

MEMORANDUM

DATE: April 2, 2026

TO: Essek Petrie, AICP, ENV SP
Pulte Homes of New England LLC
1900 West Park Drive, Suite 180
Westborough, MA 01581

FROM: Robert J. Michaud, P.E. – Managing Principal
Andrew J. Arseneault – Project Manager

RE: **Proposed Multifamily Residential Development**
28 Haverhill Road – Amesbury, MA

MDM Transportation Consultants, Inc. (MDM) has conducted a Transportation Impact and Access Study (TIAS) for a multifamily residential development to be located at 28 Haverhill Road in Amesbury, Massachusetts. The location of the Site relative to the adjacent roadway network is shown in **Figure 1**. This assessment provides a summary of the baseline traffic conditions at the Site and adjacent roadways/intersections, evaluates projected trip generation, quantifies incremental traffic impacts of the Site development on area roadways, and evaluates the access to and circulation within the Site.

Key findings of this assessment are as follows:

- *Safety Analysis:* Based on an extensive review of Massachusetts Department of Transportation (MassDOT) crash data, most study intersections exhibit below-average crash rates and none of the intersections are listed as high crash locations on the MassDOT HSIP database. However, the intersection of Haverhill Road at Hillside Avenue and the Southwest Connector at Haverhill Road intersection (the so-called “Southwest Connector” intersection) experience above-average crash rates; the Southwest Connector specifically exhibits a high prevalence of angle-type collisions involving northbound left-turn vehicles turning onto Haverhill Road. These movements often have restricted sight lines due to signal queuing. The City of Amesbury has identified this condition as one of the underlying bases for desiring left-turn entry access to the Project along Hillside Avenue.
- *Driveway Sight Line Evaluation:* The available sight lines at proposed driveway locations exceed the recommended minimum criteria based on a design speed slightly higher than the observed 85th percentile design speeds.



Figure 1

Study Location Map

- *Traffic Generation and Distribution:* Projected trip generation for the community based on an industry standard trip rate published by the Institute of Transportation Engineers (ITE) is approximately 45 vehicle trips (10 entering and 35 exiting) during the weekday morning peak hour, 48 vehicle trips (31 entering and 17 exiting) during the weekday evening peak hour and approximately 562 vehicle trips on a daily basis.
- *Site Access.* The optimal access/egress for the Site comprises two full access driveways: a full-access driveway along the south side of Haverhill Road opposite and between Merrill Avenue and Jacqueline Drive (the location of existing access for the property) and a full access driveway along Hillside Avenue within the “allowed access” area of the state highway layout. These locations are supported by safety and operational analyses that indicate both locations exceed applicable sight line criteria for measured 85th percentile travel speeds and will operate with minimal delays and queues. The proposed driveway locations also provide preferred means of emergency access to/from the site as supported by discussions with the City of Amesbury Fire Department. The proposed full-access design further reduces dependency on and impact to the unsignalized movement of left-turns from Hillside Avenue to Haverhill Road where longer delays and high prevalence of angle collisions occur. Avoiding this location is an objective and preference of the City of Amesbury based on impaired sight lines and the prevalence of angle-type crashes at that intersection.
- *Adequate Roadway Capacity.* The proposed development is expected to have minimal impact on the study area intersections and will not result in any notable changes in traffic operations in the study area relative to No-Build conditions. The Site driveway approaches to will operate below capacity at LOS C or better during the peak hours, under both assessed access configurations.

PROJECT DESCRIPTION

The existing Site consists of an approximately 13.3± acres of land with a single-family home located along the southern side of Haverhill Road in Amesbury, Massachusetts. Site access/egress is currently provided via a single driveway along Haverhill Road to the west of Jacqueline Drive.

The Site will be developed to include two residential buildings providing 126 residential units. Access/egress to the Site is proposed to remain via the full-access driveway along Haverhill Road, and by way of a new full-access driveway along Hillside Avenue within the “allowed access” portion of the state highway layout. Parking for 216 vehicles is proposed comprising of 112 surface spaces and 104 garaged spaces below each of the residential buildings; this represents a parking ratio of approximately 1.71 spaces per unit. In addition, a portion of the Site will be developed to allow public parking for approximately three vehicles in a stone dust lot that will provide public access to a trailhead that connects the parking area to a walking trail system on the property. Access/egress to the public parking associated with this amenity will be provided

by way of a separate, existing driveway along Haverhill Road. The preliminary Site layout prepared by Civil Design Group, LLC is presented in **Figure 2**.

An alternative access scenario was also explored for the Site that includes left-turn restrictions at the proposed Hillside Avenue Site driveway. This alternative was evaluated following initial consultation with MassDOT District 4 Office and at the request of the City of Amesbury so that potential project traffic impacts of these turn restrictions are quantified with specific focus on the unsignalized southwest connector intersection at the nearby Haverhill Road at Hillside Avenue intersection. This alternative is documented in more detail under the *Alternative Access Configuration* section of this assessment.

BASELINE TRAFFIC & SAFETY CHARACTERISTICS

An overview of roadway classification and geometric characteristics is provided below for the adjacent study roadways.

Roadways

The following roadways provide a primary means of access to the Site and are likely to sustain a measurable level of traffic impact from the development:

Haverhill Road

Haverhill Road, also designated as Route 110, is classified by the Massachusetts Department of Transportation (MassDOT) as a Minor Arterial roadway under MassDOT jurisdiction. Haverhill Road is an east-west roadway connecting Interstate 95 (I-95) to the east with Route 108 and Route 113 to the west. The roadway generally provides two travel lanes in each direction, with additional auxiliary lanes provided at key intersections. The posted speed limit along Haverhill Road in the Site vicinity is 35 miles per hour (mph). Sidewalks are provided intermittently along both sides of the roadway. The Merrimack Valley Transit Authority (MVTA) provides bus service along Haverhill Road, with a stop located approximately 0.1 miles west of the Site. Land uses along Haverhill Road primarily includes the Saint Joseph/Bartlett Cemetery and a mix of residential, industrial and commercial uses including restaurants, retail shops, and general and medical office uses.

Hillside Avenue

Hillside Avenue, also designated as Route 150, is classified by the Massachusetts Department of Transportation (MassDOT) as a Minor Arterial roadway under MassDOT jurisdiction. Hillside Avenue is a north-south roadway connecting to the New Hampshire state line to the north and Interstate 495 (I-495) to the south. The roadway generally provides two travel lanes in each direction, with additional auxiliary lanes provided at key intersections. The posted speed limit along Hillside Avenue in the Site vicinity is 45 mph. Sidewalks are provided intermittently

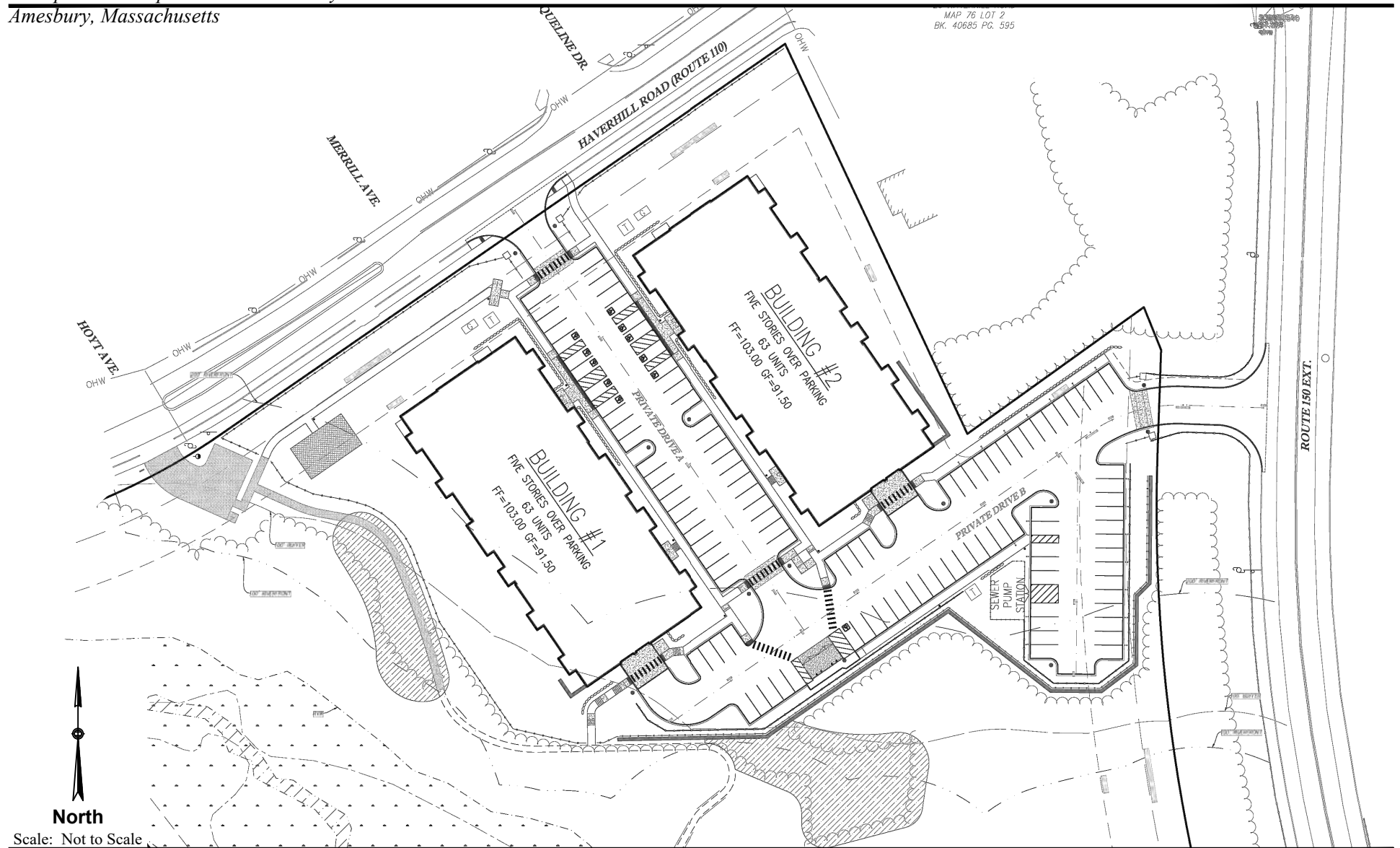


Figure 2

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Preliminary Site Plan

along both sides of the roadway north of Haverhill Road. A shared-use path is provided along the east side of the roadway in the vicinity of the I-495 interchange. Land uses along Hillside Avenue primarily includes the Saint Joseph/Bartlett Cemetery, areas of unimproved land, a mix of residential, industrial and commercial uses.

Intersections

The existing vehicular, bicycle and pedestrian accommodations at the study area intersections are summarized in **Table 1**.

TABLE 1
INTERSECTION SUMMARY

Intersection	Control ¹	Approach ²	Vehicle Accommodations	Bicycle Accommodations	Pedestrian Accommodations
Haverhill Road at Hoyt Avenue	U	Hoyt Avenue (N)	One 12'± general purpose lane; no marked centerline or shoulder	None (mixed-traffic)	None
		Haverhill Road (E)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
		Haverhill Road (W)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
Haverhill Road at Merrill Avenue	U	Merrill Avenue (N)	One 12'± general purpose lane; no marked centerline or shoulder	None (mixed-traffic)	None
		Haverhill Road (E)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
		Haverhill Road (W)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
Haverhill Road at Jacqueline Drive	U	Jacqueline Drive (N)	One 12'± general purpose lane; no marked centerline or shoulder	None (mixed-traffic)	5'± sidewalk along the west side
		Haverhill Road (E)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
		Haverhill Road (W)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
Haverhill Road at Hillside Avenue	TS	Hillside Avenue (N)	One 16'± general purpose lane; 4'± marked shoulder	None (mixed-traffic); bicycle detection equipment provided	6'± sidewalk along the west side; traffic signal phasing (exclusive)
		Hillside Avenue (S)	One 16'± general purpose lane; 4'± marked shoulder	None (mixed-traffic); bicycle detection equipment provided	Crosswalk at intersection; traffic signal phasing (exclusive)
		Haverhill Road (E)	One 11'± left-turn lane and one 12'± through/right-turn lane; 4'± marked shoulder	None (mixed-traffic); bicycle detection equipment provided	5'± sidewalk along the south side; traffic signal phasing (exclusive)
		Haverhill Road (W)	One 11'± left-turn lane and one 12'± through/right-turn lane; 4'± marked shoulder	None (mixed-traffic); bicycle detection equipment provided	6'± sidewalks along both sides; crosswalk at intersection; traffic signal phasing (exclusive)

Table Continues

TABLE 1 (Continued)
INTERSECTION SUMMARY

Intersection	Control ¹	Approach ²	Vehicle Accommodations	Bicycle Accommodations	Pedestrian Accommodations
Haverhill Road at the Southwest Connector Roadway	U	Connector Roadway (S)	One 16'± general purpose lane; 2'± marked shoulder	None (mixed-traffic)	Crosswalk at intersection
		Haverhill Road (E)	One 12'± through lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
		Haverhill Road (W)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
Haverhill Road at the Northeast Connector Roadway	U	Connector Roadway (N)	One 16'± general purpose lane; 2'± marked shoulder	None (mixed-traffic)	6'± sidewalk along the east side
		Haverhill Road (E)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides
		Haverhill Road (W)	One 12'± through lane; 4'± marked shoulder	None (mixed-traffic)	6'± sidewalk along the south side
Hillside Avenue at the Northeast Connector Roadway	U	Hillside Avenue (N)	One 12'± general purpose lane; 2'± marked shoulder	None (mixed-traffic)	6'± sidewalks along both sides; crosswalk at intersection
		Hillside Avenue (S)	One 12'± general purpose lane; 2'± marked shoulder	None (mixed-traffic)	6'± sidewalk along the west side
		Connector Roadway (E)	One 14'± general purpose lane; 2'± marked shoulder	None (mixed-traffic)	6'± sidewalk along the east side
Hillside Avenue at the Southwest Connector Roadway	U	Hillside Avenue (N)	One 12'± general purpose lane; 4'± marked shoulder	None (mixed-traffic)	None
		Hillside Avenue (S)	One 12'± general purpose lane; 8'± marked shoulder	None (mixed-traffic)	None
		Connector Roadway (W)	One 16'± general purpose lane; 2'± marked shoulder	None (mixed-traffic)	None

Table Continues

TABLE 1 (Continued)
INTERSECTION SUMMARY

Intersection	Control ¹	Approach ²	Vehicle Accommodations	Bicycle Accommodations	Pedestrian Accommodations
Hillside Avenue at the I-495 SB Ramps	TS	Hillside Avenue (N)	One 12'± through lane and one 16'± channelized right-turn lane; 6'± marked shoulder	10'± shared-use path along the west side	10'± shared-use path along the west side; traffic signal phasing (exclusive)
		Hillside Avenue (S)	One 10'± left-turn lane and one 12'± through lane; 2'± marked shoulder	6'± bicycle lane along the east side; 10'± shared-use path along the west side	10'± shared-use path along the west side; traffic signal phasing (exclusive)
		I-495 SB On-Ramp (E)	One 16'± one-way westbound (departing the intersection) travel lane	None (<i>prohibited</i>)	None (<i>prohibited</i>)
		I-495 SB Off-Ramp (W)	One 12'± left-turn/through lane and one 16'± channelized right-turn lane; 2'± marked shoulder	None (<i>prohibited</i>)	Crosswalk at intersection; traffic signal phasing (exclusive)
Hillside Avenue at the I-495 NB Ramps and South Hunt Road	TS	Hillside Avenue (N)	One 10'± left-turn lane, one 11' through lane, and one 11'± right-turn lane; 2'± marked shoulder	6'± bicycle lane along the east side; 10'± shared-use path along the west side	10'± shared-use path along the west side; crosswalk at intersection; traffic signal phasing (exclusive)
		Hillside Avenue (S)	One 12'± left-turn/through lane and one 16'± channelized right-turn lane; 2'± marked shoulder	10'± shared-use path along the west side	10'± shared-use path along the west side; crosswalk at intersection; traffic signal phasing (exclusive)
		I-495 NB Ramps (E)	One 12'± left-turn/through lane and one 12'± right-turn lane; 4'± marked shoulder	None (<i>prohibited</i>)	Crosswalk at intersection; traffic signal phasing (exclusive)
		South Hunt Road (W)	One 12'± left-turn lane and one 12'± through/right-turn lane	6'± bicycle lanes along both sides	6'± sidewalk along the south side; crosswalk at intersection; traffic signal phasing (exclusive)

¹ TS = Traffic Signal; U = Unsignalized

² N = North Leg; S = South Leg; E = East Leg; W = West Leg.

Baseline Traffic

Traffic volume data was collected at the study intersections in August 2025 and March 2026 during the weekday morning (7:00 AM - 9:00 AM) and weekday evening (4:00 PM – 6:00 PM) periods to coincide with peak traffic activity of the proposed use and the adjacent streets. A review of MassDOT permanent count station data indicates that March is a below average traffic month (approximately 11 percent below average-month conditions), and August is an above-average traffic month (approximately 15 percent above average-month conditions). Therefore, the March volumes were adjusted upwards by 11 percent to reflect average monthly traffic conditions. No adjustment for seasonal fluctuations were required or applied to the August volumes; however, the August 2025 traffic volumes were adjusted upwards by one percent to account for annual growth (see *Background Traffic Growth* section for further details). The resulting 2026 Baseline weekday morning and weekday evening peak hour traffic volumes for the study intersections are shown in **Figure 3** and **Figure 4**. Traffic count data and MassDOT permanent count station data are provided in the **Attachments**.

Daily Traffic Counts

In addition to the TMC data described above, daily traffic volumes were obtained along Haverhill Road adjacent to the Site in August 2025 which are summarized in **Table 2**.

TABLE 2
ROADWAY TRAFFIC-VOLUME SUMMARY – HAVERHILL ROAD

Time Period	Daily Volume (vpd) ¹	Percent Daily Traffic ²	Peak Hour Volume (vph) ³	Peak Flow Direction ⁴	Peak Hour Directional Volume (vph)
<i>Haverhill Road, west of Hillside Avenue</i>					
Weekday Morning Peak Hour	13,560	7.8%	1,064	62.2% EB	662
Weekday Evening Peak Hour	13,560	8.6%	1,163	54.9% WB	639
<i>Hillside Avenue, south of Haverhill Road</i>					
Weekday Morning Peak Hour	11,900	6.9%	818	58.9% SB	482
Weekday Evening Peak Hour	11,900	7.5%	894	59.4% NB	531

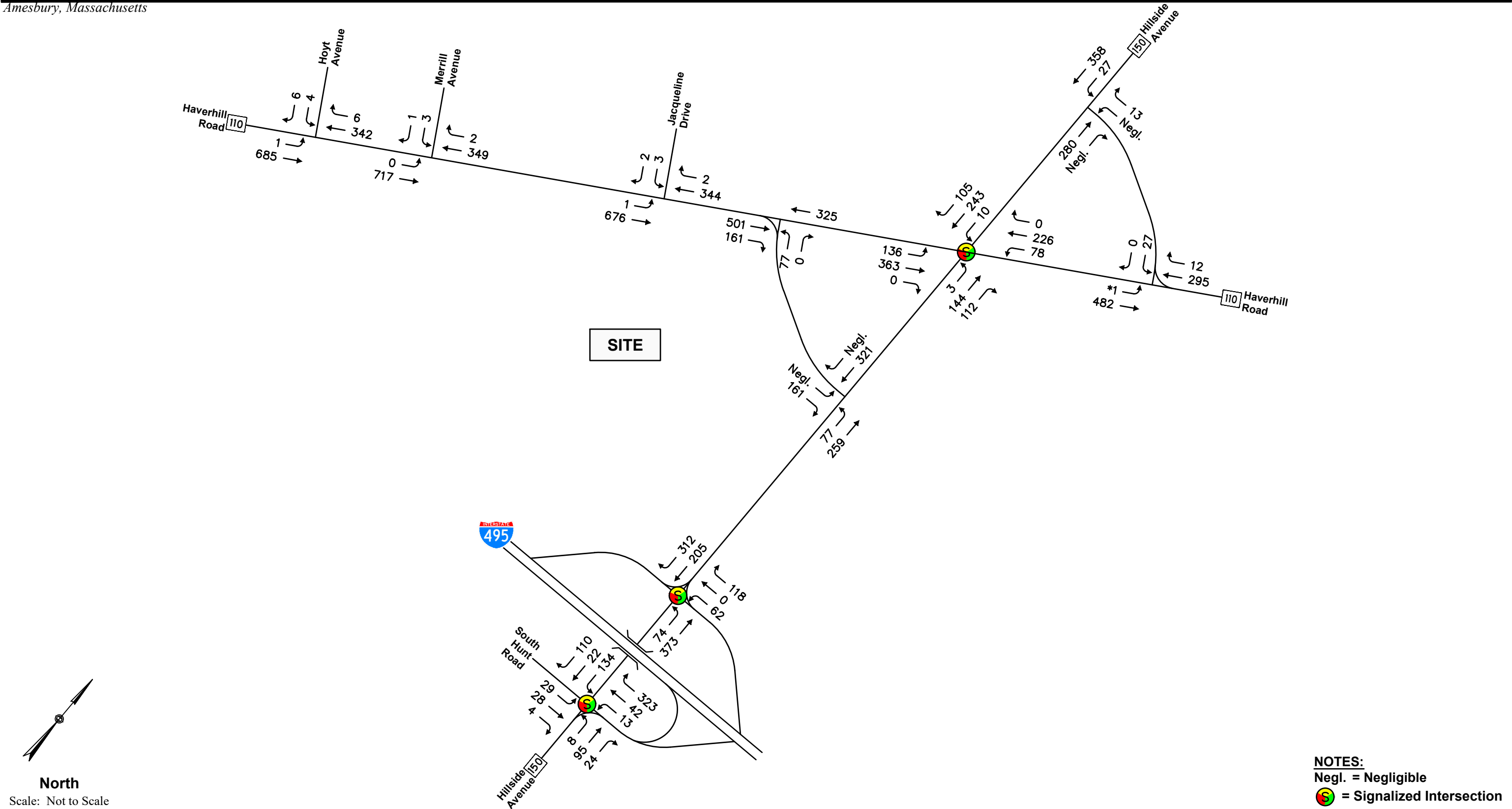
¹Two-way daily traffic expressed in vehicles per day.

²The percent of daily traffic that occurs during the peak hour.

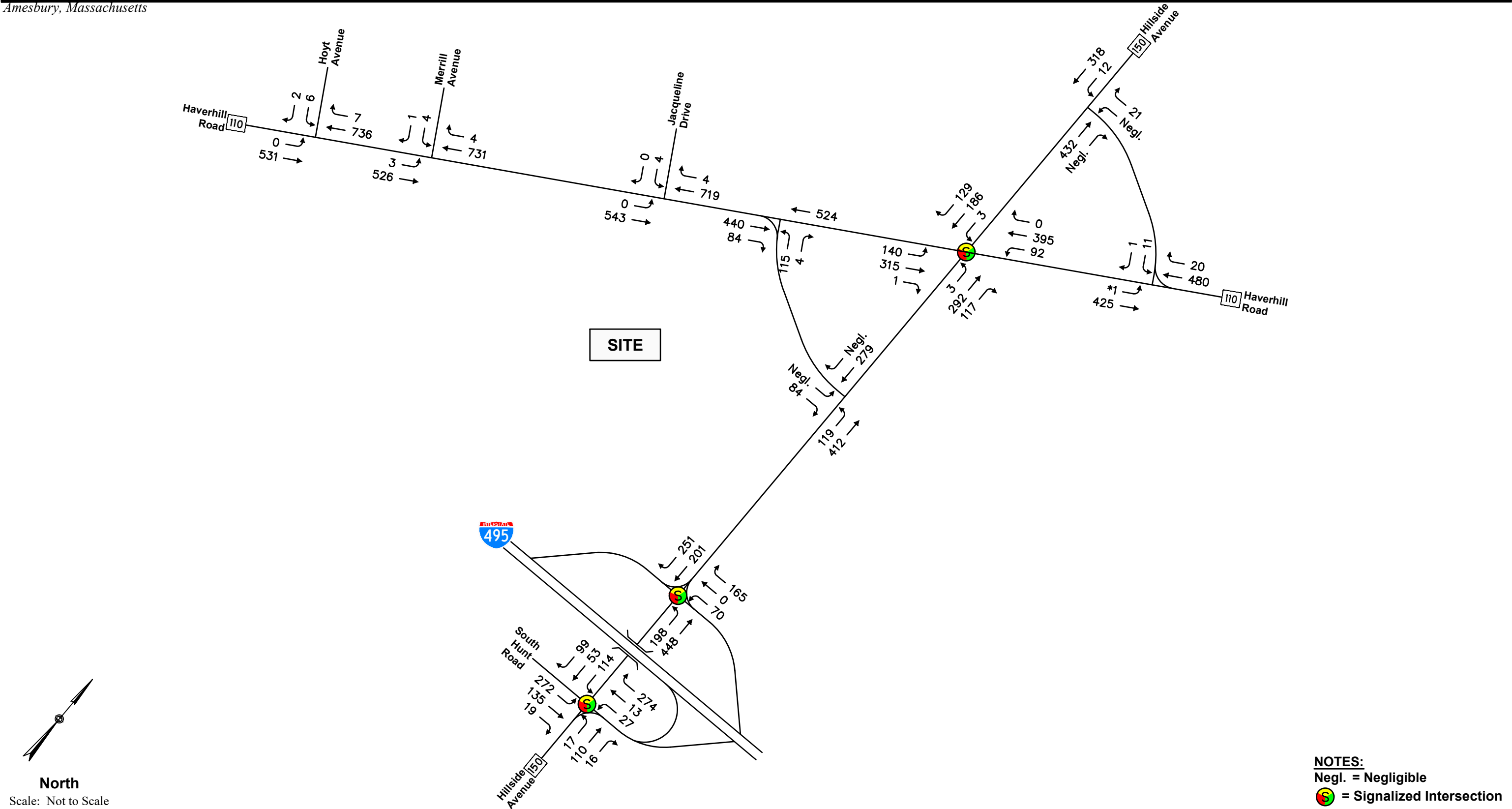
³Two-way peak-hour volume expressed in vehicles per hour.

⁴NB = Northbound, EB = Eastbound, WB = Westbound

As summarized in **Table 2**, Haverhill Road carries approximately 13,560 vehicles per day (vpd) on an average weekday. Peak hour traffic volumes on Haverhill Road range from approximately 1,064 to 1,163 vehicles per hour (vph) which represents approximately 8 to 9 percent of daily traffic flow. Hillside Avenue carries approximately 11,900 vpd on an average weekday. Peak hour traffic volumes on Hillside Avenue range from approximately 818 to 894 vph, which represents approximately 7 to 8 percent of daily traffic flow.



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G:\Projects\1449 - Amesbury (Pulte)\Dwg\1449 TIA01.dwg, Figure 4, 3/30/2026 2:01:08 PM

Measured Travel Speeds

Vehicle speeds were obtained for Haverhill Road and Hillside Avenue using a radar recorder device over a 48-hour weekday period. These measured travel speeds provide a basis for determining sight line requirements at the Site driveway intersection with Haverhill Road and Hillside Avenue. **Table 3** presents a summary of the travel speed data collected along Haverhill Road and Hillside Avenue adjacent to the Site. Detailed speed data is provided in the **Attachments**.

TABLE 3
SPEED STUDY RESULTS – HAVERHILL ROAD

Travel Direction	Posted Speed Limit ¹	Travel Speed	
		Mean ²	85 th Percentile ³
<i>Haverhill Road:</i>			
Eastbound	35	34	37
Westbound	35	33	36
<i>Hillside Avenue:</i>			
Northbound	45	34	38
Southbound	45	31	34

¹Regulatory speed limit in mph.

²Arithmetic mean in mph.

³The speed at or below which 85 percent of the vehicles are traveling in mph.

As summarized in **Table 3**, the mean (average) travel speed on Haverhill Road was observed to be 34 mph for the eastbound direction and 33 mph in the westbound direction; the 85th percentile travel speed was observed to be 37 mph in the eastbound direction and 36 mph in the westbound direction. The observed speeds are highly consistent to the regulatory speed limit in the study area, which is 35 mph.

The mean travel speed on Hillside Avenue was observed to be 34 mph for the northbound direction and 31 mph in the southbound direction; the 85th percentile travel speed was observed to be 38 mph in the northbound direction and 34 mph in the southbound direction. The observed speeds are influenced by the proximity to the signalized Haverhill Road intersection.

Intersection Crash History

In order to identify crash trends and safety characteristics for study area intersections, crash data were obtained from MassDOT for the City of Amesbury for the five-year period covering 2021-2025 (the most recent full year of data currently available from MassDOT). A summary of the crash data with crash rates for the study intersections with reported crashes is provided in **Table 4** with detailed data provided in the **Attachments**.

TABLE 4
INTERSECTION CRASH SUMMARY
2021 THROUGH 2025¹

	INTERSECTIONS									
	Haverhill Road/ Hoyt Avenue	Haverhill Road/ Merrill Avenue	Haverhill Road/ Jacqueline Drive	Haverhill Road/ Hillside Avenue	Haverhill Road/ Southwest Connector Roadway	Haverhill Road/ Northeast Connector Roadway	Hillside Avenue/ Northeast Connector Roadway	Hillside Avenue/ Southwest Connector Roadway	Hillside Avenue/ I-495 SB Ramps	Hillside Avenue/ I-495 NB Ramps/ South Hunt Road
Traffic Control ²	U	U	U	TS	U	U	U	U	TS	TS
Crash Rate ³	0.07	0.07	0.22	0.99	0.89	0.35	0.00	0.14	0.15	0.21
MassDOT Avg. Rate ⁴	0.57	0.57	0.57	0.73	0.57	0.57	0.57	0.57	0.73	0.73
Above Avg. Rate?	No	No	No	Yes	Yes	No	No	No	No	No
Year:										
2021	1	0	4	8	4	1	0	0	2	2
2022	0	0	1	6	2	3	0	0	0	2
2023	1	0	0	9	5	1	0	1	1	1
2024	0	1	1	6	9	2	0	0	1	1
2025	0	1	0	6	2	0	0	2	1	0
Total	2	2	6	35	22	7	0	3	5	6
Type:										
Angle	0	0	2	8	16	7	0	2	2	2
Rear-End	0	0	3	15	3	0	0	0	3	1
Head-On	0	0	0	1	0	0	0	0	0	1
Sideswipe	1	1	1	7	2	0	0	0	0	2
Fixed-Object	1	0	0	3	1	0	0	0	0	0
Pedestrian/Bicyclist	0	0	0	1	0	0	0	0	0	0
Other	0	1	0	0	0	0	0	1	0	0
Severity:										
P. Damage Only	2	2	5	25	19	5	0	2	5	6
Personal Injury	0	0	1	10	3	2	0	1	0	0
Fatality	0	0	0	0	0	0	0	0	0	0
Conditions:										
Dry	2	2	5	29	20	5	0	2	5	5
Wet	0	0	1	3	2	2	0	1	0	0
Snow/Ice	0	0	0	3	0	0	0	0	0	1
Time:										
7:00 to 9:00 AM ⁵	0	0	1	1	4	0	0	0	0	0
4:00 to 6:00 PM ⁵	0	0	1	5	5	0	0	0	1	1
Rest of Day/Weekend	2	2	4	29	13	7	0	3	4	5

¹ Source: MassDOT Crash Database
² TS = Traffic Signal; U = Unsignalized.
³ Crashes per million entering vehicles.
⁴ District 4 Average Crash Rates: 0.73 (Signalized) and 0.57 (Unsignalized)
⁵ On Weekdays.

Crash rates were calculated for the study intersection as reported in **Table 4**. These rates quantify the number of crashes per million entering vehicles. MassDOT has determined the official District 4 (which includes the City of Amesbury) crash rate to be 0.73 for signalized intersections and 0.57 for unsignalized intersections. This rate represents MassDOT's "average" crash experience for District 4 communities and serves as a basis for comparing reported crash rates for the study intersections. Where calculated crash rates notably exceed the district average, some form of safety countermeasures may be beneficial. A review of HSIP locations was also conducted.

As summarized in **Table 4**:

- *Haverhill Road at Hoyt Avenue*: There were two crashes reported at the unsignalized study intersection during the five-year study period, resulting in a crash rate of 0.07, which is substantially below the District 4 average. The reported crashes included one sideswipe-type collision and one collision with a fixed-object. All (100%) of the crashes resulted in property damage only. All (100%) occurred outside the peak period travel times and occurred under dry roadway conditions.
- *Haverhill Road at Merrill Avenue*: There were two crashes reported at the unsignalized study intersection during the five-year study period, resulting in a crash rate of 0.07, which is substantially below the District 4 average. The reported crashes included one sideswipe-type collision and one unclassifiable collision. All (100%) of the crashes resulted in property damage only. All (100%) occurred outside the peak period travel times and occurred under dry roadway conditions.
- *Haverhill Road at Jacqueline Drive*: There were six crashes reported at the unsignalized study intersection during the five-year study period, resulting in a crash rate of 0.22, which is substantially below the District 4 average. The reported crashes included two angle-type collisions, three rear-end collisions, and one sideswipe-type collision. Five (83%) of the crashes resulted in property damage only, generally indicative of low-speed crashes. Two (33%) occurred during the peak period travel times, and five (83%) occurred under dry roadway conditions.
- *Haverhill Road at Hillside Avenue*: There were thirty-five crashes reported at the signalized study intersection during the five-year study period, resulting in a crash rate of 0.99, which is above the District 4 average. The reported crashes included eight angle-type collisions, fifteen rear-end collisions, one head-on collision, seven sideswipe-type collisions, three collisions with a fixed-object, and one collision involving a pedestrian or bicyclist. Twenty-five (71%) of the crashes resulted in property damage only, generally indicative of low-speed crashes. Six (17%) occurred during the peak period travel times and twenty-nine (83%) occurred under dry roadway conditions.

- *Haverhill Road at the Southwest Connector Roadway:* There were twenty-two crashes reported at the unsignalized study intersection during the five-year study period, resulting in a crash rate of 0.89, which is above the District 4 average. The reported crashes included sixteen angle-type collisions, three rear-end collisions, two sideswipe-type collisions, and one collision with a fixed-object. Nineteen (86%) of the crashes resulted in property damage only, generally indicative of low-speed crashes. Nine (41%) occurred during the peak period travel times and twenty (91%) occurred under dry roadway conditions.
- *Haverhill Road at the Northeast Connector Roadway:* There were seven crashes reported at the unsignalized study intersection during the five-year study period, resulting in a crash rate of 0.35, which is below the District 4 average. The reported crashes all included angle-type collisions. Five (71%) of the crashes resulted in property damage only, generally indicative of low-speed crashes. None (0%) occurred during the peak period travel times and five (71%) occurred under dry roadway conditions.
- *Hillside Avenue at the Northeast Connector Roadway:* There were no crashes reported at the intersection over the five-year study period.
- *Hillside Avenue at the Southwest Connector Roadway:* There were three crashes reported at the unsignalized study intersection during the five-year study period, resulting in a crash rate of 0.14, which is substantially below the District 4 average. The reported crashes included two angle-type collisions and one unclassifiable collision. Two (67%) of the crashes resulted in property damage only, generally indicative of low-speed crashes. None (0%) occurred during the peak period travel times and two (67%) occurred under dry roadway conditions.
- *Hillside Avenue at the I-495 SB Ramps:* There were five crashes reported at the signalized study intersection during the five-year study period, resulting in a crash rate of 0.15, which is substantially below the District 4 average. The reported crashes included two angle-type collisions and three rear-end collisions. All (100%) of the crashes resulted in property damage only, generally indicative of low-speed crashes. One (20%) occurred during the peak period travel times and all (100%) occurred under dry roadway conditions.
- *Hillside Avenue at the I-495 NB Ramps and South Hunt Road:* There were six crashes reported at the signalized study intersection during the five-year study period, resulting in a crash rate of 0.21, which is substantially below the District 4 average. The reported crashes included two angle-type collisions, one rear-end collision, one head-on collision, and two sideswipe-type collisions. All (100%) of the crashes resulted in property damage only, generally indicative of low-speed crashes. One (17%) occurred during the peak period travel times and five (83%) occurred under dry roadway conditions.

