Traffic Impact and Access Study

Proposed WoodSpring Suites Hotel
143 Pleasant Valley Street
Methuen, MA

December 1, 2025

Prepared for:
City of Methuen

Applicant:
Park Silver Development

FUSS & O'NEILL

600 Unicorn Park Drive
Woburn, MA 01801

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1 Executive Summary

Fuss & O'Neill has prepared this study to assess the traffic impact and to evaluate the access requirements of the proposed WoodSpring Suites Hotel to be located at 143 Pleasant Valley Street in Methuen, MA.

This report identifies existing traffic operating parameters on key roadways and intersections within the study area, evaluates the anticipated traffic volume increases as a result of the proposed project, analyzes the project's traffic-related impacts, determines the projects access/egress requirements and identifies appropriate mitigating measures designed to minimize the traffic-related impacts created by the project. The following provides a brief summary of the project and the study's findings.

PROJECT DESCRIPTION

The parcel of land to be developed is located on the south side of Pleasant Valley Street west of Old Ferry Road. Currently the site consists of a commercially zoned vacant and undeveloped property.

The proposed development includes the construction of a single hotel building with 122 hotel rooms. The hotel will be an extended stay hotel, with minimal amenities and no function hall space. Parking will be provided for 116 vehicles. Access to the site would be provided by way of a single full-movement driveway to Pleasant Valley Street. Figure 1 shows the site in relation to the roadway network.

STUDY METHODOLOGY

This study has been prepared in three stages. The first stage involved an assessment of existing conditions within the study area and included an inventory of roadway geometrics, pedestrian and bicycle facilities and public transportation services. Existing traffic counts were performed at the study area intersections.

In the second stage of the study, future traffic conditions were projected and analyzed. Specific travel demand forecasts for the project were assessed along with future traffic demands due to expected traffic growth independent of the proposed project. In accordance with Massachusetts Department of Transportation (MassDOT) and Executive Office of Environmental Affairs (EEA) guidelines, the year 2032 was selected as the basis for modeling future transportation impacts of the proposed development to reflect a seven-year planning horizon.

The third stage of the study presents and evaluates measures to address traffic issues, if any, and necessary improvements to accommodate the development.

STUDY AREA

Roadway geometry and traffic control information was collected for the following

intersections:

- Pleasant Valley Street and Old Ferry Road
- Pleasant Valley Street and 140 Pleasant Valley Street Driveway
- Pleasant Valley Street, Chippy Lane and Choice Fitness Driveway

Figure 1
Site Location Map

EXISTING CONDITIONS

Evaluation of existing conditions within the study area includes a description of roadway geometrics, traffic constraints, land uses at the intersections, and quantification of traffic volumes.

Existing Traffic Volumes

To establish base traffic conditions within the study area, manual turning movement and vehicle classification counts were obtained in October 2025. Peak-period turning movement counts were conducted during the weekday morning (7:00 to 9:00 AM) and weekday evening (2:00 to 6:30 PM) periods. Daily traffic counts were conducted on Pleasant Valley Street for a two (2) day weekday period using automatic traffic recorders (ATR).

The traffic-volume data gathered as part of this study was collected during the month of October 2025. Data from the MassDOT was reviewed to determine the monthly variations

of the traffic volumes. Seasonal adjustment factors compiled by MassDOT were reviewed. Based on the MassDOT data, October volumes were slightly higher than average month volumes (approximately 8%). Therefore, the October count data was used to represent average month conditions.

Pleasant Valley Street, in front of the site was recorded to carry approximately 12,900 vehicles per day (vpd) on a weekday. During the weekday morning peak hour, approximately 751 vehicles per hour (vph) were recorded, and during the weekday evening peak hour, approximately 1,303 vph were recorded.

Vehicle Speeds

Existing speed data for Pleasant Valley Street was also collected using the ATRs. The average speed of vehicles travelling eastbound or westbound on Pleasant Valley Street was found to be 36 mph. The 85th percentile speed was found to be 42 mph for eastbound vehicles and 41 for westbound vehicles. The 85th percentile speed is the speed at which sight distances are evaluated.

Motor Vehicle Crash Data

Motor vehicle crash data for the study area intersections and roadways were obtained from the MassDOT database for 2018 through 2022, the most recent five-year period for which data is available. The motor vehicle crash data was reviewed to determine crash trends in the study area.

Over the 5-year period, five (5) crashes were reported at the Pleasant Valley Street and Chippy Lane intersection, averaging 1 crash per year. All crashes resulted in property damage only. Four occurred during dry pavement conditions, while one occurred on wet pavement. Four crashes happened outside peak periods, and one occurred during the morning peak. Three crashes involved rear-end collisions, one was a sideswipe, and one was classified as single vehicle crash.

At the Pleasant Valley Street and Old Ferry Road intersection, four (4) crashes were reported over the study period, averaging 0.8 crashes per year. Two crashes resulted in property damage only, while two involved personal injuries. All crashes occurred under dry pavement conditions. One crash occurred during the evening peak hour, and three occurred during off-peak hours. Three crashes were rear-end collisions, and one was a head-on collision.

Public Transportation

There are currently two public transportation services (MEVA) that run near the proposed project with bus stop nearby. Route 4 (The Loop Via Prospect Hill) runs east to west and vice versa. It runs from 5:15 AM to 9:00 PM on weekdays and 6:45 AM to 5:45 PM on Saturday and 9:00 AM to 5:30 PM on Sunday. Route 1 (Lawrence-Haverhill via the Loop) runs east to west and vice versa. It runs from 5:00 AM to 9:00 PM on weekdays and 7:00 AM to 7:00 PM

on Saturday and Sunday.

PROBABLE IMPACTS OF THE PROJECT

No-Build Traffic Volumes

To determine the impact of site-generated traffic volumes generated by the project on the roadway network under future conditions, baseline traffic volumes in the study area were projected to the year 2032. Traffic volumes on the roadway network at that time, in the absence of the proposed project, would include existing traffic, new traffic due to general background traffic growth, and traffic related to specific developments by others expected to be completed by 2032. The Central Transportation Planning Staff (CTPS) Department was queried requesting municipal growth rates for the City of Methuen. CTPS indicated highway growth in the area is 0.17%. A 1.0% compounded growth rate was used in this study.

Traffic volumes generated by the specific local developments by others were included in the 2032 No-Build condition. The City of Methuen was contacted to identify specific planned developments. Based on these discussions, there is 0ne (1) project that has been identified that could impact traffic volumes in the study area. A warehouse has been constructed on Old Ferry Road but has not been occupied. Trips for the approximately 151, 000 sf warehouse were obtained from the traffic generation letter prepared by Vanasse & Associates (dated April 1, 2022) and included in the background projections.

Build Traffic Volumes

Site generated traffic for the project was based on trip-generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation* manual[1] as well as empirical trip generation data from other similar hotels. The trip generation data for Land Use Code (LUC) 312 – Limited Service Hotel was used. On a typical weekday, the proposed hotel is expected to generate 506 vehicle trips (253 vehicles entering and 253 vehicles exiting). During the weekday morning peak hour, 43 vehicle trips (17 vehicles entering and 26 vehicles exiting) are expected. During the weekday evening peak hour, 38 vehicle trips (21 vehicles entering and 17 vehicles exiting) are expected.

TRAFFIC OPERATIONS ANALYSIS

To assess the impacts of the proposed project on the roadway network, traffic operations analyses were performed at the study area intersections under 2025 Existing, 2032 No-Build and 2032 Build conditions. These analyses indicate that the proposed project will not result in a significant impact on traffic operations at the study area intersections over No-Build conditions.

The capacity analyses performed for the site driveway intersection with Pleasant Valley Street indicate that overall, the critical movements at the intersection shared left and right-turns out of the site will operate at good levels of service, with minor delays for the critical movements.

[1] *Trip Generation,* Eleventh Edition; Institute of Transportation Engineers; Washington, DC; 2021.

RECOMMENDATIONS

The final phase of the analysis process is to identify the mitigation measures necessary to minimize the impact of the project on the transportation system. The proponent has made a commitment to implement the mitigation measures listed below.

The capacity analyses indicate the critical movements at the Pleasant Valley Street and site-driveway intersection (left- and right-turns) are projected to operate at good levels of service during the weekday morning and evening peak hours.

The Pleasant Valley Street driveway should consist of one lane in and one lane out, with a minimum of fifteen (15) foot radii on the curbs. Appropriate signage should also be installed identifying the Pleasant Valley Street driveway entrance. Vegetation or proposed landscaping along Pleasant Valley Street in front of the site and within the layout should be cleared and maintained so as to maintain sight distances.

For the study area intersections, the amount of additional site traffic is not large enough to warrant any intersection improvements.

SUMMARY

The WoodSpring Suites hotel is located on the south side of Pleasant Valley Street, west of Old Ferry Road. On a typical weekday, the proposed hotel is expected to generate 506 vehicle trips. During the weekday morning peak hour, 43 vehicle trips (17 vehicles entering and 26 vehicles exiting) are expected. During the weekday evening peak hour, 38 vehicle trips (21 vehicles entering and 17 vehicles exiting) are expected.

Capacity analyses were performed for each of the study area intersections for 2025 Existing, 2032 No-Build and 2032 Build conditions. Based on the analyses performed, there is no significant change in level of service from No-Build to Build conditions at the signalized study area intersections.

Review of the proposed hotel access plan shows that in relation to roadway capacity, traffic safety, and traffic impacts upon the surrounding roadway network, the proposed project will meet safety standards and have a minimal impact on existing traffic conditions. With the proposed access, in conjunction with the mitigation measures described above and maintaining sight distances from the driveway (clear sight lines along frontage), safe and efficient access can be provided to the hotel tenants and staff of the proposed hotel and to the motoring public in the area.

2 Existing Traffic Conditions

The evaluation of a proposed project's transportation impacts requires a complete understanding of the existing transportation system within the study area. Existing conditions include roadway geometrics, traffic control, daily and peak hour traffic flows, public transportation, and vehicular crash data. Each of these are discussed below.

