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
11:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>13</b>
12:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
12:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>10</b>
Grand Total	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	15	0	0	15	23
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	34.8	0.0	0.0	0.0	0.0	0.0	0.0	65.2	0.0	0.0	65.2	
Exiting Leg Total	0					15					0					8					23
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.0	0.0	13.3	13.0
Exiting Leg Total	0					2					0					1					3
Single-Unit Trucks	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	9	0	0	9	14
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	62.5	0.0	0.0	62.5	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	60.0	60.9
Exiting Leg Total	0					9					0					5					14
Articulated Trucks	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	6
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	26.7	0.0	0.0	26.7	26.1
Exiting Leg Total	0					4					0					2					6

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

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	6
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
12:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>15</b>
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.375	0.000	0.000	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.625
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	16.7	0.0	0.0	16.7	20.0
Single-Unit Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	7
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	50.0	46.7
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	5
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	33.3
Buses	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Single-Unit Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	7
Articulated Trucks	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	5
<b>Total Entering Leg</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>15</b>
Buses	0					2					0					1					3
Single-Unit Trucks	0					6					0					1					7
Articulated Trucks	0					4					0					1					5
<b>Total Exiting Leg</b>	<b>0</b>					<b>12</b>					<b>0</b>					<b>3</b>					<b>15</b>

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Saturday, October 5, 2024**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdilic.com

**Buses**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>
12:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>
Grand Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	2	3
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	66.7		
Exiting Leg Total	0					2					0					1					3	

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

11:15 AM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
12:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	2	3
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.750	
Entering Leg	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	0	2	3
Exiting Leg	0					2					0					1					3	
Total	0					3					0					3					6	

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Saturday, October 5, 2024**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdillc.com

**Single-Unit Trucks**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>5</b>
12:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
12:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>9</b>
Grand Total	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	9	0	0	9	14
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	35.7	0.0	0.0	35.7	0.0	0.0	0.0	0.0	0.0	0.0	64.3	0.0	0.0	64.3	
Exiting Leg Total	0					9					0					5					14

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

12:00 PM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
12:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
12:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	1	0	0	1	4
Total Volume	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	9
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.417	0.000	0.000	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.563
Entering Leg	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	9
Exiting Leg	0					4					0					5					9
Total	0					9					0					9					18

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Saturday, October 5, 2024**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
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 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdilic.com

**Articulated Trucks**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>6</b>
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Grand Total	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	6
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	0.0	0.0	0.0	0.0	0.0	66.7	0.0	0.0	66.7	
Exiting Leg Total	0					4					0					2					6

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

11:00 AM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
11:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>6</b>
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.375
Entering Leg	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	6
Exiting Leg	0					4					0					2					6
<b>Total</b>	<b>0</b>					<b>6</b>					<b>0</b>					<b>6</b>					<b>12</b>

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Saturday, October 5, 2024**  
 Start Time: **11:00 AM**  
 End Time: **1:00 PM**  
 Class:



**Bicycles (on Roadway and Crosswalks)**

	Volvo Dealership Driveway								Manchester Street (Route 3)								#96 Site Driveway								Manchester Street (Route 3)								Total
	from North								from East								from South								from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2			
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
<b>Total</b>	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2			
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1			
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
<b>Total</b>	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2		
<b>Grand Total</b>	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	1	0	0	0	0	1	1	0	0	0	0	0	1	4		
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		0.0	50.0	50.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		100.0	0.0	0.0	0.0	0.0	0.0						
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	25.0	0.0	0.0	0.0	50.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	25.0	25.0	0.0	0.0	0.0	0.0	0.0	25.0				
Exiting Leg Total	0								0								2								2								4

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

11:00 AM	Volvo Dealership Driveway								Manchester Street (Route 3)								#96 Site Driveway								Manchester Street (Route 3)								Total
	from North								from East								from South								from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total		Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total		Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total		Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
11:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2			
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Total Volume	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2			
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		0.0	0.0	100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0						
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250				
Entering Leg	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	2				
Exiting Leg	0								0								1								1								2
Total	0								1								2								1								4



PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdilic.com

**Cars and Heavy Vehicles (Combined)**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	146	1	0	147	0	0	0	0	0	0	136	0	0	136	283
7:15 AM	0	0	0	0	0	2	186	1	0	189	0	0	1	0	1	1	184	4	0	189	379
7:30 AM	3	0	0	0	3	0	169	1	0	170	0	0	0	0	0	2	192	2	0	196	369
7:45 AM	1	0	0	0	1	1	186	3	0	190	1	0	1	0	2	6	185	4	0	195	388
<b>Total</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>687</b>	<b>6</b>	<b>0</b>	<b>696</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>9</b>	<b>697</b>	<b>10</b>	<b>0</b>	<b>716</b>	<b>1419</b>
8:00 AM	2	0	1	0	3	2	172	1	0	175	0	0	1	0	1	3	167	2	0	172	351
8:15 AM	2	0	1	0	3	2	143	0	0	145	1	0	2	0	3	0	135	2	0	137	288
8:30 AM	1	0	0	0	1	0	127	0	0	127	1	0	0	0	1	7	127	1	0	135	264
8:45 AM	2	0	0	0	2	0	127	2	0	129	3	0	2	0	5	2	161	1	0	164	300
<b>Total</b>	<b>7</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>569</b>	<b>3</b>	<b>0</b>	<b>576</b>	<b>5</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>10</b>	<b>12</b>	<b>590</b>	<b>6</b>	<b>0</b>	<b>608</b>	<b>1203</b>
Grand Total	11	0	2	0	13	7	1256	9	0	1272	6	0	7	0	13	21	1287	16	0	1324	2622
Approach %	84.6	0.0	15.4	0.0		0.6	98.7	0.7	0.0		46.2	0.0	53.8	0.0		1.6	97.2	1.2	0.0		
Total %	0.4	0.0	0.1	0.0	0.5	0.3	47.9	0.3	0.0	48.5	0.2	0.0	0.3	0.0	0.5	0.8	49.1	0.6	0.0	50.5	
Exiting Leg Total	23					1295					30					1274					2622
Cars	11	0	2	0	13	7	1172	8	0	1187	3	0	6	0	9	18	1218	16	0	1252	2461
% Cars	100.0	0.0	100.0	0.0	100.0	100.0	93.3	88.9	0.0	93.3	50.0	0.0	85.7	0.0	69.2	85.7	94.6	100.0	0.0	94.6	93.9
Exiting Leg Total	23					1223					26					1189					2461
Heavy Vehicles	0	0	0	0	0	0	84	1	0	85	3	0	1	0	4	3	69	0	0	72	161
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	6.7	11.1	0.0	6.7	50.0	0.0	14.3	0.0	30.8	14.3	5.4	0.0	0.0	5.4	6.1
Exiting Leg Total	0					72					4					85					161