In summary, Based on an extensive review of Massachusetts Department of Transportation (MassDOT) crash data, most study intersections exhibit below-average crash rates and none are listed as high crash locations on the MassDOT HSIP database. However, the intersection of Haverhill Road at Hillside Avenue and the Southwest Connector Road at Haverhill Road experience above-average crash rates; the Southwest Connector Road specifically exhibits a high prevalence of angle-type collisions involving northbound left-turn movements onto Haverhill Road. These movements often have restricted sight lines due to eastbound signal queuing. The City of Amesbury has therefore identified this condition as one of the underlying bases for desiring left-turn entry access to the Project along Hillside Avenue.

SIGHT LINE EVALUATION

An evaluation of sight lines in accordance with the standards published by the American Association of State Highway and Transportation Officials' (AASHTO)¹ was conducted at the intersections of Haverhill Road and Hillside Avenue with the proposed Site driveways to ensure that minimum recommended sight lines are available to safely exit onto Haverhill Road and Hillside Avenue.

Stopping Sight Distance

SSD was estimated in the field using AASHTO standards for driver's eye (3.5 feet) and object height equivalent to the taillight height of a passenger car (2.0 feet) for the eastbound and westbound Haverhill Road approaches and the northbound and southbound Hillside Avenue approaches to the Site driveways. **Table 5** presents a summary of the available SSD as it relates to Haverhill Road and Hillside Avenue and AASHTO's recommended SSD.

¹American Association of State Highway and Transportation Officials (AASHTO). *A policy on Geometric Design of Highways and Streets*. 7th ed. AASHTO, 2018.

TABLE 5
STOPPING SIGHT DISTANCE SUMMARY
APPROACHES TO SITE DRIVEWAYS

Approach/ Travel Direction	Available SSD	AASHTO Recommended ¹	
		Regulatory Speed ²	85 th Percentile Speed ³
<i>Haverhill Road</i>			
<i>Eastbound</i>	>500 Feet	250 Feet	305 Feet
<i>Westbound</i>	>500 Feet	250 Feet	305 Feet
<i>Hillside Avenue</i>			
<i>Northbound</i>	>500 Feet	360 Feet	305 Feet
<i>Southbound</i>	>500 Feet	360 Feet	250 Feet

¹Recommended sight distance based on AASHTO, A Policy on Geometric Design of Highways and Streets. Based on driver height of eye of 3.5 feet to object height of 2.0 feet and adjustments for roadway grade.

²The Posted Speed Limit is 35 mph EB and WB along Haverhill Road and 45 mph NB and SB along Hillside Avenue.

³85th Percentile travel speed is 37 mph EB and 36 mph WB on Haverhill Road and 38 mph NB and 34 mph SB on Hillside Avenue. Slightly conservative values of 40 mph NB and SB along Haverhill Road, 40 mph NB and 35 mph SB along Hillside Avenue were used for this assessment.

As summarized in **Table 5**, appropriate SSD criteria are met for the proposed driveway locations based on the appropriate travel speed.

Intersection Sight Distance

Available ISD was estimated in the field using AASHTO standards for driver's eye (3.5 feet), object height (3.5 feet) and decision point (10 feet from the edge of the travel way) for the eastbound and westbound directions along Haverhill Road and the northbound and southbound directions along Hillside Avenue. **Table 6** presents a summary of the available ISD for the departure from the Site driveways and AASHTO's minimum recommended ISD.

TABLE 6
INTERSECTION SIGHT DISTANCE SUMMARY
SITE DRIVEWAY DEPARTURES

Approach/ Travel Direction	Available ISD	AASHTO Minimum ¹	AASHTO Ideal ¹
		Regulatory Speed Limit ²	Regulatory Speed Limit ²
Haverhill Road			
Looking East	>500 Feet	250 Feet	445 Feet
Looking West	>500 Feet	250 Feet	385 Feet
Hillside Avenue			
Looking North	>500 Feet	360 Feet	335 Feet
Looking South	>500 Feet	360 Feet	445 Feet

¹Recommended sight distance based on AASHTO, A Policy on Geometric Design of Highways and Streets. Based on driver height of eye of 3.5 feet to object height of 2.0 feet. The minimum value as noted represents ISD per AASHTO guidance.

² The Posted Speed Limit is 35 mph EB and WB along Haverhill Road and 45 mph NB and SB along Hillside Avenue.

As summarized in **Table 6**, the analysis results indicate that the available sight lines exceed AASHTO's recommended ISD criteria based on the appropriate design speeds. MDM recommends that any new plantings (shrubs, bushes) or physical landscape features to be located within the sight line triangles should also be maintained at a height of 2 feet or less above the adjacent existing roadway grade to ensure unobstructed lines of sight.

FUTURE TRAFFIC CONDITIONS

Evaluation of the proposed development impacts requires the establishment of a future baseline analysis condition. This section estimates future roadway and traffic conditions with and without the proposed development. For planning purposes, a seven-year planning horizon (year 2033) was selected, consistent with EEA/MassDOT guidelines and standard industry practice.

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 a future year condition. Traffic volumes on the roadway network at that time, in the absence of the development (that is, the No-Build condition), includes existing traffic, new traffic due to general background traffic growth, and traffic related to specific developments by others that are currently under review at the local and/or state level or recently approved but not yet occupied. Consideration of these factors resulted in the development of No-Build traffic volumes. Anticipated Site-generated traffic volumes were then superimposed upon these No-Build traffic-flow networks to develop future Build conditions.

The following sections provide an overview of future No-Build traffic volumes and Build traffic volumes.

Background Traffic Growth

Background traffic includes demand generated by other planned developments in the area as well as demand increases caused by external factors. External factors are general increases in traffic not attributable to a specific development and are determined using historical data.

Historical Area Growth

Nearby permanent count station data published by MassDOT indicates a 0.9 percent per year growth rate. For purposes of this evaluation, a 1.0 percent growth rate was used (7.2 percent increase over a 7-year horizon). This growth rate is higher than historic rates and as such, is also expected to account for any small fluctuation in hourly traffic that may occur from time to time in the study area and traffic associated with other potential small developments or vacancies in the area. MassDOT permanent count station data and background growth calculations are provided in the **Attachments**.

Background Development-Related Growth

The development of future No-Build traffic volumes also considers traffic generated through the study area from other specific area developments. Based on a review of the City of Amesbury Planning Department and Massachusetts Environmental Policy Act (MEPA) filings, there are several pending or approved projects in the immediate area that were reviewed as they may increase traffic volumes through the study. The Site-specific project reviewed include the following:

- o *39 & 41 Hillside Avenue Mixed-Use Development.* This project is partially constructed and comprises an eight-unit multifamily residential community with 2,000± square feet (sf) of retail space to be located at 39 & 41 Hillside Avenue approximately 0.1 miles northeast of the Site. The traffic volumes associated with the development were taken from the study² prepared in support of the project.
- o *12-14 South Hunt Road Athletic Facility.* This project has been approved by the Amesbury Planning Board and includes a recreational athletic facility to be located at 12-14 South Hunt Road approximately 0.4 miles southwest of the Site. The traffic volumes associated with the development were taken from the study³ prepared in support of the project.
- o *Kimball Road Residential Development.* This project is under review by the Amesbury Zoning Board of Appeals and includes a 95-lot multifamily residential community to be

² Transportation Impact Assessment, Proposed Mixed-Use Development; 39 & 41 Hillside Avenue; Amesbury, Massachusetts; Vanasse and Associates, Inc.; September 2021.

³ Technical Memorandum, Proposed Recreational Sports Field (Soccer); 12-14 South Hunt Road; Amesbury, Massachusetts; MDM; March 11, 2024.

located off Kimball Road approximately 1.2 miles west of the Site. Traffic volumes associated with this specific development are expected to fall within the 1.0 percent compounded annual growth rate.

No other specific developments were identified that may increase traffic outside of the general background traffic growth rate. The resulting 2033 No-Build traffic volumes for the weekday morning and evening peak hours are displayed in **Figure 5** and **6**, respectively.

Trip Generation

The trip generation estimates for the proposed multifamily residential development were estimated using trip rates published in the ITE *Trip Generation*⁴ manual for Land Use Code (LUC) 221 – Multifamily Housing (Mid-Rise). **Table 7** presents the trip-generation comparison for the proposed development based on ITE methodology.

TABLE 7
TRIP-GENERATION SUMMARY

Period/Direction	Total Vehicle Trips
<i>Weekday Morning Peak Hour:</i>	
Entering	10
<u>Exiting</u>	<u>35</u>
Total	45
<i>Weekday Evening Peak Hour:</i>	
Entering	31
<u>Exiting</u>	<u>17</u>
Total	48
<i>Daily</i>	562

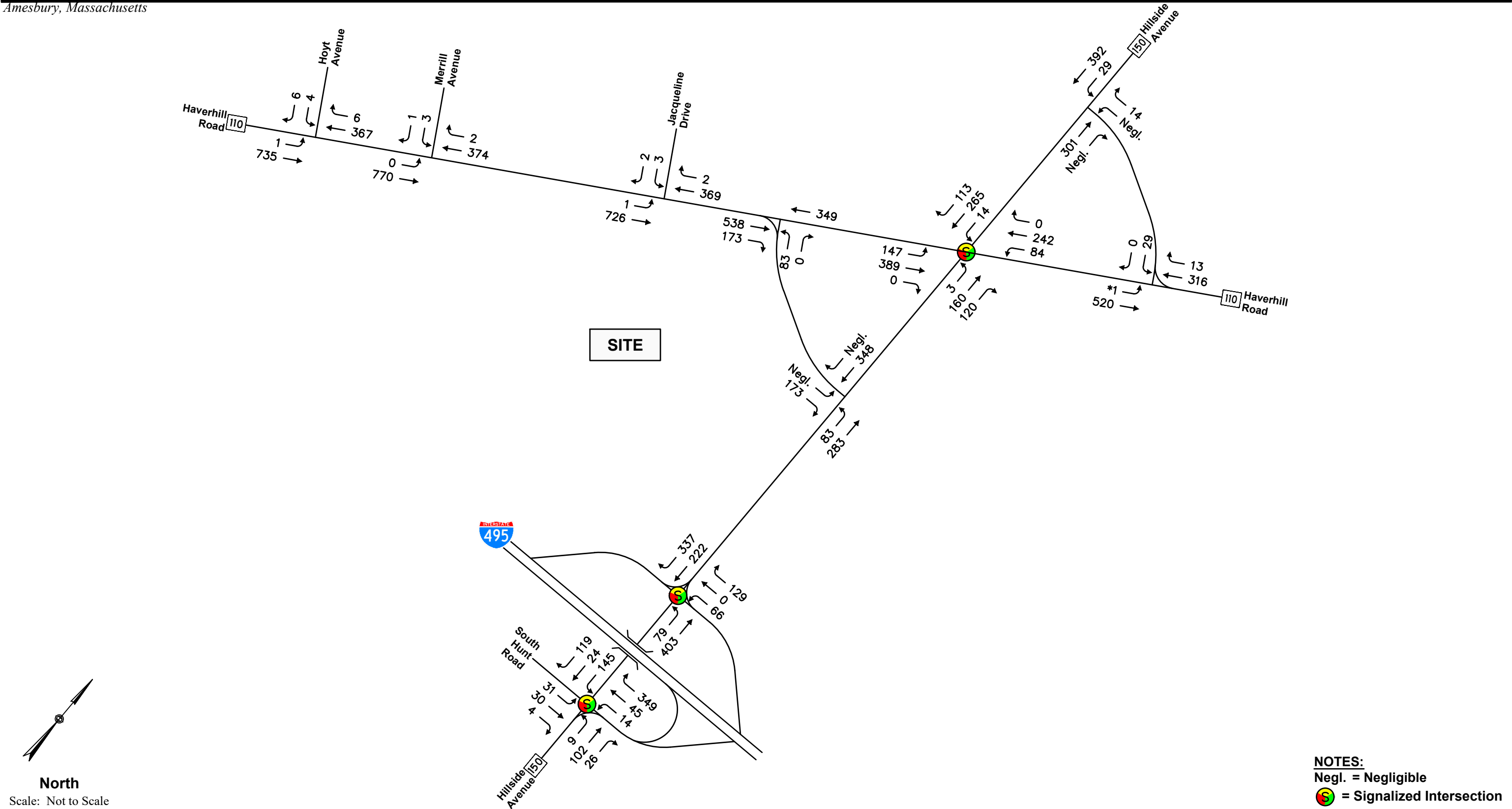
⁴Based on ITE trip rates for LUC 221 – Multifamily Housing (Mid-Rise) applied to 126 Units.

As summarized in **Table 6**, based on industry-standard trip rates the proposed development is estimated to generate approximately 45 vehicle trips (10 entering and 35 exiting) during the weekday morning peak hour, 48 vehicle trips (31 entering and 17 exiting) during the weekday evening peak hour and approximately 562 vehicle trips on a daily basis.

Trip Distribution

The directional distribution of development-generated trips on the roadway network is a function of a number of variables including local area populations and the efficiency of the roadways leading to the Site. Journey-to-work census data serves as the primary basis for determining the

⁴ Institute of Transportation Engineers (ITE). *Trip Generation*. 12th ed. ITE, 2025.



2033 No-Build Conditions
Weekday Morning Peak Hour Volumes

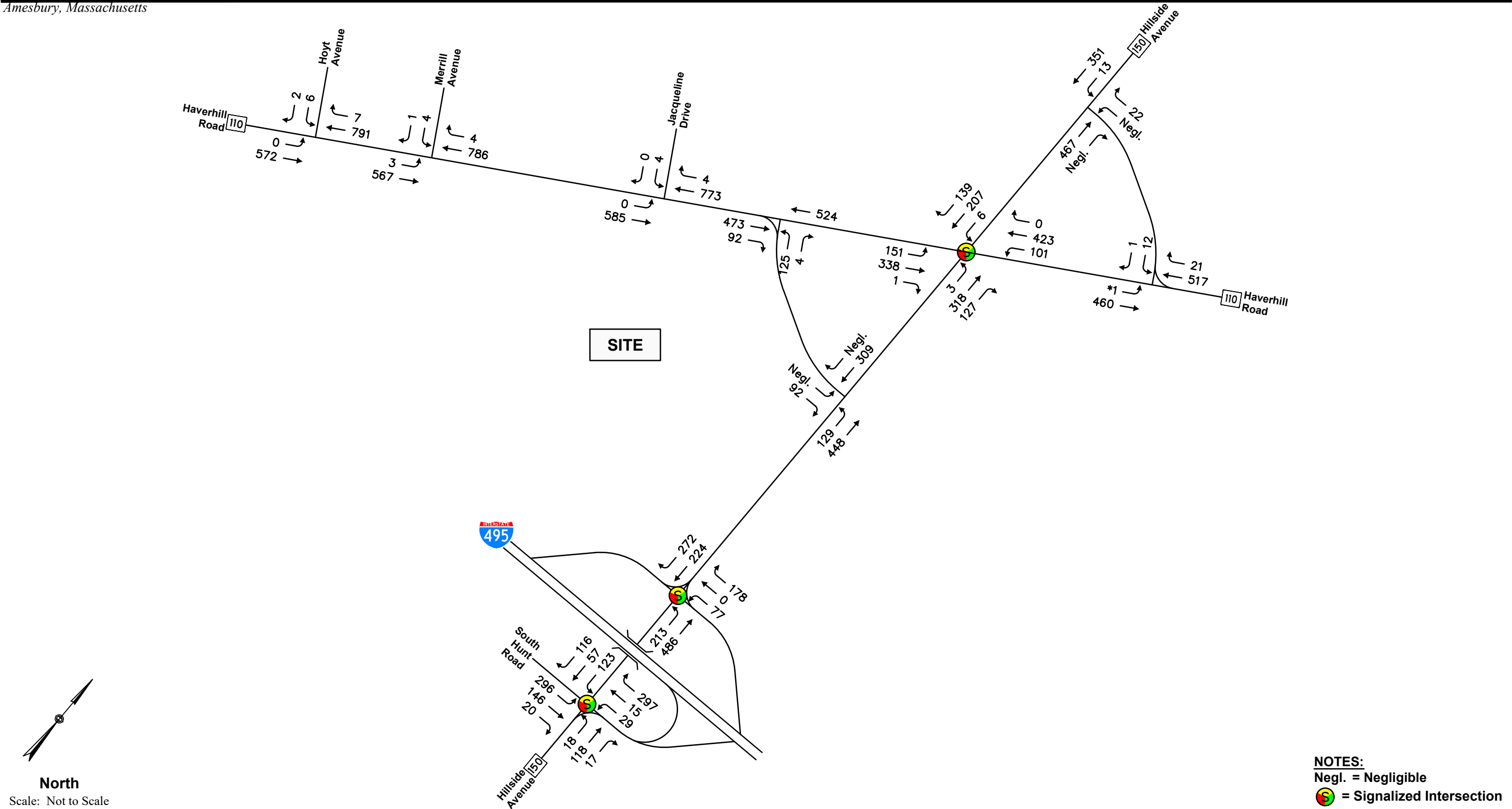


Figure 6
2033 No-Build Conditions
Weekday Evening Peak Hour Volumes

trip distribution pattern for the proposed development. The distribution of the site generated trips is displayed in **Figure 7**. Journey-to-work trip distribution calculations are provided in the **Attachments**.

Development-related trips for the proposed development are assigned to the roadway network using the trip-generation estimates shown in Table 6 and the distribution patterns presented above. Development-related trips at each intersection approach for the weekday morning and weekday evening peak hours are quantified in **Figure 8** and **Figure 9**, respectively.

Build Traffic Volumes

Future Build traffic volumes were arrived at by adding Site-specific traffic volumes to the 2033 No-Build conditions. The 2033 Build condition traffic-volume networks for the weekday morning and weekday evening peak hours are displayed in **Figures 10** and **11**, respectively.

OPERATIONS ANALYSIS

This section provides an overview of operational analysis methodology and an assessment of intersection operations under Baseline, No-Build, and Build conditions.

Analysis Methodology

Capacity analyses, conducted in accordance with EEA/MassDOT guidelines, provide an index of how well the roadway facilities serve the traffic demands placed upon them. The operational results provide the basis for recommended access and any necessary roadway improvements in the following section.

Capacity analysis of intersections is developed using the Synchro® computer software, which implements the methods of the Highway Capacity Manual, 7th edition (HCM7). The resulting analysis presents a Level-of-Service (LOS) designation for individual intersection movements and/or approaches. The LOS is a letter designation that provides a qualitative measure of operating conditions based on several factors including roadway geometry, speeds, ambient traffic volumes, traffic controls, and driver characteristics. Since the LOS of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of LOS, depending on the time of day, day of week, or period of year. A range of six levels of service are defined on the basis of average delay, ranging from LOS A (the least delay) to LOS F (delays greater than 50 seconds for unsignalized movements).

Analysis Results

LOS analyses were conducted for the Baseline, No-Build, and Build conditions for the study area intersections. The results of the intersection capacity analyses are summarized below in **Tables 8**

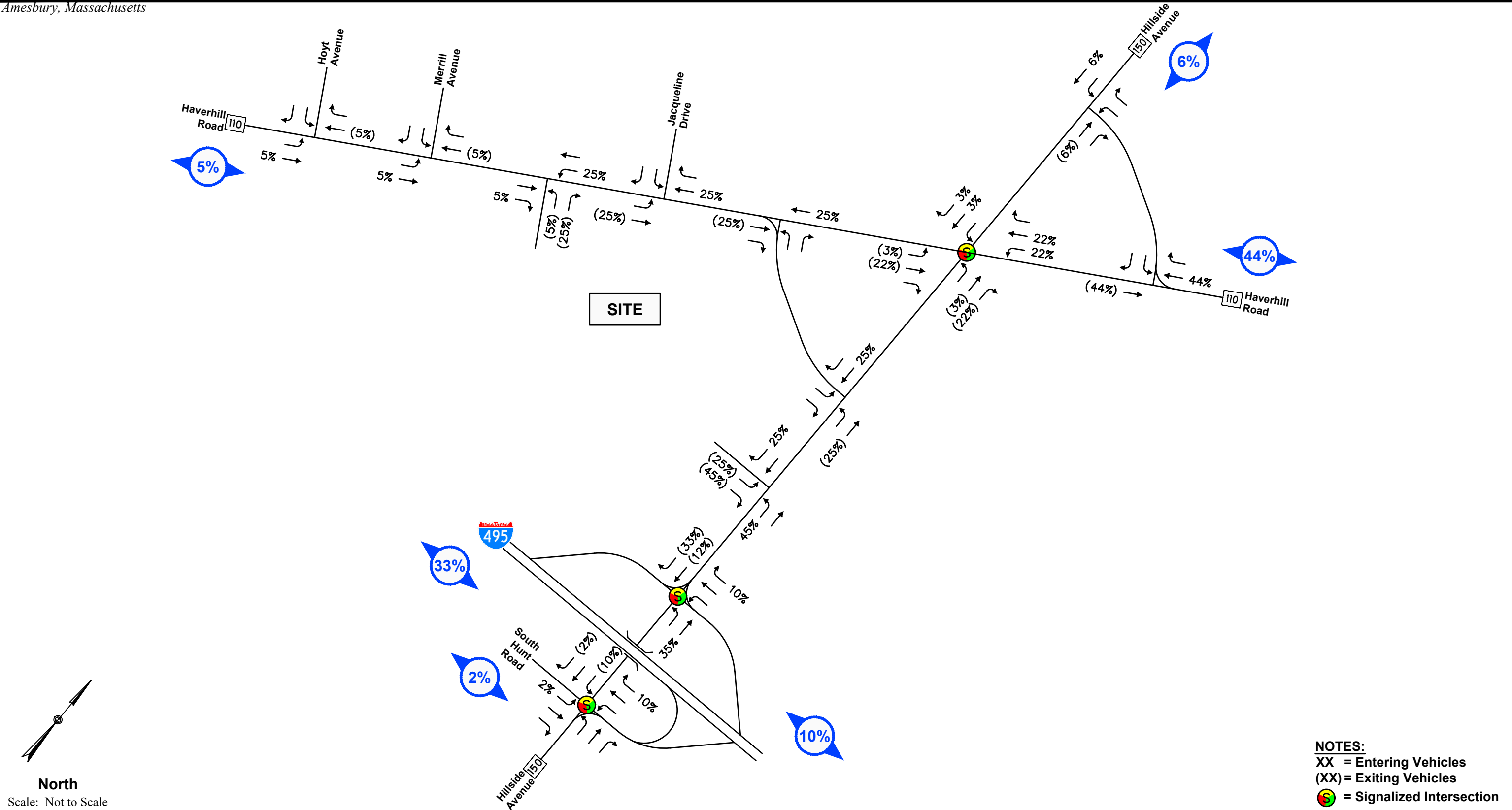


Figure 7

Trip Distribution Map

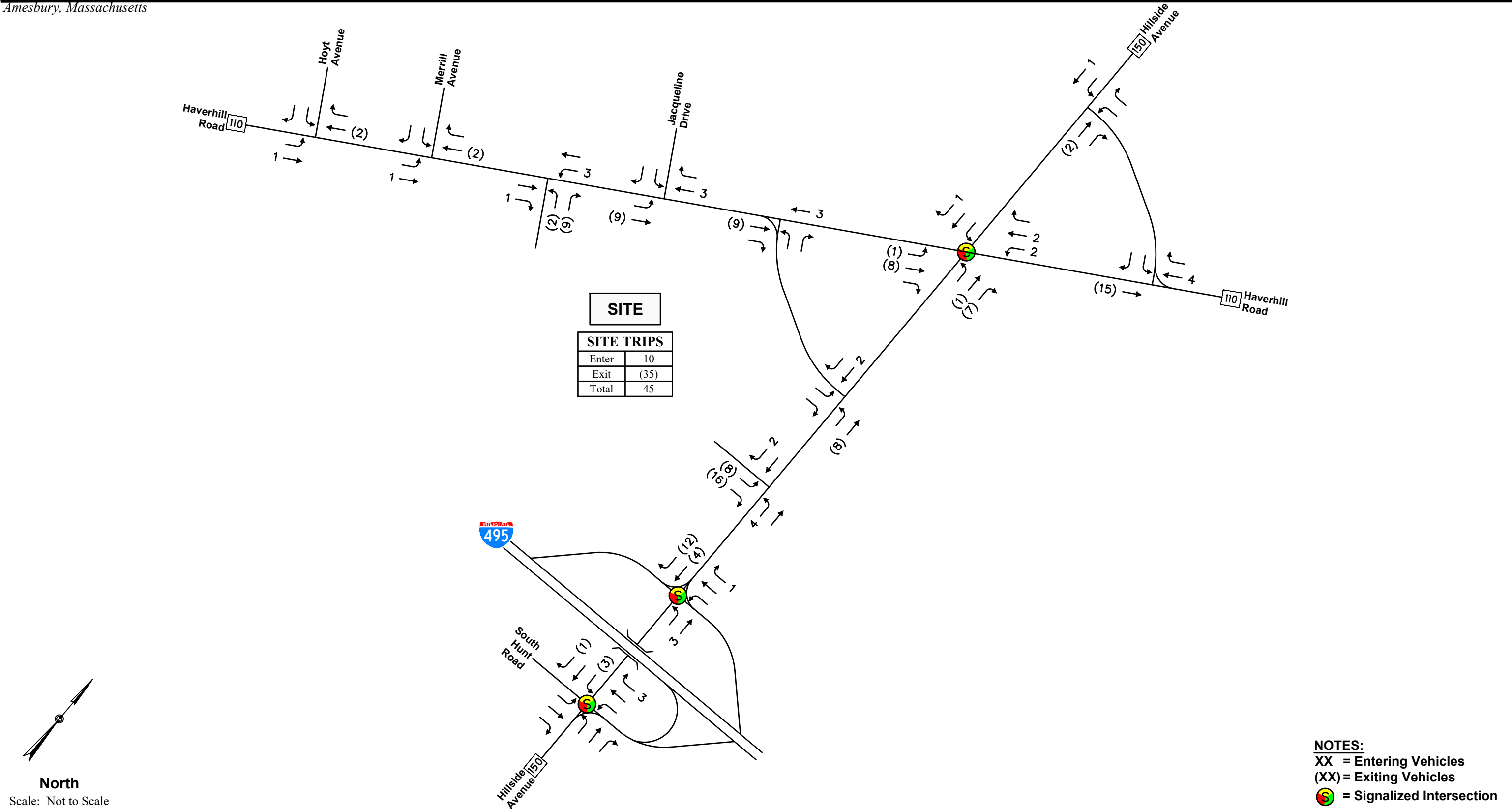
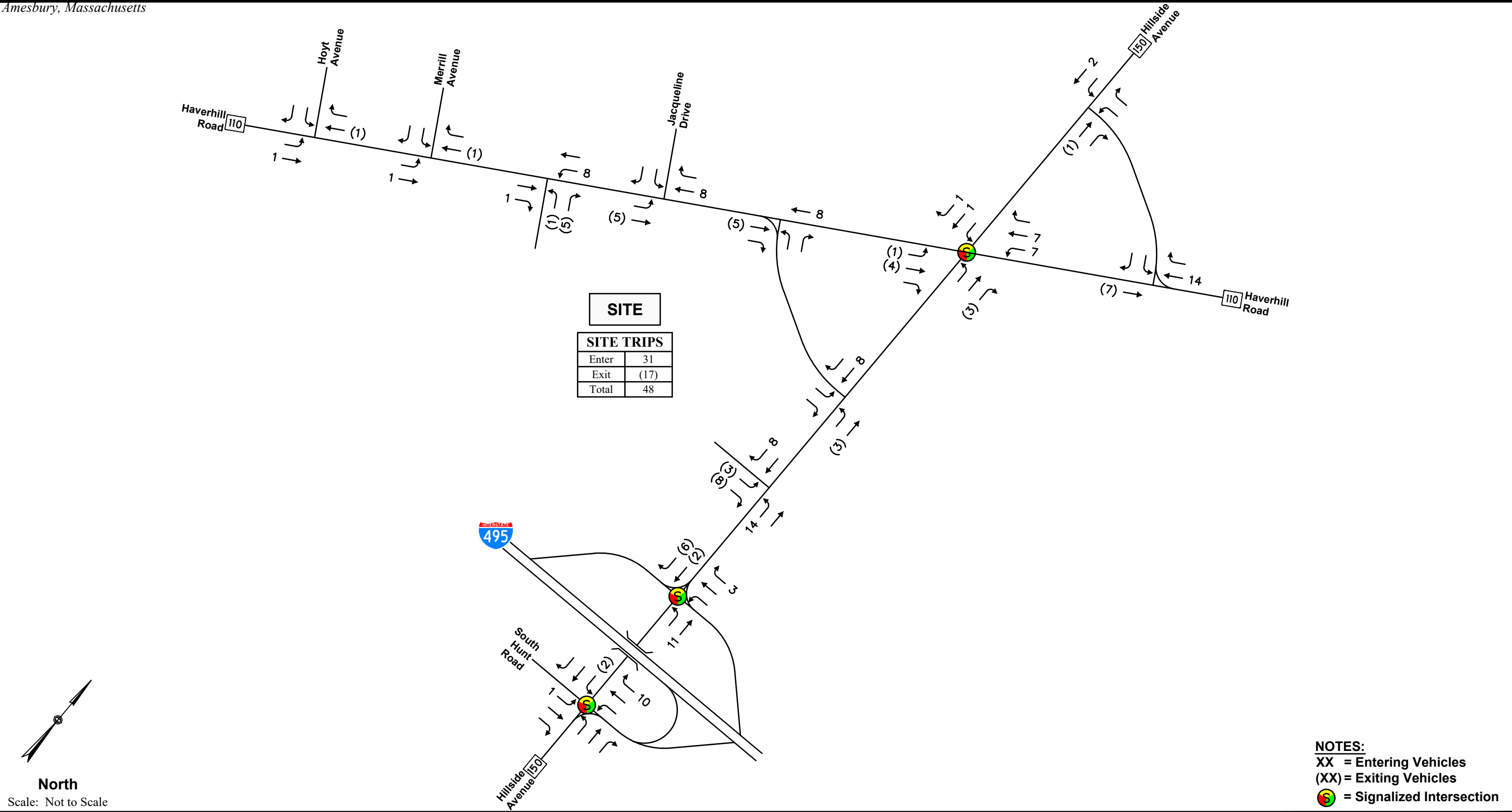


Figure 8
Site Generated
Weekday Morning Peak Hour Volumes



North
Scale: Not to Scale

Figure 9
Site Generated
Weekday Evening Peak Hour Volumes

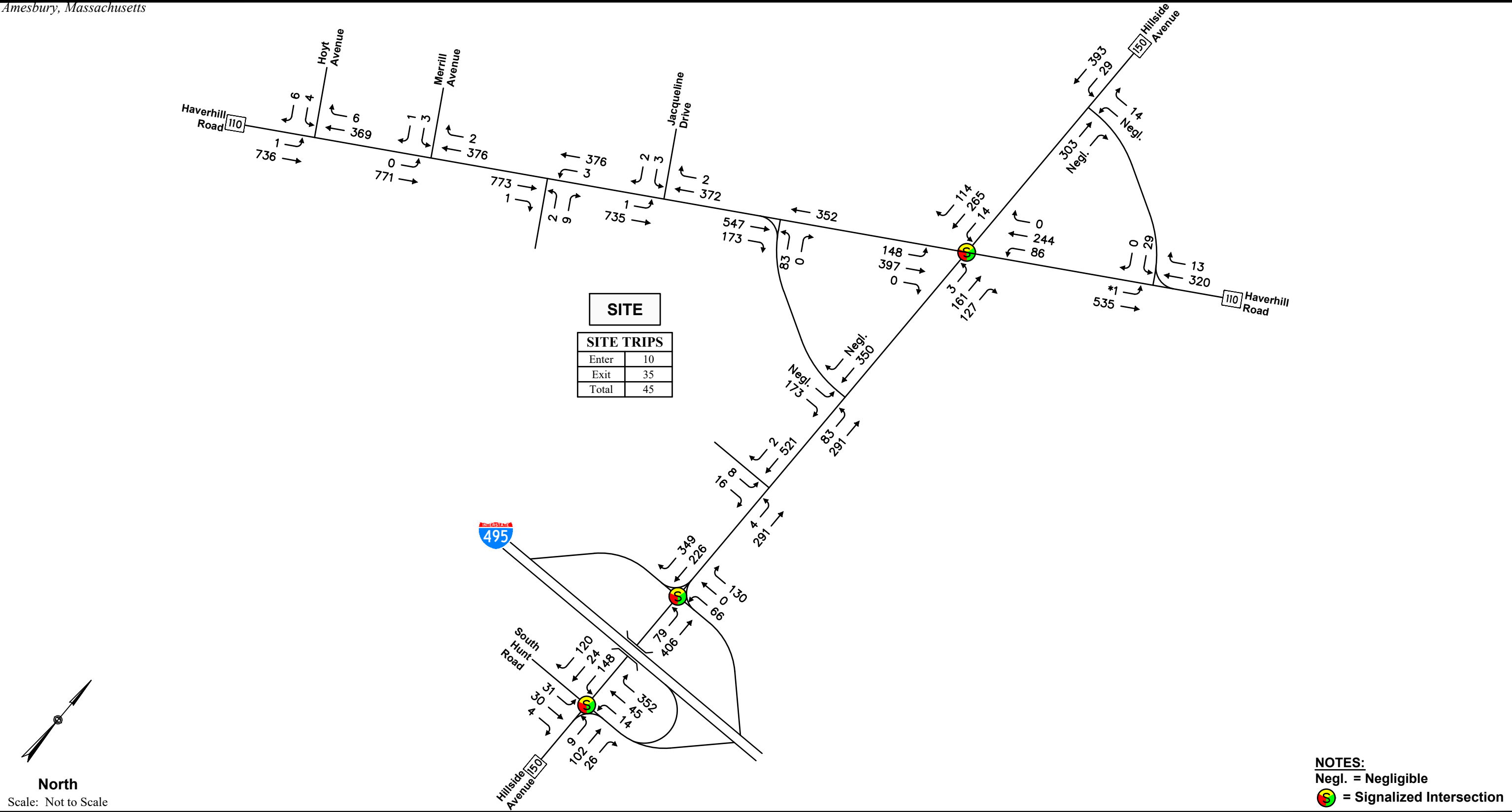


Figure 10

2033 Build Conditions
Weekday Morning Peak Hour Volumes

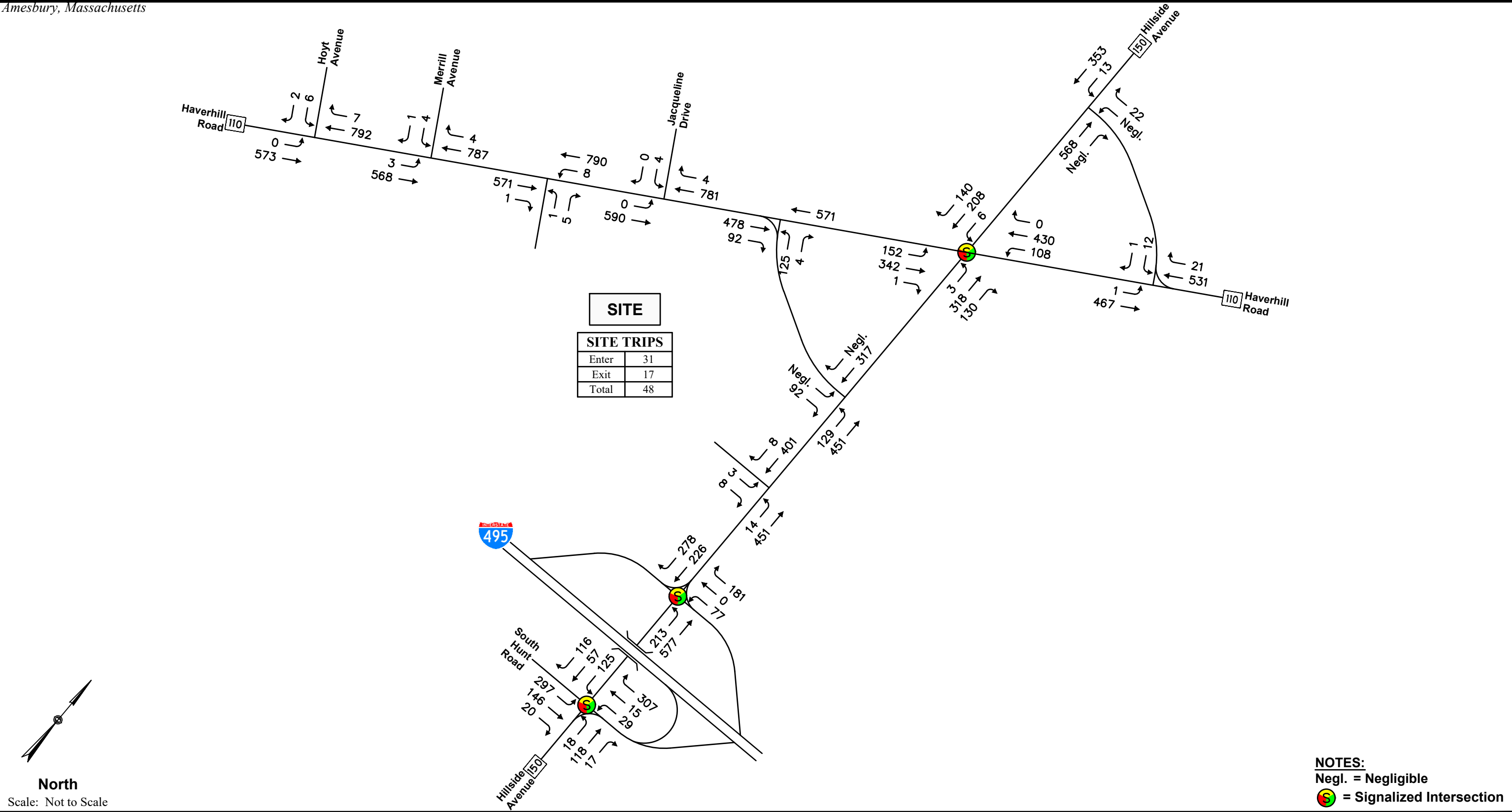


Figure 11

2033 Build Conditions
Weekday Evening Peak Hour Volumes

and 9 for the weekday morning and weekday evening peak hours, respectively. Detailed analysis results are presented in the **Attachments**.