2.1 Study Area

Based on a review of the anticipated trip generation and trip distribution for the proposed development, a local study area was established. The study area includes the following intersections:

- Pleasant Valley Street and Old Ferry Road
- Pleasant Valley Street and 140 Pleasant Valley Street
- Pleasant Valley Street, Chippy Lane and Choice Fitness Driveway

2.2 Field Survey

A comprehensive field inventory of the proposed site was conducted in October 2025. The inventory included collection of existing roadway geometrics, traffic volumes, and safety data for the existing study area intersections and site access driveway locations. Traffic volumes were measured by means of automatic traffic recorder (ATR) counts and substantiated by manual turning movement counts (TMCs) conducted at the study area intersections.

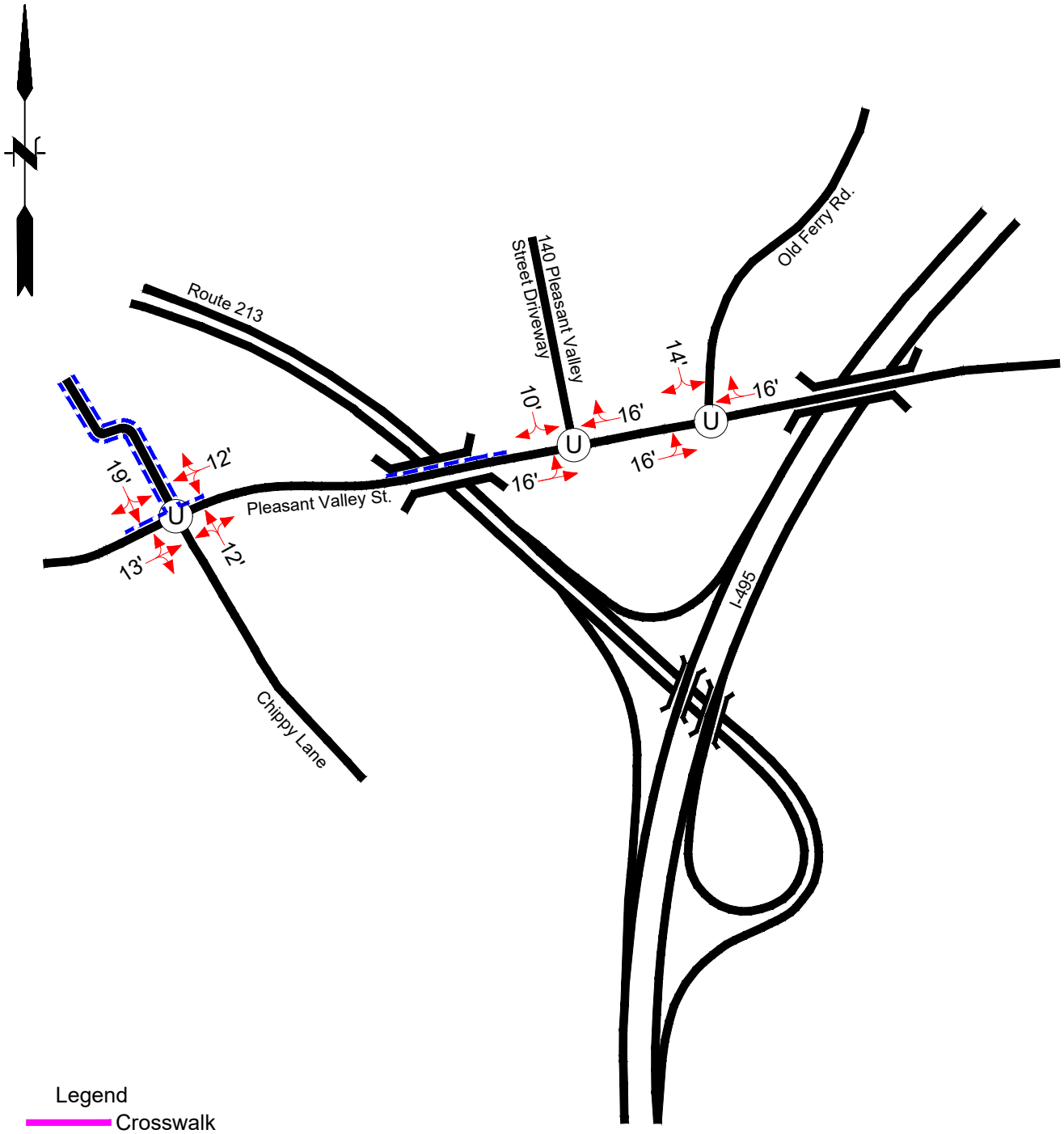
2.3 Geometrics

Primary study area roadways are described below. Figure 2 presents a summary of existing lane uses and traffic control.

Roadways

Pleasant Valley Street

Pleasant Valley Street is a two-lane, Urban Minor Arterial under the jurisdiction of the City of Methuen. Pleasant Valley Street traverses the study area in a general east/west direction. Travel lanes are generally separated by a single yellow centerline. The posted speed limit on Pleasant Valley Street in the vicinity of the site is 30 miles per hour (mph). No sidewalks are provided in the site vicinity along the road. Land use along Pleasant Valley Street in the study area consists of residential and commercial properties.



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PROPOSED WOODSPRING SUITES HOTEL

EXISTING LANE USE, TRAVEL LANE WIDTH AND PEDESTRIAN FACILITIES

143 PLEASANT VALLEY STREET TIS

METHUEN MASSACHUSETTS

PROJ. No.: 20251084.A10
DATE: NOVEMBER 2025

FIG. 2

Intersections

Pleasant Valley Street and Old Ferry Road

Pleasant Valley Street forms the east and west legs of this three legged unsignalized intersection with Old Ferry Road (north leg). The Pleasant Valley Street approaches each consists of single lane that permits left or right turns. The Old Ferry Road approach southbound approach consists of a single lane permitting left or right-turns. Old Ferry Road is under STOP control. There are no sidewalks in the vicinity of the intersection. Land use at the intersection consists of commercial properties.

Pleasant Valley Street and 140 Pleasant Valley Street Driveway

Pleasant Valley Street forms the east and west legs of this three legged unsignalized intersection with the Pleasant Valley Street forms the east and west legs of this three legged unsignalized intersection with the driveway to 140 Pleasant Valley Street (north leg). The Pleasant Valley Street approaches each consists of single lane that permits left or right turns. The driveway to 140 Pleasant Valley Street southbound approach consists of a single lane permitting left or right-turns. The driveway to 140 Pleasant Valley Street is under STOP control. There are no sidewalks in the vicinity of the intersection. Land use at the intersection consists of commercial and residential properties.

Pleasant Valley Street, Chippy Lane and Choice Fitness Driveway

Pleasant Valley Street forms the east and west legs of this four legged unsignalized intersection with Chippy Lane (south leg) and the Choice Fitness driveway (north leg). The Pleasant Valley Street approaches each consist of single lanes permitting left or right-turns. The Chippy Lane approach consists of a single lane permitting all movements. The Choice Fitness approach consists of a single lane permitting all movements. The Chippy Lane operates under STOP-like control. Land use at the intersection consists of residential homes and commercial properties.

2.4 Traffic Volumes

Existing Traffic Volumes

To establish base traffic conditions within the study area, manual turning movement and vehicle classification counts were obtained in October 2025. Peak-period turning movement counts were conducted during the weekday morning peak period (7:00 to 9:00 AM) and weekday afternoon period (2:00 to 6:00 PM) on Wednesday October 22, 2025 at the following

intersections:

- Pleasant Valley Street and Old Ferry Road
- Pleasant Valley Street and 140 Pleasant Valley Street
- Pleasant Valley Street, Chippy Lane and Choice Fitness Driveway

Daily traffic counts were conducted on Pleasant Valley Street for a two-day period using automatic traffic recorders (ATR) on Tuesday October 22 and Wednesday October 23, 2025.

Analysis of the peak-period traffic counts indicated that the weekday morning commuter peak hour generally occurs between 7:45 and 8:45 AM and the weekday evening commuter peak hour generally occurs between 4:45 and 5:45 PM. The traffic count worksheets are provided in the Appendix.

Seasonal Adjustment

The traffic-volume data gathered as part of this study was collected during the month of October 2025. Data from the MassDOT was reviewed to determine the monthly variations of the traffic volumes. Seasonal adjustment factors compiled by MassDOT were reviewed. Based on the MassDOT data, October volumes were slightly higher than average month volumes (approximately 8%). Therefore, the October count data was used to represent average month conditions. The seasonal worksheets are provided in the Appendix.

The 2025 existing weekday daily and peak-hour traffic volumes are summarized in Table 1.

TABLE 1
EXISTING WEEKDAY TRAFFIC-VOLUME SUMMARY[a]

Location	Weekday Traffic Volume[b]	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
		Traffic Volume[c]	K Factor[d]	Directional Distribution[e]	Traffic Volume	K Factor	Directional Distribution
Pleasant Valley Street in front of the Site	12,900	751	5.8	54.2% WB	1,303	10.1	56.1% EB

[a]Two-way traffic volume
[b]Daily traffic expressed in vehicles per day.
[c]Expressed in vehicles per hour.
[d]Percent of daily traffic volumes which occurs during the peak hour.
[e]Percent of peak-hour volume in the predominant direction of travel.
NB = northbound; SB = southbound; EB = eastbound; WB = westbound.

Pleasant Valley Street was recorded to carry approximately 12,900 vehicles per day (vpd) in front of the site on a weekday. During the weekday morning peak hour, approximately 751 vehicles per hour (vph) were recorded, and during the weekday evening peak hour, approximately 1,303 vph were recorded.

Figures 3 and 4 show the 2025 Existing weekday morning and weekday evening peak hour traffic volumes, respectively.