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

7:15 AM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North <b>SB</b>					from East <b>WB</b>					from South <b>NB</b>					from West <b>EB</b>					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:15 AM	0	0	0	0	0	2	186	1	0	189	0	0	1	0	1	1	184	4	0	189	379
7:30 AM	3	0	0	0	3	0	169	1	0	170	0	0	0	0	0	2	192	2	0	196	369
7:45 AM	1	0	0	0	1	1	186	3	0	190	1	0	1	0	2	6	185	4	0	195	388
8:00 AM	2	0	1	0	3	2	172	1	0	175	0	0	1	0	1	3	167	2	0	172	351
Total Volume	6	0	1	0	7	5	713	6	0	724	1	0	3	0	4	12	728	12	0	752	1487
% Approach Total	85.7	0.0	14.3	0.0		0.7	98.5	0.8	0.0		25.0	0.0	75.0	0.0		1.6	96.8	1.6	0.0		
PHF	0.500	0.000	0.250	0.000	0.583	0.625	0.958	0.500	0.000	0.953	0.250	0.000	0.750	0.000	0.500	0.500	0.948	0.750	0.000	0.959	0.958
Cars	6	0	1	0	7	5	663	6	0	674	1	0	2	0	3	12	690	12	0	714	1398
Cars %	100.0	0.0	100.0	0.0	100.0	100.0	93.0	100.0	0.0	93.1	100.0	0.0	66.7	0.0	75.0	100.0	94.8	100.0	0.0	94.9	94.0
Heavy Vehicles	0	0	0	0	0	0	50	0	0	50	0	0	1	0	1	0	38	0	0	38	89
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	7.0	0.0	0.0	6.9	0.0	0.0	33.3	0.0	25.0	0.0	5.2	0.0	0.0	5.1	6.0
Cars Enter Leg	6	0	1	0	7	5	663	6	0	674	1	0	2	0	3	12	690	12	0	714	1398
Heavy Enter Leg	0	0	0	0	0	0	50	0	0	50	0	0	1	0	1	0	38	0	0	38	89
Total Entering Leg	6	0	1	0	7	5	713	6	0	724	1	0	3	0	4	12	728	12	0	752	1487
Cars Exiting Leg	17					692					18					671					1398
Heavy Exiting Leg	0					38					0					51					89
Total Exiting Leg	17					730					18					722					1487

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
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**Cars**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	138	0	0	138	0	0	0	0	0	0	130	0	0	130	268
7:15 AM	0	0	0	0	0	2	170	1	0	173	0	0	0	0	0	1	176	4	0	181	354
7:30 AM	3	0	0	0	3	0	159	1	0	160	0	0	0	0	0	2	181	2	0	185	348
7:45 AM	1	0	0	0	1	1	173	3	0	177	1	0	1	0	2	6	178	4	0	188	368
<b>Total</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>3</b>	<b>640</b>	<b>5</b>	<b>0</b>	<b>648</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>9</b>	<b>665</b>	<b>10</b>	<b>0</b>	<b>684</b>	<b>1338</b>
8:00 AM	2	0	1	0	3	2	161	1	0	164	0	0	1	0	1	3	155	2	0	160	328
8:15 AM	2	0	1	0	3	2	134	0	0	136	1	0	2	0	3	0	130	2	0	132	274
8:30 AM	1	0	0	0	1	0	120	0	0	120	0	0	0	0	0	5	115	1	0	121	242
8:45 AM	2	0	0	0	2	0	117	2	0	119	1	0	2	0	3	1	153	1	0	155	279
<b>Total</b>	<b>7</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>9</b>	<b>4</b>	<b>532</b>	<b>3</b>	<b>0</b>	<b>539</b>	<b>2</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>7</b>	<b>9</b>	<b>553</b>	<b>6</b>	<b>0</b>	<b>568</b>	<b>1123</b>
Grand Total	11	0	2	0	13	7	1172	8	0	1187	3	0	6	0	9	18	1218	16	0	1252	2461
Approach %	84.6	0.0	15.4	0.0		0.6	98.7	0.7	0.0		33.3	0.0	66.7	0.0		1.4	97.3	1.3	0.0		
Total %	0.4	0.0	0.1	0.0	0.5	0.3	47.6	0.3	0.0	48.2	0.1	0.0	0.2	0.0	0.4	0.7	49.5	0.7	0.0	50.9	
Exiting Leg Total	23					1223					26					1189					2461

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

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:15 AM	0	0	0	0	0	2	170	1	0	173	0	0	0	0	0	1	176	4	0	181	354
7:30 AM	3	0	0	0	3	0	159	1	0	160	0	0	0	0	0	2	181	2	0	185	348
7:45 AM	1	0	0	0	1	1	173	3	0	177	1	0	1	0	2	6	178	4	0	188	368
8:00 AM	2	0	1	0	3	2	161	1	0	164	0	0	1	0	1	3	155	2	0	160	328
<b>Total Volume</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>7</b>	<b>5</b>	<b>663</b>	<b>6</b>	<b>0</b>	<b>674</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>12</b>	<b>690</b>	<b>12</b>	<b>0</b>	<b>714</b>	<b>1398</b>
% Approach Total	85.7	0.0	14.3	0.0		0.7	98.4	0.9	0.0		33.3	0.0	66.7	0.0		1.7	96.6	1.7	0.0		
PHF	0.500	0.000	0.250	0.000	0.583	0.625	0.958	0.500	0.000	0.952	0.250	0.000	0.500	0.000	0.375	0.500	0.953	0.750	0.000	0.949	0.950
Entering Leg	6	0	1	0	7	5	663	6	0	674	1	0	2	0	3	12	690	12	0	714	1398
Exiting Leg	17					692					18					671					1398
<b>Total</b>	<b>24</b>					<b>1366</b>					<b>21</b>					<b>1385</b>					<b>2796</b>

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
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 Email: datarequests@pdillc.com