TABLE 8
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY MORNING PEAK HOUR

Intersection	Approach	2026 Baseline			2033 No-Build			2033 Build		
		v/c ¹	Delay ²	LOS ³	v/c	Delay	LOS	v/c	Delay	LOS
Haverhill Road at Hoyt Avenue	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.03	14.8	B	0.03	15.7	C	0.03	15.7	C
Haverhill Road at Merrill Avenue	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.02	18.7	C	0.02	20.3	C	0.02	20.4	C
Haverhill Road at the Site driveway	Eastbound	n/a	n/a	n/a	n/a	n/a	n/a	0.00	<5	A
	Westbound	n/a	n/a	n/a	n/a	n/a	n/a	0.00	<5	A
	Northbound	n/a	n/a	n/a	n/a	n/a	n/a	0.04	17.0	C
Haverhill Road at Jacqueline Drive	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.02	16.3	C	0.02	17.4	C	0.02	17.6	C
Haverhill Road at Hillside Avenue	Eastbound	0.67	31.7	C	0.70	32.2	C	0.70	32.2	C
	Westbound	0.57	33.1	C	0.60	33.8	C	0.59	33.6	C
	Northbound	0.34	10.9	B	0.38	21.5	C	0.40	21.7	C
	<u>Southbound</u>	<u>0.41</u>	<u>17.3</u>	<u>B</u>	<u>0.47</u>	<u>18.5</u>	<u>B</u>	<u>0.47</u>	<u>18.8</u>	<u>B</u>
	OVERALL	0.67	24.6	C	0.70	27.1	C	0.70	27.1	C
Haverhill Road at the Southwest Connector Roadway	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Northbound	0.32	24.4	C	0.38	28.5	D	0.38	29.2	D
Haverhill Road at the Northeast Connector Roadway	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.08	16.0	C	0.09	17.1	C	0.09	17.4	C
Hillside Avenue at the Northeast Connector Roadway	Westbound	0.02	9.9	A	0.02	10.1	B	0.02	10.1	B
	Northbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.02	<5	A	0.02	<5	A	0.02	<5	A
Hillside Avenue at the Southwest Connector Roadway	Eastbound	0.25	11.8	B	0.28	12.3	B	0.28	12.4	B
	Northbound	0.07	<5	A	0.08	<5	A	0.08	<5	A
	Southbound	0.00	<5	A	0.00	<5	A	0.00	<5	A

Table Continues

TABLE 8
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY MORNING PEAK HOUR

Intersection	Approach	2026 Baseline			2033 No-Build			2033 Build		
		v/c ¹	Delay ²	LOS ³	v/c	Delay	LOS	v/c	Delay	LOS
Hillside Avenue at the Site driveway	Eastbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.07	14.5	B
	Northbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.00	<5	A
	Southbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.00	<5	A
Hillside Avenue at the I 495 SB Ramps	Westbound	0.39	18.1	B	0.42	18.0	B	0.42	18.0	B
	Northbound	0.27	<5	A	0.31	<5	A	0.32	<5	A
	<u>Southbound</u>	<u>0.46</u>	<u>7.4</u>	<u>A</u>	<u>0.53</u>	<u>8.6</u>	<u>A</u>	<u>0.55</u>	<u>8.9</u>	<u>A</u>
	OVERALL	0.46	7.7	A	0.53	8.2	A	0.55	8.3	A
Hillside Avenue at the I 495 NB Ramps and South Hunt Road	Eastbound	0.10	20.0	B	0.10	19.4	B	0.10	19.4	B
	Westbound	0.53	10.0	A	0.52	9.4	A	0.52	9.4	A
	Northbound	0.13	12.9	B	0.15	13.9	B	0.15	13.9	B
	<u>Southbound</u>	<u>0.15</u>	<u>5.5</u>	<u>A</u>	<u>0.17</u>	<u>5.6</u>	<u>A</u>	<u>0.18</u>	<u>5.6</u>	<u>A</u>
	OVERALL	0.53	9.7	A	0.52	9.6	A	0.52	9.6	A

¹ Volume-to-capacity ratio

² Average control delay per vehicle (in seconds)

³ Level of service

n/a = not applicable

TABLE 9
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY EVENING PEAK HOUR

Intersection	Approach	2026 Baseline			2033 No-Build			2033 Build		
		v/c ¹	Delay ²	LOS ³	v/c	Delay	LOS	v/c	Delay	LOS
Haverhill Road at Hoyt Avenue	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.04	24.3	C	0.05	27.2	D	0.05	27.3	D
Haverhill Road at Merrill Avenue	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.03	24.5	C	0.03	27.5	D	0.03	27.6	D
Haverhill Road at the Site driveway	Eastbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.00	<5	A
	Westbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.01	<5	A
	Northbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.02	15.9	C
Haverhill Road at Jacqueline Drive	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.02	26.9	D	0.03	30.3	D	0.03	30.8	D

Table Continues

TABLE 9
INTERSECTION CAPACITY ANALYSIS RESULTS
WEEKDAY MORNING PEAK HOUR

Intersection	Approach	2026 Baseline			2033 No-Build			2033 Build		
		v/c ¹	Delay ²	LOS ³	v/c	Delay	LOS	v/c	Delay	LOS
Haverhill Road at Hillside Avenue	Eastbound	0.63	41.2	D	0.65	42.0	D	0.76	47.0	D
	Westbound	0.81	44.0	D	0.83	44.5	D	0.83	45.0	D
	Northbound	0.51	18.4	B	0.58	19.2	B	0.58	18.8	B
	<u>Southbound</u>	<u>0.36</u>	<u>18.6</u>	<u>B</u>	<u>0.41</u>	<u>20.2</u>	<u>C</u>	<u>0.41</u>	<u>20.1</u>	<u>C</u>
	OVERALL	0.81	32.1	C	0.83	32.9	C	0.83	34.3	C
Haverhill Road at the Southwest Connector Roadway	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Northbound	0.47	30.1	D	0.56	38.2	E	0.57	39.5	E
Haverhill Road at the Northeast Connector Roadway	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.04	17.7	C	0.05	19.2	C	0.05	19.7	C
Hillside Avenue at the Northeast Connector Roadway	Westbound	0.04	11.1	B	0.04	11.4	B	0.04	11.4	B
	Northbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.01	<5	A	0.01	<5	A	0.01	<5	A
Hillside Avenue at the Southwest Connector Roadway	Eastbound	0.12	10.4	B	0.13	10.7	B	0.13	10.8	B
	Northbound	0.10	<5	A	0.11	<5	A	0.11	<5	A
	Southbound	0.00	<5	A	0.00	<5	A	0.00	<5	A
Hillside Avenue at the Site driveway	Eastbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.03	13.8	B
	Northbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.01	<5	A
	Southbound	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	0.00	<5	A
Hillside Avenue at the I 495 SB Ramps	Westbound	0.52	21.8	C	0.54	21.9	C	0.54	21.5	C
	Northbound	0.33	<5	A	0.37	<5	A	0.38	<5	A
	<u>Southbound</u>	<u>0.43</u>	<u>8.1</u>	<u>A</u>	<u>0.47</u>	<u>9.1</u>	<u>A</u>	<u>0.48</u>	<u>9.4</u>	<u>A</u>
	OVERALL	0.52	7.5	A	0.54	8.0	A	0.54	8.1	A
Hillside Avenue at the I 495 NB Ramps and South Hunt Road	Eastbound	0.70	32.0	C	0.76	34.2	C	0.76	34.3	C
	Westbound	0.54	11.9	B	0.55	11.7	B	0.56	11.7	B
	Northbound	0.21	19.0	B	0.23	19.6	B	0.23	19.7	B
	<u>Southbound</u>	<u>0.19</u>	<u>8.0</u>	<u>A</u>	<u>0.21</u>	<u>7.5</u>	<u>A</u>	<u>0.21</u>	<u>7.5</u>	<u>A</u>
	OVERALL	0.70	19.3	B	0.76	20.0	B	0.76	20.0	B

¹ Volume-to-capacity ratio

² Average control delay per vehicle (in seconds)

³ Level of service

n/a = not applicable

As summarized in **Tables 8 and 9**, the proposed multifamily residential development is expected to have minimal impact on the study area intersections and will not result in any notable changes in traffic operations in the study area relative to No-Build conditions. With the exception of the critical movements at the unsignalized Haverhill Road at the Southwest Connector Roadway intersection, overall operating conditions are predicted to operate at an overall LOS D or better during the weekday morning and weekday evening peak hours. Independent of the

development of the Site, the crucial movements at the Haverhill Road at the Southwest Connector Roadway intersection are expected to operate at capacity during the weekday evening peak hour under 2033 No-Build conditions.

Vehicle Queue Analysis Results

Vehicle queue results are presented for the signalized intersections. These vehicle queues are compared to available storage lengths, which are defined as lengths of exclusive turn lanes or the distance to the nearest major intersection for through lanes. Vehicle queue results from the capacity analysis for the signalized intersections are summarized in **Tables 10** through **12**. Detailed worksheets of the queuing analysis are provided in the **Attachments**.

TABLE 10
VEHICLE QUEUE ANALYSIS SUMMARY
HAVERHILL ROAD AT HILLSIDE AVENUE

Approach	Storage Length (feet)	2026 Baseline		2033 No-Build		2033 Build	
		Average Queue Length ¹	95 th Percentile Queue Length ¹	Average Queue Length	95 th Percentile Queue Length	Average Queue Length	95 th Percentile Queue Length
<i>Weekday Morning Peak Hour</i>							
Eastbound L	115±	67	114	72	122	73	122
Eastbound T/R	115±	174	241	185	272	188	279
Westbound L	130±	39	81	42	86	42	87
Westbound T/R	130±	104	170	111	190	111	193
Northbound L/T/R	165±	47	76	113	168	120	163
Southbound L/T/R	240±	119	219	140	235	142	235
<i>Weekday Evening Peak Hour</i>							
Eastbound L	115±	87	148	94	162	94	164
Eastbound T/R	115±	194	261	207	285	209	292
Westbound L	130±	52	103	57	112	61	120
Westbound T/R	130±	238	338	255	368	258	382
Northbound L/T/R	165±	126	229	136	200	135	200
Southbound L/T/R	240±	120	209	146	228	149	227

¹ Average and 95th percentile queue lengths are reported in feet per lane.

TABLE 11
VEHICLE QUEUE ANALYSIS SUMMARY
HILLSIDE AVENUE AT THE I 495 SB RAMPS

Approach	Storage Length (feet)	2026 Baseline		2033 No-Build		2033 Build	
		Average Queue Length ¹	95 th Percentile Queue Length ¹	Average Queue Length	95 th Percentile Queue Length	Average Queue Length	95 th Percentile Queue Length
Weekday Morning Peak Hour							
Westbound L/T	>1,000	31	66	33	70	33	70
Westbound R	100±	>25	47	>25	49	>25	49
Northbound L	65±	>25	27	>25	>25	>25	>25
Northbound T	650±	38	118	42	93	42	81
Southbound T/R	>1,000	100	193	117	225	123	236
Weekday Evening Peak Hour							
Westbound L/T	>1,000	48	90	53	96	53	94
Westbound R	100±	>25	59	>25	61	>25	60
Northbound L	65±	>25	>25	>25	>25	>25	>25
Northbound T	650±	32	40	35	46	36	48
Southbound T/R	>1,000	104	196	125	236	127	250

¹ Average and 95th percentile queue lengths are reported in feet per lane.

TABLE 12
VEHICLE QUEUE ANALYSIS SUMMARY
HILLSIDE AVENUE AT THE I 495 NB RAMPS AND SOUTH HUNT ROAD

Approach	Storage Length (feet)	2026 Baseline		2033 No-Build		2033 Build	
		Average Queue Length ¹	95 th Percentile Queue Length ¹	Average Queue Length	95 th Percentile Queue Length	Average Queue Length	95 th Percentile Queue Length
<i>Weekday Morning Peak Hour</i>							
Eastbound L	130±	>25	28	>25	29	>25	29
Eastbound T/R	>1,000	>25	28	>25	30	>25	30
Westbound L/T	>1,000	27	59	29	62	29	62
Westbound R	125±	>25	51	>25	52	>25	52
Northbound L/T/R	400±	32	78	35	85	35	86
Southbound L	115±	>25	78	30	79	32	76
Southbound T	650±	>25	>25	>25	>25	>25	>25
Southbound R	65±	>25	>25	>25	28	>25	27
<i>Weekday Evening Peak Hour</i>							
Eastbound L	130±	164	225	183	248	184	248
Eastbound T/R	>1,000	79	121	86	130	86	130
Westbound L/T	>1,000	30	58	32	62	32	62
Westbound R	125±	>25	40	>25	40	>25	40
Northbound L/T/R	400±	69	108	74	117	74	117
Southbound L	115±	54	50	50	57	50	59
Southbound T	650±	>25	28	>25	32	>25	33
Southbound R	65±	>25	>25	>25	>25	>25	>25

¹ Average and 95th percentile queue lengths are reported in feet per lane.

As summarized in **Table 8**, with the exception of the Haverhill Road at Hillside Avenue intersection, the vehicle queues at the will generally be contained within available storage lanes during peak hours. The project will not significantly change queue lengths compared to No-Build conditions and will generally result in minor changes (increases or decreases) of up to one vehicle on all approaches in comparison to No-Build conditions.

Vehicle queues along the Haverhill Road approaches to the signalized intersection were shown to extend past the adjacent Connector Road intersection under existing conditions, which provide storage for approximately four to five vehicles. Independent of the redevelopment of the Site, operating conditions are expected to degrade such that the vehicle queues are anticipated to extend past the Hillside Avenue intersections with the Connector Roadways as well. Similar to the other signalized study area intersections, the addition of Site-related traffic is not anticipated to result in a material change to the anticipated vehicle queue lengths.

ALTERNATIVE ACCESS CONFIGURATION

During the initial due diligence process, a preliminary consultation with MassDOT was conducted. Based on that consultation, MassDOT requested consideration for potentially

restricting left-turn movements along Hillside Avenue. As such, an alternative access scenario restricting the Hillside Avenue driveway to right-in/right-out operation was developed and assessed. The trip distribution pattern associated with this access configuration is depicted on **Figure 12**, the Site generated traffic volumes are depicted on **Figure 13** and **14**, and the resulting Build condition volumes are depicted on **Figure 15** and **16**. The operation analysis at the intersections that experienced volume alterations under the alternative access scenario are provided on **Tables 13** and **14**, for the weekday morning and weekday evening peak hours, respectively.

As summarized in **Tables 13** and **14**, under the alternative access configuration, the proposed multifamily residential community is expected to have minimal impact on the study area intersections, albeit with a greater impact to operations at the Haverhill Road at Southwest Connector Road intersection. While the restriction of left-turn egress may be appropriate for the Hillside Avenue driveway, MDM does not recommend the restriction of left-turns entering the Site along Hillside Avenue Site driveway based on ability to meet acceptable operating and safety criteria and to avoid additional impact to the Southwest Connector Road intersection. A recap of findings support this recommendation as follows:

- As shown on **Table 8** and **Table 9**, acceptable (LOS B or better) operating conditions are projected for the Hillside Avenue/Site driveway intersection under the preferred full-access scenario. Likewise, available sight distances exceed requirements for approaching vehicle speeds from the north based on an observed 85th percentile travel speed of 34 mph. The preferred (unrestricted) design also maximizes access options for emergency vehicles, providing secondary means of access in a manner that is supported by input and consultation with the Amesbury Fire Department.
- Restricting left-turn egress would require project vehicles to utilize the constrained intersection at Southwest Connector Road which currently experiences longer delays and higher than average crash rate. Eastbound signal queues along Haverhill Road frequently extend past the Southwest Connector Roadway intersection, obscuring motorists line of sight to oncoming vehicles. Restricting left-turn entry at the Hillside Avenue Site driveway would result in an increase of up to 14 additional vehicles for this constrained maneuver at the Southwest Connector Roadway intersection during the peak hours which could be avoided altogether if left-turns are allowed at the Hillside Avenue driveway.
- MDM notes the relatively wide shoulder width provided along Hillside Avenue in the vicinity of the Site. This shoulder width affords northbound motorists travelling through to avoid a left-turning vehicle entering the Site, reducing overall impact in the roadway network.

In summary, the preferred access option for the Hillside Avenue driveway allows left-turn entry to the Site to avoid the noted safety and operational constraints at the Southwest Connector Road

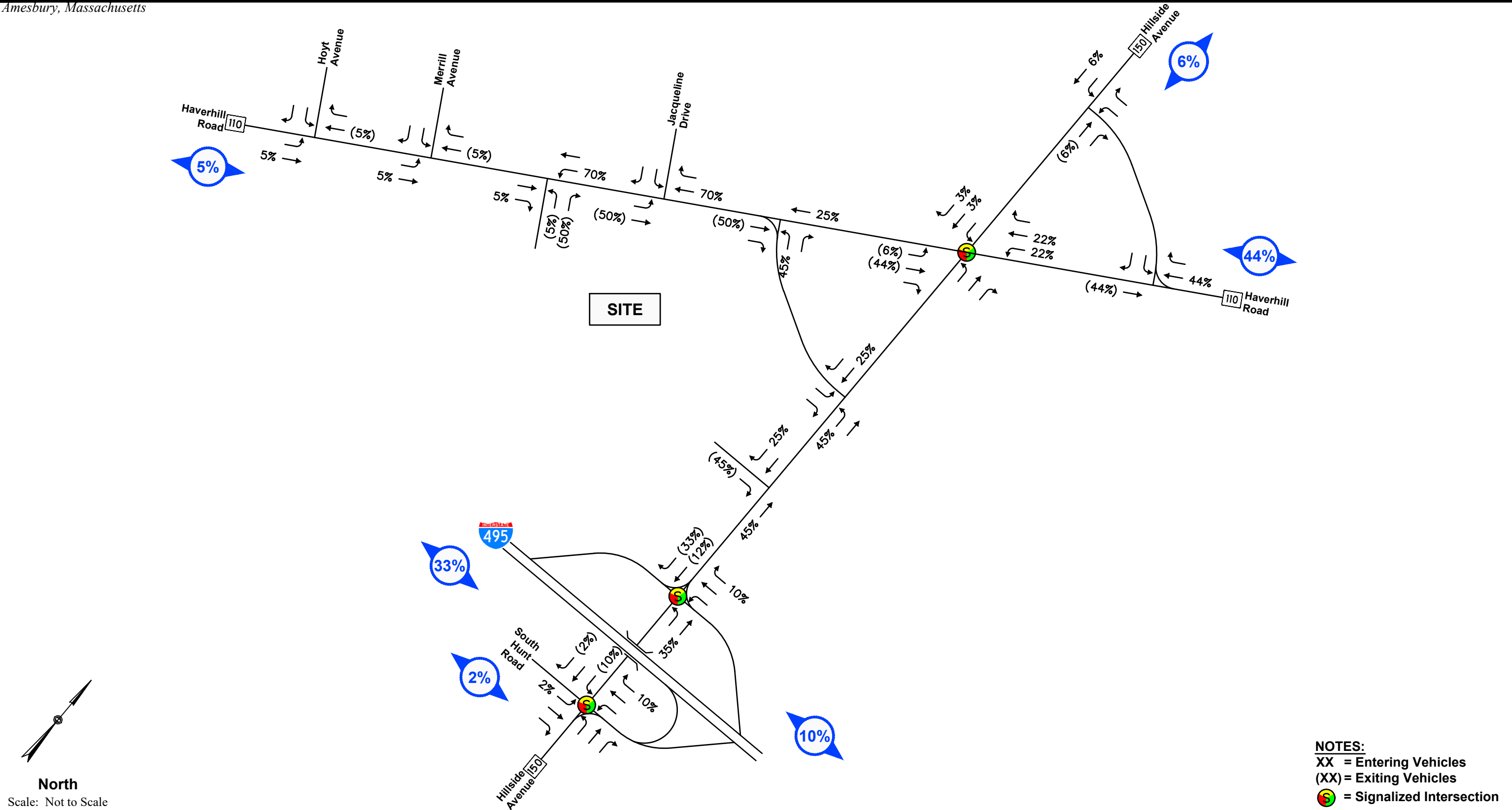


Figure 12

Trip Distribution Map
Alternative Access Configuration

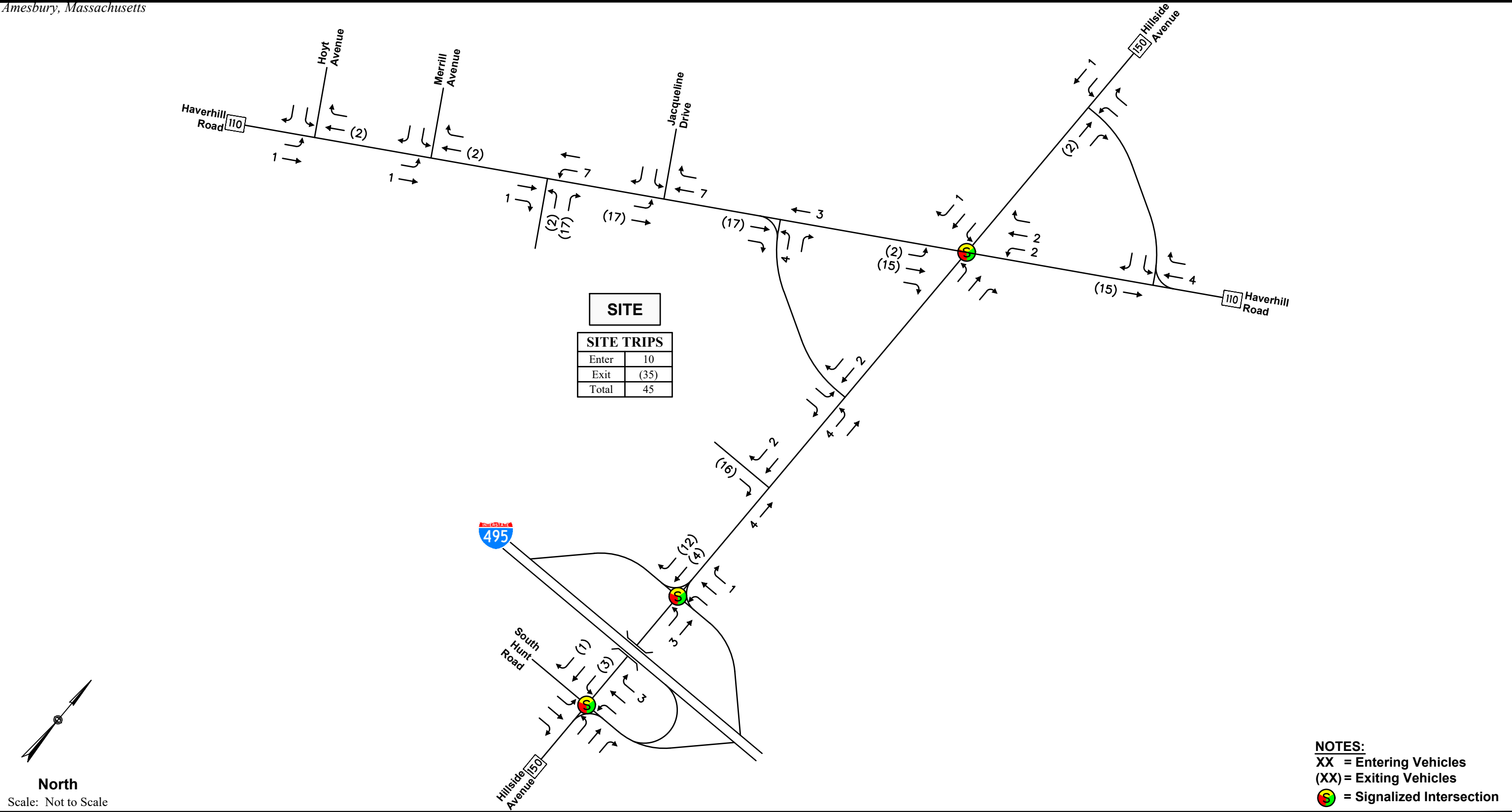
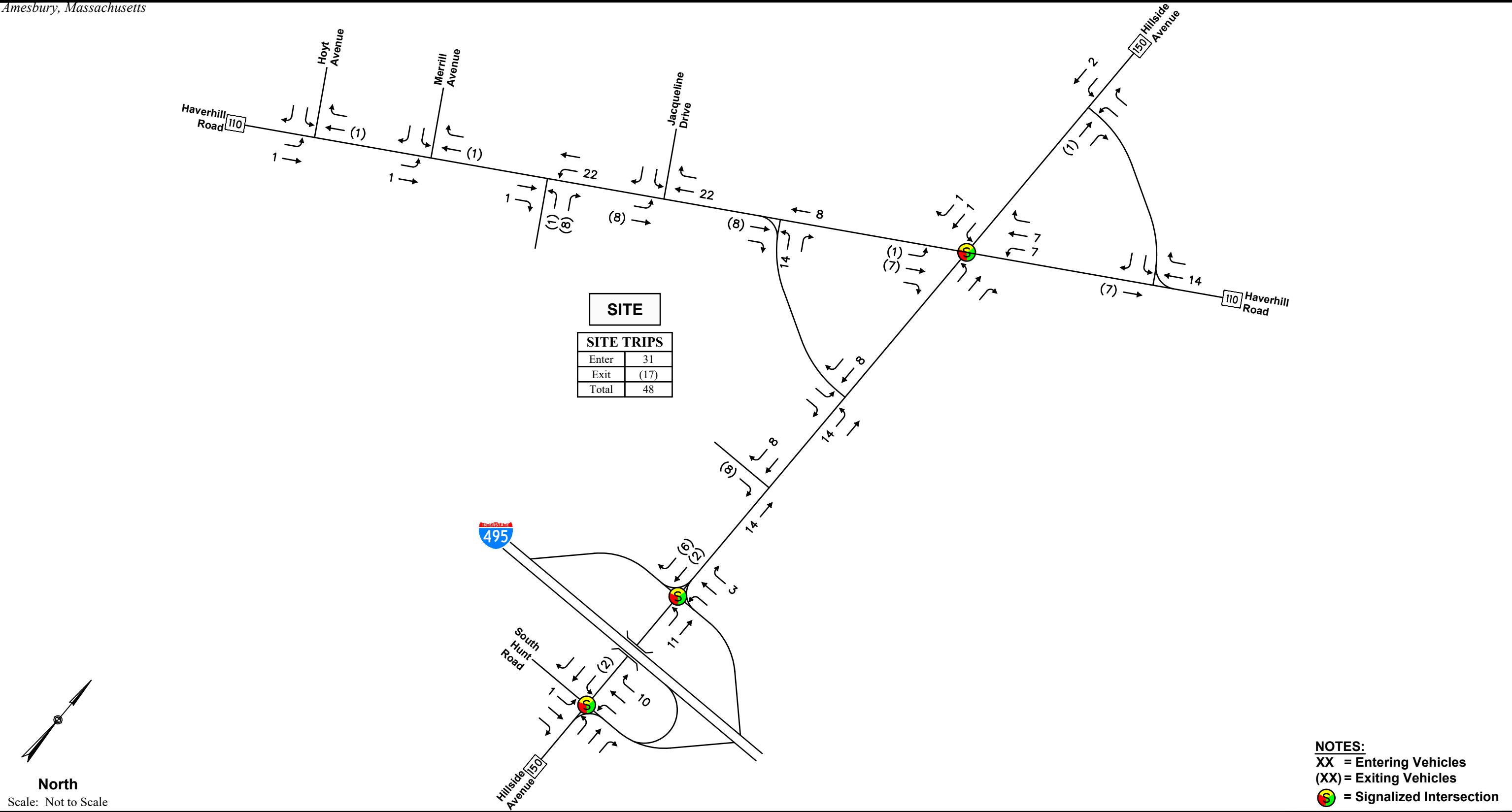


Figure 13

Site Generated
Weekday Morning Peak Hour Volumes
Alternative Access Configuration



North
Scale: Not to Scale

Figure 14
Site Generated
Weekday Evening Peak Hour Volumes
Alternative Access Configuration

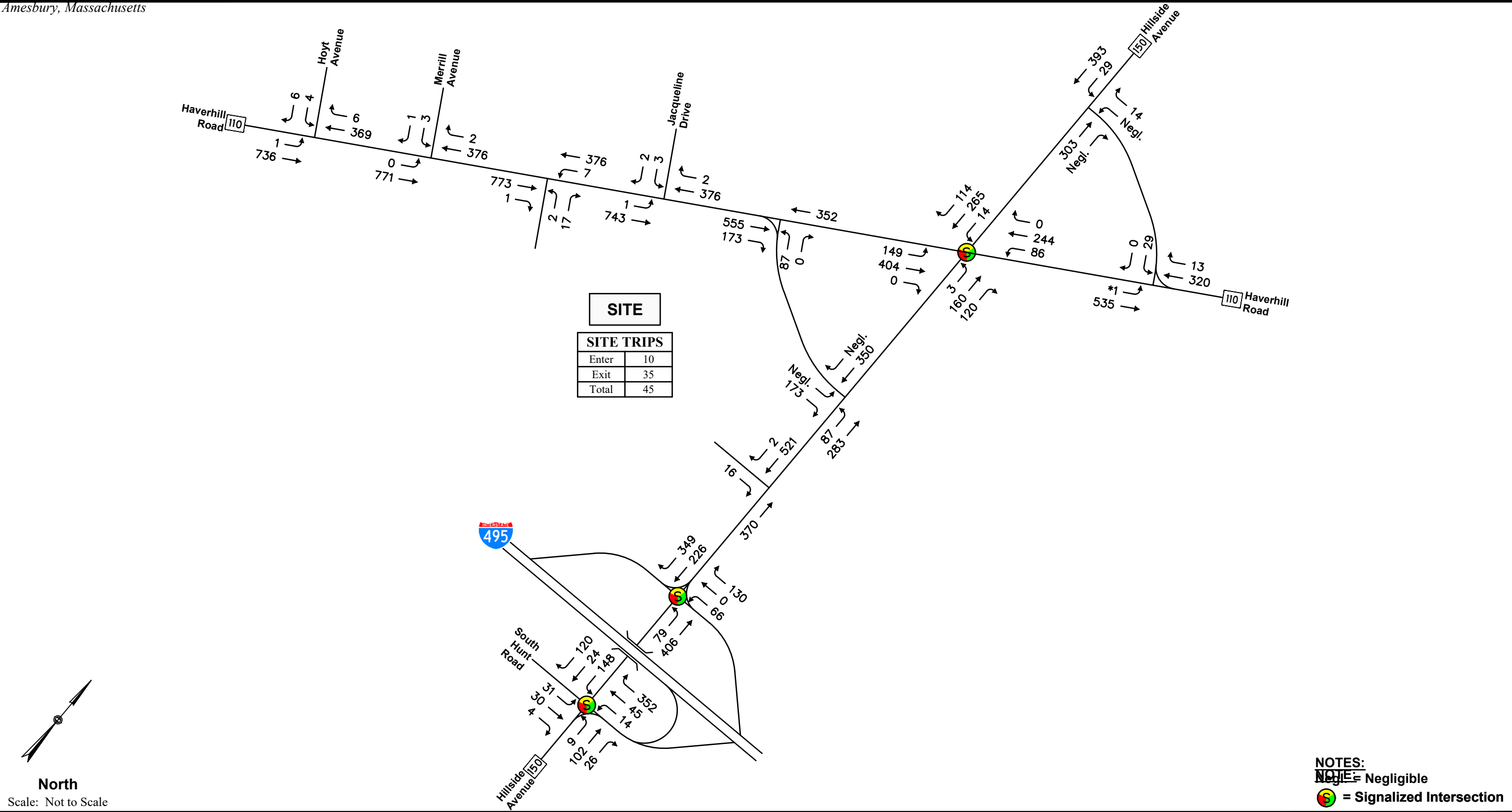


Figure 15

2033 Build Conditions
Weekday Morning Peak Hour Volumes
Alternative Access Configuration

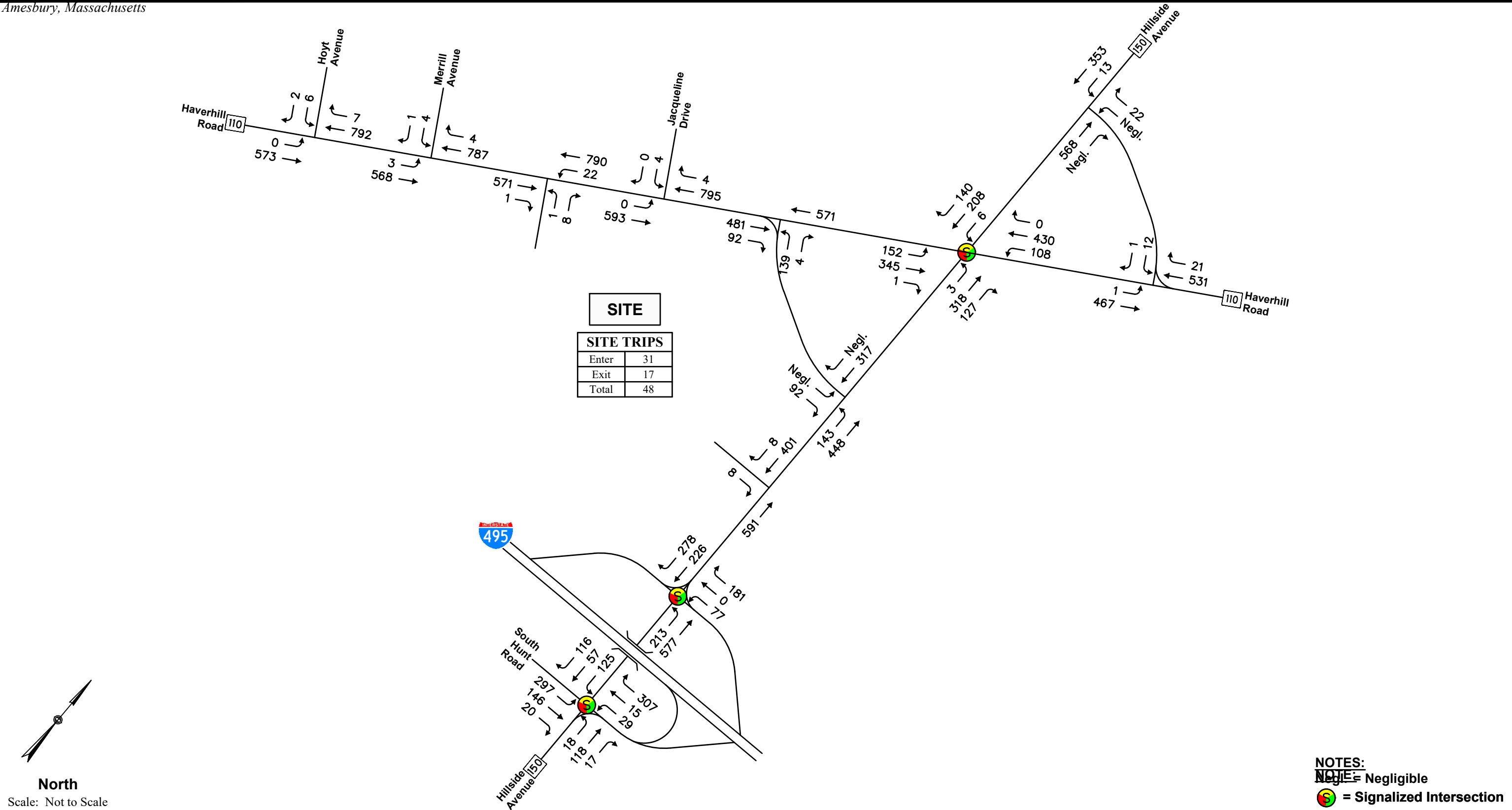


Figure 16

2033 Build Conditions
Weekday Evening Peak Hour Volumes
Alternative Access Configuration

intersection; proposed driveway layout also exceeds applicable safety-based sight line criteria and is projected to operate with very modest delays and queues.