2.5 Vehicle Speeds

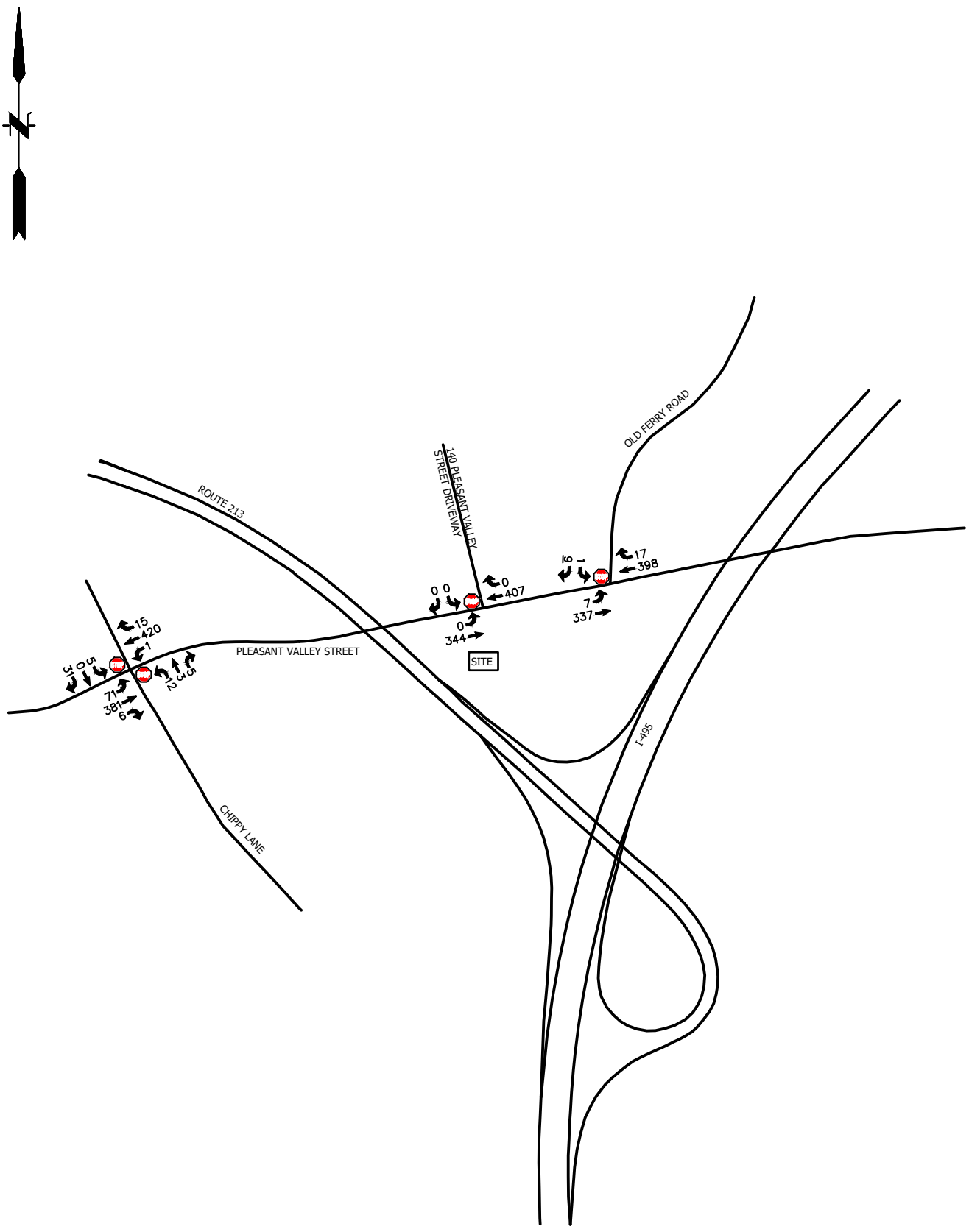
Existing speed data for Pleasant Valley Street was also collected using the ATRs. The posted speed limit on Pleasant Valley Street is 30 miles per hour (mph) in the site vicinity. The speed data is summarized in Table 2.

TABLE 2
OBSERVED VEHICLE SPEEDS

Direction	Posted Speed Limit (mph)	Average Observed Speed[a] (mph)	85th Percentile Speed (mph)
Pleasant Valley Street Eastbound	30	36	42
Pleasant Valley Street Westbound	30	36	41

[a]Based on speed data compiled on October 22 through October 23, 2025.

As shown in Table 2, the average speed of vehicles travelling eastbound or westbound on Pleasant Valley Street was found to be 36 mph, respectively. The 85th percentile speed was found to be 42 mph for eastbound vehicles and 41 for westbound vehicles.



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PROPOSED WOODSPRING SUITES HOTEL

2025 EXISTING WEEKDAY MORNING PEAK HOUR TRAFFIC VOLUMES

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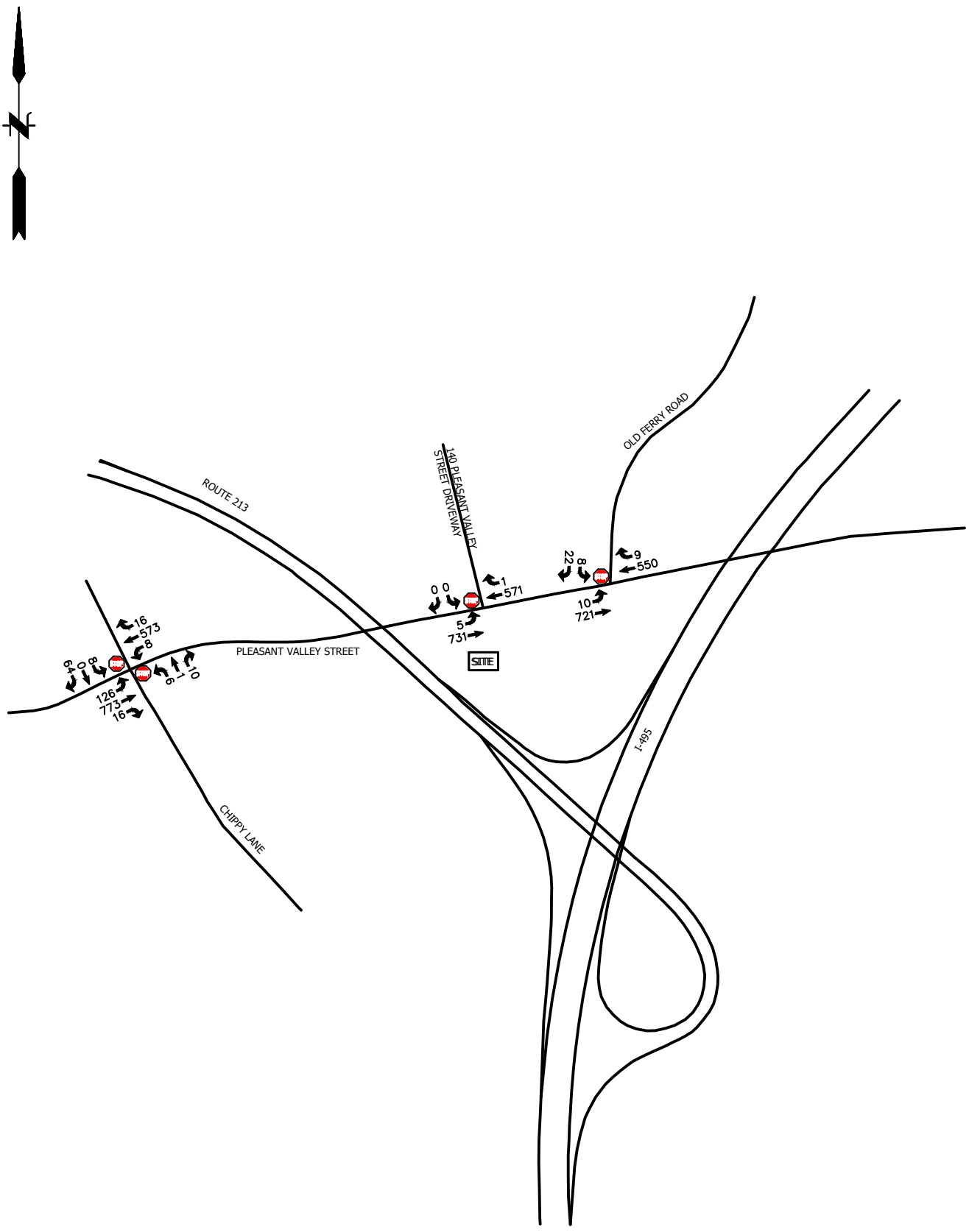
METHUEN MASSACHUSETTS

PROJ. No.: 20251084.A10
DATE: NOVEMBER 2025

FIG. 3



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PROPOSED WOODSPRING SUITES HOTEL

2025 EXISTING WEEKDAY EVENING PEAK HOUR TRAFFIC VOLUMES

143 PLEASANT VALLEY STREET TIS

METHUEN MASSACHUSETTS

PROJ. No.: 20251084.A10
DATE: NOVEMBER 2025

FIG. 4

2.6 Motor Vehicle Crash Data

Motor vehicle crash data for the study area intersections and roadways were obtained from the MassDOT database for 2018 through 2022, the most recent five-year period for which data is available. The motor vehicle crash data was reviewed to determine crash trends in the study area.

Over the 5-year period, five (5) crashes were reported at the Pleasant Valley Street and Chippy Lane intersection, averaging one (1) crash per year. All crashes resulted in property damage only. Four occurred during dry pavement conditions, while one occurred on wet pavement. Four crashes happened outside peak periods, and one occurred during the morning peak. Three crashes involved rear-end collisions, one was a sideswipe, and one was classified as single vehicle crash.

At the Pleasant Valley Street and Old Ferry Road intersection, four (4) crashes were reported over the study period, averaging 0.8 crashes per year. Two crashes resulted in property damage only, while two involved personal injuries. All crashes occurred under dry pavement conditions. One (1) crash occurred during the evening peak hour, and three occurred during off-peak hours. Three crashes were rear-end collisions, and one was a head-on collision. The crash data is summarized in Table 3 and included in the Appendix

2.7 Public Transportation

There are currently two public transportation services (MEVA) that run near the proposed project with bus stop nearby. Route 4 (The Loop Via Prospect Hill) runs east to west and vice versa. It runs from 5:15 AM to 9:00 PM on weekdays and 6:45 AM to 5:45 PM on Saturday and 9:00 AM to 5:30 PM on Sunday. Route 1 (Lawrence-Haverhill via the Loop) runs east to west and vice versa. It runs from 5:00 AM to 9:00 PM on weekdays and 7:00 AM to 7:00 PM on Saturday and Sunday.

2.8 Planned Roadway Improvements

Officials for MassDOT and the City of Methuen were contacted regarding roadway improvements planned for the study area intersections. No improvements are currently planned in the vicinity of the site or at the study area intersections.