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

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	8	1	0	9	0	0	0	0	0	0	6	0	0	6	15
7:15 AM	0	0	0	0	0	0	16	0	0	16	0	0	1	0	1	0	8	0	0	8	25
7:30 AM	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	11	0	0	11	21
7:45 AM	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	7	0	0	7	20
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>47</b>	<b>1</b>	<b>0</b>	<b>48</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>32</b>	<b>0</b>	<b>0</b>	<b>32</b>	<b>81</b>
8:00 AM	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	12	0	0	12	23
8:15 AM	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	5	0	0	5	14
8:30 AM	0	0	0	0	0	0	7	0	0	7	1	0	0	0	1	2	12	0	0	14	22
8:45 AM	0	0	0	0	0	0	10	0	0	10	2	0	0	0	2	1	8	0	0	9	21
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>37</b>	<b>0</b>	<b>0</b>	<b>37</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>37</b>	<b>0</b>	<b>0</b>	<b>40</b>	<b>80</b>
Grand Total	0	0	0	0	0	0	84	1	0	85	3	0	1	0	4	3	69	0	0	72	161
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	98.8	1.2	0.0	0.0	75.0	0.0	25.0	0.0	0.0	4.2	95.8	0.0	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	0.0	52.2	0.6	0.0	52.8	1.9	0.0	0.6	0.0	2.5	1.9	42.9	0.0	0.0	44.7	
Exiting Leg Total	0					72					4					85					161
Buses	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	11
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	7.1	0.0	0.0	7.1	0.0	0.0	0.0	0.0	0.0	0.0	7.2	0.0	0.0	6.9	6.8
Exiting Leg Total	0					5					0					6					11
Single-Unit Trucks	0	0	0	0	0	0	52	1	0	53	3	0	1	0	4	3	40	0	0	43	100
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	61.9	100.0	0.0	62.4	100.0	0.0	100.0	0.0	100.0	100.0	58.0	0.0	0.0	59.7	62.1
Exiting Leg Total	0					43					4					53					100
Articulated Trucks	0	0	0	0	0	0	26	0	0	26	0	0	0	0	0	0	24	0	0	24	50
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	31.0	0.0	0.0	30.6	0.0	0.0	0.0	0.0	0.0	0.0	34.8	0.0	0.0	33.3	31.1
Exiting Leg Total	0					24					0					26					50

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

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:15 AM	0	0	0	0	0	0	16	0	0	16	0	0	1	0	1	0	8	0	0	8	25
7:30 AM	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	0	11	0	0	11	21
7:45 AM	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	7	0	0	7	20
8:00 AM	0	0	0	0	0	0	11	0	0	11	0	0	0	0	0	0	12	0	0	12	23
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>38</b>	<b>0</b>	<b>0</b>	<b>38</b>	<b>89</b>
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.781	0.000	0.000	0.781	0.000	0.000	0.250	0.000	0.250	0.000	0.792	0.000	0.000	0.792	0.890
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	1	0	0	1	5
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	8.0	0.0	0.0	8.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0	2.6	5.6
Single-Unit Trucks	0	0	0	0	0	0	31	0	0	31	0	0	1	0	1	0	26	0	0	26	58
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	62.0	0.0	0.0	62.0	0.0	0.0	100.0	0.0	100.0	0.0	68.4	0.0	0.0	68.4	65.2
Articulated Trucks	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	0	11	0	0	11	26
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0	30.0	0.0	0.0	0.0	0.0	0.0	0.0	28.9	0.0	0.0	28.9	29.2
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	1	0	0	1	5
Single-Unit Trucks	0	0	0	0	0	0	31	0	0	31	0	0	1	0	1	0	26	0	0	26	58
Articulated Trucks	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	0	11	0	0	11	26
Total Entering Leg	0	0	0	0	0	0	50	0	0	50	0	0	1	0	1	0	38	0	0	38	89
Buses	0					1					0					4					5
Single-Unit Trucks	0					26					0					32					58
Articulated Trucks	0					11					0					15					26
Total Exiting Leg	0					38					0					51					89

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**Buses**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>4</b>	
8:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	1	2
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
8:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>7</b>	
Grand Total	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	11	
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0			
Total %	0.0	0.0	0.0	0.0	0.0	0.0	54.5	0.0	0.0	54.5	0.0	0.0	0.0	0.0	0.0	0.0	45.5	0.0	0.0	45.5		
Exiting Leg Total	0					5					0					6					11	

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

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total	
	from North					from East					from South					from West						
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total		
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	1	2
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	3
Total Volume	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	7	
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0			
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.000	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.000	0.333	0.000	0.000	0.333	0.583	
Entering Leg	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	7	
Exiting Leg	0					4					0					3					7	
Total	0					7					0					7					14	

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



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

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdilc.com

**Single-Unit Trucks**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	6	1	0	7	0	0	0	0	0	0	1	0	0	1	8
7:15 AM	0	0	0	0	0	0	12	0	0	12	0	0	1	0	1	0	4	0	0	4	17
7:30 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	8	0	0	8	16
7:45 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	4	0	0	4	12
<b>Total</b>	0	0	0	0	0	0	34	1	0	35	0	0	1	0	1	0	17	0	0	17	53
8:00 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	10	0	0	10	13
8:15 AM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	4	0	0	4	10
8:30 AM	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	2	4	0	0	6	10
8:45 AM	0	0	0	0	0	0	6	0	0	6	2	0	0	0	2	1	5	0	0	6	14
<b>Total</b>	0	0	0	0	0	0	18	0	0	18	3	0	0	0	3	3	23	0	0	26	47
Grand Total	0	0	0	0	0	0	52	1	0	53	3	0	1	0	4	3	40	0	0	43	100
Approach %	0.0	0.0	0.0	0.0		0.0	98.1	1.9	0.0		75.0	0.0	25.0	0.0		7.0	93.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	52.0	1.0	0.0	53.0	3.0	0.0	1.0	0.0	4.0	3.0	40.0	0.0	0.0	43.0	
Exiting Leg Total	0					43					4					53					100

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

7:15 AM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:15 AM	0	0	0	0	0	0	12	0	0	12	0	0	1	0	1	0	4	0	0	4	17
7:30 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	8	0	0	8	16
7:45 AM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	4	0	0	4	12
8:00 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	10	0	0	10	13
Total Volume	0	0	0	0	0	0	31	0	0	31	0	0	1	0	1	0	26	0	0	26	58
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.646	0.000	0.000	0.646	0.000	0.000	0.250	0.000	0.250	0.000	0.650	0.000	0.000	0.650	0.853
Entering Leg	0	0	0	0	0	0	31	0	0	31	0	0	1	0	1	0	26	0	0	26	58
Exiting Leg	0					26					0					32					58
Total	0					57					1					58					116

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **7:00 AM**  
 End Time: **9:00 AM**  
 Class:



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdilic.com

**Articulated Trucks**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	7
7:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	4	0	0	4	6
7:30 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	4
7:45 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>24</b>
8:00 AM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	2	0	0	2	9
8:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	9
8:45 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	6
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>26</b>
Grand Total	0	0	0	0	0	0	26	0	0	26	0	0	0	0	0	0	24	0	0	24	50
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	52.0	0.0	0.0	52.0	0.0	0.0	0.0	0.0	0.0	0.0	48.0	0.0	0.0	48.0	
Exiting Leg Total	0					24					0					26					50

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

7:45 AM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:45 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	3	0	0	3	7
8:00 AM	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	2	0	0	2	9
8:15 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	5	0	0	5	9
Total Volume	0	0	0	0	0	0	17	0	0	17	0	0	0	0	0	0	10	0	0	10	27
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.607	0.000	0.000	0.607	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.750
Entering Leg	0	0	0	0	0	0	17	0	0	17	0	0	0	0	0	0	10	0	0	10	27
Exiting Leg	0					10					0					17					27
Total	0					27					0					27					54





PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Cars and Heavy Vehicles (Combined)**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	4	0	0	0	4	0	211	2	0	213	1	0	0	0	1	2	182	6	0	190	408
4:15 PM	1	0	1	0	2	0	168	2	0	170	1	0	2	0	3	0	205	0	0	205	380
4:30 PM	3	0	0	0	3	0	201	0	0	201	2	0	4	0	6	0	186	2	0	188	398
4:45 PM	2	0	2	0	4	0	194	0	0	194	2	0	1	0	3	2	196	1	0	199	400
<b>Total</b>	<b>10</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>774</b>	<b>4</b>	<b>0</b>	<b>778</b>	<b>6</b>	<b>0</b>	<b>7</b>	<b>0</b>	<b>13</b>	<b>4</b>	<b>769</b>	<b>9</b>	<b>0</b>	<b>782</b>	<b>1586</b>
5:00 PM	7	0	0	0	7	0	241	0	0	241	2	0	4	0	6	0	174	0	0	174	428
5:15 PM	1	0	0	0	1	0	169	0	0	169	0	0	2	0	2	0	179	1	0	180	352
5:30 PM	2	0	0	0	2	1	162	0	0	163	0	0	0	0	0	2	168	0	0	170	335
5:45 PM	2	0	0	0	2	2	130	0	0	132	0	0	2	0	2	1	122	0	0	123	259
<b>Total</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>702</b>	<b>0</b>	<b>0</b>	<b>705</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>10</b>	<b>3</b>	<b>643</b>	<b>1</b>	<b>0</b>	<b>647</b>	<b>1374</b>
Grand Total	22	0	3	0	25	3	1476	4	0	1483	8	0	15	0	23	7	1412	10	0	1429	2960
Approach %	88.0	0.0	12.0	0.0		0.2	99.5	0.3	0.0		34.8	0.0	65.2	0.0		0.5	98.8	0.7	0.0		
Total %	0.7	0.0	0.1	0.0	0.8	0.1	49.9	0.1	0.0	50.1	0.3	0.0	0.5	0.0	0.8	0.2	47.7	0.3	0.0	48.3	
Exiting Leg Total	13					1423					11					1513					2960
Cars	22	0	3	0	25	3	1454	3	0	1460	8	0	14	0	22	7	1381	10	0	1398	2905
% Cars	100.0	0.0	100.0	0.0	100.0	100.0	98.5	75.0	0.0	98.4	100.0	0.0	93.3	0.0	95.7	100.0	97.8	100.0	0.0	97.8	98.1
Exiting Leg Total	13					1392					10					1490					2905
Heavy Vehicles	0	0	0	0	0	0	22	1	0	23	0	0	1	0	1	0	31	0	0	31	55
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	0.0	1.5	25.0	0.0	1.6	0.0	0.0	6.7	0.0	4.3	0.0	2.2	0.0	0.0	2.2	1.9
Exiting Leg Total	0					31					1					23					55

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North <b>SB</b>					from East <b>WB</b>					from South <b>NB</b>					from West <b>EB</b>					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:15 PM	1	0	1	0	2	0	168	2	0	170	1	0	2	0	3	0	205	0	0	205	380
4:30 PM	3	0	0	0	3	0	201	0	0	201	2	0	4	0	6	0	186	2	0	188	398
4:45 PM	2	0	2	0	4	0	194	0	0	194	2	0	1	0	3	2	196	1	0	199	400
5:00 PM	7	0	0	0	7	0	241	0	0	241	2	0	4	0	6	0	174	0	0	174	428
<b>Total Volume</b>	<b>13</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>804</b>	<b>2</b>	<b>0</b>	<b>806</b>	<b>7</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>18</b>	<b>2</b>	<b>761</b>	<b>3</b>	<b>0</b>	<b>766</b>	<b>1606</b>
% Approach Total	81.3	0.0	18.8	0.0		0.0	99.8	0.2	0.0		38.9	0.0	61.1	0.0		0.3	99.3	0.4	0.0		
PHF	0.464	0.000	0.375	0.000	0.571	0.000	0.834	0.250	0.000	0.836	0.875	0.000	0.688	0.000	0.750	0.250	0.928	0.375	0.000	0.934	0.938
Cars	13	0	3	0	16	0	795	2	0	797	7	0	10	0	17	2	746	3	0	751	1581
Cars %	100.0	0.0	100.0	0.0	100.0	0.0	98.9	100.0	0.0	98.9	100.0	0.0	90.9	0.0	94.4	100.0	98.0	100.0	0.0	98.0	98.4
Heavy Vehicles	0	0	0	0	0	0	9	0	0	9	0	0	1	0	1	0	15	0	0	15	25
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0	0.0	1.1	0.0	0.0	9.1	0.0	5.6	0.0	2.0	0.0	0.0	2.0	1.6
Cars Enter Leg	13	0	3	0	16	0	795	2	0	797	7	0	10	0	17	2	746	3	0	751	1581
Heavy Enter Leg	0	0	0	0	0	0	9	0	0	9	0	0	1	0	1	0	15	0	0	15	25
<b>Total Entering Leg</b>	<b>13</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>804</b>	<b>2</b>	<b>0</b>	<b>806</b>	<b>7</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>18</b>	<b>2</b>	<b>761</b>	<b>3</b>	<b>0</b>	<b>766</b>	<b>1606</b>
Cars Exiting Leg	3					756					4					818					1581
Heavy Exiting Leg	0					15					0					10					25
<b>Total Exiting Leg</b>	<b>3</b>					<b>771</b>					<b>4</b>					<b>828</b>					<b>1606</b>

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**Cars**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	4	0	0	0	4	0	205	1	0	206	1	0	0	0	1	2	174	6	0	182	393
4:15 PM	1	0	1	0	2	0	166	2	0	168	1	0	1	0	2	0	203	0	0	203	375
4:30 PM	3	0	0	0	3	0	198	0	0	198	2	0	4	0	6	0	182	2	0	184	391
4:45 PM	2	0	2	0	4	0	191	0	0	191	2	0	1	0	3	2	193	1	0	196	394
<b>Total</b>	<b>10</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>760</b>	<b>3</b>	<b>0</b>	<b>763</b>	<b>6</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>12</b>	<b>4</b>	<b>752</b>	<b>9</b>	<b>0</b>	<b>765</b>	<b>1553</b>
5:00 PM	7	0	0	0	7	0	240	0	0	240	2	0	4	0	6	0	168	0	0	168	421
5:15 PM	1	0	0	0	1	0	168	0	0	168	0	0	2	0	2	0	176	1	0	177	348
5:30 PM	2	0	0	0	2	1	160	0	0	161	0	0	0	0	0	2	167	0	0	169	332
5:45 PM	2	0	0	0	2	2	126	0	0	128	0	0	2	0	2	1	118	0	0	119	251
<b>Total</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>3</b>	<b>694</b>	<b>0</b>	<b>0</b>	<b>697</b>	<b>2</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>10</b>	<b>3</b>	<b>629</b>	<b>1</b>	<b>0</b>	<b>633</b>	<b>1352</b>
Grand Total	22	0	3	0	25	3	1454	3	0	1460	8	0	14	0	22	7	1381	10	0	1398	2905
Approach %	88.0	0.0	12.0	0.0		0.2	99.6	0.2	0.0		36.4	0.0	63.6	0.0		0.5	98.8	0.7	0.0		
Total %	0.8	0.0	0.1	0.0	0.9	0.1	50.1	0.1	0.0	50.3	0.3	0.0	0.5	0.0	0.8	0.2	47.5	0.3	0.0	48.1	
Exiting Leg Total	13					1392					10					1490					2905