TABLE 13
INTERSECTION CAPACITY ANALYSIS RESULTS – ALTERNATIVE ACCESS CONFIGURATION
WEEKDAY MORNING PEAK HOUR

Intersection	Approach	2026 Baseline			2033 No-Build			2033 Build			2033 Build (Alternative Access)		
		v/c ¹	Delay ²	LOS ³	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS
Haverhill Road at the Site driveway	Eastbound	n/a	n/a	n/a	n/a	n/a	n/a	0.00	<5	A	0.00	<5	A
	Westbound	n/a	n/a	n/a	n/a	n/a	n/a	0.00	<5	A	0.00	<5	A
	Northbound	n/a	n/a	n/a	n/a	n/a	n/a	0.04	17.0	C	0.06	16.6	C
Haverhill Road at Jacqueline Drive	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.02	16.3	C	0.02	17.4	C	0.02	17.6	C	0.02	17.8	C
Haverhill Road at Hillside Avenue	Eastbound	0.67	31.7	C	0.70	32.2	C	0.70	32.2	C	0.71	32.2	C
	Westbound	0.57	33.1	C	0.60	33.8	C	0.59	33.6	C	0.59	33.3	C
	Northbound	0.34	10.9	B	0.38	21.5	C	0.40	21.7	C	0.39	21.8	C
	<u>Southbound</u>	<u>0.41</u>	<u>17.3</u>	<u>B</u>	<u>0.47</u>	<u>18.5</u>	<u>B</u>	<u>0.47</u>	<u>18.8</u>	<u>B</u>	<u>0.48</u>	<u>19.0</u>	<u>B</u>
	OVERALL	0.67	24.6	C	0.70	27.1	C	0.70	27.1	C	0.71	27.2	C
Haverhill Road at the Southwest Connector Roadway	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Northbound	0.32	24.4	C	0.38	28.5	D	0.38	29.2	D	0.41	30.4	D
Hillside Avenue at the Southwest Connector Roadway	Eastbound	0.25	11.8	B	0.28	12.3	B	0.28	12.4	B	0.28	12.4	B
	Northbound	0.07	<5	A	0.08	<5	A	0.08	<5	A	0.08	<5	A
	Southbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
Hillside Avenue at the Site driveway	Eastbound	n/a	n/a	n/a	n/a	n/a	n/a	0.07	14.5	B	0.03	12.1	B
	Northbound	n/a	n/a	n/a	n/a	n/a	n/a	0.00	<5	A	0.00	<5	A
	Southbound	n/a	n/a	n/a	n/a	n/a	n/a	0.00	<5	A	0.00	<5	A

¹ Volume-to-capacity ratio

² Average control delay per vehicle (in seconds)

³ Level of service

n/a = not applicable

TABLE 14
INTERSECTION CAPACITY ANALYSIS RESULTS – ALTERNATIVE ACCESS CONFIGURATION
WEEKDAY EVENING PEAK HOUR

Intersection	Approach	2026 Baseline			2033 No-Build			2033 Build			2033 Build (Alternative Access)		
		v/c ¹	Delay ²	LOS ³	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS
Haverhill Road at the Site driveway	Eastbound	n/a	n/a	n/a	n/a	n/a	n/a	0.00	<5	A	0.00	<5	A
	Westbound	n/a	n/a	n/a	n/a	n/a	n/a	0.01	<5	A	0.02	<5	A
	Northbound	n/a	n/a	n/a	n/a	n/a	n/a	0.02	15.9	C	0.03	15.1	C
Haverhill Road at Jacqueline Drive	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Southbound	0.02	26.9	D	0.03	30.3	D	0.03	30.8	D	0.03	31.5	D
Haverhill Road at Hillside Avenue	Eastbound	0.63	41.2	D	0.65	42.0	D	0.76	47.0	D	0.75	46.5	C
	Westbound	0.81	44.0	D	0.83	44.5	D	0.83	45.0	D	0.83	44.9	C
	Northbound	0.51	18.4	B	0.58	19.2	B	0.58	18.8	B	0.58	19.1	B
	Southbound	<u>0.36</u>	<u>18.6</u>	<u>B</u>	<u>0.41</u>	<u>20.2</u>	<u>C</u>	<u>0.41</u>	<u>20.1</u>	<u>C</u>	<u>0.41</u>	<u>20.3</u>	<u>C</u>
	OVERALL	0.81	32.1	C	0.83	32.9	C	0.83	34.3	C	0.83	34.3	C
Haverhill Road at the Southwest Connector Roadway	Eastbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Westbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
	Northbound	0.47	30.1	D	0.56	38.2	E	0.57	39.5	E	0.64	44.7	E
Hillside Avenue at the Southwest Connector Roadway	Eastbound	0.12	10.4	B	0.13	10.7	B	0.13	10.8	B	0.13	10.8	B
	Northbound	0.10	<5	A	0.11	<5	A	0.11	<5	A	0.12	<5	A
	Southbound	0.00	<5	A	0.00	<5	A	0.00	<5	A	0.00	<5	A
Hillside Avenue at the Site driveway	Eastbound	n/a	n/a	n/a	n/a	n/a	n/a	0.03	13.8	B	0.01	10.9	B
	Northbound	n/a	n/a	n/a	n/a	n/a	n/a	0.01	<5	A	0.00	<5	A
	Southbound	n/a	n/a	n/a	n/a	n/a	n/a	0.00	<5	A	0.00	<5	A

¹ Volume-to-capacity ratio

² Average control delay per vehicle (in seconds)

³ Level of service

n/a = not applicable

CONCLUSIONS AND RECOMENDATIONS

In summary, adequate capacity is available at the study intersections to accommodate the traffic associated with the proposed multifamily residential community. The proposed development is estimated to generate approximately 45 vehicle trips during the weekday morning peak hour, 48 vehicle trips during the weekday evening peak hour, and approximately 562 vehicle trips on a daily basis. While no specific off-Site mitigation elements appear necessary to accommodate the transportation impacts associated with the proposed multifamily residential community, MDM summarizes the following access-related and pedestrian improvements to support the project:

- *Driveway Design.* The driveway alignments, widths and curb radii have been designed to achieve (a) approximate perpendicular orientation with Haverhill Road and Hillside Avenue; and (b) curb radii as required to accommodate emergency vehicles. Proposed driveways are full-access; allowing left-turn access to the Site via Hillside Avenue will ensure that impacts to the Southwest Connector Road intersection are avoided (an objective of the City of Amesbury). Likewise, the access design accommodates dual means of emergency access to the property.
- *Signs and Pavement Markings.* A STOP sign (R1-1) and STOP line pavement marking should be installed on the Site driveway approaches to Haverhill Road and Hillside Avenue. The signs and pavement markings shall be compliant with the Manual on Uniform Traffic Control Devices (MUTCD).
- *Maintain Clear Sight Lines.* MDM recommends that any new plantings (shrubs, bushes) or physical landscape features to be located within the Haverhill Road and Hillside Avenue sight line triangles should also be maintained at a height of 2 feet or less above the adjacent existing roadway grade to ensure unobstructed lines of sight.
- *Pedestrian Accommodation.* The design incorporates an internal sidewalk network that connects the proposed building entrances with the proposed parking areas and to the existing sidewalk along Haverhill Road. A public parking area is also proposed to accommodate trailhead connection to a passive recreational trail system on the property.
- *Bicycle Amenities.* The Proponent will incorporate secure and weather-protected bicycle facilities to encourage and facilitate this mode of transportation to/from the Site by residents. Additional bike racks will also be provided to accommodate visitors at appropriate locations within the Site.

Conclusions

In summary, MDM finds that incremental traffic associated with the proposed multifamily residential community is not expected to materially impact operating conditions at the study intersections and ample roadway capacity will be available to support the project. There will be no degradation in the level of service at any of the study intersections due to the project. Proposed access/egress to the Site will be designed to ensure adequate maneuverability for the largest service, delivery and emergency vehicles; preferably by way of two full-access driveways along Haverhill Road and Hillside Avenue as noted.

ATTACHMENTS

- ☐ Traffic Volume Data
- ☐ Seasonal/Yearly Growth Data
- ☐ Speed Data
- ☐ Crash Data
- ☐ Background Traffic Volume Data
- ☐ Trip Generation Calculations
- ☐ Trip Distribution Calculations
- ☐ Capacity Analysis

□ Traffic Volume Data

Haverhill Road
Adjacent to Site
Amesbury, MA

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Site Code: 1449

Start Time	07-Aug-25 Thu	Westbound		Hour Totals		Eastbound		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		9	109			8	144		
12:15		7	107			7	130		
12:30		3	114			7	141		
12:45		8	110	27	440	1	120	23	535
01:00		7	103			3	122		
01:15		5	106			4	127		
01:30		4	99			4	99		
01:45		1	95	17	403	3	106	14	454
02:00		1	105			0	94		
02:15		1	121			1	106		
02:30		4	110			1	122		
02:45		1	109	7	445	4	124	6	446
03:00		4	122			4	126		
03:15		3	122			2	130		
03:30		4	126			2	123		
03:45		1	130	12	500	8	115	16	494
04:00		6	123			10	138		
04:15		1	124			15	113		
04:30		6	127			11	121		
04:45		12	125	25	499	29	133	65	505
05:00		12	117			15	127		
05:15		17	123			49	106		
05:30		17	131			56	114		
05:45		27	116	73	487	46	104	166	451
06:00		35	98			55	109		
06:15		50	85			71	104		
06:30		44	91			91	69		
06:45		73	98	202	372	86	88	303	370
07:00		66	80			88	76		
07:15		64	82			120	75		
07:30		55	88			126	61		
07:45		81	69	266	319	135	66	469	278
08:00		71	85			146	71		
08:15		89	71			156	67		
08:30		72	82			136	85		
08:45		101	64	333	302	158	40	596	263
09:00		92	65			116	61		
09:15		83	53			109	47		
09:30		73	42			98	38		
09:45		101	36	349	196	111	23	434	169
10:00		84	30			129	33		
10:15		77	27			146	35		
10:30		82	19			156	23		
10:45		111	17	354	93	142	16	573	107
11:00		98	18			107	18		
11:15		93	12			129	4		
11:30		102	19			116	10		
11:45		95	11	388	60	134	4	486	36
Total		2053	4116			3151	4108	5204	8224
Percent		33.3%	66.7%			43.4%	56.6%	38.8%	61.2%
Combined Total		6169		7259		13428			

28 Lord Road, Suite 280
Marlborough, MA 01752

Start Time	12-Mar-26 Thu	Southbound		Hour Totals		Northbound				Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		5	77			9	101				
12:15		5	94			9	82				
12:30		4	66			10	92				
12:45		7	55	21	292	7	88	35	363	56	655
01:00		1	86			4	69				
01:15		1	89			2	82				
01:30		0	68			1	75				
01:45		0	72	2	315	5	105	12	331	14	646
02:00		1	101			2	98				
02:15		1	85			1	92				
02:30		6	104			4	112				
02:45		5	93	13	383	1	99	8	401	21	784
03:00		2	124			1	98				
03:15		0	120			0	115				
03:30		4	115			2	93				
03:45		2	128	8	487	3	122	6	428	14	915
04:00		7	117			1	122				
04:15		5	97			4	122				
04:30		9	86			8	136				
04:45		22	107	43	407	6	111	19	491	62	898
05:00		27	106			12	147				
05:15		31	76			16	108				
05:30		31	77			22	106				
05:45		55	53	144	312	25	104	75	465	219	777
06:00		30	72			32	86				
06:15		48	48			33	81				
06:30		87	50			51	76				
06:45		117	52	282	222	70	65	186	308	468	530
07:00		105	49			79	74				
07:15		93	48			113	66				
07:30		142	36			95	82				
07:45		117	45	457	178	118	62	405	284	862	462
08:00		107	39			116	38				
08:15		108	28			83	32				
08:30		138	24			81	31				
08:45		108	35	461	126	101	44	381	145	842	271
09:00		98	33			76	32				
09:15		99	24			77	31				
09:30		82	19			94	27				
09:45		67	22	346	98	81	21	328	111	674	209
10:00		61	16			82	18				
10:15		71	9			81	20				
10:30		76	12			67	18				
10:45		62	9	270	46	63	27	293	83	563	129
11:00		52	12			64	15				
11:15		71	12			68	19				
11:30		62	7			75	7				
11:45		90	7	275	38	76	10	283	51	558	89
Total		2322	2904			2031	3461			4353	6365
Percent		44.4%	55.6%			37.0%	63.0%			40.6%	59.4%
Combined Total		5226				5492				10718	

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

North: Hoyt Avenue File Name : 1449 Haverhill Road (Rt 110) at Hoyt Avenue - Updated Combined
E/W: Haverhill Road (Rt 110) Code : 1449
Amesbury, MA Start Date : 3/12/2026
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

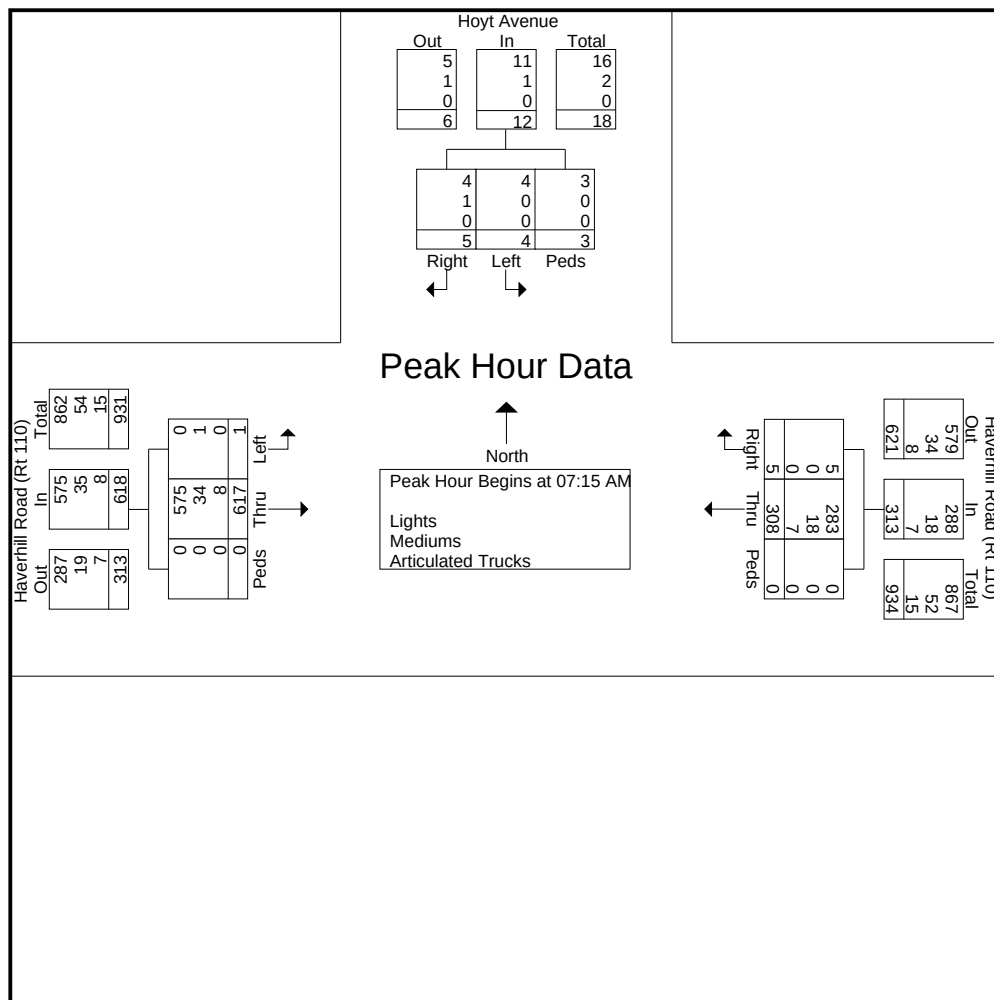
Start Time	Hoyt Avenue From North				Haverhill Road (Rt 110) From East				Haverhill Road (Rt 110) From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
07:00 AM	0	1	0	1	0	71	0	71	116	0	0	116	188
07:15 AM	1	2	0	3	1	71	0	72	136	0	0	136	211
07:30 AM	1	1	0	2	0	72	0	72	172	1	0	173	247
07:45 AM	0	0	3	3	0	95	0	95	158	0	0	158	256
Total	2	4	3	9	1	309	0	310	582	1	0	583	902
08:00 AM	3	1	0	4	4	70	0	74	151	0	0	151	229
08:15 AM	0	0	1	1	2	73	0	75	105	0	0	105	181
08:30 AM	0	0	1	1	0	104	0	104	146	0	0	146	251
08:45 AM	0	1	0	1	1	100	0	101	126	0	0	126	228
Total	3	2	2	7	7	347	0	354	528	0	0	528	889
04:00 PM	2	0	2	4	0	149	0	149	142	1	1	144	297
04:15 PM	0	0	1	1	2	152	0	154	118	1	0	119	274
04:30 PM	0	1	0	1	2	156	0	158	113	0	0	113	272
04:45 PM	1	2	1	4	1	174	0	175	128	0	2	130	309
Total	3	3	4	10	5	631	0	636	501	2	3	506	1152
05:00 PM	0	0	0	0	3	168	0	171	125	0	0	125	296
05:15 PM	1	2	0	3	0	165	0	165	112	0	0	112	280
05:30 PM	0	0	0	0	0	152	0	152	101	0	0	101	253
05:45 PM	1	0	0	1	0	146	0	146	89	0	0	89	236
Total	2	2	0	4	3	631	0	634	427	0	0	427	1065
Grand Total	10	11	9	30	16	1918	0	1934	2038	3	3	2044	4008
Apprch %	33.3	36.7	30		0.8	99.2	0		99.7	0.1	0.1		
Total %	0.2	0.3	0.2	0.7	0.4	47.9	0	48.3	50.8	0.1	0.1	51	
Lights	9	11	9	29	16	1858	0	1874	1954	2	3	1959	3862
% Lights	90	100	100	96.7	100	96.9	0	96.9	95.9	66.7	100	95.8	96.4
Mediums	1	0	0	1	0	46	0	46	67	1	0	68	115
% Mediums	10	0	0	3.3	0	2.4	0	2.4	3.3	33.3	0	3.3	2.9
Articulated Trucks	0	0	0	0	0	14	0	14	17	0	0	17	31
% Articulated Trucks	0	0	0	0	0	0.7	0	0.7	0.8	0	0	0.8	0.8

MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

North: Hoyt Avenue File Name : 1449 Haverhill Road (Rt 110) at Hoyt Avenue - Updated Combined
E/W: Haverhill Road (Rt 110) Code : 1449
Amesbury, MA Start Date : 3/12/2026
Page No : 2

	Hoyt Avenue From North				Haverhill Road (Rt 110) From East				Haverhill Road (Rt 110) From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	1	2	0	3	1	71	0	72	136	0	0	136	211
07:30 AM	1	1	0	2	0	72	0	72	172	1	0	173	247
07:45 AM	0	0	3	3	0	95	0	95	158	0	0	158	256
08:00 AM	3	1	0	4	4	70	0	74	151	0	0	151	229
Total Volume	5	4	3	12	5	308	0	313	617	1	0	618	943
% App. Total	41.7	33.3	25		1.6	98.4	0		99.8	0.2	0		
PHF	.417	.500	.250	.750	.313	.811	.000	.824	.897	.250	.000	.893	.921
Lights	4	4	3	11	5	283	0	288	575	0	0	575	874
% Lights	80.0	100	100	91.7	100	91.9	0	92.0	93.2	0	0	93.0	92.7
Mediums	1	0	0	1	0	18	0	18	34	1	0	35	54
% Mediums	20.0	0	0	8.3	0	5.8	0	5.8	5.5	100	0	5.7	5.7
Articulated Trucks	0	0	0	0	0	7	0	7	8	0	0	8	15
% Articulated Trucks	0	0	0	0	0	2.3	0	2.2	1.3	0	0	1.3	1.6

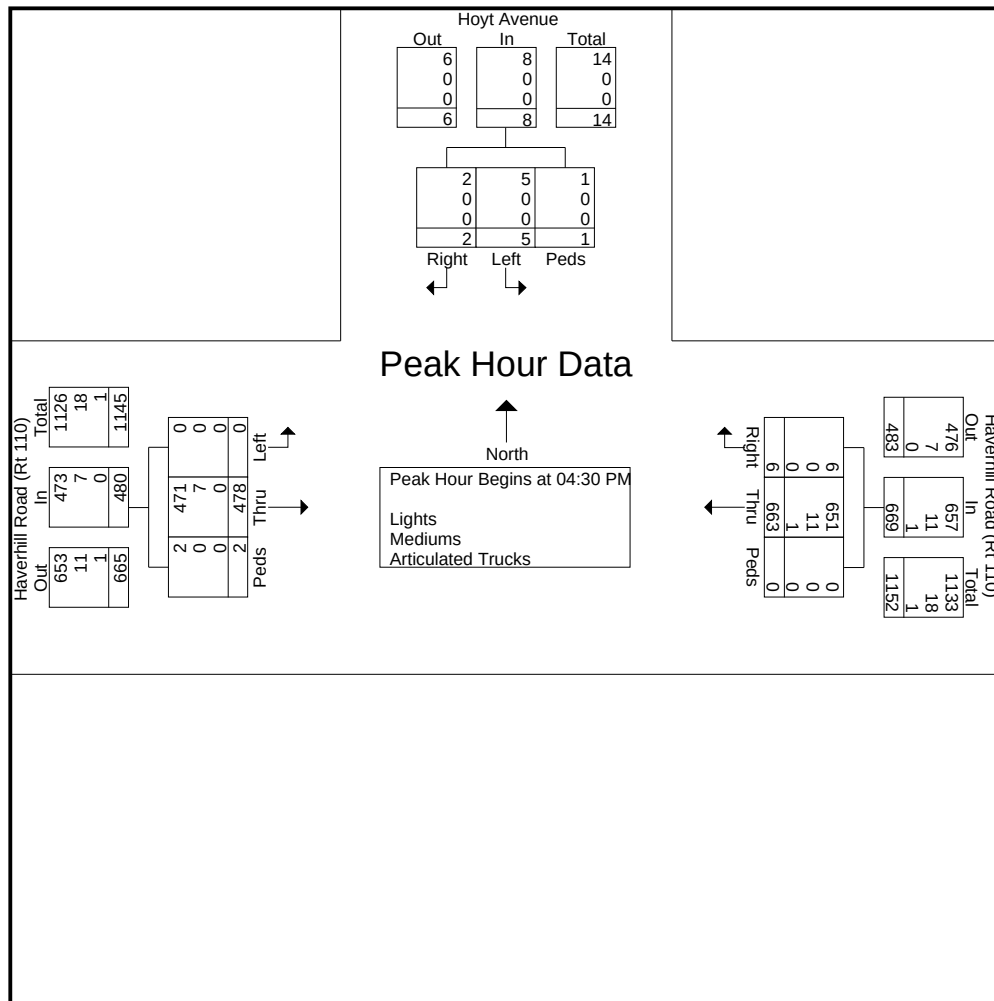


MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

North: Hoyt Avenue File Name : 1449 Haverhill Road (Rt 110) at Hoyt Avenue - Updated Combined
E/W: Haverhill Road (Rt 110) Code : 1449
Amesbury, MA Start Date : 3/12/2026
Page No : 3

	Hoyt Avenue From North				Haverhill Road (Rt 110) From East				Haverhill Road (Rt 110) From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	1	0	1	2	156	0	158	113	0	0	113	272
04:45 PM	1	2	1	4	1	174	0	175	128	0	2	130	309
05:00 PM	0	0	0	0	3	168	0	171	125	0	0	125	296
05:15 PM	1	2	0	3	0	165	0	165	112	0	0	112	280
Total Volume	2	5	1	8	6	663	0	669	478	0	2	480	1157
% App. Total	25	62.5	12.5		0.9	99.1	0		99.6	0	0.4		
PHF	.500	.625	.250	.500	.500	.953	.000	.956	.934	.000	.250	.923	.936
Lights	2	5	1	8	6	651	0	657	471	0	2	473	1138
% Lights	100	100	100	100	100	98.2	0	98.2	98.5	0	100	98.5	98.4
Mediums	0	0	0	0	0	11	0	11	7	0	0	7	18
% Mediums	0	0	0	0	0	1.7	0	1.6	1.5	0	0	1.5	1.6
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
% Articulated Trucks	0	0	0	0	0	0.2	0	0.1	0	0	0	0	0.1



MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

North: Merrill Avenue
E/W: Haverhill Road (Rt 110)
Amesbury, MA

File Name : 1449 Haverhill Road (Rt 110) at Merrill Avenue
Site Code : 1449
Start Date : 3/12/2026
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

Start Time	Merrill Avenue From North				Haverhill Road From East				Haverhill Road From West				Int. Total
	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	
07:00 AM	1	1	0	2	0	67	0	67	112	0	0	112	181
07:15 AM	0	1	1	2	0	73	0	73	148	0	0	148	223
07:30 AM	0	0	0	0	1	74	0	75	186	0	0	186	261
07:45 AM	0	1	2	3	0	97	0	97	162	0	0	162	262
Total	1	3	3	7	1	311	0	312	608	0	0	608	927
08:00 AM	1	1	0	2	1	70	1	72	150	0	0	150	224
08:15 AM	0	0	0	0	1	79	0	80	104	0	0	104	184
08:30 AM	0	1	2	3	1	102	0	103	145	0	0	145	251
08:45 AM	0	2	0	2	0	103	0	103	131	0	0	131	236
Total	1	4	2	7	3	354	1	358	530	0	0	530	895
04:00 PM	0	1	1	2	1	151	0	152	136	0	0	136	290
04:15 PM	0	0	0	0	1	155	0	156	119	0	0	119	275
04:30 PM	1	1	0	2	3	156	0	159	109	0	0	109	270
04:45 PM	0	0	1	1	0	161	0	161	128	1	0	129	291
Total	1	2	2	5	5	623	0	628	492	1	0	493	1126
05:00 PM	0	2	0	2	1	174	0	175	127	1	0	128	305
05:15 PM	0	1	0	1	0	168	0	168	110	1	0	111	280
05:30 PM	0	0	1	1	2	156	0	158	102	0	0	102	261
05:45 PM	0	2	0	2	1	147	0	148	91	0	0	91	241
Total	0	5	1	6	4	645	0	649	430	2	0	432	1087
Grand Total	3	14	8	25	13	1933	1	1947	2060	3	0	2063	4035
Apprch %	12	56	32		0.7	99.3	0.1		99.9	0.1	0		
Total %	0.1	0.3	0.2	0.6	0.3	47.9	0	48.3	51.1	0.1	0	51.1	
Lights	3	14	8	25	13	1873	1	1887	1977	3	0	1980	3892
% Lights	100	100	100	100	100	96.9	100	96.9	96	100	0	96	96.5
Mediums	0	0	0	0	0	48	0	48	66	0	0	66	114
% Mediums	0	0	0	0	0	2.5	0	2.5	3.2	0	0	3.2	2.8
Articulated Trucks	0	0	0	0	0	12	0	12	17	0	0	17	29
% Articulated Trucks	0	0	0	0	0	0.6	0	0.6	0.8	0	0	0.8	0.7

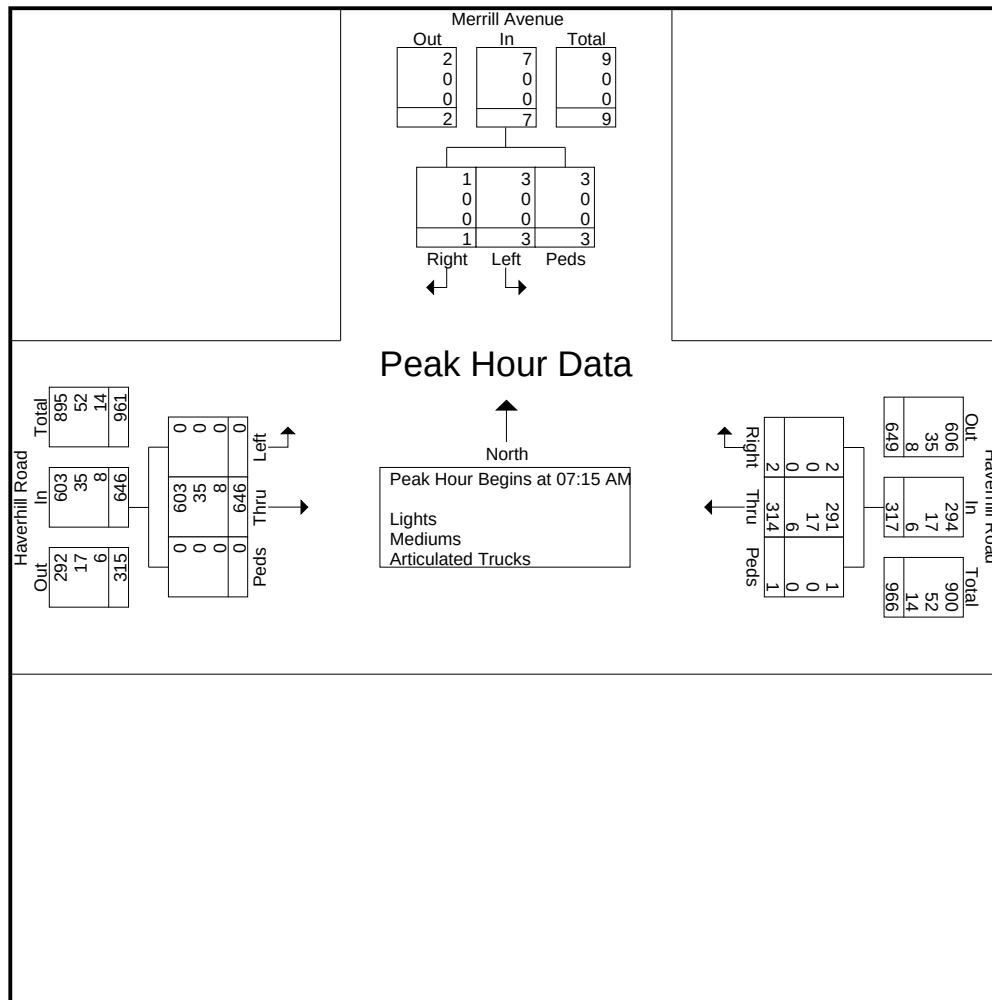
MDM Transportation Consultants, Inc.

28 Lord Road, Suite 280
Marlborough, MA, 01752

North: Merrill Avenue
E/W: Haverhill Road (Rt 110)
Amesbury, MA

File Name : 1449 Haverhill Road (Rt 110) at Merrill Avenue
Site Code : 1449
Start Date : 3/12/2026
Page No : 2

	Merrill Avenue From North				Haverhill Road From East				Haverhill Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 12:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	0	1	1	2	0	73	0	73	148	0	0	148	223
07:30 AM	0	0	0	0	1	74	0	75	186	0	0	186	261
07:45 AM	0	1	2	3	0	97	0	97	162	0	0	162	262
08:00 AM	1	1	0	2	1	70	1	72	150	0	0	150	224
Total Volume	1	3	3	7	2	314	1	317	646	0	0	646	970
% App. Total	14.3	42.9	42.9		0.6	99.1	0.3		100	0	0		
PHF	.250	.750	.375	.583	.500	.809	.250	.817	.868	.000	.000	.868	.926
Lights	1	3	3	7	2	291	1	294	603	0	0	603	904
% Lights	100	100	100	100	100	92.7	100	92.7	93.3	0	0	93.3	93.2
Mediums	0	0	0	0	0	17	0	17	35	0	0	35	52
% Mediums	0	0	0	0	0	5.4	0	5.4	5.4	0	0	5.4	5.4
Articulated Trucks	0	0	0	0	0	6	0	6	8	0	0	8	14
% Articulated Trucks	0	0	0	0	0	1.9	0	1.9	1.2	0	0	1.2	1.4



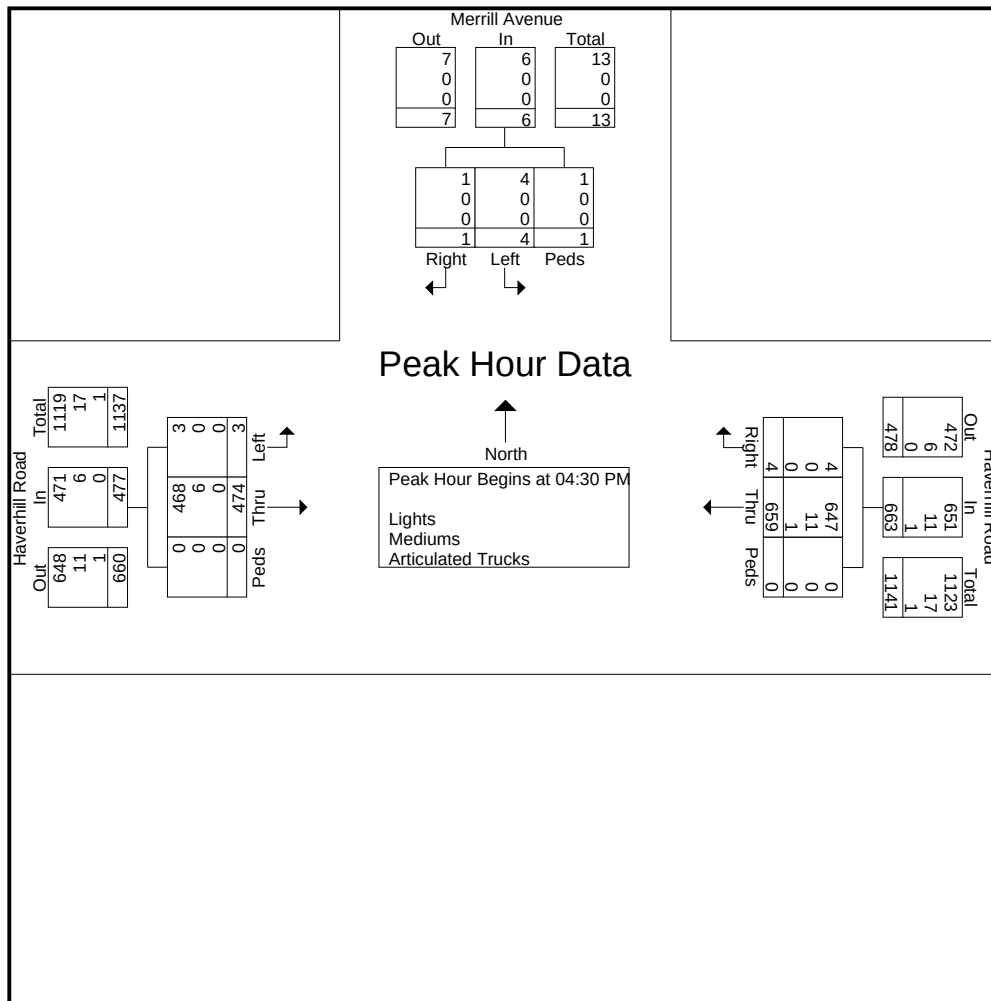
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28 Lord Road, Suite 280
Marlborough, MA, 01752

North: Merrill Avenue
E/W: Haverhill Road (Rt 110)
Amesbury, MA

File Name : 1449 Haverhill Road (Rt 110) at Merrill Avenue
Site Code : 1449
Start Date : 3/12/2026
Page No : 3

	Merrill Avenue From North				Haverhill Road From East				Haverhill Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 01:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	1	1	0	2	3	156	0	159	109	0	0	109	270
04:45 PM	0	0	1	1	0	161	0	161	128	1	0	129	291
05:00 PM	0	2	0	2	1	174	0	175	127	1	0	128	305
05:15 PM	0	1	0	1	0	168	0	168	110	1	0	111	280
Total Volume	1	4	1	6	4	659	0	663	474	3	0	477	1146
% App. Total	16.7	66.7	16.7		0.6	99.4	0		99.4	0.6	0		
PHF	.250	.500	.250	.750	.333	.947	.000	.947	.926	.750	.000	.924	.939
Lights	1	4	1	6	4	647	0	651	468	3	0	471	1128
% Lights	100	100	100	100	100	98.2	0	98.2	98.7	100	0	98.7	98.4
Mediums	0	0	0	0	0	11	0	11	6	0	0	6	17
% Mediums	0	0	0	0	0	1.7	0	1.7	1.3	0	0	1.3	1.5
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
% Articulated Trucks	0	0	0	0	0	0.2	0	0.2	0	0	0	0	0.1



MDM Transportation Consultants, Inc.