TABLE 3
MOTOR VEHICLE CRASH DATA SUMMARY[a]

Scenario	Intersection: Pleasant Valley Street/ Old Ferry Road	Intersection: Pleasant Valley Street/ # 140 Pleasant Valley Street	Intersection: Pleasant Valley Street / Chippy Lane
Year[b]:			
2018	0	0	3
2019	3	0	0
2020	0	0	1
2021	0	0	1
2022	1	0	0
Total	4	0	5
Average[b]	0.8	0.0	1.0
Crash Rate[c]	0.15	0.0	0.15
Significant[d]	No	No	No
Type:			
Angle	0	0	0
Rear-End	3	0	3
Head-On	1	0	0
Sideswipe	0	0	1
Pedestrian	0	0	0
Bicycle	0	0	0
Single Vehicle Crash	0	0	1
Unknown	0	0	0
Total	4	0	5
Time of Day:			
Morning (7 to 9 AM)	0	0	1
Evening (4 to 6 PM)	1	0	0
Remainder of Day	3	0	4
Total	4	0	5
Pavement Conditions:			
Dry	4	0	4
Wet	0	0	1
Snow/Ice/Slush	0	0	0
Unknown	0	0	0
Total	4	0	5
Severity:			
Property Damage	2	0	5
Personal Injury	2	0	0
Fatal Accident	0	0	0
Unknown	0	0	0
Total	4	0	5

[a]Source: MassDOT Crash Portal.
[b]Average crashes over analysis period.
[c]Crash rate per million entering vehicles (mev).
[d]District 4 signalized intersections are significant if rate >0.73 crashes per million vehicles and unsignalized intersections are significant if rate >0.57 crashes per million vehicles.

3 2032 No-Build and Build Traffic Conditions

To determine the impact of site-generated traffic volumes on the roadway network under future conditions, baseline traffic volumes in the study area were projected to the year 2032. Traffic volumes on the roadway network at that time, in the absence of the proposed project, would include existing traffic, new traffic due to general background traffic growth, and traffic related to specific developments by others expected to be completed by 2032. Consideration of these factors resulted in the development of 2032 No-Build traffic volumes. Anticipated site-generated traffic volumes were then superimposed upon these No-Build traffic flow networks to develop 2032 Build conditions.

3.1 No-Build Traffic Volumes

Traffic growth on area roadways is a function of the expected land development in the immediate area as well as the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This produces a more realistic estimate of growth for local traffic. However, the drawback of this procedure is that the potential growth in population and development external to the study area would not be accounted for in the traffic projections.

To provide a conservative analysis framework, both procedures were used.

Background Traffic Growth

The Central Transportation Planning Staff (CTPS) Department was queried requesting municipal growth rates for the City of Methuen. An email was received from CTPS providing the following Compound Average Annual Growth Rate (CAGR) from 2019 to 2050 for the City of Methuen, which is presented in Table 4.

TABLE 4
COMPOUND AVERAGE ANNUAL GROWTH RATE (CAGR) FROM BOSTON REGION MPO (CTPS) FOR 2019 TO 2050

Roadway Type	Methuen CAGR
Highway	0.180%
Major Arterial	0.264%
Minor Arterial and Collector	0.324%
All Facilities (including Local Roads)	0.234%

Source: Central Transportation Planning Department, 2019 to 2050.

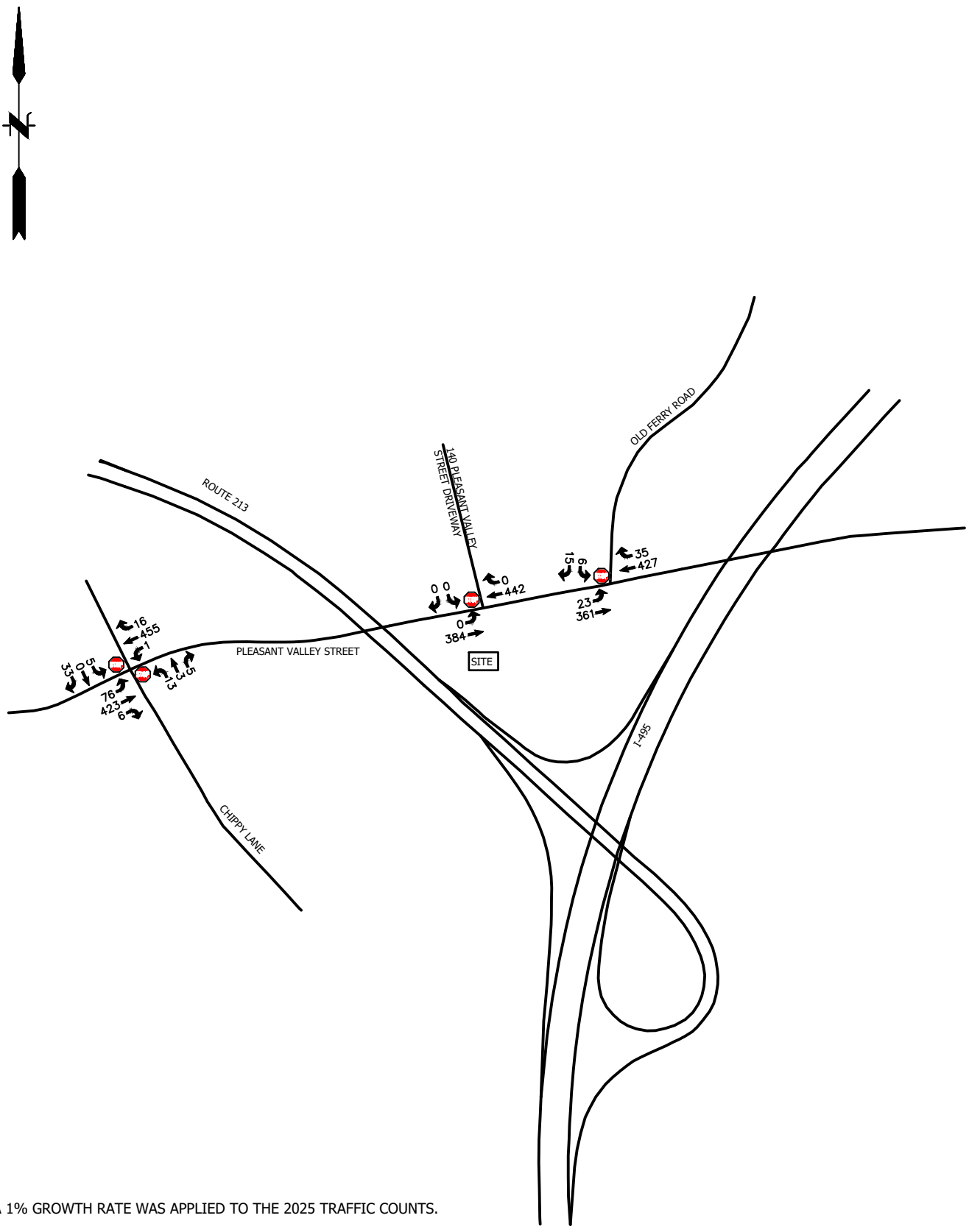
To be conservative, the future 2032 baseline traffic volumes were projected using a 1.0% growth rate.

Specific Development by Others

Traffic volumes generated by the specific local developments by others were included in the 2032 No-Build condition. The City of Methuen was contacted to identify specific planned developments. Based on these discussions, there is 0ne (1) project that has been identified that could impact traffic volumes in the study area. A warehouse has been constructed on Old Ferry Road but has not been occupied. Trips for the approximately 151, 000 sf warehouse were obtained from the traffic generation letter prepared by Vanasse & Associates (dated April 1, 2022) and included in the background projections.

No-Build Condition Traffic Volumes

The 2032 No-Build weekday morning and evening peak-hour traffic volumes were developed by applying a compounded 1.0 percent annual growth rate to the 2025 Existing peak-hour traffic volumes and adding traffic from any identified background developments. Figures 5 and 6 show the projected 2032 No-Build peak hour traffic volumes for the weekday morning and weekday evening peak-hours, respectively.



*A 1% GROWTH RATE WAS APPLIED TO THE 2025 TRAFFIC COUNTS.

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PROPOSED WOODSPRING SUITES HOTEL