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:15 PM	1	0	1	0	2	0	166	2	0	168	1	0	1	0	2	0	203	0	0	203	375
4:30 PM	3	0	0	0	3	0	198	0	0	198	2	0	4	0	6	0	182	2	0	184	391
4:45 PM	2	0	2	0	4	0	191	0	0	191	2	0	1	0	3	2	193	1	0	196	394
5:00 PM	7	0	0	0	7	0	240	0	0	240	2	0	4	0	6	0	168	0	0	168	421
<b>Total Volume</b>	<b>13</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>795</b>	<b>2</b>	<b>0</b>	<b>797</b>	<b>7</b>	<b>0</b>	<b>10</b>	<b>0</b>	<b>17</b>	<b>2</b>	<b>746</b>	<b>3</b>	<b>0</b>	<b>751</b>	<b>1581</b>
% Approach Total	81.3	0.0	18.8	0.0		0.0	99.7	0.3	0.0		41.2	0.0	58.8	0.0		0.3	99.3	0.4	0.0		
PHF	0.464	0.000	0.375	0.000	0.571	0.000	0.828	0.250	0.000	0.830	0.875	0.000	0.625	0.000	0.708	0.250	0.919	0.375	0.000	0.925	0.939
Entering Leg	13	0	3	0	16	0	795	2	0	797	7	0	10	0	17	2	746	3	0	751	1581
Exiting Leg	3					756					4					818					1581
<b>Total</b>	<b>19</b>					<b>1553</b>					<b>21</b>					<b>1569</b>					<b>3162</b>

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdilic.com

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

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	6	1	0	7	0	0	0	0	0	0	8	0	0	8	15
4:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	2	0	0	2	5
4:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	7
4:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	6
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>1</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>33</b>
5:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	6	0	0	6	7
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	4
5:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
5:45 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>22</b>
Grand Total	0	0	0	0	0	0	22	1	0	23	0	0	1	0	1	0	31	0	0	31	55
Approach %	0.0	0.0	0.0	0.0	0.0	0.0	95.7	4.3	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	
Total %	0.0	0.0	0.0	0.0	0.0	0.0	40.0	1.8	0.0	41.8	0.0	0.0	1.8	0.0	1.8	0.0	56.4	0.0	0.0	56.4	
Exiting Leg Total	0					31					1					23					55
Buses	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
% Buses	0.0	0.0	0.0	0.0	0.0	0.0	13.6	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	6.5	9.1
Exiting Leg Total	0					2					0					3					5
Single-Unit Trucks	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	0	23	0	0	23	37
% Single-Unit	0.0	0.0	0.0	0.0	0.0	0.0	63.6	0.0	0.0	60.9	0.0	0.0	0.0	0.0	0.0	0.0	74.2	0.0	0.0	74.2	67.3
Exiting Leg Total	0					23					0					14					37
Articulated Trucks	0	0	0	0	0	0	5	1	0	6	0	0	1	0	1	0	6	0	0	6	13
% Articulated	0.0	0.0	0.0	0.0	0.0	0.0	22.7	100.0	0.0	26.1	0.0	0.0	100.0	0.0	100.0	0.0	19.4	0.0	0.0	19.4	23.6
Exiting Leg Total	0					6					1					6					13

**Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	6	1	0	7	0	0	0	0	0	0	8	0	0	8	15
4:15 PM	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	0	2	0	0	2	5
4:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	7
4:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	6
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>1</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>33</b>
<b>% Approach Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>93.3</b>	<b>6.7</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>100.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>100.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.583	0.250	0.000	0.536	0.000	0.000	0.250	0.000	0.250	0.000	0.531	0.000	0.000	0.531	0.550
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
Buses %	0.0	0.0	0.0	0.0	0.0	0.0	14.3	0.0	0.0	13.3	0.0	0.0	0.0	0.0	0.0	0.0	5.9	0.0	0.0	5.9	9.1
Single-Unit Trucks	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	21
Single-Unit %	0.0	0.0	0.0	0.0	0.0	0.0	64.3	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	70.6	0.0	0.0	70.6	63.6
Articulated Trucks	0	0	0	0	0	0	3	1	0	4	0	0	1	0	1	0	4	0	0	4	9
Articulated %	0.0	0.0	0.0	0.0	0.0	0.0	21.4	100.0	0.0	26.7	0.0	0.0	100.0	0.0	100.0	0.0	23.5	0.0	0.0	23.5	27.3
Buses	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
Single-Unit Trucks	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	21
Articulated Trucks	0	0	0	0	0	0	3	1	0	4	0	0	1	0	1	0	4	0	0	4	9
<b>Total Entering Leg</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>1</b>	<b>0</b>	<b>15</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>17</b>	<b>33</b>
Buses	0					1					0					2					3
Single-Unit Trucks	0					12					0					9					21
Articulated Trucks	0					4					1					4					9
<b>Total Exiting Leg</b>	<b>0</b>					<b>17</b>					<b>1</b>					<b>15</b>					<b>33</b>

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdilic.com

**Buses**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
4:15 PM	0	0	0	0	0	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	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>3</b>
5:00 PM	0	0	0	0	0	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	0	0	0	0	0
5:30 PM	0	0	0	0	0	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	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>
Grand Total	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	60.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0	0.0	0.0	40.0	0.0	0.0	40.0	
Exiting Leg Total	0					2					0					3					5

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
4:15 PM	0	0	0	0	0	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	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.250	0.375
Entering Leg	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	3
Exiting Leg	0					1					0					2					3
<b>Total</b>	<b>0</b>					<b>3</b>					<b>0</b>					<b>3</b>					<b>6</b>