28 Lord Rd, Suite 280
Marlborough, MA, 01752

North: Jacqueline Drive
E/W: Haverhill Road (Rt 110)
Amesbury, MA

File Name : 1449 Haverhill Road (Rt 110) at Jacqueline Drive
Site Code : 1449
Start Date : 3/12/2026
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Jacqueline Drive From North				Haverhill Road (Rt 110) From East				Haverhill Road (Rt 110) From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	1	2	3	0	70	0	70	115	0	0	115	188
07:15 AM	0	0	2	2	0	74	0	74	140	0	0	140	216
07:30 AM	0	1	0	1	0	72	0	72	167	1	0	168	241
07:45 AM	0	1	0	1	0	91	0	91	155	0	1	156	248
Total	0	3	4	7	0	307	0	307	577	1	1	579	893
08:00 AM	2	1	0	3	2	73	0	75	147	0	1	148	226
08:15 AM	1	1	0	2	2	79	0	81	107	0	0	107	190
08:30 AM	0	1	1	2	0	100	0	100	150	0	0	150	252
08:45 AM	0	0	0	0	1	101	0	102	129	0	0	129	231
Total	3	3	1	7	5	353	0	358	533	0	1	534	899
04:00 PM	0	0	0	0	0	144	0	144	140	0	0	140	284
04:15 PM	0	0	2	2	0	149	0	149	126	0	0	126	277
04:30 PM	0	3	0	3	1	157	0	158	118	0	0	118	279
04:45 PM	0	1	0	1	0	143	0	143	133	0	0	133	277
Total	0	4	2	6	1	593	0	594	517	0	0	517	1117
05:00 PM	0	0	0	0	0	177	0	177	129	0	0	129	306
05:15 PM	0	0	0	0	3	171	0	174	109	0	0	109	283
05:30 PM	0	0	1	1	0	157	0	157	104	0	0	104	262
05:45 PM	0	1	0	1	1	146	0	147	89	0	0	89	237
Total	0	1	1	2	4	651	0	655	431	0	0	431	1088
Grand Total	3	11	8	22	10	1904	0	1914	2058	1	2	2061	3997
Apprch %	13.6	50	36.4		0.5	99.5	0		99.9	0	0.1		
Total %	0.1	0.3	0.2	0.6	0.3	47.6	0	47.9	51.5	0	0.1	51.6	
Lights	3	11	8	22	10	1847	0	1857	1973	1	2	1976	3855
% Lights	100	100	100	100	100	97	0	97	95.9	100	100	95.9	96.4
Mediums	0	0	0	0	0	44	0	44	69	0	0	69	113
% Mediums	0	0	0	0	0	2.3	0	2.3	3.4	0	0	3.3	2.8
Articulated Trucks	0	0	0	0	0	13	0	13	16	0	0	16	29
% Articulated Trucks	0	0	0	0	0	0.7	0	0.7	0.8	0	0	0.8	0.7

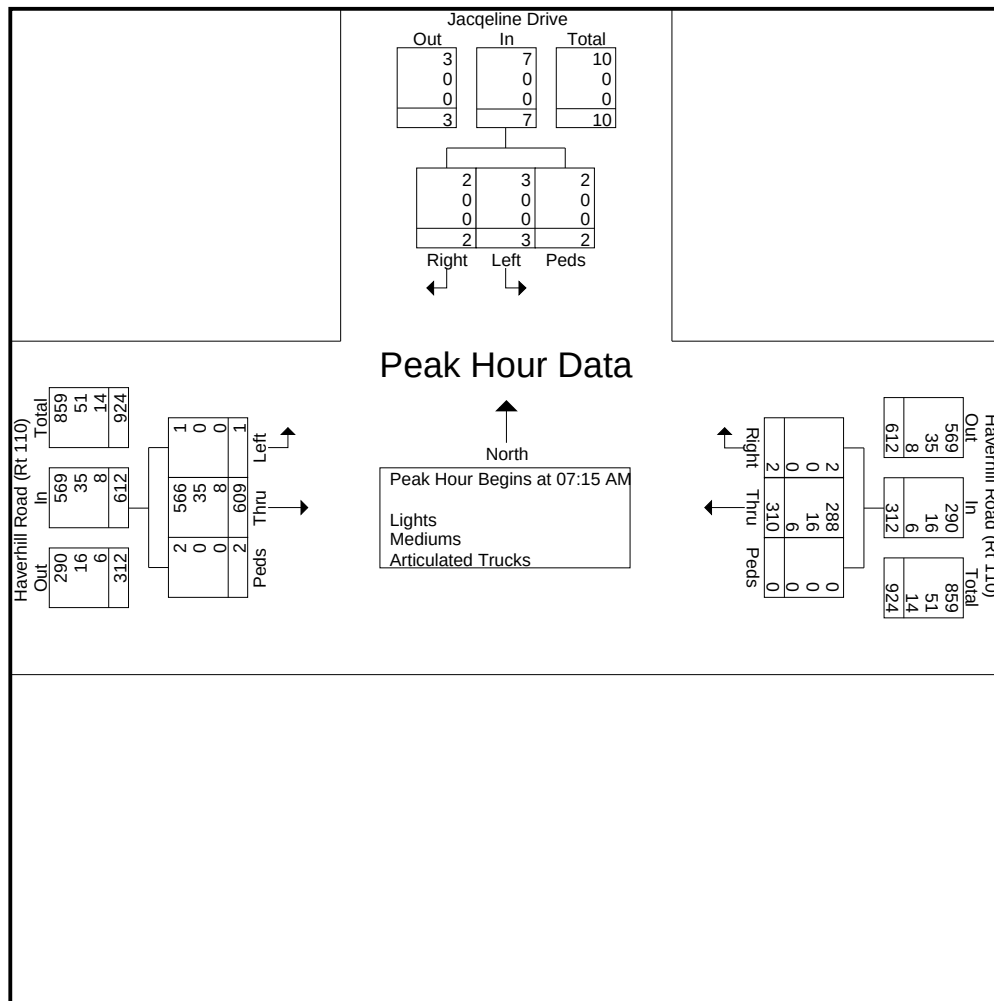
MDM Transportation Consultants, Inc.

28 Lord Rd, Suite 280
Marlborough, MA, 01752

North: Jacqueline Drive
E/W: Haverhill Road (Rt 110)
Amesbury, MA

File Name : 1449 Haverhill Road (Rt 110) at Jacqueline Drive
Site Code : 1449
Start Date : 3/12/2026
Page No : 2

	Jacqueline Drive From North				Haverhill Road (Rt 110) From East				Haverhill Road (Rt 110) From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	0	0	2	2	0	74	0	74	140	0	0	140	216
07:30 AM	0	1	0	1	0	72	0	72	167	1	0	168	241
07:45 AM	0	1	0	1	0	91	0	91	155	0	1	156	248
08:00 AM	2	1	0	3	2	73	0	75	147	0	1	148	226
Total Volume	2	3	2	7	2	310	0	312	609	1	2	612	931
% App. Total	28.6	42.9	28.6		0.6	99.4	0		99.5	0.2	0.3		
PHF	.250	.750	.250	.583	.250	.852	.000	.857	.912	.250	.500	.911	.939
Lights	2	3	2	7	2	288	0	290	566	1	2	569	866
% Lights	100	100	100	100	100	92.9	0	92.9	92.9	100	100	93.0	93.0
Mediums	0	0	0	0	0	16	0	16	35	0	0	35	51
% Mediums	0	0	0	0	0	5.2	0	5.1	5.7	0	0	5.7	5.5
Articulated Trucks	0	0	0	0	0	6	0	6	8	0	0	8	14
% Articulated Trucks	0	0	0	0	0	1.9	0	1.9	1.3	0	0	1.3	1.5



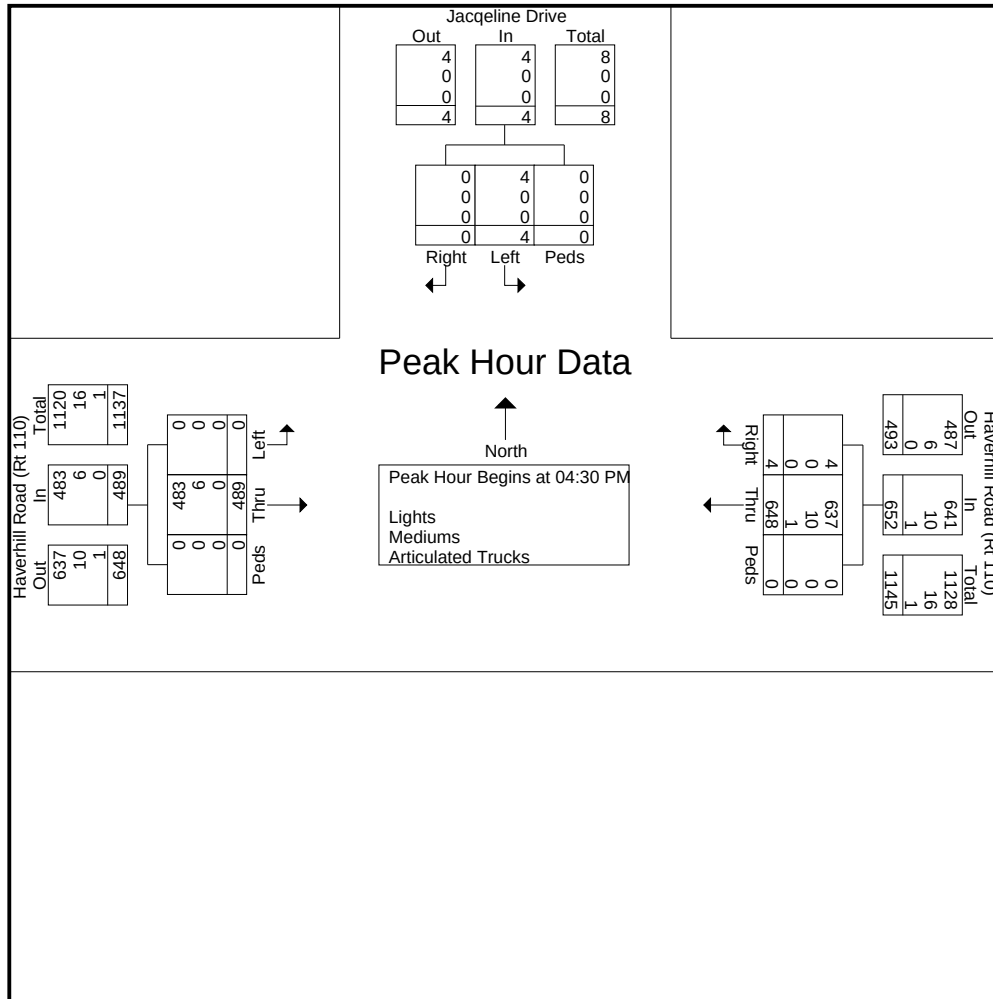
MDM Transportation Consultants, Inc.

28 Lord Rd, Suite 280
Marlborough, MA, 01752

North: Jacqueline Drive
E/W: Haverhill Road (Rt 110)
Amesbury, MA

File Name : 1449 Haverhill Road (Rt 110) at Jacqueline Drive
Site Code : 1449
Start Date : 3/12/2026
Page No : 3

	Jacqueline Drive From North				Haverhill Road (Rt 110) From East				Haverhill Road (Rt 110) From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	3	0	3	1	157	0	158	118	0	0	118	279
04:45 PM	0	1	0	1	0	143	0	143	133	0	0	133	277
05:00 PM	0	0	0	0	0	177	0	177	129	0	0	129	306
05:15 PM	0	0	0	0	3	171	0	174	109	0	0	109	283
Total Volume	0	4	0	4	4	648	0	652	489	0	0	489	1145
% App. Total	0	100	0		0.6	99.4	0		100	0	0		
PHF	.000	.333	.000	.333	.333	.915	.000	.921	.919	.000	.000	.919	.935
Lights	0	4	0	4	4	637	0	641	483	0	0	483	1128
% Lights	0	100	0	100	100	98.3	0	98.3	98.8	0	0	98.8	98.5
Mediums	0	0	0	0	0	10	0	10	6	0	0	6	16
% Mediums	0	0	0	0	0	1.5	0	1.5	1.2	0	0	1.2	1.4
Articulated Trucks	0	0	0	0	0	1	0	1	0	0	0	0	1
% Articulated Trucks	0	0	0	0	0	0.2	0	0.2	0	0	0	0	0.1



N/S: Hillside Avenue
E/W: Haverhill Road
Amesbury, MA

File Name : 1449_Haverhill_at_Hillside_1325590_08-07-2025
Site Code : 1449
Start Date : 8/7/2025
Page No : 1

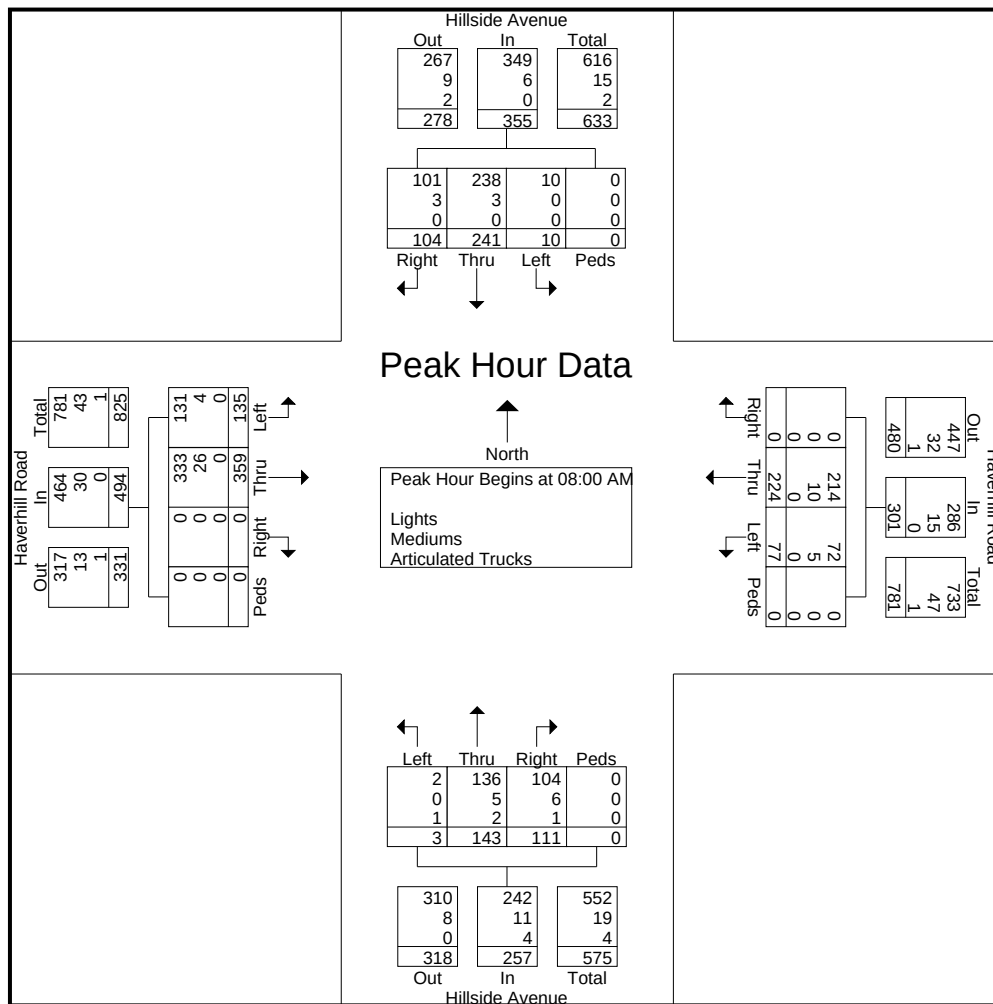
Groups Printed- Lights - Mediums - Articulated Trucks

	Hillside Avenue From North					Haverhill Road From East					Hillside Avenue From South					Haverhill Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	21	37	0	0	58	1	34	15	0	50	18	34	0	0	52	0	56	17	0	73	233
07:15 AM	24	54	0	0	78	0	36	8	0	44	19	32	0	0	51	0	84	21	0	105	278
07:30 AM	15	64	1	0	80	0	35	20	0	55	15	34	0	0	49	0	66	36	0	102	286
07:45 AM	29	52	2	0	83	0	35	16	0	51	25	59	0	0	84	0	84	23	0	107	325
Total	89	207	3	0	299	1	140	59	0	200	77	159	0	0	236	0	290	97	0	387	1122
08:00 AM	16	65	2	0	83	0	46	21	0	67	23	31	3	0	57	0	95	36	0	131	338
08:15 AM	33	54	2	0	89	0	58	20	0	78	24	39	0	0	63	0	93	36	0	129	359
08:30 AM	21	63	2	0	86	0	56	18	0	74	29	33	0	0	62	0	87	24	0	111	333
08:45 AM	34	59	4	0	97	0	64	18	0	82	35	40	0	0	75	0	84	39	0	123	377
Total	104	241	10	0	355	0	224	77	0	301	111	143	3	0	257	0	359	135	0	494	1407
04:00 PM	29	43	0	0	72	0	106	30	0	136	20	46	0	0	66	0	69	37	0	106	380
04:15 PM	32	51	0	0	83	0	105	21	0	126	30	52	5	0	87	1	67	27	0	95	391
04:30 PM	28	51	0	0	79	0	107	25	0	132	35	69	0	0	104	0	71	39	0	110	425
04:45 PM	32	41	2	0	75	0	83	19	0	102	29	75	0	0	104	0	87	38	0	125	406
Total	121	186	2	0	309	0	401	95	0	496	114	242	5	0	361	1	294	141	0	436	1602
05:00 PM	40	47	0	0	87	0	100	25	0	125	24	80	1	0	105	0	83	30	0	113	430
05:15 PM	28	45	1	0	74	0	101	22	0	123	28	65	2	0	95	1	71	32	0	104	396
05:30 PM	37	39	0	0	76	0	95	26	0	121	29	69	1	0	99	1	52	35	0	88	384
05:45 PM	37	43	0	0	80	0	104	10	0	114	19	72	0	0	91	0	68	26	0	94	379
Total	142	174	1	0	317	0	400	83	0	483	100	286	4	0	390	2	274	123	0	399	1589
Grand Total	456	808	16	0	1280	1	1165	314	0	1480	402	830	12	0	1244	3	1217	496	0	1716	5720
Apprch %	35.6	63.1	1.2	0		0.1	78.7	21.2	0		32.3	66.7	1	0		0.2	70.9	28.9	0		
Total %	8	14.1	0.3	0	22.4	0	20.4	5.5	0	25.9	7	14.5	0.2	0	21.7	0.1	21.3	8.7	0	30	
Lights	449	791	16	0	1256	1	1127	299	0	1427	390	812	11	0	1213	2	1170	486	0	1658	5554
% Lights	98.5	97.9	100	0	98.1	100	96.7	95.2	0	96.4	97	97.8	91.7	0	97.5	66.7	96.1	98	0	96.6	97.1
Mediums	7	15	0	0	22	0	37	14	0	51	10	15	0	0	25	1	44	10	0	55	153
% Mediums	1.5	1.9	0	0	1.7	0	3.2	4.5	0	3.4	2.5	1.8	0	0	2	33.3	3.6	2	0	3.2	2.7
Articulated Trucks	0	2	0	0	2	0	1	1	0	2	2	3	1	0	6	0	3	0	0	3	13
% Articulated Trucks	0	0.2	0	0	0.2	0	0.1	0.3	0	0.1	0.5	0.4	8.3	0	0.5	0	0.2	0	0	0.2	0.2

N/S: Hillside Avenue
E/W: Haverhill Road
Amesbury, MA

File Name : 1449_Haverhill_at_Hillside_1325590_08-07-2025
Site Code : 1449
Start Date : 8/7/2025
Page No : 2

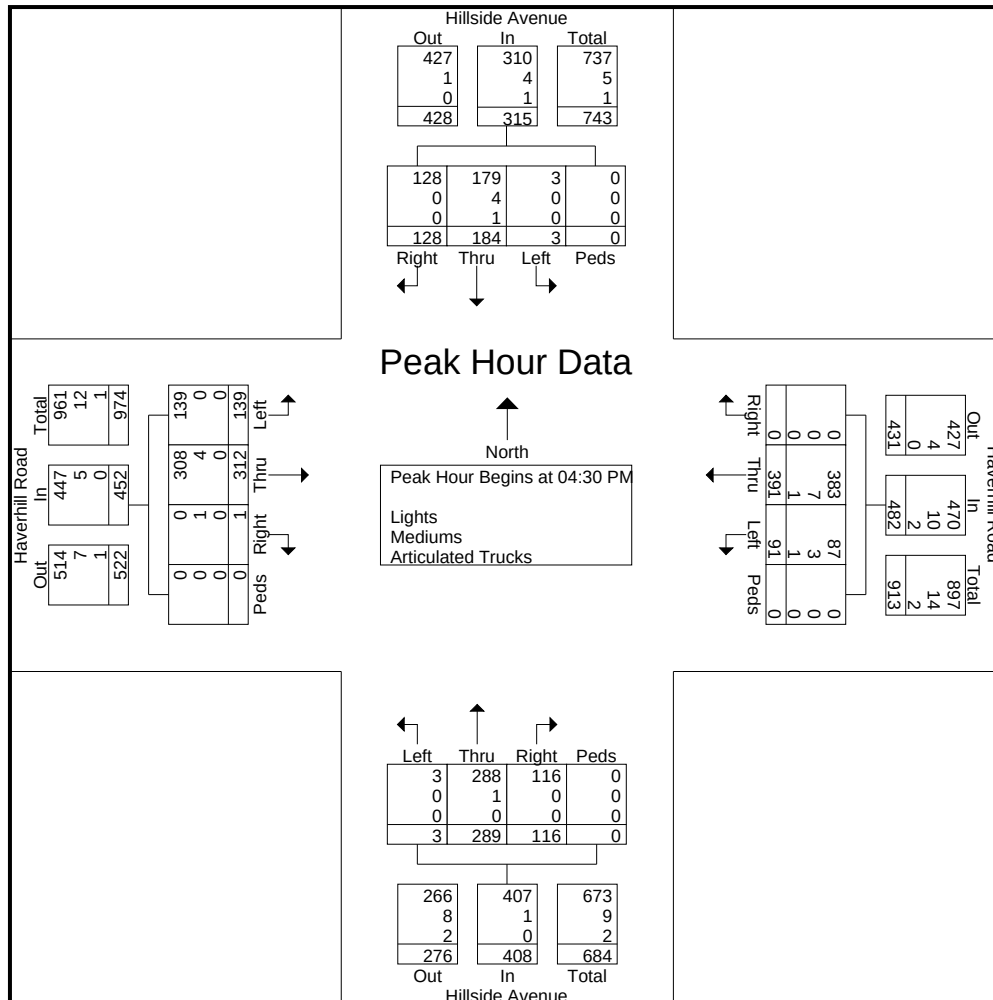
	Hillside Avenue From North					Haverhill Road From East					Hillside Avenue From South					Haverhill Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	16	65	2	0	83	0	46	21					3				95	36	0	131	338
08:15 AM	33	54	2	0	89	0	58	20	0	78	24	39	0	0	63	0	93	36	0	129	359
08:30 AM	21	63	2	0	86	0	56	18	0	74	29	33	0	0	62	0	87	24	0	111	333
08:45 AM	34		4		97	0	64	18	0	82	35	40	0	0	75	0	84	39		377	
Total Volume	104	241	10	0	355	0	224	77	0	301	111	143	3	0	257	0	359	135	0	494	1407
% App. Total	29.3	67.9	2.8	0		0	74.4	25.6	0		43.2	55.6	1.2	0		0	72.7	27.3	0		
PHF	.765	.927	.625	.000	.915	.000	.875	.917	.000	.918	.793	.894	.250	.000	.857	.000	.945	.865	.000	.943	.933
Lights	101	238	10	0	349	0	214	72	0	286	104	136	2	0	242	0	333	131	0	464	1341
% Lights	97.1	98.8	100	0	98.3	0	95.5	93.5	0	95.0	93.7	95.1	66.7	0	94.2	0	92.8	97.0	0	93.9	95.3
Mediums	3	3	0	0	6	0	10	5	0	15	6	5	0	0	11	0	26	4	0	30	62
% Mediums	2.9	1.2	0	0	1.7	0	4.5	6.5	0	5.0	5.4	3.5	0	0	4.3	0	7.2	3.0	0	6.1	4.4
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	2	1	0	4	0	0	0	0	0	4
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0.9	1.4	33.3	0	1.6	0	0	0	0	0	0.3



N/S: Hillside Avenue
E/W: Haverhill Road
Amesbury, MA

File Name : 1449_Haverhill_at_Hillside_1325590_08-07-2025
Site Code : 1449
Start Date : 8/7/2025
Page No : 3

	Hillside Avenue From North					Haverhill Road From East					Hillside Avenue From South					Haverhill Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	28	51	0	0	79	0	107	25	0	132	35	75	0	0	104	0	87	38	0	125	406
04:45 PM	32	41	2	0	75	0	83	19	0	102	29	80	1	0	104	0	83	30	0	113	430
05:00 PM	40				87	0	100	25	0	125	24	80	1	0	105						
05:15 PM	28	45	1	0	74	0	101	22	0	123	28	65	2			1					
Total Volume	128	184	3	0	315	0	391	91	0	482	116	289	3	0	408	1	312	139	0	452	1657
% App. Total	40.6	58.4	1	0		0	81.1	18.9	0		28.4	70.8	0.7	0		0.2	69	30.8	0		
PHF	.800	.902	.375	.000	.905	.000	.914	.910	.000	.913	.829	.903	.375	.000	.971	.250	.897	.891	.000	.904	.963
Lights	128	179	3	0	310	0	383	87	0	470	116	288	3	0	407	0	308	139	0	447	1634
% Lights	100	97.3	100	0	98.4	0	98.0	95.6	0	97.5	100	99.7	100	0	99.8	0	98.7	100	0	98.9	98.6
Mediums	0	4	0	0	4	0	7	3	0	10	0	1	0	0	1	1	4	0	0	5	20
% Mediums	0	2.2	0	0	1.3	0	1.8	3.3	0	2.1	0	0.3	0	0	0.2	100	1.3	0	0	1.1	1.2
Articulated Trucks	0	1	0	0	1	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	3
% Articulated Trucks	0	0.5	0	0	0.3	0	0.3	1.1	0	0.4	0	0	0	0	0	0	0	0	0	0	0.2



N/S: Hillside Avenue West Chatham : 1449_Haverhill_at_Hillside_West_Branch_1325584_08-07-2025
 E/W: Haverhill Road Site Code : 1449
 Amesbury, MA Start Date : 8/7/2025
 Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Haverhill Road From East				Hillside Ave West Branch From South				Haverhill Road From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
07:00 AM	52	0	0	52	0	19	0	19	26	72	0	98	169
07:15 AM	60	0	0	60	0	12	0	12	35	102	0	137	209
07:30 AM	48	0	0	48	0	17	0	17	43	100	0	143	208
07:45 AM	71	1	0	72	1	21	0	22	27	113	0	140	234
Total	231	1	0	232	1	69	0	70	131	387	0	518	820
08:00 AM	63	0	0	63	0	15	0	15	40	129	0	169	247
08:15 AM	86	0	0	86	0	26	0	26	48	131	0	179	291
08:30 AM	80	0	0	80	0	13	0	13	36	110	0	146	239
08:45 AM	93	0	0	93	0	22	0	22	35	126	0	161	276
Total	322	0	0	322	0	76	0	76	159	496	0	655	1053
04:00 PM	135	0	0	135	1	18	0	19	31	112	0	143	297
04:15 PM	144	0	0	144	0	21	0	21	26	96	0	122	287
04:30 PM	127	0	0	127	3	27	0	30	24	110	0	134	291
04:45 PM	125	0	0	125	0	28	0	28	20	119	0	139	292
Total	531	0	0	531	4	94	0	98	101	437	0	538	1167
05:00 PM	134	0	0	134	1	25	0	26	24	109	0	133	293
05:15 PM	133	0	0	133	0	34	0	34	15	98	0	113	280
05:30 PM	134	0	0	134	0	28	0	28	21	91	0	112	274
05:45 PM	144	0	0	144	1	14	0	15	23	88	0	111	270
Total	545	0	0	545	2	101	0	103	83	386	0	469	1117
Grand Total	1629	1	0	1630	7	340	0	347	474	1706	0	2180	4157
Apprch %	99.9	0.1	0		2	98	0		21.7	78.3	0		
Total %	39.2	0	0	39.2	0.2	8.2	0	8.3	11.4	41	0	52.4	
Lights	1585	1	0	1586	7	321	0	328	445	1645	0	2090	4004
% Lights	97.3	100	0	97.3	100	94.4	0	94.5	93.9	96.4	0	95.9	96.3
Mediums	37	0	0	37	0	13	0	13	18	55	0	73	123
% Mediums	2.3	0	0	2.3	0	3.8	0	3.7	3.8	3.2	0	3.3	3
Articulated Trucks	7	0	0	7	0	6	0	6	11	6	0	17	30
% Articulated Trucks	0.4	0	0	0.4	0	1.8	0	1.7	2.3	0.4	0	0.8	0.7

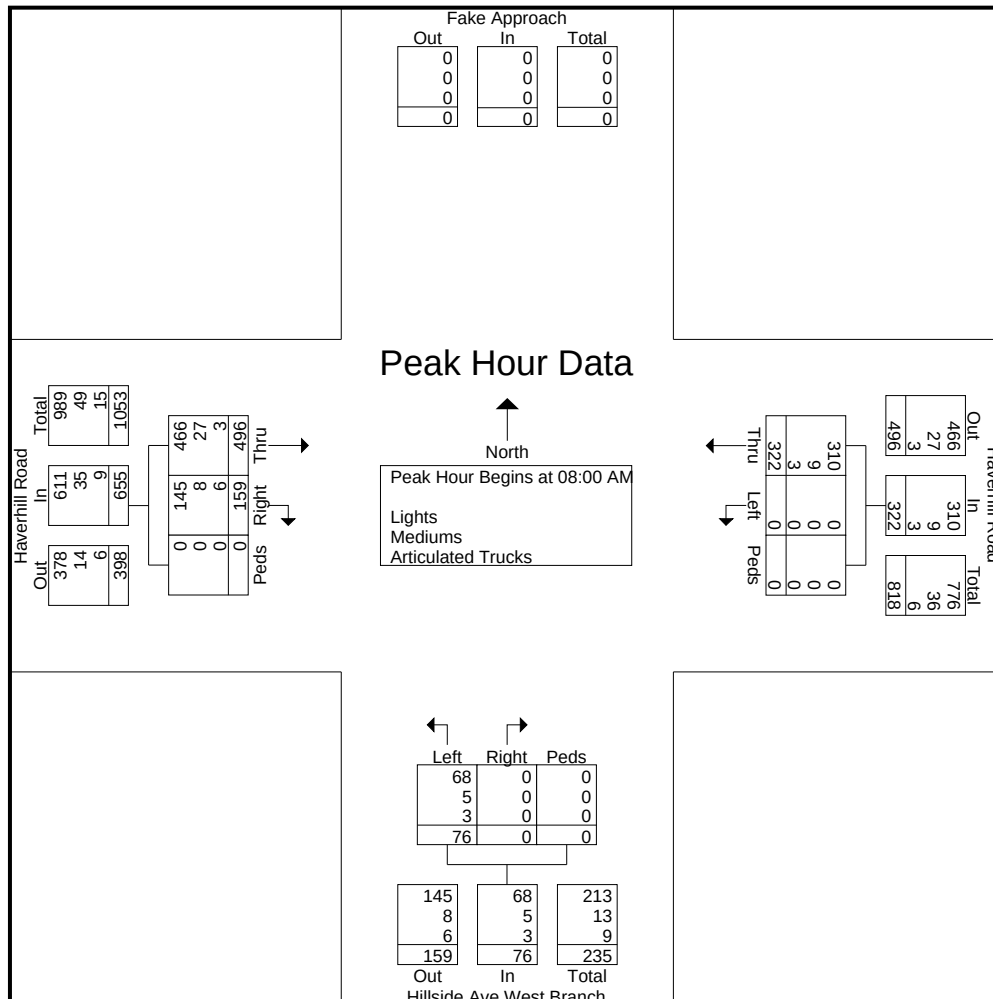
N/S: Hillside Avenue West Chatham : 1449_Haverhill_at_Hillside_West_Branch_1325584_08-07-2025
E/W: Haverhill Road Site Code : 1449
Amesbury, MA Start Date : 8/7/2025
Page No : 2

	Haverhill Road From East				Hillside Ave West Branch From South				Haverhill Road From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

08:00 AM	63	0	0	63	0	15	0	15	40	129	0	169	247
08:15 AM	86	0	0	86	0	26	0	26	48	131	0	179	291
08:30 AM	80	0	0	80	0	13	0	13	36	110	0	146	239
08:45 AM	93	0	0	93	0	22	0	22	35	126	0	161	276
Total Volume	322	0	0	322	0	76	0	76	159	496	0	655	1053
% App. Total	100	0	0		0	100	0		24.3	75.7	0		
PHF	.866	.000	.000	.866	.000	.731	.000	.731	.828	.947	.000	.915	.905
Lights	310	0	0	310	0	68	0	68	145	466	0	611	989
% Lights	96.3	0	0	96.3	0	89.5	0	89.5	91.2	94.0	0	93.3	93.9
Mediums	9	0	0	9	0	5	0	5	8	27	0	35	49
% Mediums	2.8	0	0	2.8	0	6.6	0	6.6	5.0	5.4	0	5.3	4.7
Articulated Trucks	3	0	0	3	0	3	0	3	6	3	0	9	15
% Articulated Trucks	0.9	0	0	0.9	0	3.9	0	3.9	3.8	0.6	0	1.4	1.4