2032 NO-BUILD WEEKDAY MORNING PEAK HOUR TRAFFIC VOLUMES

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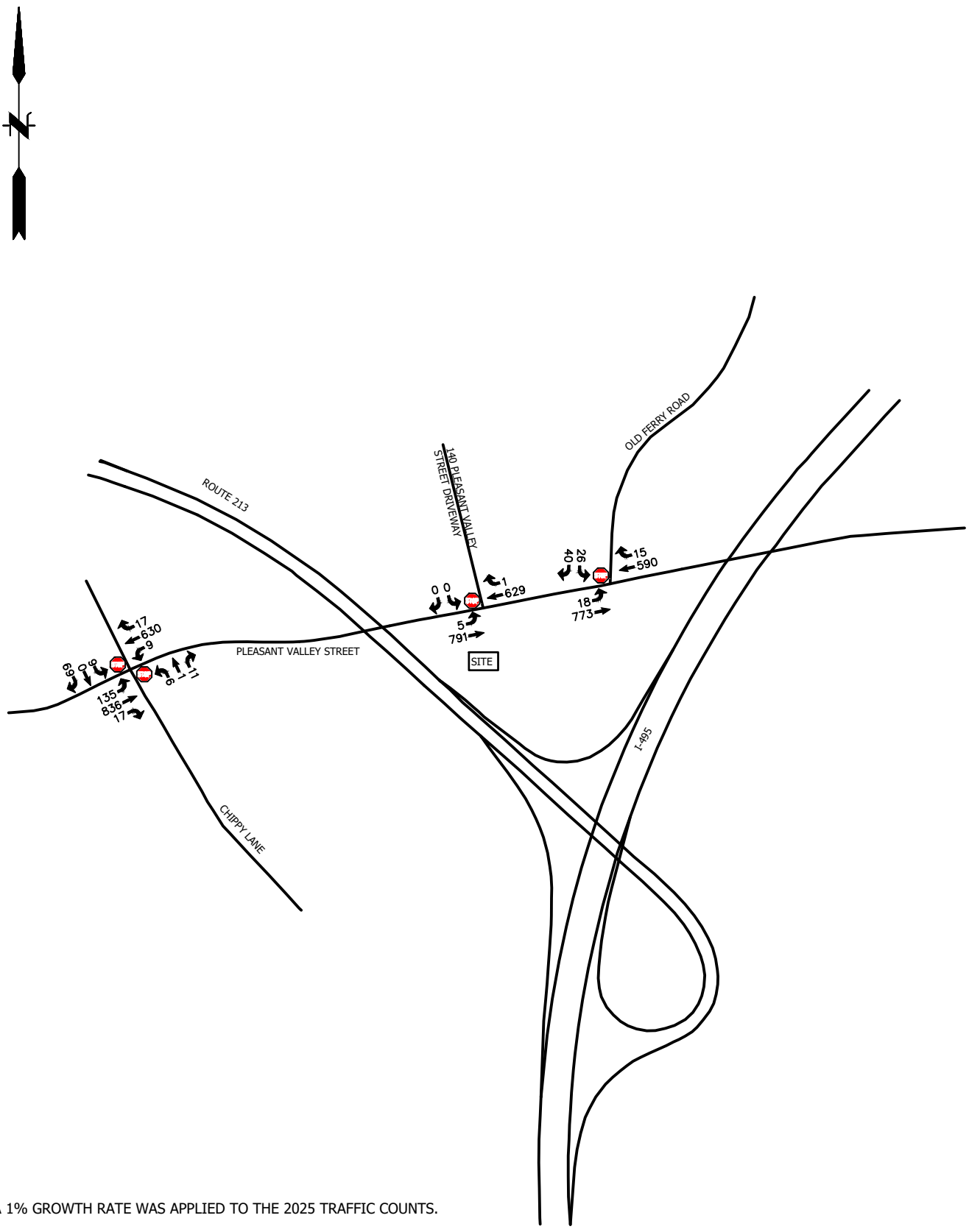
FIG. 5



*A 1% GROWTH RATE WAS APPLIED TO THE 2025 TRAFFIC COUNTS.

SCALE: HORZ.: NOT TO SCALE VERT.: DATUM: HORZ.: - VERT.: -	FUSS & O'NEILL ONE FINANCIAL PLAZA, 15th FLOOR HARTFORD, CT 06103 860.646.2469 www.fando.com	PROPOSED WOODSPRING SUITES HOTEL 2032 NO-BUILD WEEKDAY EVENING PEAK HOUR TRAFFIC VOLUMES 143 PLEASANT VALLEY STREET TIS METHUEN MASSACHUSETTS	PROJ. No.: 20251084.A10 DATE: NOVEMBER 2025 FIG. 6

3.2 Build Traffic Volumes

Project Description

The proposed development includes the construction of a single hotel building with 122 hotel rooms. The hotel will be an extended stay hotel, with minimal amenities and no function hall space. Parking will be provided for 116 vehicles. Access to the site would be provided by way of a single full-movement driveway to Pleasant Valley Street.

Traffic Generation

Site generated traffic for the project was based on trip-generation data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation* manual[2] as well as empirical trip generation data from other similar hotels. The trip generation data for Land Use Code (LUC) 312 – Limited Service Hotel is shown in the first column of Table 5 and is based on the proposed number of hotel rooms.

TABLE 5
TRIP-GENERATION SUMMARY

	Proposed Trips[a]
Average Weekday Daily Traffic	506
Weekday Morning Peak Hour:	
Entering	17
Exiting	26
Total	43
Weekday Evening Peak Hour:	
Entering	21
Exiting	17
Total	38

[a]Based on LUC 312 – Limited Service Hotel, 122 rooms.

On a typical weekday, the proposed hotel is expected to generate 506 vehicle trips (253 vehicles entering and 253 vehicles exiting). During the weekday morning peak hour, 43 vehicle trips (17 vehicles entering and 26 vehicles exiting) are expected. During the weekday evening peak hour, 38 vehicle trips (21 vehicles entering and 17 vehicles exiting) are expected.

[2]*Trip Generation,* Eleventh Edition; Institute of Transportation Engineers; Washington, DC; 2021.

Trip Distribution

The directional distribution of the vehicular traffic approaching and departing the site is a function of population densities, the location of employment, existing travel patterns, similar uses, and the efficiency of the existing roadway system. Table 6 summarizes the expected trip distribution for the hotel, also shown on Figure 7.

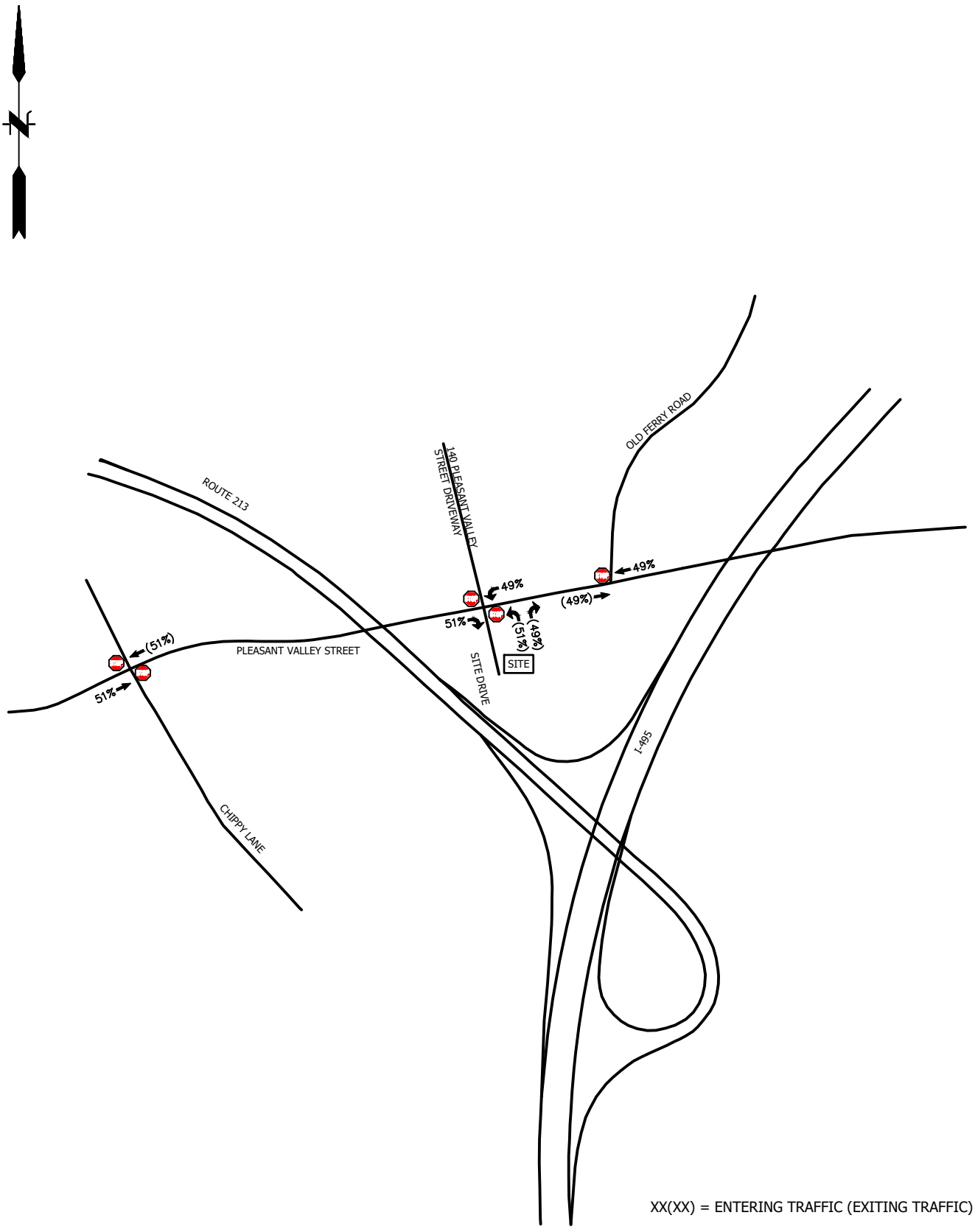
TABLE 6
PROPOSED TRIP DISTRIBUTION

Route	Direction	Percent of Trips
Pleasant Valley Street	East	49
Pleasant Valley Street	West	51
TOTAL		100

Future Traffic Volumes - Build Condition

The site-generated traffic was distributed within the study area according to the percentages summarized in Table 7. The site generated volumes for the Project are shown on Figures 8 and 9 for the respective weekday morning and weekday evening peak hours. The site generated traffic volumes for the Project were then superimposed onto the 2032 No-Build traffic flow network and are shown on Figures 10 and 11 for the weekday morning and weekday evening peak hours, respectively. These volumes were used as the basis for all analysis as well as to identify potential mitigation measures to ameliorate the project's impacts.

A summary of peak-hour projected traffic-volume changes in the site vicinity is shown in Table 7. These volumes are based on the expected increases from the site traffic generation.