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



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

157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdilic.com

**Single-Unit Trucks**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	6	0	0	6	10
4:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
4:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>21</b>
5:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	5	0	0	5	6
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
5:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
5:45 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	3	0	0	3	6
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>16</b>
Grand Total	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	0	23	0	0	23	37
Approach %	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	37.8	0.0	0.0	37.8	0.0	0.0	0.0	0.0	0.0	0.0	62.2	0.0	0.0	62.2	
Exiting Leg Total	0					23					0					14					37

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	6	0	0	6	10
4:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
4:30 PM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	2	0	0	2	5
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	3
Total Volume	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	21
% Approach Total	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.563	0.000	0.000	0.563	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.500	0.525
Entering Leg	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	12	0	0	12	21
Exiting Leg	0					12					0					9					21
Total	0					21					0					21					42

PDI File #: **240234 A**  
 Location: **N: Volvo Dealership Driveway S: #96 Site Driveway**  
 Location: **E: Manchester Street (Route 3) W: Manchester Street (Route 3)**  
 City, State: **Concord, NH**  
 Client: **TF Moran/ J. Porter**  
 Site Code: **95513.11**  
 Count Date: **Tuesday, October 8, 2024**  
 Start Time: **4:00 PM**  
 End Time: **6:00 PM**  
 Class:



**PRECISION  
D A T A  
INDUSTRIES, LLC**  
 157 Washington Street, Suite 2  
 Hudson, MA 01749  
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 Email: datarequests@pdilic.com

**Articulated Trucks**

	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	3
4:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>9</b>
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
5:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>4</b>
Grand Total	0	0	0	0	0	0	5	1	0	6	0	0	1	0	1	0	6	0	0	6	13
Approach %	0.0	0.0	0.0	0.0		0.0	83.3	16.7	0.0		0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	38.5	7.7	0.0	46.2	0.0	0.0	7.7	0.0	7.7	0.0	46.2	0.0	0.0	46.2	
Exiting Leg Total	0					6					1					6					13

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Volvo Dealership Driveway					Manchester Street (Route 3)					#96 Site Driveway					Manchester Street (Route 3)					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	0	0	1	3
4:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
4:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>9</b>
% Approach Total	0.0	0.0	0.0	0.0		0.0	75.0	25.0	0.0		0.0	0.0	100.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.750	0.250	0.000	0.500	0.000	0.000	0.250	0.000	0.250	0.000	0.500	0.000	0.000	0.500	0.750
Entering Leg	0	0	0	0	0	0	3	1	0	4	0	0	1	0	1	0	4	0	0	4	9
Exiting Leg	0					4					1					4					9
<b>Total</b>	<b>0</b>					<b>8</b>					<b>2</b>					<b>8</b>					<b>18</b>









## Location Map: 228705 Concord, NH

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: datarequests@pdillc.com

- (1) 24HR VCU-ATR
- (1) 24HR Houston Radar (Speed)

Manchester St (Rte 3) just east of K9 Club Driveway where it narrows down to 2 lanes



Client:  
TFMoran

Engineer:  
J. Porter

Site Code:  
95486.08

Date:  
Wed 6/22/2022

PDI Job #  
228705

City, State:  
Concord, NH



Manchester Street (Route 3A)  
 between K9 Club & Landscaping Driveway  
 City, State: Concord, NH  
 Client: TFMoran/ J Porter  
 Site Code: 95486.08



157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdillc.com

PDI File #: 228705 ATR A

Count Date: **Wednesday, June 22, 2022**  
 Direction: **EB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	1	5	0	0	2	8
12:15 AM	0	1	10	0	0	4	15
12:30 AM	0	0	4	0	0	2	6
12:45 AM	0	0	2	0	1	0	3
1:00 AM	0	0	3	0	0	0	3
1:15 AM	0	0	5	0	0	1	6
1:30 AM	0	0	4	0	0	3	7
1:45 AM	0	0	8	0	1	1	10
2:00 AM	0	1	6	0	1	2	10
2:15 AM	0	0	7	0	1	2	10
2:30 AM	0	0	4	0	0	4	8
2:45 AM	0	0	12	0	0	0	12
3:00 AM	0	0	3	0	0	1	4
3:15 AM	0	0	8	0	0	4	12
3:30 AM	0	0	9	0	0	2	11
3:45 AM	0	0	10	0	2	2	14
4:00 AM	0	0	7	0	0	1	8
4:15 AM	0	0	14	0	3	4	21
4:30 AM	0	1	16	0	1	3	21
4:45 AM	0	0	26	0	0	1	27
5:00 AM	0	0	14	0	4	1	19
5:15 AM	1	2	33	0	1	2	39
5:30 AM	0	0	24	0	2	3	29
5:45 AM	0	1	52	0	3	2	58
6:00 AM	0	0	51	0	2	5	58
6:15 AM	0	0	57	0	5	2	64
6:30 AM	0	0	84	0	2	2	88
6:45 AM	0	3	120	0	5	3	131
7:00 AM	0	3	107	0	6	4	120
7:15 AM	0	0	155	0	1	3	159
7:30 AM	0	1	192	2	5	3	203
7:45 AM	0	2	204	0	6	7	219
8:00 AM	0	4	158	0	3	4	169
8:15 AM	0	0	131	0	6	4	141
8:30 AM	0	0	141	0	4	2	147
8:45 AM	0	1	145	1	11	1	159
9:00 AM	0	2	141	1	7	2	153
9:15 AM	0	0	113	0	7	6	126
9:30 AM	0	2	133	0	9	3	147
9:45 AM	1	1	147	0	5	1	155
10:00 AM	0	1	115	0	8	4	128
10:15 AM	0	0	144	0	9	3	156
10:30 AM	0	1	119	0	11	2	133
10:45 AM	0	0	149	0	6	6	161
11:00 AM	0	0	108	0	8	1	117
11:15 AM	0	2	120	0	3	5	130
11:30 AM	0	1	155	0	5	7	168
11:45 AM	0	4	152	0	4	8	168