N/S: Hillside Avenue West Branch
E/W: Haverhill Road
Amesbury, MA

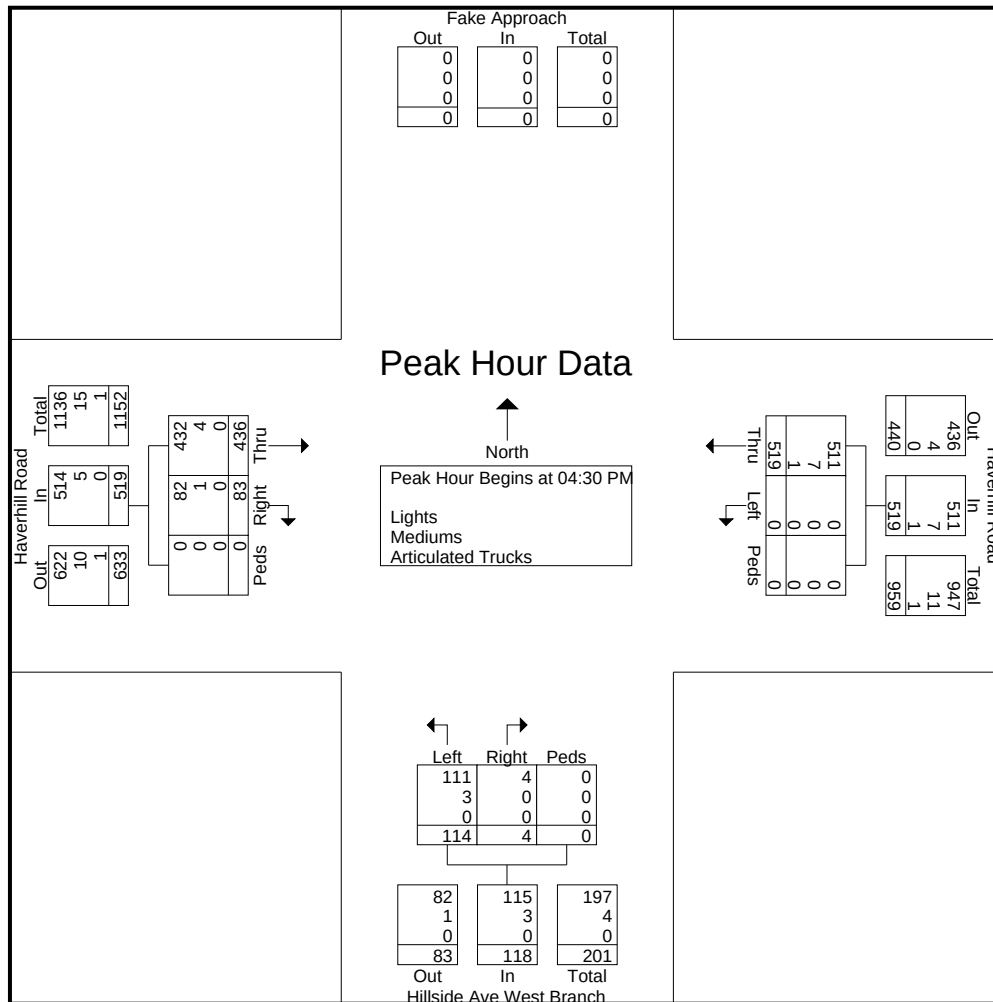
File Name : 1449_Haverhill_at_Hillside_West_Branch_1325584_08-07-2025
Site Code : 1449
Start Date : 8/7/2025
Page No : 3

	Haverhill Road From East				Hillside Ave West Branch From South				Haverhill Road From West				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total

Peak Hour Analysis From 04:30 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	127	0	0	127	3	27	0	30	24	110	0	134	291
04:45 PM	125	0	0	125	0	28	0	28	20	119	0	139	292
05:00 PM	134	0	0	134	1	25	0	26	24	109	0	133	293
05:15 PM	133	0	0	133	0	34	0	34	15	98	0	113	280
Total Volume	519	0	0	519	4	114	0	118	83	436	0	519	1156
% App. Total	100	0	0		3.4	96.6	0		16	84	0		
PHF	.968	.000	.000	.968	.333	.838	.000	.868	.865	.916	.000	.933	.986
Lights	511	0	0	511	4	111	0	115	82	432	0	514	1140
% Lights	98.5	0	0	98.5	100	97.4	0	97.5	98.8	99.1	0	99.0	98.6
Mediums	7	0	0	7	0	3	0	3	1	4	0	5	15
% Mediums	1.3	0	0	1.3	0	2.6	0	2.5	1.2	0.9	0	1.0	1.3
Articulated Trucks	1	0	0	1	0	0	0	0	0	0	0	0	1
% Articulated Trucks	0.2	0	0	0.2	0	0	0	0	0	0	0	0	0.1



N/S: Hillside Avenue East Chatham File Name : 1449_Haverhill_at_Hillside_East_Branch_1325586_08-07-2025
E/W: Haverhill Road Site Code : 1449
Amesbury, MA Start Date : 8/7/2025
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Hillside Ave East Branch From North				Haverhill Road From East				Haverhill Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	7	0	7	3	45	0	48	77	0	0	77	132
07:15 AM	0	6	0	6	1	46	0	47	95	0	0	95	148
07:30 AM	0	8	0	8	1	55	0	56	82	0	0	82	146
07:45 AM	0	12	0	12	1	55	0	56	115	0	0	115	183
Total	0	33	0	33	6	201	0	207	369	0	0	369	609
08:00 AM	0	7	0	7	4	67	0	71	118	0	0	118	196
08:15 AM	0	8	0	8	5	72	0	77	122	1	0	123	208
08:30 AM	0	7	0	7	2	74	0	76	120	0	0	120	203
08:45 AM	0	5	0	5	1	79	0	80	122	0	0	122	207
Total	0	27	0	27	12	292	0	304	482	1	0	483	814
04:00 PM	1	3	0	4	4	121	0	125	87	1	0	88	217
04:15 PM	0	2	0	2	4	129	0	133	101	0	0	101	236
04:30 PM	1	3	0	4	4	125	0	129	104	0	0	104	237
04:45 PM	0	2	0	2	11	111	0	122	120	0	0	120	244
Total	2	10	0	12	23	486	0	509	412	1	0	413	934
05:00 PM	0	2	0	2	4	122	0	126	101	0	0	101	229
05:15 PM	0	4	0	4	1	117	0	118	96	1	0	97	219
05:30 PM	0	5	0	5	6	129	0	135	84	0	0	84	224
05:45 PM	0	2	0	2	3	119	0	122	89	0	0	89	213
Total	0	13	0	13	14	487	0	501	370	1	0	371	885
Grand Total	2	83	0	85	55	1466	0	1521	1633	3	0	1636	3242
Apprch %	2.4	97.6	0		3.6	96.4	0		99.8	0.2	0		
Total %	0.1	2.6	0	2.6	1.7	45.2	0	46.9	50.4	0.1	0	50.5	
Lights	1	82	0	83	53	1416	0	1469	1578	3	0	1581	3133
% Lights	50	98.8	0	97.6	96.4	96.6	0	96.6	96.6	100	0	96.6	96.6
Mediums	1	1	0	2	2	45	0	47	52	0	0	52	101
% Mediums	50	1.2	0	2.4	3.6	3.1	0	3.1	3.2	0	0	3.2	3.1
Articulated Trucks	0	0	0	0	0	5	0	5	3	0	0	3	8
% Articulated Trucks	0	0	0	0	0	0.3	0	0.3	0.2	0	0	0.2	0.2

N/S: Hillside Avenue East Branch
E/W: Haverhill Road
Amesbury, MA

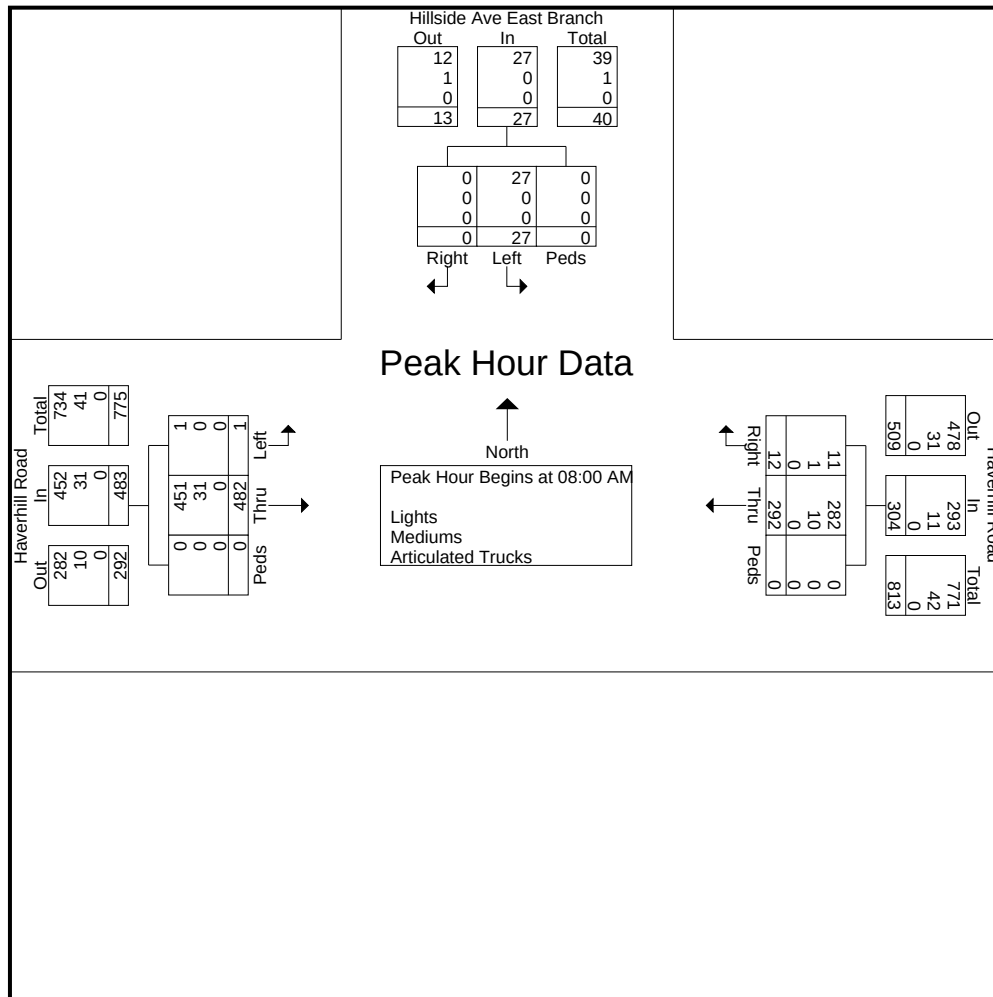
File Name : 1449_Haverhill_at_Hillside_East_Branch_1325586_08-07-2025
Site Code : 1449
Start Date : 8/7/2025
Page No : 2

	Hillside Ave East Branch From North				Haverhill Road From East				Haverhill Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total

Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 08:00 AM

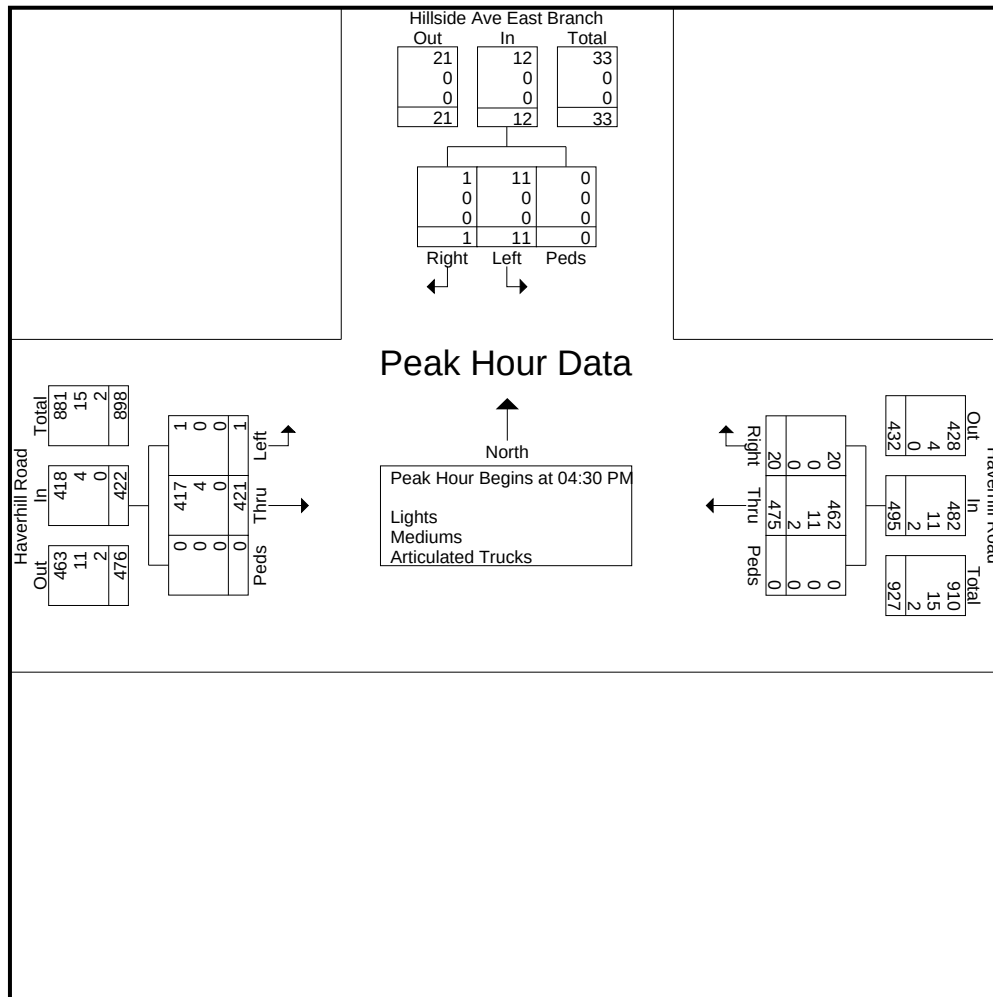
08:00 AM	0	7	0	7	4	67	0	71	118	0	0	118	196
08:15 AM	0	8	0	8	5	72	0	77	122	1	0	123	208
08:30 AM	0	7	0	7	2	74	0	76	120	0	0	120	203
08:45 AM	0	5	0	5	1	79	0	80	122	0	0	122	207
Total Volume	0	27	0	27	12	292	0	304	482	1	0	483	814
% App. Total	0	100	0		3.9	96.1	0		99.8	0.2	0		
PHF	.000	.844	.000	.844	.600	.924	.000	.950	.988	.250	.000	.982	.978
Lights	0	27	0	27	11	282	0	293	451	1	0	452	772
% Lights	0	100	0	100	91.7	96.6	0	96.4	93.6	100	0	93.6	94.8
Mediums	0	0	0	0	1	10	0	11	31	0	0	31	42
% Mediums	0	0	0	0	8.3	3.4	0	3.6	6.4	0	0	6.4	5.2
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0
% Articulated Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0



N/S: Hillside Avenue East Branch
E/W: Haverhill Road
Amesbury, MA

File Name : 1449_Haverhill_at_Hillside_East_Branch_1325586_08-07-2025
Site Code : 1449
Start Date : 8/7/2025
Page No : 3

	Hillside Ave East Branch From North				Haverhill Road From East				Haverhill Road From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	1	3	0	4	4	125	0	129	104	0	0	104	237
04:45 PM	0	2	0	2	11	111	0	122	120	0	0	120	244
05:00 PM	0	2	0	2	4	122	0	126	101	0	0	101	229
05:15 PM	0	4	0	4	1	117	0	118	96	1	0	97	219
Total Volume	1	11	0	12	20	475	0	495	421	1	0	422	929
% App. Total	8.3	91.7	0		4	96	0		99.8	0.2	0		
PHF	.250	.688	.000	.750	.455	.950	.000	.959	.877	.250	.000	.879	.952
Lights	1	11	0	12	20	462	0	482	417	1	0	418	912
% Lights	100	100	0	100	100	97.3	0	97.4	99.0	100	0	99.1	98.2
Mediums	0	0	0	0	0	11	0	11	4	0	0	4	15
% Mediums	0	0	0	0	0	2.3	0	2.2	1.0	0	0	0.9	1.6
Articulated Trucks	0	0	0	0	0	2	0	2	0	0	0	0	2
% Articulated Trucks	0	0	0	0	0	0.4	0	0.4	0	0	0	0	0.2



MDM Transportation Consultants, Inc.

28 Lord Rd, Suite 280
Marlborough, MA, 01752

N/S: Hillside Avenue (Rt 150)
East: Rt 495 WB Off Ramps
West: Rt 495 WB On Ramps
Amesbury, MA

File Name : 1449 Hillside Avenue (Rt 150) at Rt 495 WB Ramps
Site Code : 1449
Start Date : 3/12/2026
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Hillside Avenue (Rt 150) From North					Rt 495 WB Off Ramps From East					Hillside Avenue (Rt 150) From South					Rt 495 WB On Ramps From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	66	40	0	0	106	18	0	12	0	30	0	58	12	0	70	0	0	0	0	0	206
07:15 AM	65	41	0	0	106	29	0	12	0	41	0	95	15	0	110	0	0	0	0	0	257
07:30 AM	85	56	0	0	141	16	0	10	0	26	0	71	16	0	87	0	0	0	0	0	254
07:45 AM	76	41	0	0	117	37	0	20	0	57	0	89	21	0	110	0	0	0	0	0	284
Total	292	178	0	0	470	100	0	54	0	154	0	313	64	0	377	0	0	0	0	0	1001
08:00 AM	55	47	0	0	102	24	0	14	0	38	0	81	15	0	96	0	0	0	0	0	236
08:15 AM	65	45	0	0	110	10	0	8	0	18	0	78	14	0	92	0	0	0	0	0	220
08:30 AM	81	59	0	0	140	19	0	10	0	29	0	67	21	0	88	0	0	0	0	0	257
08:45 AM	71	40	0	0	111	27	0	11	0	38	0	70	19	0	89	0	0	0	0	0	238
Total	272	191	0	0	463	80	0	43	0	123	0	296	69	0	365	0	0	0	0	0	951
04:00 PM	68	44	0	0	112	30	0	19	0	49	0	86	37	0	123	0	0	0	0	0	284
04:15 PM	62	38	0	0	100	43	0	10	0	53	0	82	26	0	108	0	0	0	0	0	261
04:30 PM	50	45	0	0	95	37	0	20	0	57	0	96	90	0	186	0	0	0	0	0	338
04:45 PM	52	52	0	0	104	25	0	23	0	48	0	92	29	0	121	0	0	0	0	0	273
Total	232	179	0	0	411	135	0	72	0	207	0	356	182	0	538	0	0	0	0	0	1156
05:00 PM	62	46	0	0	108	44	0	10	0	54	0	134	33	0	167	0	0	0	0	0	329
05:15 PM	47	32	0	0	79	32	0	12	0	44	0	69	46	0	115	0	0	0	0	0	238
05:30 PM	42	27	0	0	69	27	0	13	0	40	0	82	23	0	105	0	0	0	0	0	214
05:45 PM	37	25	0	0	62	24	0	14	0	38	0	72	13	0	85	0	0	0	0	0	185
Total	188	130	0	0	318	127	0	49	0	176	0	357	115	0	472	0	0	0	0	0	966
Grand Total	984	678	0	0	1662	442	0	218	0	660	0	1322	430	0	1752	0	0	0	0	0	4074
Apprch %	59.2	40.8	0	0		67	0	33	0		0	75.5	24.5	0		0	0	0	0		
Total %	24.2	16.6	0	0	40.8	10.8	0	5.4	0	16.2	0	32.4	10.6	0	43	0	0	0	0	0	
Lights	954	650	0	0	1604	429	0	206	0	635	0	1275	425	0	1700	0	0	0	0	0	3939
% Lights	97	95.9	0	0	96.5	97.1	0	94.5	0	96.2	0	96.4	98.8	0	97	0	0	0	0	0	96.7
Mediums	25	22	0	0	47	4	0	9	0	13	0	39	3	0	42	0	0	0	0	0	102
% Mediums	2.5	3.2	0	0	2.8	0.9	0	4.1	0	2	0	3	0.7	0	2.4	0	0	0	0	0	2.5
Articulated Trucks																					
% Articulated Trucks	0.5	0.9	0	0	0.7	2	0	1.4	0	1.8	0	0.6	0.5	0	0.6	0	0	0	0	0	0.8

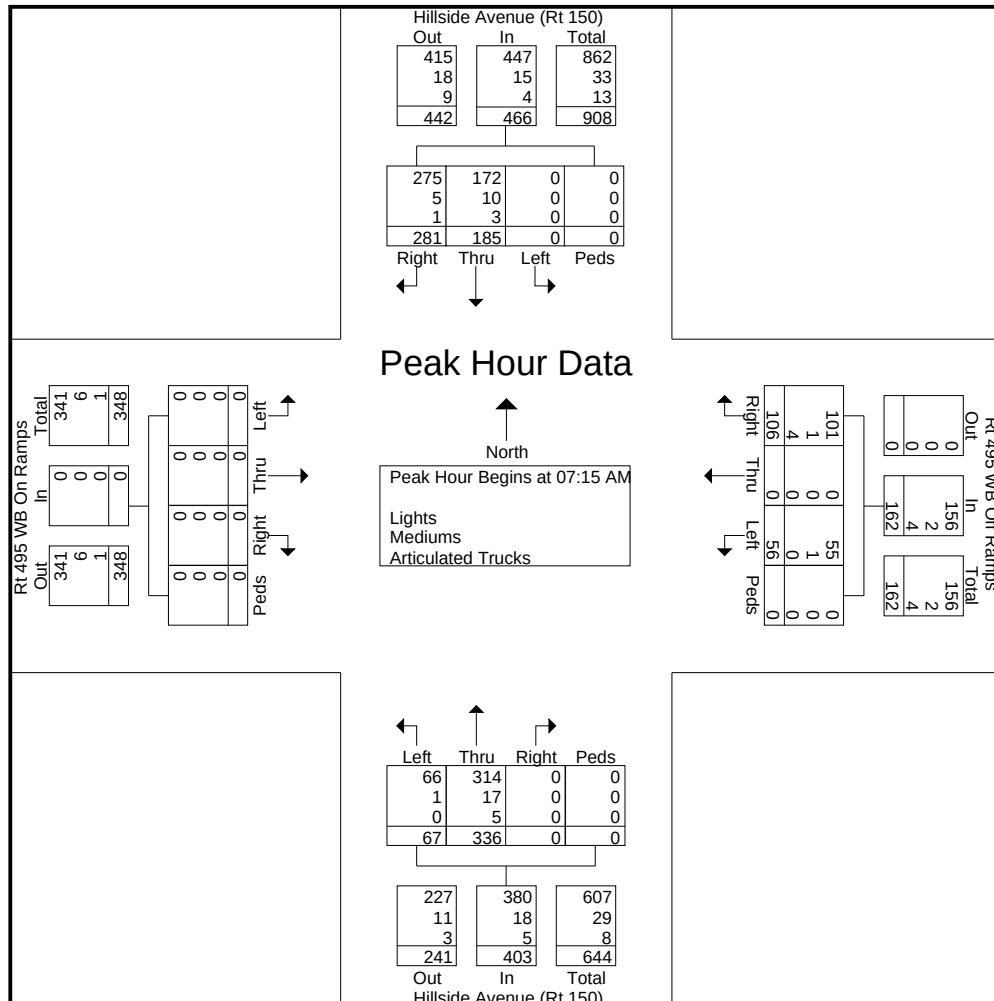
MDM Transportation Consultants, Inc.

28 Lord Rd, Suite 280
Marlborough, MA, 01752

N/S: Hillside Avenue (Rt 150)
East: Rt 495 WB Off Ramps
West: Rt 495 WB On Ramps
Amesbury, MA

File Name : 1449 Hillside Avenue (Rt 150) at Rt 495 WB Ramps
Site Code : 1449
Start Date : 3/12/2026
Page No : 2

	Hillside Avenue (Rt 150) From North					Rt 495 WB Off Ramps From East					Hillside Avenue (Rt 150) From South					Rt 495 WB On Ramps From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	65	41	0	0	106	29	0	12	0	41	0	95	15	0	110	0	0	0	0	0	257
07:30 AM	85	56	0	0	141	16	0	10	0	26	0	71	16	0	87	0	0	0	0	0	254
07:45 AM	76	41	0	0	117	37	0	20	0	57	0	89	21	0	110	0	0	0	0	0	284
08:00 AM	55	47	0	0	102	24	0	14	0	38	0	81	15	0	96	0	0	0	0	0	236
Total Volume	281	185	0	0	466	106	0	56	0	162	0	336	67	0	403	0	0	0	0	0	1031
% App. Total	60.3	39.7	0	0		65.4	0	34.6	0		0	83.4	16.6	0		0	0	0	0	0	
PHF	.826	.826	.000	.000	.826	.716	.000	.700	.000	.711	.000	.884	.798	.000	.916	.000	.000	.000	.000	.000	.908
Lights	275	172	0	0	447	101	0	55	0	156	0	314	66	0	380	0	0	0	0	0	983
% Lights	97.9	93.0	0	0	95.9	95.3	0	98.2	0	96.3	0	93.5	98.5	0	94.3	0	0	0	0	0	95.3
Mediums	5	10	0	0	15	1	0	1	0	2	0	17	1	0	18	0	0	0	0	0	35
% Mediums	1.8	5.4	0	0	3.2	0.9	0	1.8	0	1.2	0	5.1	1.5	0	4.5	0	0	0	0	0	3.4
Articulated Trucks	1	3	0	0	4	4	0	0	0	4	0	5	0	0	5	0	0	0	0	0	13
% Articulated Trucks	0.4	1.6	0	0	0.9	3.8	0	0	0	2.5	0	1.5	0	0	1.2	0	0	0	0	0	1.3



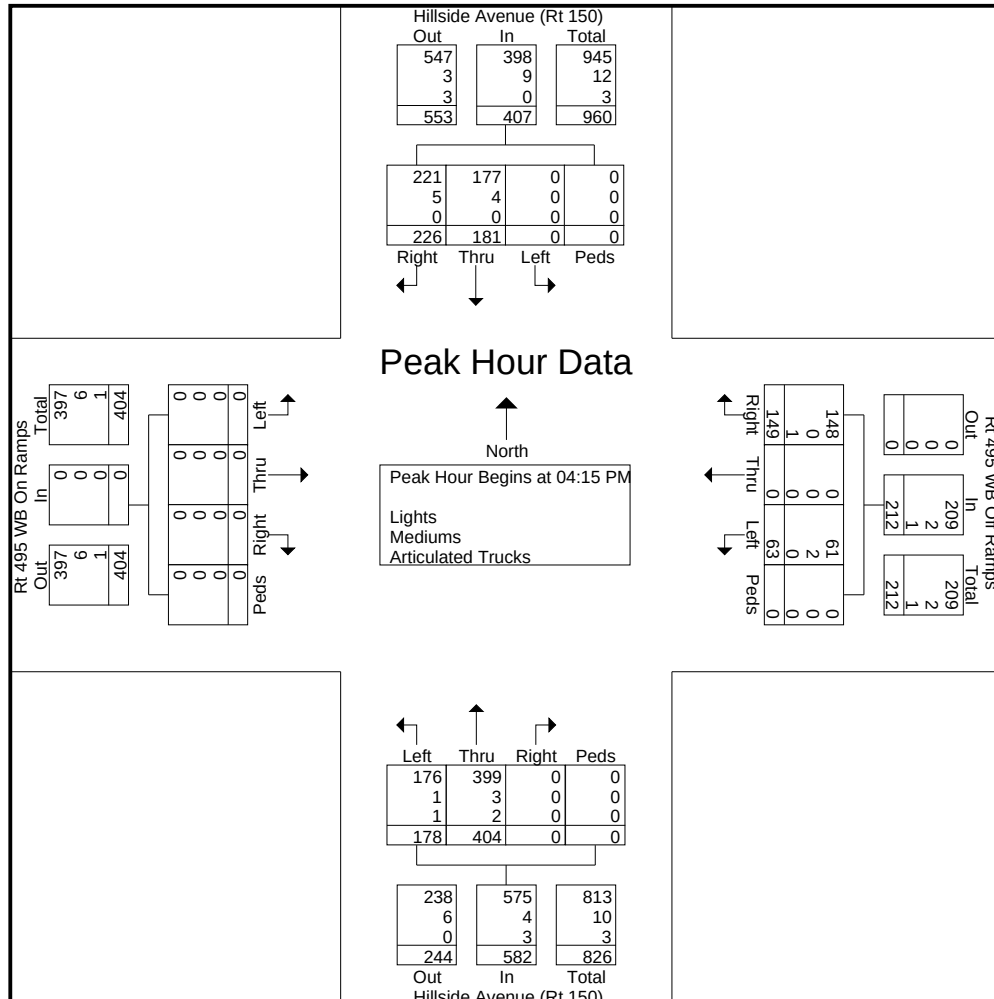
MDM Transportation Consultants, Inc.

28 Lord Rd, Suite 280
Marlborough, MA, 01752

N/S: Hillside Avenue (Rt 150)
East: Rt 495 WB Off Ramps
West: Rt 495 WB On Ramps
Amesbury, MA

File Name : 1449 Hillside Avenue (Rt 150) at Rt 495 WB Ramps
Site Code : 1449
Start Date : 3/12/2026
Page No : 3

	Hillside Avenue (Rt 150) From North					Rt 495 WB Off Ramps From East					Hillside Avenue (Rt 150) From South					Rt 495 WB On Ramps From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	62	38	0	0	100	43	0	10	0	53	0	82	26	0	108	0	0	0	0	0	261
04:30 PM	50	45	0	0	95	37	0	20	0	57	0	96	90	0	186	0	0	0	0	0	338
04:45 PM	52	52	0	0	104	25	0	23	0	48	0	92	29	0	121	0	0	0	0	0	273
05:00 PM	62	46	0	0	108	44	0	10	0	54	0	134	33	0	167	0	0	0	0	0	329
Total Volume	226	181	0	0	407	149	0	63	0	212	0	404	178	0	582	0	0	0	0	0	1201
% App. Total	55.5	44.5	0	0		70.3	0	29.7	0		0	69.4	30.6	0		0	0	0	0	0	
PHF	.911	.870	.000	.000	.942	.847	.000	.685	.000	.930	.000	.754	.494	.000	.782	.000	.000	.000	.000	.000	.888
Lights	221	177	0	0	398	148	0	61	0	209	0	399	176	0	575	0	0	0	0	0	1182
% Lights	97.8	97.8	0	0	97.8	99.3	0	96.8	0	98.6	0	98.8	98.9	0	98.8	0	0	0	0	0	98.4
Mediums	5	4	0	0	9	0	0	2	0	2	0	3	1	0	4	0	0	0	0	0	15
% Mediums	2.2	2.2	0	0	2.2	0	0	3.2	0	0.9	0	0.7	0.6	0	0.7	0	0	0	0	0	1.2
Articulated Trucks	0	0	0	0	0	1	0	0	0	1	0	2	1	0	3	0	0	0	0	0	4
% Articulated Trucks	0	0	0	0	0	0.7	0	0	0	0.5	0	0.5	0.6	0	0.5	0	0	0	0	0	0.3



MDM Transportation Consultants, Inc.