SCALE: HORZ.: NOT TO SCALE VERT.: DATUM: HORZ.: - VERT.: -	FUSS & O'NEILL ONE FINANCIAL PLAZA, 15th FLOOR HARTFORD, CT 06103 860.646.2469 www.fando.com	PROPOSED WOODSPRING SUITES HOTEL TRIP DISTRIBUTION 143 PLEASANT VALLEY STREET TIS METHUEN MASSACHUSETTS	PROJ. No.: 20251084.A10 DATE: NOVEMBER 2025 FIG. 7

TABLE 7
TRAFFIC-VOLUME INCREASES[a]

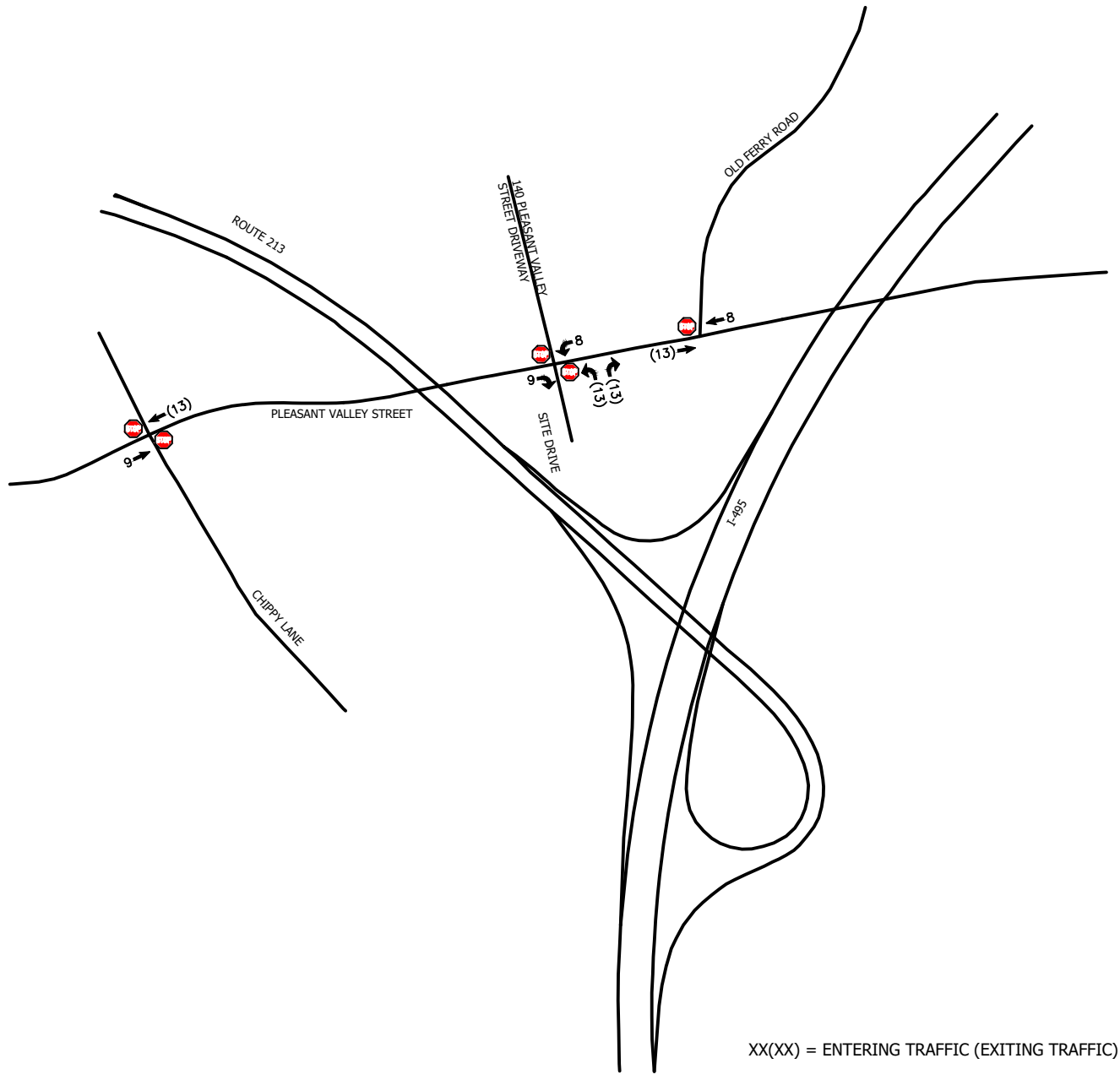
Location/Peak Hour	2032 No-Build	2032 Build	Volume Increase over No-Build
Pleasant Valley Street east of Old Ferry Road			
Weekday Morning	829	850	21
Weekday Evening	1,404	1,422	18
Pleasant Valley Street west of Chippy Lane			
Weekday Morning	1,006	1,028	22
Weekday Evening	1,630	1,650	20

[a]All volumes are vehicles per hour, total of both directions.

As shown in Table 7, project-related increases are in the range of eighteen (18) to twenty-two (22) bi-directional vehicles during the peak hours. This is approximately equivalent to one additional vehicle every fifteen (15) minutes or less per direction on average during the peak hours.

SITE GENERATED TRAFFIC VOLUMES

LAND USE CODE	QUANTITY	AM PEAK HOUR		
		ENTER	EXIT	TOTAL
LUC 312 - LIMITED-SERVICE HOTEL	122 UNITS	17	26	43
SUBTOTAL		17	26	43



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PROPOSED WOODSPRING SUITES HOTEL

SITE-GENERATED WEEKDAY MORNING PEAK HOUR TRAFFIC VOLUMES

143 PLEASANT VALLEY STREET TIS

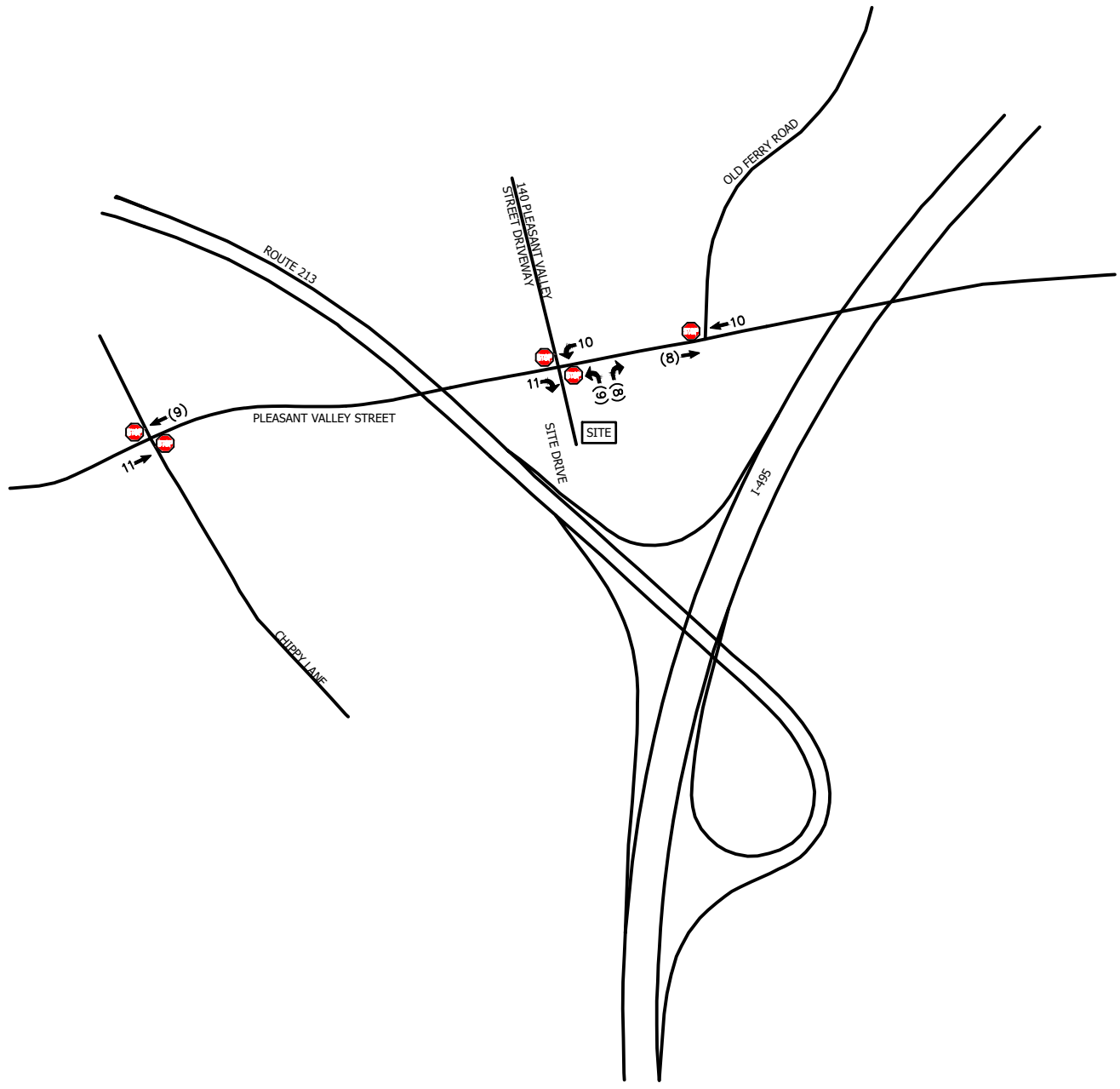
METHUEN MASSACHUSETTS

PROJ. No.: 20251084.A10
DATE: NOVEMBER 2025

FIG. 8

SITE GENERATED TRAFFIC VOLUMES

LAND USE CODE	QUANTITY	PM PEAK HOUR		
		ENTER	EXIT	TOTAL
LUC 312 - LIMITED-SERVICE HOTEL	122 UNITS	21	17	38
SUBTOTAL		21	17	38



File: J:\DWG_Trilon1VP\120.0251084.A10\Civil\Traffic Figures\20251025.A10_TVF01.dwg Layout: FIG 9 Plotted: 2025-12-01 2:29 PM Saved: 2025-12-01 2:28 PM User: robert.lupien
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PROPOSED WOODSPRING SUITES HOTEL