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	1	3	145	0	6	4	159
12:15 PM	0	1	163	0	4	5	173
12:30 PM	0	2	143	0	10	4	159
12:45 PM	0	1	144	0	7	3	155
1:00 PM	0	2	164	0	3	3	172
1:15 PM	0	2	145	0	3	4	154
1:30 PM	0	0	160	1	4	5	170
1:45 PM	0	2	146	0	8	6	162
2:00 PM	0	0	140	0	5	6	151
2:15 PM	0	0	142	0	6	5	153
2:30 PM	0	3	146	0	1	2	152
2:45 PM	0	0	149	0	6	5	160
3:00 PM	0	1	156	0	4	2	163
3:15 PM	0	0	182	0	4	2	188
3:30 PM	0	3	173	0	7	5	188
3:45 PM	1	2	160	0	5	2	170
4:00 PM	1	2	202	0	4	0	209
4:15 PM	0	3	181	0	3	1	188
4:30 PM	0	2	183	0	3	2	190
4:45 PM	0	6	246	1	5	1	259
5:00 PM	0	10	240	0	2	1	253
5:15 PM	0	1	200	0	5	3	209
5:30 PM	1	2	173	0	1	4	181
5:45 PM	0	1	119	0	1	1	122
6:00 PM	0	1	120	0	1	0	122
6:15 PM	0	2	127	0	0	1	130
6:30 PM	0	0	106	0	1	0	107
6:45 PM	0	0	100	0	2	1	103
7:00 PM	0	1	89	0	1	0	91
7:15 PM	0	0	90	0	1	0	91
7:30 PM	0	0	75	0	0	1	76
7:45 PM	0	2	66	0	2	1	71
8:00 PM	0	2	75	0	1	0	78
8:15 PM	0	2	51	0	0	0	53
8:30 PM	0	0	50	0	0	1	51
8:45 PM	0	0	54	0	1	0	55
9:00 PM	0	1	47	0	0	1	49
9:15 PM	0	0	39	0	1	0	40
9:30 PM	0	1	38	0	1	1	41
9:45 PM	0	0	31	0	0	3	34
10:00 PM	0	1	22	0	0	0	23
10:15 PM	0	0	23	0	0	2	25
10:30 PM	0	0	15	0	0	1	16
10:45 PM	0	0	21	0	1	1	23
11:00 PM	0	1	15	0	0	3	19
11:15 PM	0	0	17	0	0	2	19
11:30 PM	0	0	14	0	0	1	15
11:45 PM	0	1	14	0	0	1	16

<b>AM Total</b>	<b>2</b>	<b>35</b>	<b>3427</b>	<b>4</b>	<b>158</b>	<b>135</b>	<b>3761</b>
<b>Percentage</b>	<b>0.05%</b>	<b>0.93%</b>	<b>91.12%</b>	<b>0.11%</b>	<b>4.20%</b>	<b>3.59%</b>	
<b>AM Peak</b>	<b>4:30 AM</b>	<b>6:45 AM</b>	<b>7:15 AM</b>	<b>6:45 AM</b>	<b>8:45 AM</b>	<b>11:00 AM</b>	<b>7:15 AM</b>
<b>Volume</b>	<b>1</b>	<b>7</b>	<b>709</b>	<b>2</b>	<b>34</b>	<b>21</b>	<b>750</b>

<b>PM Total</b>	<b>4</b>	<b>64</b>	<b>5301</b>	<b>2</b>	<b>120</b>	<b>97</b>	<b>5588</b>
<b>Percentage</b>	<b>0.07%</b>	<b>1.15%</b>	<b>94.86%</b>	<b>0.04%</b>	<b>2.15%</b>	<b>1.74%</b>	
<b>PM Peak</b>	<b>3:15 PM</b>	<b>4:15 PM</b>	<b>4:30 PM</b>	<b>12:45 PM</b>	<b>12:00 PM</b>	<b>1:30 PM</b>	<b>4:30 PM</b>
<b>Volume</b>	<b>2</b>	<b>21</b>	<b>869</b>	<b>1</b>	<b>27</b>	<b>22</b>	<b>911</b>

<b>Day Total</b>	<b>6</b>	<b>99</b>	<b>8728</b>	<b>6</b>	<b>278</b>	<b>232</b>	<b>9349</b>
<b>Percentage</b>	<b>0.06%</b>	<b>1.06%</b>	<b>93.36%</b>	<b>0.06%</b>	<b>2.97%</b>	<b>2.48%</b>	



PRECISION  
D A T A  
INDUSTRIES, LLC

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157 Washington Street, Suite 2  
Hudson, MA 01749  
Office: 508-875-0100 Fax: 508-875-0118  
Email: [datarequests@pdillc.com](mailto:datarequests@pdillc.com)

Manchester Street (Route 3A)  
 between K9 Club & Landscaping Driveway  
 City, State: Concord, NH  
 Client: TFMoran/ J Porter  
 Site Code: 95486.08



157 Washington Street, Suite 2  
 Hudson, MA 01749  
 Office: 508-875-0100 Fax: 508-875-0118  
 Email: datarequests@pdillc.com

PDI File #: 228705 ATR A

Count Date: **Wednesday, June 22, 2022**  
 Direction: **WB**

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	1	5	0	0	0	6
12:15 AM	0	0	4	0	2	1	7
12:30 AM	0	0	3	0	0	0	3
12:45 AM	0	0	4	0	0	0	4
1:00 AM	0	0	9	0	0	0	9
1:15 AM	0	0	1	0	0	2	3
1:30 AM	0	0	5	0	2	0	7
1:45 AM	0	0	2	0	0	0	2
2:00 AM	0	0	3	0	2	2	7
2:15 AM	0	0	6	0	1	1	8
2:30 AM	0	0	6	0	0	4	10
2:45 AM	0	1	4	0	3	2	10
3:00 AM	0	0	2	0	0	4	6
3:15 AM	0	0	7	0	0	2	9
3:30 AM	0	0	4	0	0	4	8
3:45 AM	0	1	5	0	1	3	10
4:00 AM	0	0	8	0	0	2	10
4:15 AM	0	0	12	0	1	2	15
4:30 AM	0	0	20	0	5	6	31
4:45 AM	0	0	30	0	0	1	31
5:00 AM	1	0	24	0	1	5	31
5:15 AM	0	0	45	0	2	8	55
5:30 AM	0	1	44	0	3	8	56
5:45 AM	0	1	61	0	1	3	66
6:00 AM	0	1	70	0	4	3	78
6:15 AM	0	2	77	0	2	5	86
6:30 AM	0	3	109	0	6	4	122
6:45 AM	1	0	109	0	5	4	119
7:00 AM	0	3	141	0	11	5	160
7:15 AM	0	4	168	0	5	5	182
7:30 AM	1	2	172	0	6	3	184
7:45 AM	0	1	179	0	4	4	188
8:00 AM	0	2	149	0	3	8	162
8:15 AM	0	0	112	0	7	6	125
8:30 AM	0	0	127	0	8	3	138
8:45 AM	1	1	139	0	5	6	152
9:00 AM	0	0	121	0	6	3	130
9:15 AM	0	0	115	1	12	2	130
9:30 AM	0	0	124	0	6	1	131
9:45 AM	0	0	133	0	2	2	137
10:00 AM	0	0	157	1	9	6	173
10:15 AM	0	0	132	0	3	5	140
10:30 AM	0	0	129	0	4	3	136
10:45 AM	0	0	122	1	9	7	139
11:00 AM	0	0	104	1	9	3	117
11:15 AM	0	0	123	0	6	2	131
11:30 AM	0	0	142	0	7	2	151
11:45 AM	0	1	143	0	2	4	150