28 Lord Rd, Suite 280
Marlborough, MA, 01752

N/S: Pond View Avenue
East: Rt 495 EB Ramps
West: S Hunt Road
Amesbury, MA

File Name : 1449 Pond View Avenue at S Hunt Road + 495 EB Ramps
Site Code : 1449
Start Date : 3/12/2026
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks

	Pond View Avenue From North					Rt 495 EB Ramps From East					Pond View Avenue From South					S Hunt Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	22	3	26	0	51	54	5	3	0	62	4	13	1	0	18	0	8	6	0	14	145
07:15 AM	25	3	24	0	52	82	14	6	0	102	4	19	1	0	24	0	5	7	0	12	190
07:30 AM	24	5	35	0	64	59	5	0	0	64	5	21	2	0	28	1	8	8	0	17	173
07:45 AM	31	5	29	0	65	79	9	2	0	90	4	26	2	0	32	0	5	3	0	8	195
Total	102	16	114	0	232	274	33	11	0	318	17	79	6	0	102	1	26	24	0	51	703
08:00 AM	19	7	33	0	59	71	10	4	0	85	9	20	2	0	31	3	7	8	0	18	193
08:15 AM	20	8	23	0	51	61	13	6	0	80	3	23	3	0	29	1	4	6	0	11	171
08:30 AM	19	10	41	0	70	58	5	2	0	65	7	17	3	0	27	1	8	12	0	21	183
08:45 AM	23	3	29	0	55	61	10	2	0	73	4	21	2	0	27	1	6	8	0	15	170
Total	81	28	126	0	235	251	38	14	0	303	23	81	10	0	114	6	25	34	0	65	717
04:00 PM	25	9	33	0	67	59	2	6	0	67	5	19	1	0	25	3	25	44	0	72	231
04:15 PM	17	11	21	0	49	61	1	6	0	68	3	22	1	0	26	0	14	21	0	35	178
04:30 PM	26	13	24	0	63	59	3	1	0	63	6	24	3	0	33	4	48	106	0	158	317
04:45 PM	41	9	25	0	75	68	3	8	0	79	1	16	8	0	25	1	27	31	0	59	238
Total	109	42	103	0	254	247	9	21	0	277	15	81	13	0	109	8	114	202	0	324	964
05:00 PM	12	14	32	0	58	58	4	8	0	70	5	22	3	0	30	8	38	90	0	136	294
05:15 PM	10	12	22	0	44	62	2	7	0	71	2	37	1	0	40	4	9	18	0	31	186
05:30 PM	12	9	18	0	39	64	6	8	0	78	1	18	1	0	20	0	7	19	0	26	163
05:45 PM	10	9	19	0	38	60	14	4	0	78	4	14	6	0	24	3	13	10	0	26	166
Total	44	44	91	0	179	244	26	27	0	297	12	91	11	0	114	15	67	137	0	219	809
Grand Total	336	130	434	0	900	1016	106	73	0	1195	67	332	40	0	439	30	232	397	0	659	3193
Apprch %	37.3	14.4	48.2	0		85	8.9	6.1	0		15.3	75.6	9.1	0		4.6	35.2	60.2	0		
Total %	10.5	4.1	13.6	0	28.2	31.8	3.3	2.3	0	37.4	2.1	10.4	1.3	0	13.7	0.9	7.3	12.4	0	20.6	
Lights	317	126	416	0	859	979	104	71	0	1154	65	329	39	0	433	28	225	384	0	637	3083
% Lights	94.3	96.9	95.9	0	95.4	96.4	98.1	97.3	0	96.6	97	99.1	97.5	0	98.6	93.3	97	96.7	0	96.7	96.6
Mediums	16	4	14	0	34	31	2	2	0	35	2	3	1	0	6	2	7	10	0	19	94
% Mediums	4.8	3.1	3.2	0	3.8	3.1	1.9	2.7	0	2.9	3	0.9	2.5	0	1.4	6.7	3	2.5	0	2.9	2.9
Articulated Trucks	3	0	4	0	7	6	0	0	0	6	0	0	0	0	0	0	0	3	0	3	16
% Articulated Trucks	0.9	0	0.9	0	0.8	0.6	0	0	0	0.5	0	0	0	0	0	0	0	0.8	0	0.5	0.5

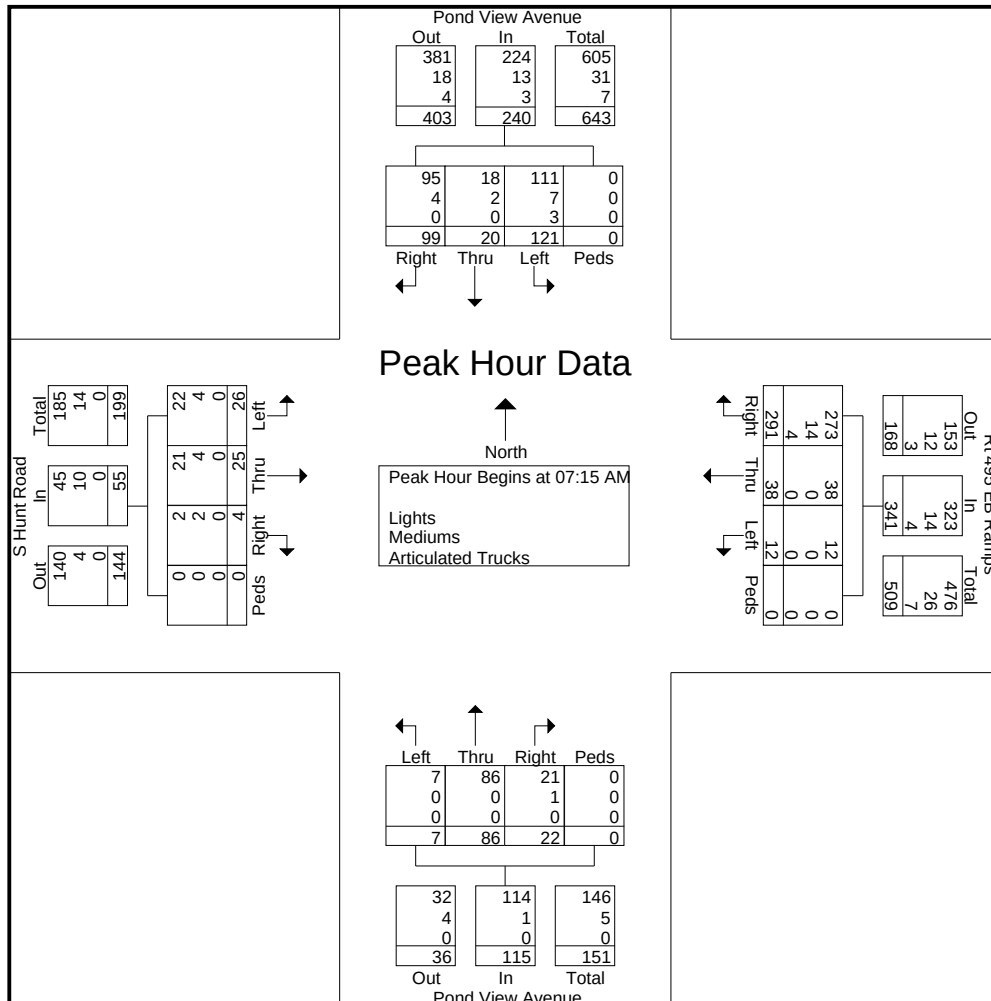
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N/S: Pond View Avenue
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File Name : 1449 Pond View Avenue at S Hunt Road + 495 EB Ramps
Site Code : 1449
Start Date : 3/12/2026
Page No : 2

	Pond View Avenue From North					Rt 495 EB Ramps From East					Pond View Avenue From South					S Hunt Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 11:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	25	3	24	0	52	82	14	6	0	102	4	19	1	0	24	0	5	7	0	12	190
07:30 AM	24	5	35	0	64	59	5	0	0	64	5	21	2	0	28	1	8	8	0	17	173
07:45 AM	31	5	29	0	65	79	9	2	0	90	4	26	2	0	32	0	5	3	0	8	195
08:00 AM	19	7	33	0	59	71	10	4	0	85	9	20	2	0	31	3	7	8	0	18	193
Total Volume	99	20	121	0	240	291	38	12	0	341	22	86	7	0	115	4	25	26	0	55	751
% App. Total	41.2	8.3	50.4	0		85.3	11.1	3.5	0		19.1	74.8	6.1	0		7.3	45.5	47.3	0		
PHF	.798	.714	.864	.000	.923	.887	.679	.500	.000	.836	.611	.827	.875	.000	.898	.333	.781	.813	.000	.764	.963
Lights	95	18	111	0	224	273	38	12	0	323	21	86	7	0	114	2	21	22	0	45	706
% Lights	96.0	90.0	91.7	0	93.3	93.8	100	100	0	94.7	95.5	100	100	0	99.1	50.0	84.0	84.6	0	81.8	94.0
Mediums	4	2	7	0	13	14	0	0	0	14	1	0	0	0	1	2	4	4	0	10	38
% Mediums	4.0	10.0	5.8	0	5.4	4.8	0	0	0	4.1	4.5	0	0	0	0.9	50.0	16.0	15.4	0	18.2	5.1
Articulated Trucks	0	0	3	0	3	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	7
% Articulated Trucks	0	0	2.5	0	1.3	1.4	0	0	0	1.2	0	0	0	0	0	0	0	0	0	0	0.9



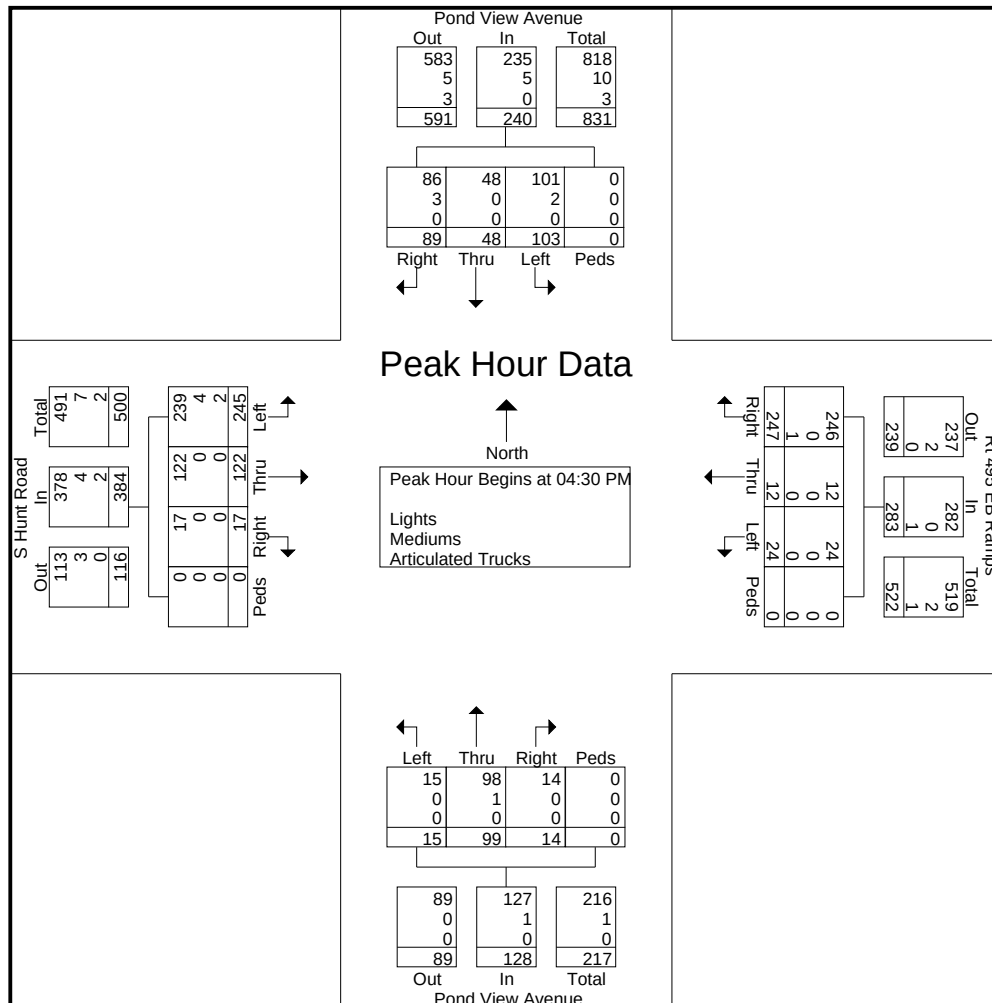
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28 Lord Rd, Suite 280
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N/S: Pond View Avenue
East: Rt 495 EB Ramps
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File Name : 1449 Pond View Avenue at S Hunt Road + 495 EB Ramps
Site Code : 1449
Start Date : 3/12/2026
Page No : 3

	Pond View Avenue From North					Rt 495 EB Ramps From East					Pond View Avenue From South					S Hunt Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	26	13	24	0	63	59	3	1	0	63	6	24	3	0	33	4	48	106	0	158	317
04:45 PM	41	9	25	0	75	68	3	8	0	79	1	16	8	0	25	1	27	31	0	59	238
05:00 PM	12	14	32	0	58	58	4	8	0	70	5	22	3	0	30	8	38	90	0	136	294
05:15 PM	10	12	22	0	44	62	2	7	0	71	2	37	1	0	40	4	9	18	0	31	186
Total Volume	89	48	103	0	240	247	12	24	0	283	14	99	15	0	128	17	122	245	0	384	1035
% App. Total	37.1	20	42.9	0		87.3	4.2	8.5	0		10.9	77.3	11.7	0		4.4	31.8	63.8	0		
PHF	.543	.857	.805	.000	.800	.908	.750	.750	.000	.896	.583	.669	.469	.000	.800	.531	.635	.578	.000	.608	.816
Lights	86	48	101	0	235	246	12	24	0	282	14	98	15	0	127	17	122	239	0	378	1022
% Lights	96.6	100	98.1	0	97.9	99.6	100	100	0	99.6	100	99.0	100	0	99.2	100	100	97.6	0	98.4	98.7
Mediums	3	0	2	0	5	0	0	0	0	0	0	1	0	0	1	0	0	4	0	4	10
% Mediums	3.4	0	1.9	0	2.1	0	0	0	0	0	0	1.0	0	0	0.8	0	0	1.6	0	1.0	1.0
Articulated Trucks	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	2	3
% Articulated Trucks	0	0	0	0	0	0.4	0	0	0	0.4	0	0	0	0	0	0	0	0.8	0	0.5	0.3



□ Seasonal/Yearly Growth Data

SECTION I - CONTINUOUS COUNTING STATION MONTHLY AVERAGE DAILY TRAFFIC

STATION 5010 - NEWBURY - RTE.I-95 - SOUTH OF SCOTLAND RD.													
YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
08	59,463	60,485	63,000	65,420	68,863	72,461	79,444	81,485	69,158	70,161	63,382	59,916	67,770
	-5%	1%	-4%	1%	1%	1%	1%	2%	5%	-1%	0%	3%	1%
09	56,254	60,998	60,741	65,981	69,723	72,870	80,271	83,498	72,755	69,281	63,516	61,523	68,118
	2%	-1%	4%	0%	3%	3%	4%	1%	1%	1%	3%	-1%	2%
10	57,311	60,412	62,874	66,194	71,671	75,291	83,447	84,636	73,300	69,965	65,132	60,888	69,260
	-5%	-4%	-1%	-3%	-5%	-1%	0%	-5%	-1%	0%	0%	4%	-2%
11	54,718	58,007	62,347	64,386	68,084	74,276	83,211	80,459	72,745	69,941	65,261	63,216	68,054
	7%	5%	0%	2%	5%	-1%	1%	6%	-1%	-2%	0%	-1%	2%
12	58,648	61,080	62,489	65,667	71,204	73,600	84,023	84,971	71,999	68,649	65,349	62,383	69,172
	0%	-7%	-3%	0%	0%	4%	-1%	1%	2%	5%	-1%	-18%	-1%
13	58,632	56,534	60,707	65,432	71,158	76,325	83,494	85,725	73,509	71,971	64,770	51,183	68,287
	11%	18%	12%	10%	10%	9%	11%	9%	9%	12%	14%	32%	13%
19	65,199	66,906	67,914	72,286	78,626	83,152	92,596	93,397	79,865	80,604	74,071	67,365	76,832
	-5%	-16%	-23%	-55%	-39%	-22%	-11%	-18%	-10%	-16%	-22%	-22%	-21%
20	61,801	56,225	52,110	32,654	47,706	64,736	87,113	76,404	71,773	67,841	57,571	52,451	60,699
	-16%	-6%	15%	100%	53%	27%	-3%	13%	11%	13%	21%	24%	16%
21	51,873	52,997	60,100	65,264	72,802	82,075	84,484	86,691	79,545	76,349	69,769	64,880	70,569
	9%	17%	9%	7%	5%	-1%	3%	1%	0%	0%	1%	5%	4%
22	56,769	61,786	65,805	69,938	76,710	81,433	86,868	87,624	79,625	76,559	70,426	67,952	73,458
	14%	5%	4%	3%	3%	1%	1%	2%	0%	0%	1%	0%	3%
23	64,620	64,761	68,174	71,810	79,189	82,104	87,645	89,279	80,008	79,031	71,170	68,218	75,501
	1%	7%	1%	0%	1%	4%	3%	1%	3%	1%	1%	3%	2%
24	65,074	69,132	69,156	71,730	79,863	85,280	90,269	89,942	82,031	80,203	71,692	69,927	77,025
Seasonal Adjustment Factor (to average month)	1.19	1.16	1.12	1.12	1.00	0.92	0.83	0.82	0.93	0.96	1.05	1.13	Growth 0.64%

STATION 5128 - NEWBURY - RTE.1 - SOUTH OF HANOVER ST.													
YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
09	7,734	7,890	8,469	8,675	9,200	9,352	9,300	9,935	9,390	9,100	8,160	8,019	8,769
	-9%	-21%	-2%	-1%	2%	4%	5%	-7%	-1%	-2%	3%	4%	-2%
11	7,049	6,245	8,315	8,569	9,368	9,680	9,794	9,263	9,262	8,926	8,421	8,320	8,601
	14%	27%	2%	5%	-1%	-19%	-6%	0%	3%	1%	0%	-1%	1%
12	8,030	7,928	8,495	8,964	9,304	7,820	9,220	9,260	9,578	8,997	8,442	8,203	8,687
	-2%	-9%	-7%	-2%	3%	27%	5%	7%	-2%	1%	-2%	-4%	1%
13	7,899	7,233	7,901	8,805	9,625	9,924	9,665	9,869	9,420	9,100	8,239	7,844	8,794
	0%	-2%	2%	-1%	1%	-2%	-3%	-5%	-4%	-4%	-2%	-1%	-2%
19	7,866	7,086	8,059	8,736	9,686	9,723	9,394	9,418	9,076	8,763	8,037	7,768	8,634
	0%	10%	-19%	-40%	-26%	-14%	-8%	-9%	-9%	-21%	-10%	-16%	-14%
20	7,880	7,791	6,543	5,222	7,200	8,327	8,606	8,626	8,258	6,944	7,238	6,551	7,432
	-17%	-21%	14%	50%	23%	9%	-2%	-1%	3%	17%	5%	12%	6%
21	6,540	6,179	7,459	7,847	8,850	9,093	8,420	8,581	8,497	8,126	7,571	7,342	7,875
	4%	13%	0%	3%	1%	-1%	4%	5%	-1%	4%	3%	1%	3%
22	6,784	7,002	7,486	8,114	8,979	8,964	8,792	9,010	8,385	8,469	7,767	7,404	8,096
Seasonal Adjustment Factor (to average month)	1.12	1.18	1.07	1.05	0.93	0.92	0.91	0.90	0.93	0.98	1.05	1.09	Growth -0.60%

STATION 5258 - WEST NEWBURY - RTE.I-95 - NORTH OF SCOTLAND RD.													
YR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR
08	56,156	55,549	58,000	60,205	63,921	67,516	74,637	76,747	65,170	64,871	58,424	54,893	63,007
	-3%	1%	3%	1%	1%	1%	1%	-1%	2%	2%	0%	2%	1%
09	54,522	56,074	60,000	60,916	64,808	68,356	75,236	76,000	66,789	65,870	58,560	56,041	63,598
	-4%	-2%	-4%	0%	2%	2%	4%	4%	2%	-2%	3%	0%	1%
10	52,451	54,781	57,350	60,787	66,228	69,857	78,218	79,290	68,013	64,657	60,104	55,878	63,968
	2%	-3%	0%	-2%	-5%	-1%	0%	-5%	-1%	-1%	0%	4%	-1%
11	53,628	53,106	57,332	59,404	62,699	69,034	78,077	75,436	67,289	64,076	60,090	58,319	63,208
	1%	6%	-1%	2%	5%	2%	-1%	5%	-2%	-1%	0%	-2%	1%
12	54,432	56,313	56,875	60,519	66,028	70,268	77,650	79,389	66,070	63,430	59,947	57,335	64,021
	5%	-9%	-2%	-1%	-1%	0%	1%	1%	3%	5%	0%	-4%	0%
13	57,356	51,519	55,611	60,141	65,643	70,600	78,055	80,033	67,988	66,341	59,842	55,071	64,017
	-2%	10%	5%	23%	32%	35%	0%	0%	2%	2%	2%	7%	10%
14	56,230	56,749	58,187	73,796	86,800	95,350	78,191	80,125	69,074	67,601	60,900	59,143	70,179
	-1%	-2%	0%	-16%	-21%	-24%	3%	1%	11%	1%	3%	4%	-5%
15	55,438	55,775	58,392	61,794	68,294	72,448	80,774	81,307	76,709	68,187	62,696	61,379	66,933
	1%	4%	-20%	-53%	-44%	-17%	-15%	-13%	-13%	-5%	-11%	-15%	-17%
20	56,001	58,158	46,755	28,973	38,340	60,448	68,457	70,775	66,815	64,944	55,938	52,160	55,647
	-14%	-15%	19%	107%	72%	23%	16%	15%	11%	11%	21%	24%	19%
21	48,225	49,592	55,475	60,039	65,878	74,268	79,392	81,309	74,270	72,322	67,604	64,431	66,067
	30%	33%	17%	11%	10%	3%	3%	1%	0%	0%	0%	6%	8%
22	62,554	65,764	64,634	66,418	72,212	76,625	81,948	82,156	74,214	72,586	67,337	68,054	71,209
	-2%	0%	2%	2%	2%	-1%	-1%	1%	0%	2%	4%	0%	1%
23	61,601	65,891	65,869	67,640	73,738	76,172	81,452	83,029	74,124	73,887	70,271	67,947	71,802
	7%	3%	1%	1%	0%	3%	3%	1%	2%	2%	-4%	-3%	1%
24	66,139	68,077	66,673	68,176	73,977	78,718	83,817	83,707	75,685	75,676	67,485	65,627	72,813
Seasonal Adjustment Factor (to average month)	1.17	1.15	1.13	1.12	1.01	0.91	0.84	0.83	0.94	0.97	1.06	1.11	Growth 2.67%

Average Seasonal Adjustment Factor (to average month)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
	1.16	1.16	1.11	1.10	0.98	0.91	0.86	0.85	0.93	0.97	1.05	1.11

Average Yearly Growth Calculator 0.9%
Yearly Growth Factor Used 1.0%

ITALICS = ESTIMATED DATA
MADT

□ Speed Data

Haverhill Road
Adjacent to Site
Amesbury, MA

Site Code: 1449

Eastbound

Start Time	1 20	21 22	23 24	25 26	27 28	29 30	31 32	33 34	35 36	37 38	39 40	41 42	43 44	45 999	Total	85th Percent
08/07/25	0	0	0	0	1	0	1	3	5	7	4	2	0	0	23	39
01:00	0	0	1	0	0	0	1	2	3	2	2	2	1	0	14	40
02:00	0	0	0	0	0	0	0	0	0	0	2	1	0	3	6	41
03:00	0	0	0	0	0	2	2	1	4	3	0	3	0	1	16	40
04:00	1	0	1	0	3	1	8	7	6	13	13	5	5	2	65	40
05:00	2	1	2	2	2	11	20	30	35	32	12	10	4	3	166	38
06:00	1	0	1	3	6	20	26	70	68	52	32	18	5	1	303	38
07:00	1	3	3	4	18	45	60	111	110	67	32	11	2	2	469	37
08:00	3	0	9	15	27	83	95	125	120	80	28	7	3	1	596	36
09:00	1	0	1	5	11	26	81	113	88	68	26	12	1	1	434	37
10:00	50	22	22	30	55	72	83	97	69	40	26	5	1	1	573	35
11:00	1	3	5	15	16	41	101	116	97	58	22	8	0	3	486	36
12 PM	19	14	6	15	34	51	89	107	106	59	23	6	6	0	535	36
13:00	4	3	4	8	25	43	71	85	81	76	40	10	2	2	454	37
14:00	3	0	1	8	12	22	53	112	115	79	28	10	3	0	446	37
15:00	0	1	6	11	15	46	86	113	111	63	30	7	3	2	494	36
16:00	11	3	5	6	14	49	63	98	106	86	44	12	7	1	505	37
17:00	1	3	2	3	15	25	69	95	113	68	44	8	5	0	451	37
18:00	0	2	5	3	9	24	34	73	94	71	35	9	7	4	370	37
19:00	1	3	3	0	11	11	30	52	74	45	30	13	4	1	278	38
20:00	0	0	2	10	20	26	53	55	47	29	12	3	3	3	263	36
21:00	0	0	1	0	9	23	27	29	32	27	12	6	0	3	169	37
22:00	2	0	1	1	6	11	14	12	22	16	14	3	4	1	107	38
23:00	0	0	2	0	0	5	4	7	7	4	4	3	0	0	36	38
Total	101	58	83	139	309	637	1071	1513	1513	1045	515	174	66	35	7259	

Statistics 10 MPH Pace Speed : 29-38 MPH
 85th Percentile : 37 MPH
 95th Percentile : 39 MPH
 Number of Vehicles > 35 MPH : 2592
 Percent of Vehicles > 35 MPH : 35.7%
 Mean Speed(Average) : 34 MPH

Statistics Mean Speed(Average) : 34 MPH
 85th Percentile : 37 MPH
 95th Percentile : 39 MPH
 Number of Vehicles > 35 MPH : 2592
 Percent of Vehicles > 35 MPH : 35.7%

Haverhill Road
 Adjacent to Site
 Amesbury, MA

Site Code: 1449

Westbound

Start Time	1 20	21 22	23 24	25 26	27 28	29 30	31 32	33 34	35 36	37 38	39 40	41 42	43 44	45 999	Total	85th Percent
08/07/25	0	0	0	0	1	0	3	5	4	7	4	1	1	1	27	39
01:00	0	1	1	0	2	1	2	2	1	3	2	1	1	0	17	39
02:00	0	0	1	0	0	0	1	0	1	2	1	0	1	0	7	39
03:00	0	1	0	0	0	1	0	1	4	4	0	0	0	1	12	37
04:00	1	0	0	0	0	0	4	3	5	4	2	5	0	1	25	40
05:00	2	0	0	0	3	5	13	12	8	11	8	6	1	4	73	39
06:00	1	1	5	3	5	8	16	28	37	44	35	10	5	4	202	39
07:00	1	1	0	3	9	25	44	60	50	36	18	9	5	5	266	37
08:00	1	0	2	4	13	36	63	76	70	34	16	13	3	2	333	36
09:00	2	1	2	7	23	35	53	93	61	37	26	4	3	2	349	36
10:00	3	2	5	11	18	40	68	107	51	30	12	5	2	0	354	35
11:00	1	2	3	6	21	35	92	94	68	34	23	8	1	0	388	36
12 PM	5	2	7	8	26	47	79	111	81	44	19	4	6	1	440	36
13:00	0	0	8	10	12	45	99	87	73	37	21	9	1	1	403	36
14:00	2	1	4	7	20	52	76	98	97	52	24	7	5	0	445	36
15:00	3	4	1	16	28	71	84	110	94	39	34	9	3	4	500	36
16:00	3	3	0	9	24	59	110	111	107	41	21	8	1	2	499	35
17:00	6	0	3	4	17	50	98	119	94	57	25	10	3	1	487	36
18:00	4	2	5	3	13	38	65	107	62	46	16	8	2	1	372	36
19:00	4	1	5	3	8	29	53	84	67	38	19	6	2	0	319	36
20:00	2	1	2	12	34	54	68	56	41	19	8	3	2	0	302	35
21:00	4	0	2	1	3	29	42	41	34	22	12	2	3	1	196	36
22:00	1	1	2	0	4	8	20	15	17	12	7	2	2	2	93	37
23:00	1	0	0	0	1	7	7	9	15	7	7	3	2	1	60	38
Total	47	24	58	107	285	675	1160	1429	1142	660	360	133	55	34	6169	

Statistics 10 MPH Pace Speed : 29-38 MPH
 85th Percentile : 36 MPH
 95th Percentile : 39 MPH
 Number of Vehicles > 35 MPH : 1813
 Percent of Vehicles > 35 MPH : 29.4%
 Mean Speed(Average) : 33 MPH

Statistics Mean Speed(Average) : 33 MPH
 85th Percentile : 36 MPH
 95th Percentile : 39 MPH
 Number of Vehicles > 35 MPH : 1813
 Percent of Vehicles > 35 MPH : 29.4%

MDM Transportation Consultants, Inc.

N/S: Hillside Avenue
Just North of 495S Ramps
Amesbury, MA

28 Lord Road, Suite 280
Marlborough, MA 01752

Site Code: 1449
Station ID:

Northbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
03/14/26	0	0	0	9	20	12	0	0	0	0	0	0	0	0	41	37	39
01:00	0	0	1	7	11	2	0	0	0	0	0	0	0	0	21	34	37
02:00	0	0	0	5	12	3	0	0	0	0	0	0	0	0	20	35	38
03:00	0	0	0	2	1	1	1	0	0	0	0	0	0	0	5	41	43
04:00	0	0	1	4	5	3	0	0	0	0	0	0	0	0	13	36	38
05:00	0	0	1	4	7	3	0	0	0	0	0	0	0	0	15	36	38
06:00	0	0	3	28	25	7	1	0	0	0	0	0	0	0	64	34	38
07:00	0	0	1	20	58	35	8	0	0	0	0	0	0	0	122	38	41
08:00	0	0	0	26	83	69	14	3	0	0	0	0	0	0	195	39	42
09:00	0	1	2	28	103	77	21	1	0	0	0	0	0	0	233	39	42
10:00	0	0	3	31	135	118	20	0	0	0	0	0	0	0	307	38	41
11:00	0	2	3	50	165	122	8	2	0	0	0	0	0	0	352	38	39
12 PM	0	0	1	43	184	114	14	1	0	0	0	0	0	0	357	38	39
13:00	0	0	2	50	171	101	20	5	0	0	0	0	0	0	349	38	41
14:00	0	0	2	40	178	107	25	1	1	0	0	0	0	0	354	38	41
15:00	0	0	2	39	165	110	20	0	0	0	0	0	0	0	336	38	40
16:00	0	1	0	27	161	85	19	4	0	0	0	0	0	0	297	38	42
17:00	0	0	2	26	148	107	24	2	0	0	0	0	0	0	309	39	42
18:00	0	0	0	42	152	96	10	3	0	0	0	0	0	0	303	38	39
19:00	0	0	1	47	124	49	7	1	0	0	0	0	0	0	229	37	39
20:00	0	0	0	32	101	45	9	0	1	0	0	0	0	0	188	37	40
21:00	0	0	0	10	70	26	5	1	0	0	0	0	0	0	112	37	40
22:00	0	0	2	30	55	34	4	0	0	1	0	0	0	0	126	37	39
23:00	0	0	1	2	36	27	3	0	0	0	0	0	0	0	69	38	39
Total	0	4	28	602	2170	1353	233	24	2	1	0	0	0	0	4417		
Percent	0.0%	0.1%	0.6%	13.6%	49.1%	30.6%	5.3%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak		11:00	06:00	11:00	11:00	11:00	09:00	08:00							11:00		
Vol.		2	3	50	165	122	21	3							352		
PM Peak		16:00	13:00	13:00	12:00	12:00	14:00	13:00	14:00	22:00					12:00		
Vol.		1	2	50	184	114	25	5	1	1					357		
Total	47	32	219	2420	7601	4371	640	63	3	1	0	0	0	0	15397		
Percent	0.3%	0.2%	1.4%	15.7%	49.4%	28.4%	4.2%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 29 MPH
50th Percentile : 33 MPH
85th Percentile : 38 MPH
95th Percentile : 39 MPH

Stats
10 MPH Pace Speed : 31-40 MPH
Number in Pace : 11972
Percent in Pace : 77.8%
Number of Vehicles > 45 MPH : 67
Percent of Vehicles > 45 MPH : 0.4%
Mean Speed(Average) : 34 MPH

MDM Transportation Consultants, Inc.

N/S: Hillside Avenue
Just South of Haverhill Road
Amesbury, MA

28 Lord Road, Suite 280
Marlborough, MA 01752

Site Code: 1449
Station ID:

Southbound

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total	85th Percent	95th Percent
03/14/26	0	0	6	11	6	6	0	0	0	0	0	0	0	0	29	36	38
01:00	0	0	1	12	3	0	0	0	0	0	0	0	0	0	16	31	33
02:00	0	1	2	7	4	2	1	0	0	0	0	0	0	0	17	36	40
03:00	0	2	3	7	7	1	0	0	0	0	0	0	0	0	20	33	35
04:00	0	2	4	7	4	1	1	0	0	0	0	0	0	0	19	33	40
05:00	0	0	6	20	9	0	0	0	0	0	0	0	0	0	35	32	34
06:00	0	2	12	35	10	4	0	0	0	0	0	0	0	0	63	32	36
07:00	0	3	15	64	35	19	3	0	0	0	0	0	0	0	139	35	38
08:00	0	1	21	66	79	43	6	2	0	0	0	0	0	0	218	37	39
09:00	0	2	18	106	103	25	3	3	0	0	0	0	0	0	260	34	38
10:00	0	3	29	129	130	47	1	0	0	0	0	0	0	0	339	34	38
11:00	0	5	41	146	137	39	2	1	0	0	0	0	0	0	371	34	38
12 PM	0	3	36	103	121	36	5	0	0	0	0	0	0	0	304	34	38
13:00	0	1	34	93	116	36	2	2	0	0	0	0	0	0	284	34	38
14:00	0	0	20	92	128	44	5	0	1	0	0	0	0	0	290	35	39
15:00	0	1	21	105	127	50	2	1	0	0	0	0	0	0	307	35	38
16:00	0	0	22	76	108	45	5	0	0	0	0	0	0	0	256	36	39
17:00	0	0	23	89	97	43	5	1	0	0	0	0	0	0	258	36	39
18:00	0	0	12	75	72	31	3	1	0	0	0	0	0	0	194	35	39
19:00	0	0	20	69	77	16	1	1	0	0	0	0	0	0	184	34	37
20:00	0	0	15	41	53	17	2	0	0	0	0	0	0	0	128	34	38
21:00	0	0	14	50	48	8	0	0	0	0	0	0	0	0	120	33	36
22:00	0	2	10	41	38	9	1	1	0	0	0	0	0	0	102	34	38
23:00	0	5	6	28	28	13	0	0	0	0	0	0	0	0	80	35	38
Total	0	33	391	1472	1540	535	48	13	1	0	0	0	0	0	4033		
Percent	0.0%	0.8%	9.7%	36.5%	38.2%	13.3%	1.2%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak		11:00	11:00	11:00	11:00	10:00	08:00	09:00							11:00		
Vol.		5	41	146	137	47	6	3							371		
PM Peak		23:00	12:00	15:00	14:00	15:00	12:00	13:00	14:00						15:00		
Vol.		5	36	105	128	50	5	2	1						307		
Total	19	204	1447	5170	5693	1895	178	27	3	0	0	0	0	0	14636		
Percent	0.1%	1.4%	9.9%	35.3%	38.9%	12.9%	1.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

15th Percentile : 25 MPH
50th Percentile : 30 MPH
85th Percentile : 34 MPH
95th Percentile : 38 MPH

Stats
10 MPH Pace Speed : 26-35 MPH
Number in Pace : 10863
Percent in Pace : 74.2%
Number of Vehicles > 45 MPH : 30
Percent of Vehicles > 45 MPH : 0.2%
Mean Speed(Average) : 31 MPH

□ Crash Data



INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Mar-26

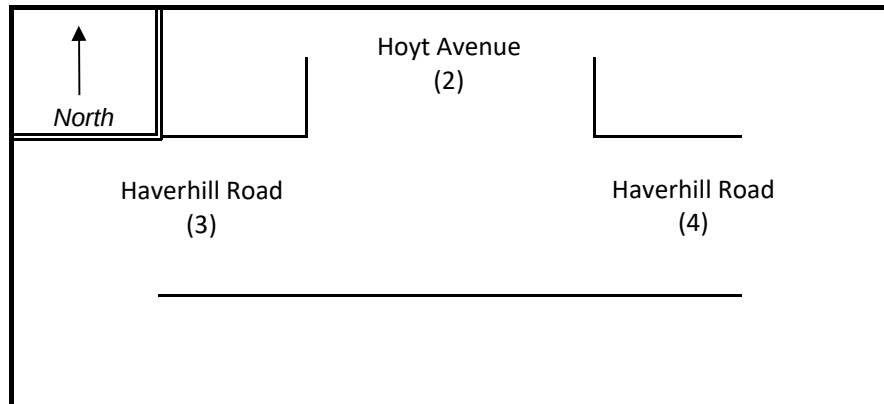
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Haverhill Road

MINOR STREET(S) : Hoyt Avenue

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :		SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :		8	531	743		1,282

" K " FACTOR : **0.086** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **14,907**

TOTAL # OF CRASHES : **2** # OF YEARS : **5** AVERAGE # OF CRASHES PER YEAR (**A**) : **0.40**

CRASH RATE CALCULATION :

0.07

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Mar-26

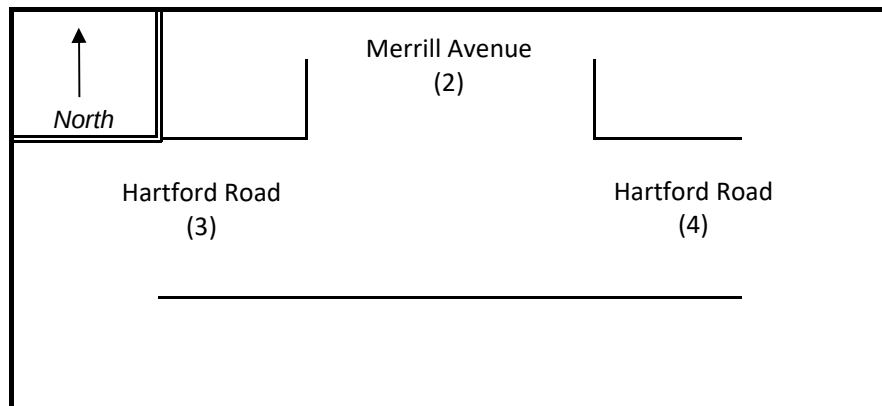
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Haverhill Road

MINOR STREET(S) : Merrill Avenue

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :		SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :		5	529	735		1,269

" K " FACTOR :

0.086

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

14,756

TOTAL # OF CRASHES :

2

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

0.40

CRASH RATE CALCULATION :

0.07

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury



INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Mar-26

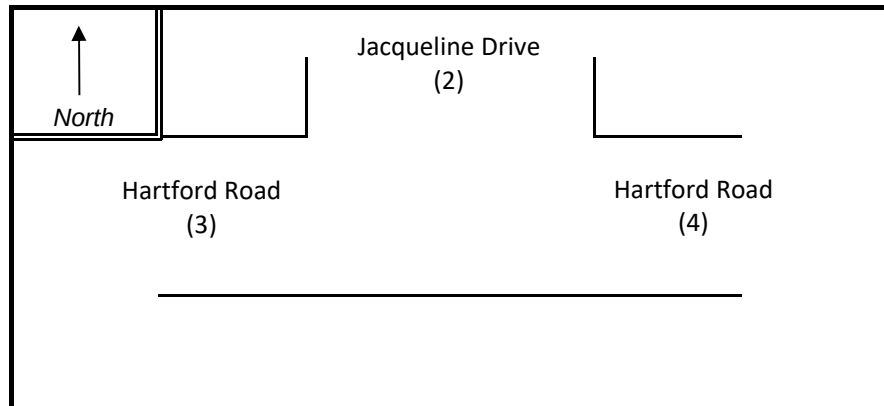
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Haverhill Road