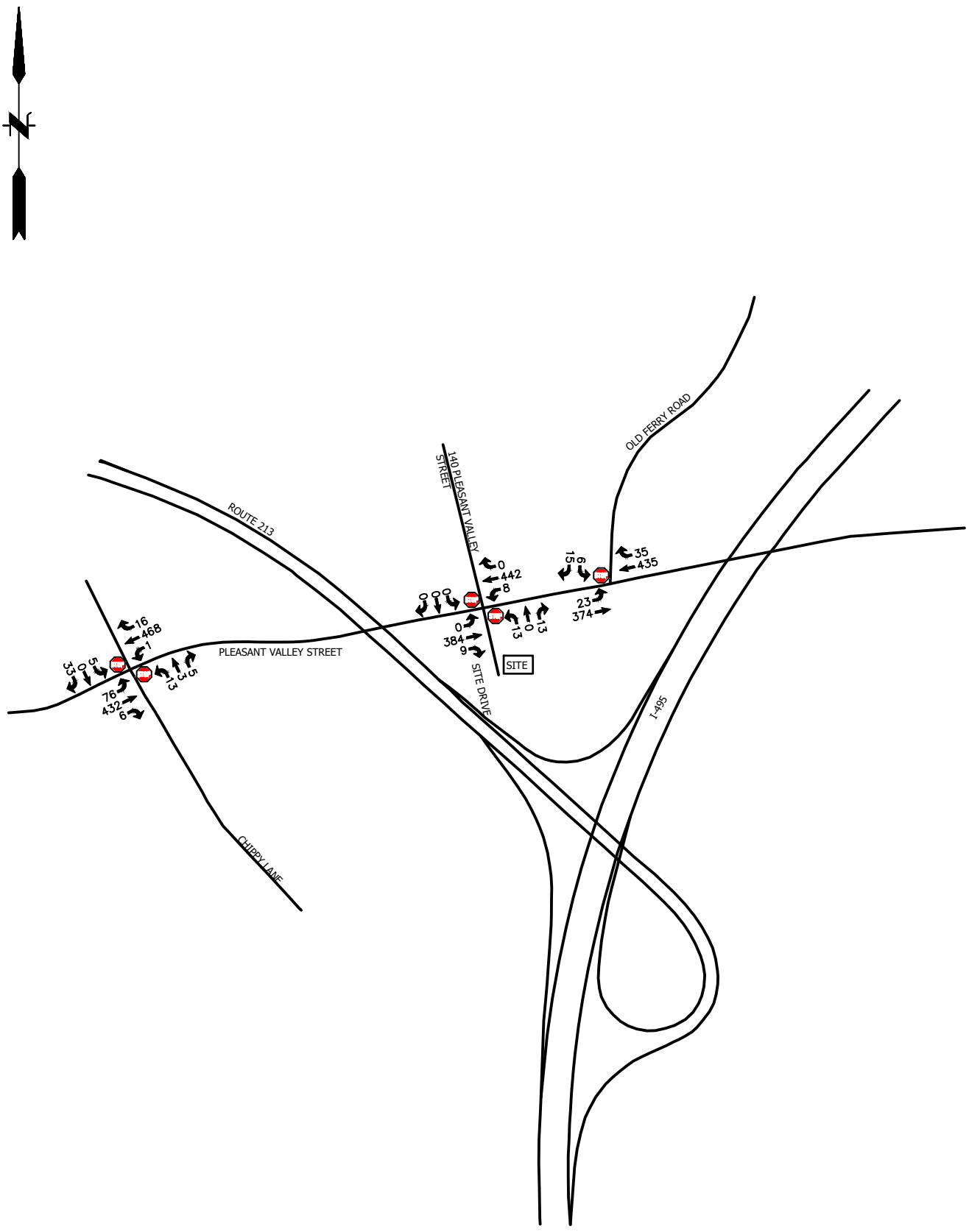
SITE-GENERATED WEEKDAY EVENING PEAK HOUR TRAFFIC VOLUMES

143 PLEASANT VALLEY STREET TIS

METHUEN MASSACHUSETTS

PROJ. No.: 20251084.A10
DATE: NOVEMBER 2025

FIG. 9



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PROPOSED WOODSPRING SUITES HOTEL

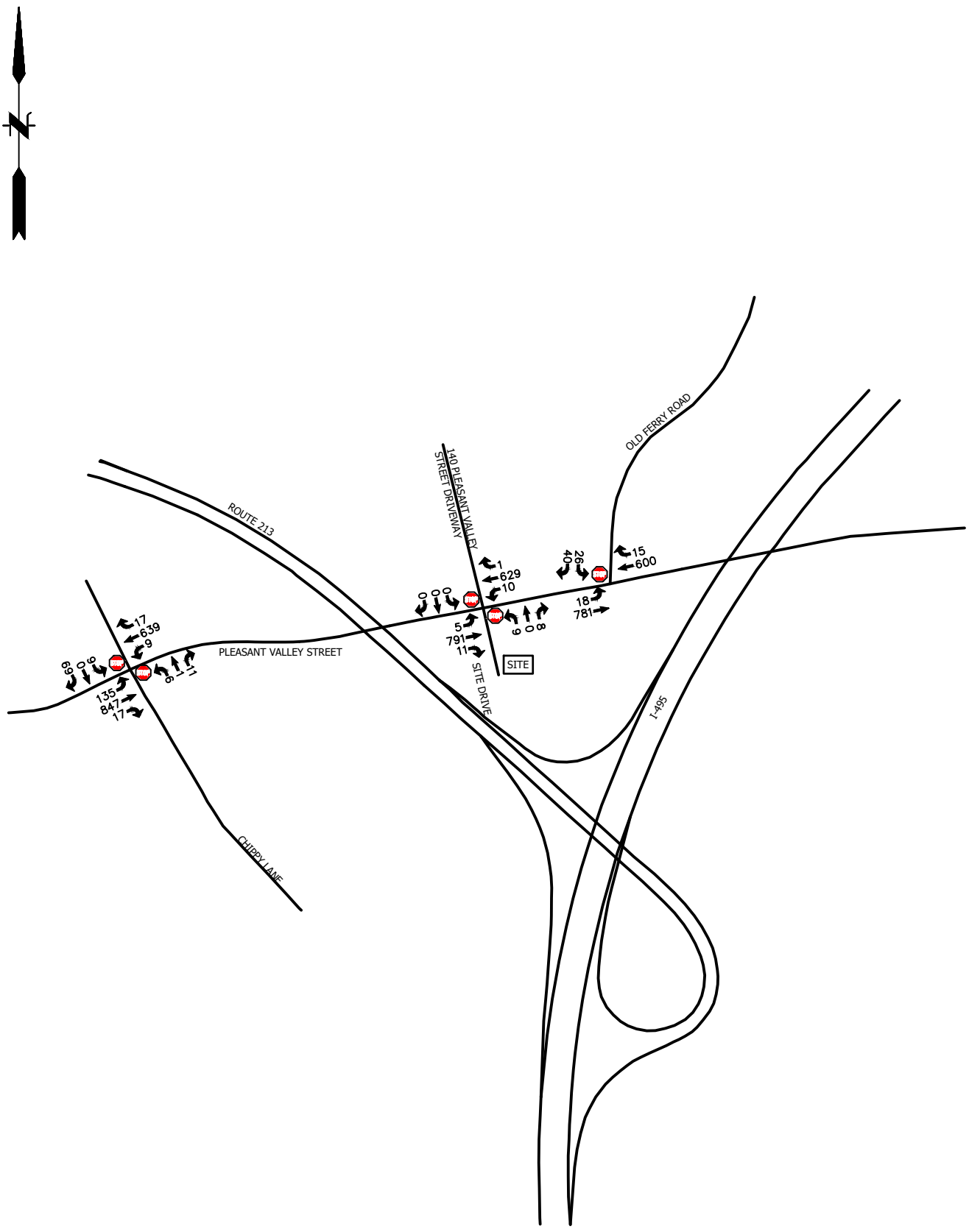
2032 BUILD WEEKDAY MORNING PEAK HOUR TRAFFIC VOLUMES

143 PLEASANT VALLEY STREET TIS

METHUEN MASSACHUSETTS

PROJ. No.: 20251084.A10
DATE: NOVEMBER 2025

FIG. 10



SCALE: HORZ.: NOT TO SCALE VERT.: DATUM: HORZ.: - VERT.: -	**FUSS & O'NEILL** ONE FINANCIAL PLAZA, 15th FLOOR HARTFORD, CT 06103 860.646.2469 www.fando.com	PROPOSED WOODSPRING SUITES HOTEL 2032 BUILD WEEKDAY EVENING PEAK HOUR TRAFFIC VOLUMES 143 PLEASANT VALLEY STREET TIS METHUEN MASSACHUSETTS	PROJ. No.: 20251084.A10 DATE: NOVEMBER 2025 FIG. 11

4 Analysis

4.1 Methodology

To assess intersection operations, capacity analyses were conducted for Existing, No-Build, and Build traffic-volume conditions. Capacity analyses provide an indication of how well the study area intersections serve existing and projected traffic volumes. Vehicle queue analyses provide a secondary measure of the operational characteristics of an intersection or section of roadway under study in terms of lane use and demand.

Levels of Service

Level-of-service (LOS) is a quantitative measure used to describe the operation of an intersection or roadway segment. The Level-of-Service definition is described by the quality of traffic flow and is primarily defined in terms of traffic delays. The primary result of capacity analyses[3] is the assignment of a level-of-service to traffic intersections or roadway segments under various traffic-flow conditions. Six levels of service are defined for traffic intersections and roadway segments. Levels-of-service criteria range from LOS A to LOS F. LOS A represents very good operating conditions while LOS F represents very poor operating conditions.

Signalized Intersections

Levels of service for signalized intersections are calculated using the methodology and procedures described in the 7th Edition *Highway Capacity Manual*[4] *(HCM7)*. The methodology assesses the intersection based on type of signal operation, signal timing and phasing, progression, vehicle mix, and intersection geometrics. Level-of-service designations are based on the delay per vehicle. Table 8 summarizes the relationship between Level-of-Service and delay for signalized intersections. The calculated delay values result in levels-of-service designations which are applied to individual lane groups, to individual intersection approaches, and to the entire intersection. In the HCM7 methodology, the critical lane group volume to capacity ratio is reported.

[3]The capacity analysis methodology is based on procedures presented in the *Highway Capacity Manual 7th Edition;* Transportation Research Board; Washington, DC; 2022.

[4]*Highway Capacity Manual 7th Edition*; Transportation Research Board; Washington, DC; 2022.

TABLE 8
LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS[a]

Delay per Vehicle (Seconds)	Defined Level-of-Service $v/c^b < 1.0$	Defined Level-of-Service $v/c^b > 1.0$
≤10.0	A	F
10.1 to 20.0	B	F
20.1 to 35.0	C	F
35.1 to 55.0	D	F
55.1 to 80.0	E	F
>80.0	F	F

[a]*Highway Capacity Manual 7th Edition*; Transportation Research Board; Washington, DC; 2022; page 19-16.
[b]Volume to capacity ratio.