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	2	150	0	1	1	154
12:15 PM	0	2	127	0	4	9	142
12:30 PM	0	2	148	0	3	7	160
12:45 PM	0	1	160	1	7	7	176
1:00 PM	0	1	157	0	5	6	169
1:15 PM	0	0	152	0	8	2	162
1:30 PM	0	2	133	0	2	3	140
1:45 PM	0	1	130	0	5	5	141
2:00 PM	0	2	175	1	7	3	188
2:15 PM	0	2	143	0	4	3	152
2:30 PM	0	1	145	0	8	2	156
2:45 PM	0	2	153	0	3	2	160
3:00 PM	1	1	168	0	2	2	174
3:15 PM	0	2	167	0	4	2	175
3:30 PM	0	3	146	0	4	0	153
3:45 PM	1	5	180	0	4	4	194
4:00 PM	0	0	187	0	3	4	194
4:15 PM	0	2	180	0	10	3	195
4:30 PM	0	4	182	0	0	0	186
4:45 PM	0	0	180	1	2	7	190
5:00 PM	0	2	236	0	2	1	241
5:15 PM	0	4	182	0	0	1	187
5:30 PM	1	2	149	0	4	1	157
5:45 PM	0	3	112	0	0	1	116
6:00 PM	0	3	151	0	0	1	155
6:15 PM	1	3	122	0	2	0	128
6:30 PM	0	0	105	0	0	1	106
6:45 PM	0	2	114	0	0	1	117
7:00 PM	0	0	119	0	1	0	120
7:15 PM	0	1	81	0	1	1	84
7:30 PM	0	1	93	0	0	1	95
7:45 PM	0	0	72	0	0	1	73
8:00 PM	0	2	86	0	0	0	88
8:15 PM	0	0	82	0	3	0	85
8:30 PM	0	1	60	0	0	1	62
8:45 PM	0	0	45	0	1	0	46
9:00 PM	0	2	59	0	0	0	61
9:15 PM	0	0	34	0	0	1	35
9:30 PM	0	0	29	0	0	0	29
9:45 PM	0	0	30	0	0	0	30
10:00 PM	0	0	12	0	0	0	12
10:15 PM	0	0	15	0	0	1	16
10:30 PM	0	0	21	0	0	0	21
10:45 PM	0	0	23	0	0	0	23
11:00 PM	0	0	13	0	0	1	14
11:15 PM	0	0	6	0	0	0	6
11:30 PM	0	0	12	0	0	2	14
11:45 PM	0	0	11	0	0	2	13

**AM Total** 4 25 3411 4 165 156 3765  
**Percentage** 0.11% 0.66% 90.60% 0.11% 4.38% 4.14%

**AM Peak** 6:45 AM 6:30 AM 7:15 AM 9:15 AM 8:30 AM 5:00 AM 7:15 AM  
**Volume** 2 10 668 2 31 24 716

**PM Total** 4 61 5237 3 100 90 5495  
**Percentage** 0.07% 1.11% 95.30% 0.05% 1.82% 1.64%

**PM Peak** 3:00 PM 5:15 PM 4:30 PM 12:00 PM 1:45 PM 12:15 PM 4:15 PM  
**Volume** 2 12 780 1 24 29 812

**Day Total** 8 86 8648 7 265 246 9260  
**Percentage** 0.09% 0.93% 93.39% 0.08% 2.86% 2.66%



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## **APPENDIX M**

### **Plan**

#### Site Layout Plan







**APPENDIX N**  
**Scoping Meeting Notes**





Civil Engineers  
Structural Engineers  
Traffic Engineers  
Land Surveyors  
Landscape Architects  
Scientists

## Traffic Scoping Meeting Notes

**Date:** September 20, 2024  
**Location:** 94 Manchester Street, Concord, Hooksett NH  
**Project:** Hotel  
TFM# 95513.11

---

### 1. Introduction

**Developer:** Key Auto Group  
**Engineer/Traffic:** TFMoran

### 2. Project

Property is currently a condominium, that will be dissolved.

Finishing survey now

Project area is already disturbed, paved and flat.

Key Auto Collision use will remain

Proposed development of 116 Room Hotel.

Full site access will be directly onto Manchester Street via a shared driveway with Key Collision.

### 3. Analysis Periods

Weekday: AM Peak (7am to 9am), PM Peak (4pm to 6pm)

Weekend: SAT Peak (11am to 1pm)

### 4. Analysis Years

Opening 2025: Opening year – existing conditions

Future 2035: Future year (opening +10) – includes the City improvement project for widening Manchester Street.

### 5. Traffic Data Requirements

Seasonal Adjustment – NHDOT Group 4 Urban Highways

Covid Adjust if necessary

New Counts at existing driveway curb cut (4-way)

Reference ATR counts that were done for Nault

### 6. Background Growth Rate

1% growth, to be verified – but no less than 1%

### 7. Other Developments

Opening Year – include St. Mary's and Common Man (Phase 1A Naults).

Future Year – include Full Build of Naults.

## 8. Trip Generation/Composition/Distribution

*Trip Generation: ITE 11<sup>th</sup> Edition (before capture)*

- LUC 310 Hotel – All Primary Trips
  - AM: 51 trips, PM: 58 trips, SAT: 86 trips
- We will confirm hotel type with the Client (Business or General) and adjust LUC as necessary.

*Distribution:*

After new counts are taken within the study area, distribution will be reviewed. Prorata distribution is anticipated, with most of the traffic to/from I93.

## 9. Study Area Intersections:

- Manchester Street at Site Driveway

## 10. Other Items:

Intersection analysis at 4-way intersection only.

Documenting existing conditions.

Show distances between existing driveways for separation, no conflicts and that in compliance

Supply support to defend location of driveway because it may not be in compliance. Reference national standards. Driveway policy at NHDOT, check sketches on the back of the permit.

Document Sight Distances at existing driveway.

Manchester Street is a project in the City 5year plan for improvements. Widening. They are acquiring/requesting ROW. AnnMarie will do research for plans of Manchester Street project and share what is being proposed.

A Conditional Use permit may be needed because of driveway separation to abutting driveways. ZBA relief is not required. A second CUP application may be necessary to cover driveway width.

Make sure all driveways meet widths, radii, fire truck requirements. Driveway width at ROW is a CUP item, internal would be a waiver. Check on truck movements before and after City widening.

What used to be there? Previous use might help with CUP but cannot be counted as previous trips.

Crash Data – ask Concord PD if there are any safety issues at the intersection.

Two proposed driveways internal on site, make sure there is proper internal sight distance based on 25mph.

At a prior City staff meeting, a possible future re-routing of Garvins Falls Road. It was agreed that the project is too speculative to be considered as part of this traffic study.

No NHDOT driveway permit needed, this section of roadway is under City jurisdiction.

Check Section 32.08 of the Site Plan Regs for traffic requirements.

Check Section 28-7-11f – alternative parking analysis for driveway compliance.

Respectfully Submitted,  
**TFMoran Inc.**