Unsignalized Intersections

The level-of-service (LOS) for an unsignalized intersection is determined by the methodology and procedures described in the HCM7. The level-of-service for unsignalized intersections is measured in terms of average delay for the critical movements (typically side street turning movements or mainline turning movements). The delay for the critical movements is a function of the available capacity for the movement and the degree of saturation of the lane group containing the critical movement. The delay calculation includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. The definitions for level-of-service at unsignalized intersections are also provided in the *Highway Capacity Manual 7th Edition*. Table 9 summarizes the relationship between level- of-service and average control delay for the critical movements at unsignalized intersections.

TABLE 9
LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS[a]

Average Delay (seconds per vehicle)	Defined Level-of-Service v/c[b] < 1.0	Defined Level-of-Service v/c > 1.0
≤ 10.0	A	F
10.1 to 15.0	B	F
15.1 to 25.0	C	F
25.1 to 35.0	D	F
35.1 to 50.0	E	F
>50.0	F	F

[a]*Highway Capacity Manual 7th Edition*; Transportation Research Board; Broad, DC; page 20-6
[b]Volume to capacity ratio.

The analytical methodologies used for the analysis of unsignalized intersections use conservative analysis parameters, such as high critical gaps. The critical gap is defined as the minimum time between successive main line vehicles for a side street vehicle to execute the appropriate turning maneuver. Actual field observations indicate that drivers at the study area intersections accept smaller gaps in traffic than those used in the analysis procedures and therefore experience less delay than calculated by the HCM methodology. **The analysis results from the HCM model overstate the actual delays experienced in the field.** It should be noted that the unsignalized intersections along heavily trafficked roadways operate at constrained levels and the resulting calculated results of the unsignalized intersection analyses should be considered highly conservative.

4.2 Capacity Analysis Results

Level-of-service analyses were conducted for average month conditions for 2025 Existing, 2032 No-Build and 2032 Build conditions for the intersections within the study area. The results of the unsignalized capacity analyses are summarized in Table 10. Detailed analysis sheets are presented in the Appendix.

TABLE 10
UNSIGNALIZED LEVEL-OF-SERVICE ANALYSIS SUMMARY

Critical Movement/ Peak Hour	2025 Existing					2032 No-Build					2032 Build				
	Demand[a]	V/C[b]	Delay[c]	LOS[d]	Queue[e]	Demand	V/C	Delay	LOS	Queue	Demand	V/C	Delay	LOS	Queue
Pleasant Valley Street and Old Ferry Road Valley Street															
All movements from Old Ferry Road (SB):															
Weekday Morning	10	0.019	11.5	B	2.5	21	0.059	15.0	C	5.0	21	0.061	15.2	C	5.0
Weekday Evening	30	0.107	18.2	C	10.0	66	0.323	28.8	D	32.5	66	0.331	29.6	D	35.0
Pleasant Valley Street and 140 Pleasant Valley Street Driveway															
All movements from Driveway (SB):															
Weekday Morning	0	---	0	A	---	0	---	0	A	---	0	---	0	A	---
Weekday Evening	0	---	0	A	---	0	---	0	A	---	0	---	0	A	---
All movements from Site Driveway (NB):															
Weekday Morning	---	---	---	---	---	---	---	---	---	---	26	0.079	15.9	C	7.5
Weekday Evening	---	---	---	---	---	---	---	---	---	---	17	0.137	35.9	E	12.5
Pleasant Valley Street, Chippy Lane and Choice Fitness Driveway															
All Movements from Chippy Lane (NB):															
Weekday Morning	20	0.097	22.8	C	7.5	21	0.121	26.6	D	10.0	21	0.126	27.7	D	10.0
Weekday Evening	17	0.208	55.8	F	17.5	18	0.449	76.6	F	25.0	18	0.306	84.3	F	27.5
All Movements from Choice Fitness Driveway (SB):															
Weekday Morning	36	0.085	13.5	B	7.5	38	0.096	14.3	B	7.5	38	0.099	14.6	B	7.5
Weekday Evening	72	0.325	27.0	D	35.0	78	0.449	38.7	E	52.5	78	0.466	40.9	E	55.0

[a]Demand of critical movements in vehicles per hour. [b]Volume-to-capacity ratio. [c]Delay in seconds per vehicle. [d]Level of service. [e]95th percentile queue in feet.

Pleasant Valley Street and Old Ferry Road

Under 2025 Existing weekday morning conditions, the critical movements at this unsignalized intersection (all movements from Old Ferry Road) are modeled to operate at LOS B during the weekday morning peak hour and at LOS C during the weekday evening peak hour. Under future 2032 No-Build conditions, the critical movements are projected to operate at LOS C during the weekday morning peak hour and at LOS D during the weekday evening peak hour. Under 2032 Build conditions, with the project, the critical movements are projected to continue to operate at LOS C during the weekday morning peak hour and at LOS D during the weekday evening peak hour.

Pleasant Valley Street and 140 Pleasant Valley Street Driveway

Under 2025 Existing weekday morning conditions, the critical movements at this unsignalized intersection (all movements from driveway) are modeled to operate at LOS A during the weekday morning peak hour and at LOS A during the weekday evening peak hour. Under future 2032 No-Build conditions, the critical movements are projected to operate at LOS A during the weekday morning peak hour and at LOS A during the weekday evening peak hour. Under 2032 Build conditions, with the project, the critical movements are from the proposed site driveway and are projected to operate at LOS C during the weekday morning peak hour and at LOS E during the weekday evening peak hour. The volume to capacity (v/c) ratio is well less than 1.0 (capacity) and the projected 95th percentile vehicular queue is approximately one (1) vehicle.

Pleasant Valley Street, Chippy Lane and Choice Fitness Driveway

Under 2025 Existing weekday morning conditions, the critical movements at this unsignalized intersection (all movements from Chippy Lane) are modeled to operate at LOS C during the weekday morning peak hour and at LOS F during the weekday evening peak hour. Under future 2032 No-Build conditions, the critical movements are projected to operate at LOS D during the weekday morning peak hour and at LOS F during the weekday evening peak hour. Under 2032 Build conditions, with the project, the critical movements are projected to continue to operate at LOS D during the weekday morning peak hour and at LOS F during the weekday evening peak hour. The v/c ratio is well less than 1.0 (capacity) and the projected 95th percentile vehicular queue is approximately one (1) vehicle.

4.3 Sight Distance Assessment

Sight distance measurements were performed at the proposed site driveway intersection with Pleasant Valley Street in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO) standards. Stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. Intersection sight distance (ISD) or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an

intersecting roadway, to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. Table 11 presents the measured SSD and ISD at the intersection of the site driveway with Pleasant Valley Street. The sight distance calculations are included in the Appendix.

TABLE 11
SIGHT DISTANCE SUMMARY

	Required Minimum (Feet)[a]	Measured (Feet)
Pleasant Valley Street and Proposed Site Driveway		
Stopping Sight Distance:		
Pleasant Valley Street approaching from the East	299	500
Pleasant Valley Street approaching from the West	339	480
Intersection Sight Distance:		
Site Driveway looking to the East	401[c]/463[d]	500
Site Driveway looking to the West	401[c]/463[d]	455

[a]Recommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets*; American Association of State Highway and Transportation Officials (AASHTO); 2018 and based on 85th percentile speed for Pleasant Valley Street.
[b]Recommended minimum value for vehicles turning right exiting a roadway under STOP-sign control.
[c]Recommended minimum value for vehicles turning left exiting a roadway under STOP-sign control.

As can be seen in Table 11, the SSD measurements performed at the proposed site driveway intersection indicate that the intersections exceed the recommended minimum requirements based on an 85th percentile speed. The ISD at the proposed site driveway intersection with Pleasant Valley Street also exceeds the AASHTO recommendations for westbound flow and is just short for eastbound flow. In accordance with the AASHTO manual, *"If the available sight distance for an entering or crossing vehicle is at least equal to the appropriate stopping sight distance for the major road, then drivers have sufficient sight distance to anticipate and avoid collisions. However, in some cases, this may require a major-road vehicle to stop or slow to accommodate the maneuver by a minor-road vehicle. To enhance traffic operations, intersection sight distances that exceed stopping sight distances are desirable along the major road."* Accordingly, the ISD should be at least equal to the SSD, which would allow a driver approaching the minor road to safely stop. It is recommended that any proposed landscaping be less than three (3) feet in height and maintained for sightlines. It is also recommended that no plantings occur within ten (10) feet of the Pleasant Valley Street travelled ways to maintain sight lines and that the vegetation within the layout be maintained at a height that will not impact sight distances.

5 Recommendations and Conclusion

5.1 Recommendations

The final phase of the analysis process is to identify the mitigation measures necessary to minimize the impact of the project on the transportation system. The proponent has made a commitment to implement the mitigation measures listed below.

The capacity analyses indicate the critical movements at the Pleasant Valley Street and site-driveway intersection (left- and right-turns) are projected to operate at good levels of service during the weekday morning and evening peak hours.

The Pleasant Valley Street driveway should consist of one lane in and one lane out, with a minimum of fifteen (15) foot radii on the curbs. Appropriate signage should also be installed identifying the Pleasant Valley Street driveway entrance. Vegetation or proposed landscaping along Pleasant Valley Street in front of the site and within the layout should be cleared and maintained so as to maintain sight distances.

For the study area intersections, the amount of additional site traffic is not large enough to warrant any intersection improvements.

5.2 Conclusion

The WoodSpring Suites hotel is located on the south side of Pleasant Valley Street, west of Old Ferry Road. On a typical weekday, the proposed hotel is expected to generate 506 vehicle trips. During the weekday morning peak hour, 43 vehicle trips (17 vehicles entering and 26 vehicles exiting) are expected. During the weekday evening peak hour, 38 vehicle trips (21 vehicles entering and 17 vehicles exiting) are expected.

Capacity analyses were performed for each of the study area intersections for 2025 Existing, 2032 No-Build and 2032 Build conditions. Based on the analyses performed, there is no significant change in level of service from No-Build to Build conditions at the signalized study area intersections.

Review of the proposed hotel access plan shows that in relation to roadway capacity, traffic safety, and traffic impacts upon the surrounding roadway network, the proposed project will meet safety standards and have a minimal impact on existing traffic conditions. With the proposed access, in conjunction with the mitigation measures described above and maintaining sight distances from the driveway (clear sight lines along frontage), safe and efficient access can be provided to the hotel tenants and staff of the proposed hotel and to the motoring public in the area.