MINOR STREET(S) : Jacqueline Drive

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :		SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :		4	543	723		1,270

" K " FACTOR :

0.086

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

14,767

TOTAL # OF CRASHES :

6

OF YEARS :

5

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

1.20

CRASH RATE CALCULATION :

0.22

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Aug-25

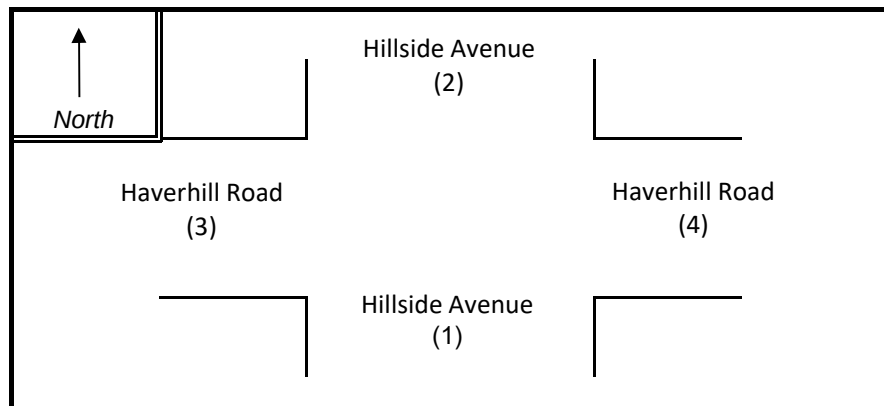
DISTRICT : 4 UNSIGNALIZED : ☐ SIGNALIZED : ☒

~ INTERSECTION DATA ~

MAJOR STREET : Haverhill Road

MINOR STREET(S) : Hillside Avenue

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	412	318	456	487		1,673

" K " FACTOR :

0.086

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

19,453

TOTAL # OF CRASHES :

35

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

7.00

CRASH RATE CALCULATION :

0.99

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury



INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Aug-25

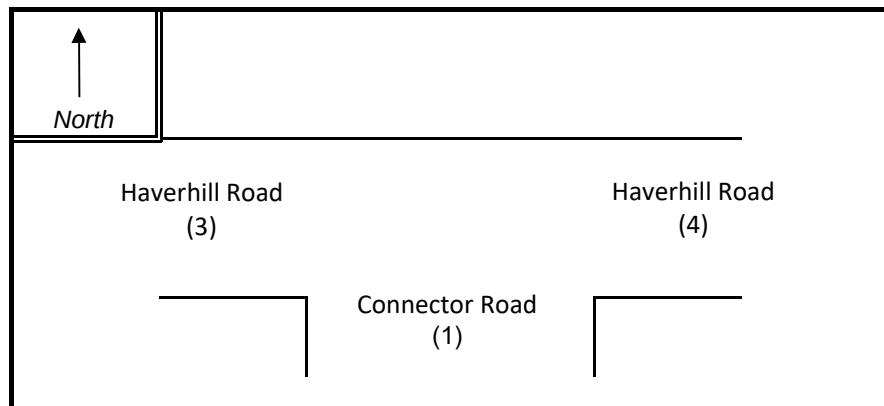
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Haverhill Road

MINOR STREET(S) : Southwest Connector Road

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB		EB	WB		
PEAK HOURLY VOLUMES (PM) :	119		524	524		

" K " FACTOR :

0.086

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

13,570

TOTAL # OF CRASHES :

22

OF
YEARS :

5

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

4.40

CRASH RATE CALCULATION :

0.89

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Aug-25

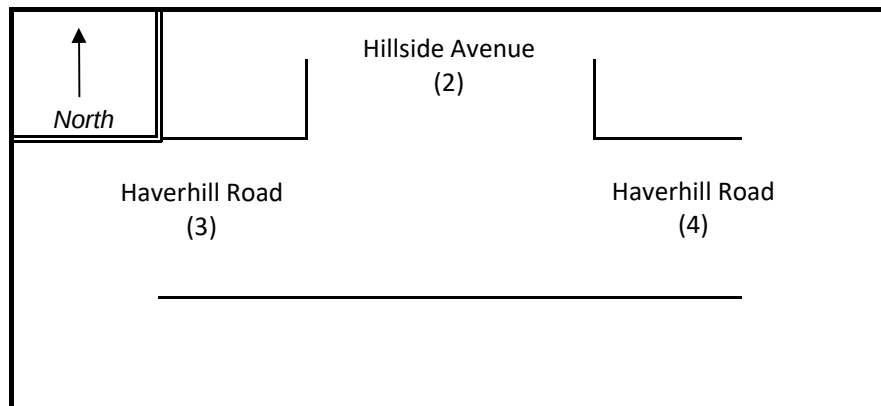
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Haverhill Road

MINOR STREET(S) : Northeast Connector Road

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :		SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :		12	426	500		938

" K " FACTOR :

0.086

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

10,907

TOTAL # OF CRASHES :

7

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

1.40

CRASH RATE CALCULATION :

0.35

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Aug-25

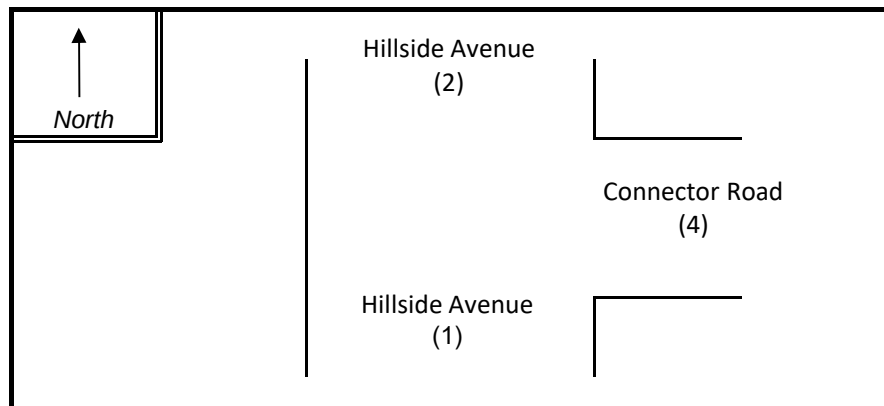
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Hillside Avenue

MINOR STREET(S) : Northeast Connector Road

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB		WB		
PEAK HOURLY VOLUMES (PM) :	432	330		21		783

" K " FACTOR :

0.075

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

10,440

TOTAL # OF CRASHES :

0

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

0.00

CRASH RATE CALCULATION :

0.00

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Aug-25

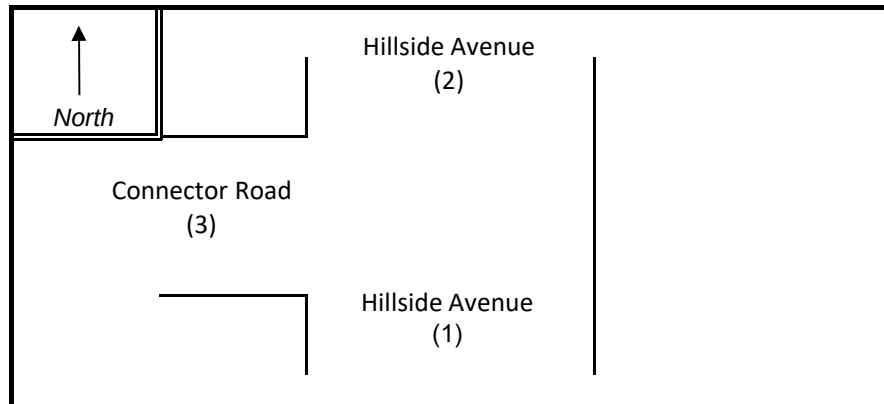
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : Hillside Avenue

MINOR STREET(S) : Southwest Connector Road

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB			
PEAK HOURLY VOLUMES (PM) :	531	279	84			894

" K " FACTOR :

0.075

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

11,920

TOTAL # OF CRASHES :

3

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

0.60

CRASH RATE CALCULATION :

0.14

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Mar-26

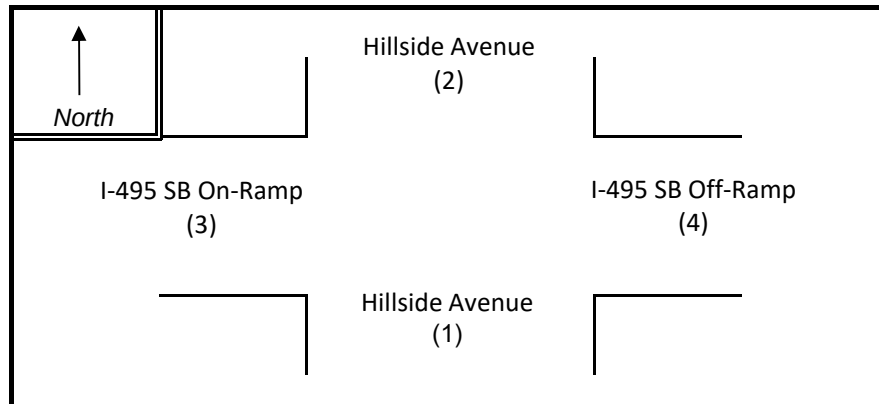
DISTRICT : 4 UNSIGNALIZED : ☐ SIGNALIZED : ☒

~ INTERSECTION DATA ~

MAJOR STREET : Hillside Avenue

MINOR STREET(S) : I-495 SB Ramps

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB		WB		
PEAK HOURLY VOLUMES (PM) :	646	452		235		1,333

" K " FACTOR :

0.075

INTERSECTION ADT (V) = TOTAL DAILY
APPROACH VOLUME :

17,773

TOTAL # OF CRASHES :

5

OF
YEARS :

5

AVERAGE # OF
CRASHES PER YEAR (A) :

1.00

CRASH RATE CALCULATION :

0.15

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Amesbury, MA COUNT DATE : Mar-26

DISTRICT : 4 UNSIGNALIZED : ☐ SIGNALIZED : ☒

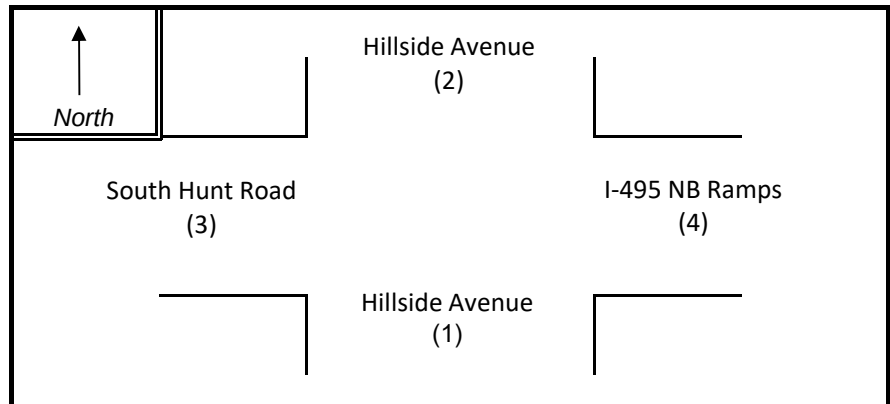
~ INTERSECTION DATA ~

MAJOR STREET : Hillside Avenue

MINOR STREET(S) : I-495 NB Ramps

South Hunt Road

**INTERSECTION
DIAGRAM**
(Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (PM) :	143	266	426	314		1,149

" K " FACTOR :

0.075

INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

15,320

TOTAL # OF CRASHES :

6

OF YEARS :

5

AVERAGE # OF CRASHES PER YEAR (A) :

1.20

CRASH RATE CALCULATION :

0.21

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

Comments : MassDOT District 4 Avg: Signalized = 0.73; Unsignalized = 0.57

Project Title & Date : 1449 - Amesbury

Crash Number	City Town Name	Crash Date	Day	Crash Severity	Crash Time	Manner of Collision	Road Surface Condition
<u>Route 110 at Hoyt Avenue</u>							
4937187	AMESBURY	02/06/2021	Sat	Property damage only (none injured)	6:51 PM	Sideswipe, same direction	Dry
5231942	AMESBURY	02/12/2023	Sun	Property damage only (none injured)	10:23 AM	Fixed Object	Dry
<u>Route 110 at Merrill Avenue</u>							
5466892	AMESBURY	11/29/2024	Fri	Property damage only (none injured)	3:29 PM	Sideswipe, opposite directic	Dry
5602875	AMESBURY	11/02/2025	Sun	Property damage only (none injured)	9:57 PM	Other (Deer Strike)	Dry
<u>Route 110 at Jacqueline Drive</u>							
4949956	AMESBURY	03/19/2021	Fri	Property damage only (none injured)	7:59 AM	Angle	Dry
4977117	AMESBURY	06/01/2021	Tue	Property damage only (none injured)	4:37 PM	Rear-end	Dry
5040591	AMESBURY	11/09/2021	Tue	Property damage only (none injured)	6:39 PM	Sideswipe, opposite directic	Dry
5051671	AMESBURY	12/14/2021	Tue	Non-fatal injury	12:48 PM	Rear-end	Dry
5077669	AMESBURY	02/08/2022	Tue	Property damage only (none injured)	1:12 PM	Angle	Wet
5420906	AMESBURY	07/03/2024	Wed	Property damage only (none injured)	12:17 PM	Rear-end	Dry
<u>Route 110 at Route 150</u>							
4927576	AMESBURY	01/16/2021	Sat	Non-fatal injury	9:17 AM	Angle	Wet
4960266	AMESBURY	04/03/2021	Sat	Property damage only (none injured)	8:03 PM	Pedestrian/Bicyclist	Dry
4990587	AMESBURY	07/12/2021	Mon	Property damage only (none injured)	4:33 PM	Rear-end	Wet
4990590	AMESBURY	07/20/2021	Tue	Property damage only (none injured)	9:12 AM	Angle	Dry
4990593	AMESBURY	07/26/2021	Mon	Property damage only (none injured)	11:55 AM	Rear-end	Dry
5026122	AMESBURY	10/22/2021	Fri	Property damage only (none injured)	12:09 PM	Rear-end	Dry
5040585	AMESBURY	11/20/2021	Sat	Property damage only (none injured)	1:16 PM	Rear-end	Dry
5051663	AMESBURY	12/15/2021	Wed	Non-fatal injury	11:21 AM	Rear-end	Dry
5077769	AMESBURY	02/26/2022	Sat	Property damage only (none injured)	6:21 PM	Rear-end	Dry
5098070	AMESBURY	04/03/2022	Sun	Property damage only (none injured)	12:09 PM	Rear to Side	Dry
5160562	AMESBURY	09/26/2022	Mon	Property damage only (none injured)	5:05 PM	Angle	Dry
5186378	AMESBURY	11/04/2022	Fri	Property damage only (none injured)	7:32 PM	Sideswipe, same direction	Dry
5197987	AMESBURY	12/09/2022	Fri	Non-fatal injury	3:39 PM	Rear-end	Dry
5221575	AMESBURY	01/09/2023	Mon	Property damage only (none injured)	6:09 PM	Fixed Object	Dry
5231945	AMESBURY	02/17/2023	Fri	Property damage only (none injured)	12:21 PM	Angle	Wet

Source: MassDOT IMPACT Crash Query and Visualization

Queried: Wednesday, March 25, 2026

G:\Projects\1449 - Amesbury (Pulte)\Excel\Crash Data\TIA\1449 Crash Summaries

Crash Number	City Town Name	Crash Date	Day	Crash Severity	Crash Time	Manner of Collision	Road Surface Condition
5238273	AMESBURY	03/06/2023	Mon	Property damage only (none injured)	9:08 AM	Sideswipe, opposite directic	Dry
5238277	AMESBURY	03/14/2023	Tue	Property damage only (none injured)	1:08 PM	Rear-end	Snow
5238284	AMESBURY	03/14/2023	Tue	Property damage only (none injured)	1:30 PM	Rear-end	Snow
5250620	AMESBURY	04/08/2023	Sat	Property damage only (none injured)	3:41 PM	Sideswipe, same direction	Dry
5261633	AMESBURY	05/02/2023	Tue	Property damage only (none injured)	10:21 PM	Rear-end	Dry
5292943	AMESBURY	08/07/2023	Mon	Non-fatal injury	5:12 PM	Sideswipe, opposite directic	Dry
5342346	AMESBURY	12/12/2023	Tue	Property damage only (none injured)	4:59 PM	Rear-end	Dry
5388168	AMESBURY	04/09/2024	Tue	Non-fatal injury	3:55 PM	Sideswipe, opposite directic	Dry
5409358	AMESBURY	06/04/2024	Tue	Property damage only (none injured)	8:48 AM	<i>Fixed Object</i>	Dry
5420924	AMESBURY	07/09/2024	Tue	Non-fatal injury	3:42 PM	Rear-end	Dry
5420912	AMESBURY	07/12/2024	Fri	Property damage only (none injured)	5:48 PM	Rear-end	Dry
5466897	AMESBURY	11/15/2024	Fri	Non-fatal injury	3:36 PM	Head-on	Dry
5539299	AMESBURY	01/27/2025	Mon	Non-fatal injury	2:44 PM	Angle	Dry
5539290	AMESBURY	01/30/2025	Thu	Property damage only (none injured)	12:29 PM	Angle	Dry
5505585	AMESBURY	02/06/2025	Thu	Property damage only (none injured)	11:58 AM	<i>Fixed Object</i>	Snow
5523775	AMESBURY	04/04/2025	Fri	Property damage only (none injured)	12:12 PM	Sideswipe, opposite directic	Dry
5523788	AMESBURY	04/27/2025	Sun	Property damage only (none injured)	2:35 PM	<i>Angle</i>	Dry
5592130	AMESBURY	10/05/2025	Sun	Property damage only (none injured)	3:19 PM	Angle	Dry
5145879	AMESBURY	07/23/2022	Sat	Non-fatal injury	11:51 AM	Sideswipe, same direction	Dry
5409386	AMESBURY	06/14/2024	Fri	Non-fatal injury	10:10 AM	Rear-end	Dry

Route 110 at the Route 150 West Connector

4966461	AMESBURY	05/14/2021	Fri	Non-fatal injury	3:08 PM	Angle	Dry
4990670	AMESBURY	07/07/2021	Wed	Property damage only (none injured)	4:06 PM	Sideswipe, opposite directic	Dry
5015553	AMESBURY	09/16/2021	Thu	Property damage only (none injured)	7:24 PM	Angle	Dry
5197989	AMESBURY	12/27/2022	Tue	Property damage only (none injured)	3:52 PM	Angle	Dry
5221571	AMESBURY	01/28/2023	Sat	Property damage only (none injured)	6:53 AM	Rear-end	Dry
5231947	AMESBURY	02/15/2023	Wed	Property damage only (none injured)	10:18 AM	Angle	Dry
5304052	AMESBURY	09/11/2023	Mon	Non-fatal injury	7:14 AM	<i>Angle</i>	Dry
5335197	AMESBURY	11/15/2023	Wed	Property damage only (none injured)	8:59 AM	Rear-end	Dry
5356316	AMESBURY	01/30/2024	Tue	Property damage only (none injured)	4:43 PM	Sideswipe, opposite directic	Dry
5398707	AMESBURY	05/11/2024	Sat	Property damage only (none injured)	3:34 PM	<i>Fixed Object</i>	Dry

Source: MassDOT IMPACT Crash Query and Visualization

Queried: Wednesday, March 25, 2026

G:\Projects\1449 - Amesbury (Pulte)\Excel\Crash Data\TIA\1449 Crash Summaries

Crash					Crash		Road Surface
Number	City Town Name	Crash Date	Day	Crash Severity	Time	Manner of Collision	Condition
5409360	AMESBURY	06/04/2024	Tue	Property damage only (none injured)	3:46 PM	Angle	Dry
5409387	AMESBURY	06/24/2024	Mon	Property damage only (none injured)	7:21 AM	Angle	Dry
5431515	AMESBURY	08/09/2024	Fri	Property damage only (none injured)	4:22 PM	Angle	Dry
5446146	AMESBURY	09/02/2024	Mon	Property damage only (none injured)	9:49 AM	Rear-end	Dry
5455540	AMESBURY	10/09/2024	Wed	Property damage only (none injured)	1:23 PM	Angle	Dry
5479479	AMESBURY	12/01/2024	Sun	Property damage only (none injured)	12:17 PM	Angle	Dry
5592141	AMESBURY	10/18/2025	Sat	Property damage only (none injured)	8:54 AM	Angle	Dry
5592144	AMESBURY	10/20/2025	Mon	Property damage only (none injured)	1:12 PM	Angle	Wet
5004046	AMESBURY	08/01/2021	Sun	Property damage only (none injured)	3:36 PM	Angle	Dry
5125332	AMESBURY	06/01/2022	Wed	Non-fatal injury	9:34 AM	Angle	Dry
5231948	AMESBURY	02/17/2023	Fri	Property damage only (none injured)	5:19 PM	Angle	Wet
5388167	AMESBURY	04/11/2024	Thu	Property damage only (none injured)	5:33 PM	Angle	Dry
<u>Route 110 at the Route 150 East Connector</u>							
4966469	AMESBURY	05/29/2021	Sat	Property damage only (none injured)	12:15 PM	Angle	Wet
5145869	AMESBURY	07/23/2022	Sat	Property damage only (none injured)	11:06 AM	Angle	Dry
5160560	AMESBURY	09/12/2022	Mon	Property damage only (none injured)	2:45 PM	Angle	Dry
5160554	AMESBURY	09/22/2022	Thu	Property damage only (none injured)	3:48 PM	Angle	Wet
5284295	AMESBURY	07/18/2023	Tue	Property damage only (none injured)	1:43 PM	Angle	Dry
5420919	AMESBURY	07/08/2024	Mon	Non-fatal injury	12:12 PM	Angle	Dry
5446168	AMESBURY	09/29/2024	Sun	Non-fatal injury	1:48 PM	Angle	Dry
<u>Route 150 at the Route 110 North Connector</u>							
No Reported Crashes							
<u>Route 150 at the Route 110 South Connector</u>							
5533201	AMESBURY	05/21/2025	Wed	Property damage only (none injured)	4:57 AM	Other (Deer Strike)	Wet
5602891	AMESBURY	11/24/2025	Mon	Non-fatal injury	1:42 PM	Angle	Dry
5317223	AMESBURY	10/20/2023	Fri	Property damage only (none injured)	10:51 AM	Angle	Dry
<u>Route 150 at the I-495 Southbound Ramps</u>							
4977180	AMESBURY	06/05/2021	Sat	Property damage only (none injured)	2:49 PM	Angle	Dry
5040590	AMESBURY	11/04/2021	Thu	Property damage only (none injured)	3:10 PM	Rear-end	Dry

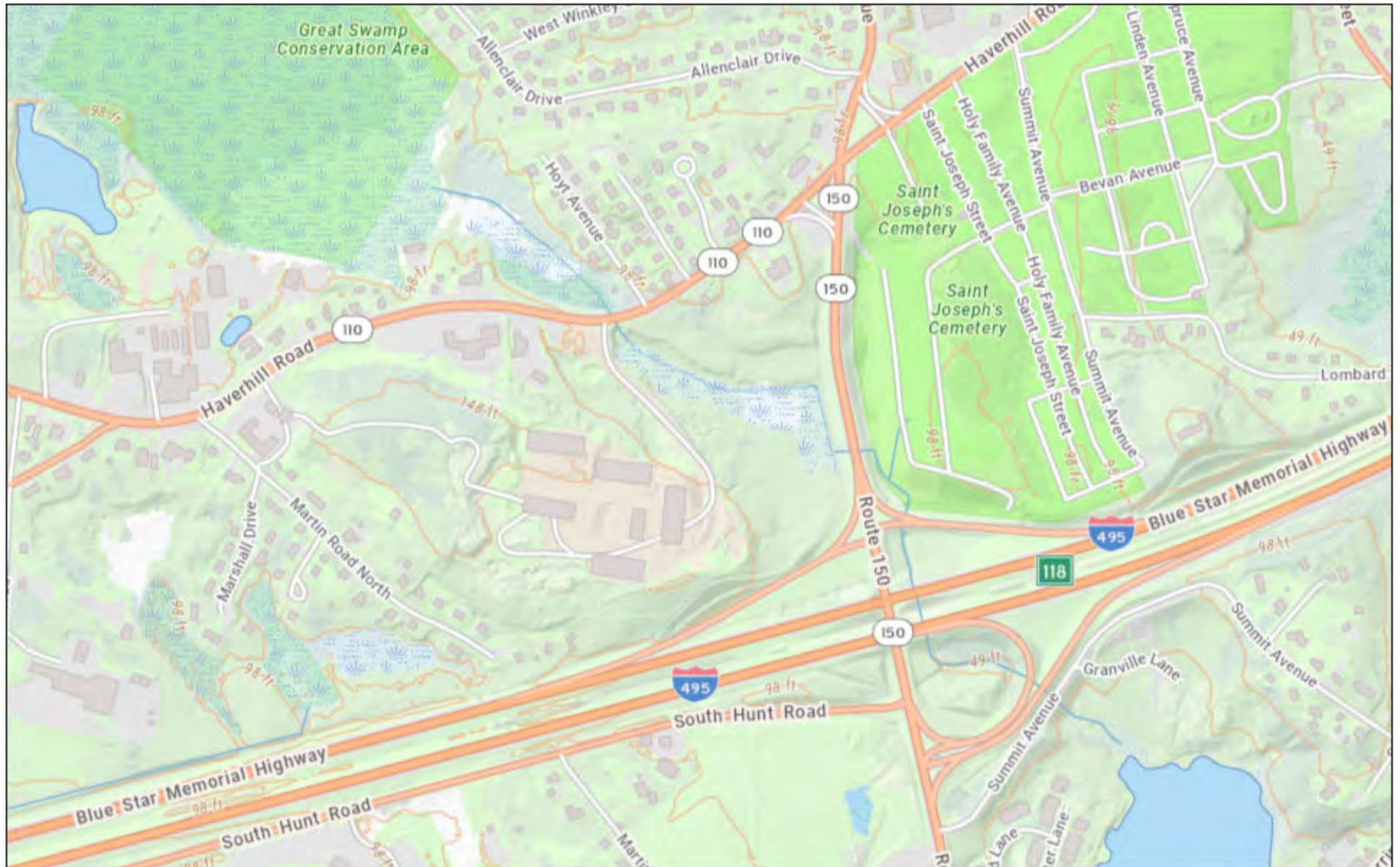
Source: MassDOT IMPACT Crash Query and Visualization

Queried: Wednesday, March 25, 2026

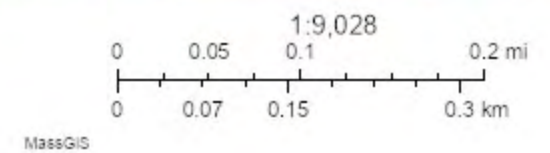
G:\Projects\1449 - Amesbury (Pulte)\Excel\Crash Data\TIA\1449 Crash Summaries

Crash Number	City Town Name	Crash Date	Day	Crash Severity	Crash Time	Manner of Collision	Road Surface Condition
5335199	AMESBURY	11/21/2023	Tue	Property damage only (none injured)	4:11 PM	Angle	Dry
5431509	AMESBURY	08/09/2024	Fri	Property damage only (none injured)	7:59 PM	Rear-end	Dry
5523778	AMESBURY	04/30/2025	Wed	Property damage only (none injured)	12:11 PM	Rear-end	Dry
<u>Route 150 at the I-495 Northbound Ramps and South Hunt Road</u>							
4949954	AMESBURY	03/13/2021	Sat	Property damage only (none injured)	11:53 AM	Rear-end	Dry
5004050	AMESBURY	08/18/2021	Wed	Property damage only (none injured)	10:44 AM	Sideswipe, same direction	Dry
5077764	AMESBURY	02/25/2022	Fri	Property damage only (none injured)	3:43 PM	Angle	Snow
5197996	AMESBURY	12/02/2022	Fri	Property damage only (none injured)	5:52 PM	Head-on	Dry
5342352	AMESBURY	12/22/2023	Fri	Property damage only (none injured)	3:19 PM	Angle	Dry
5431510	AMESBURY	08/07/2024	Wed	Property damage only (none injured)	2:05 PM	Sideswipe, opposite directic	Dry

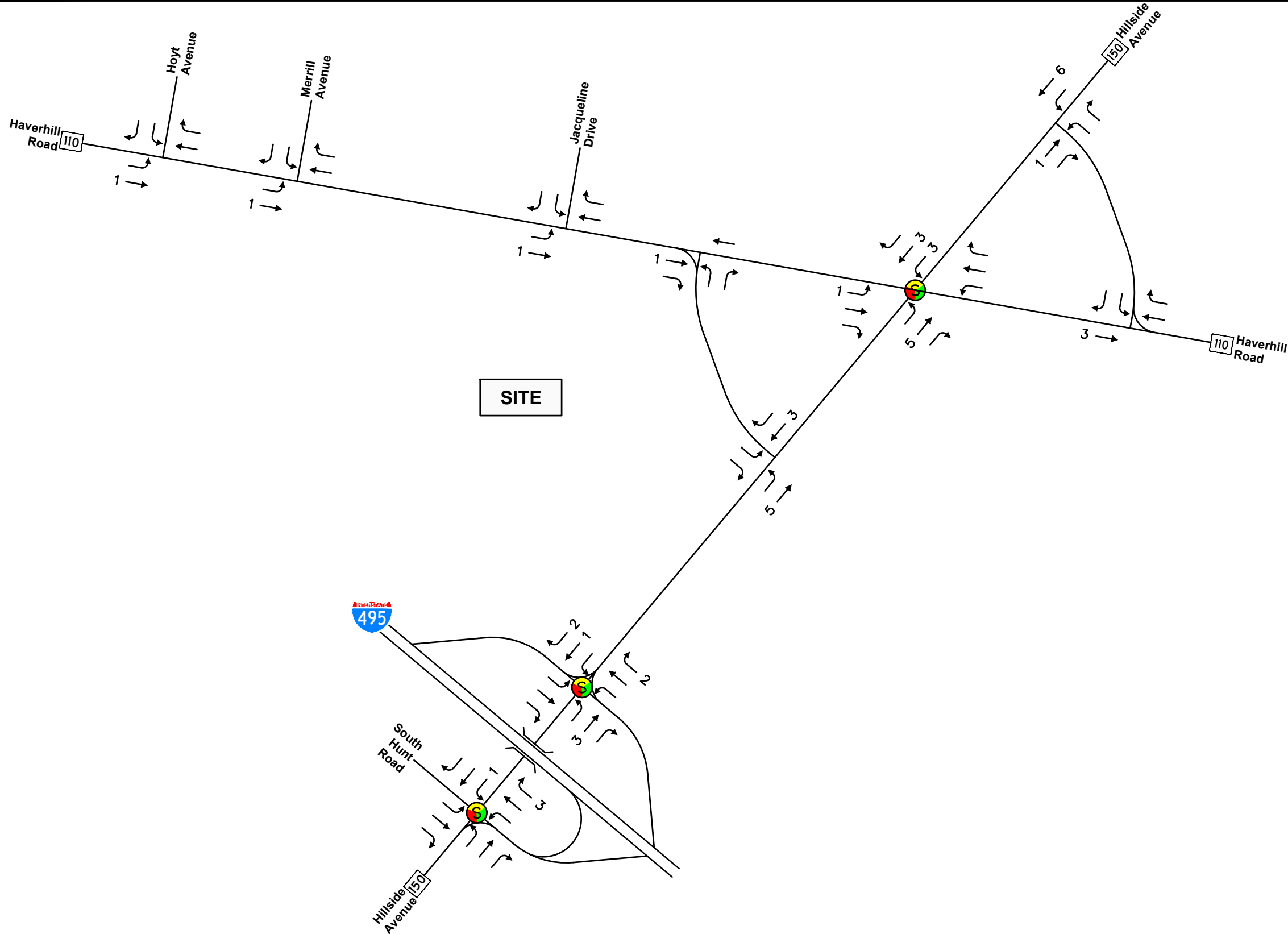
ArcGIS Web Map



March 25, 2026

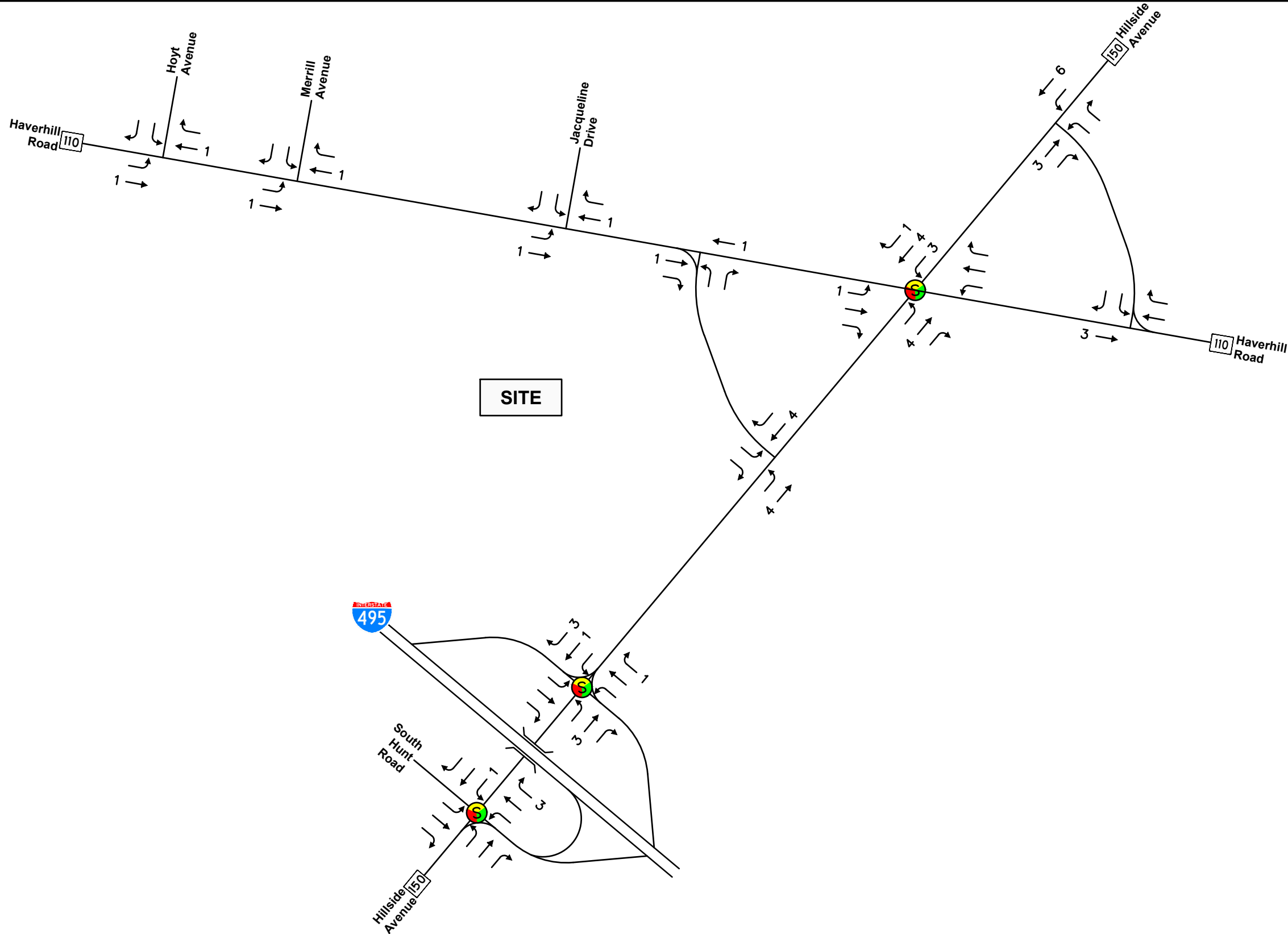


- Background Traffic Volume Data



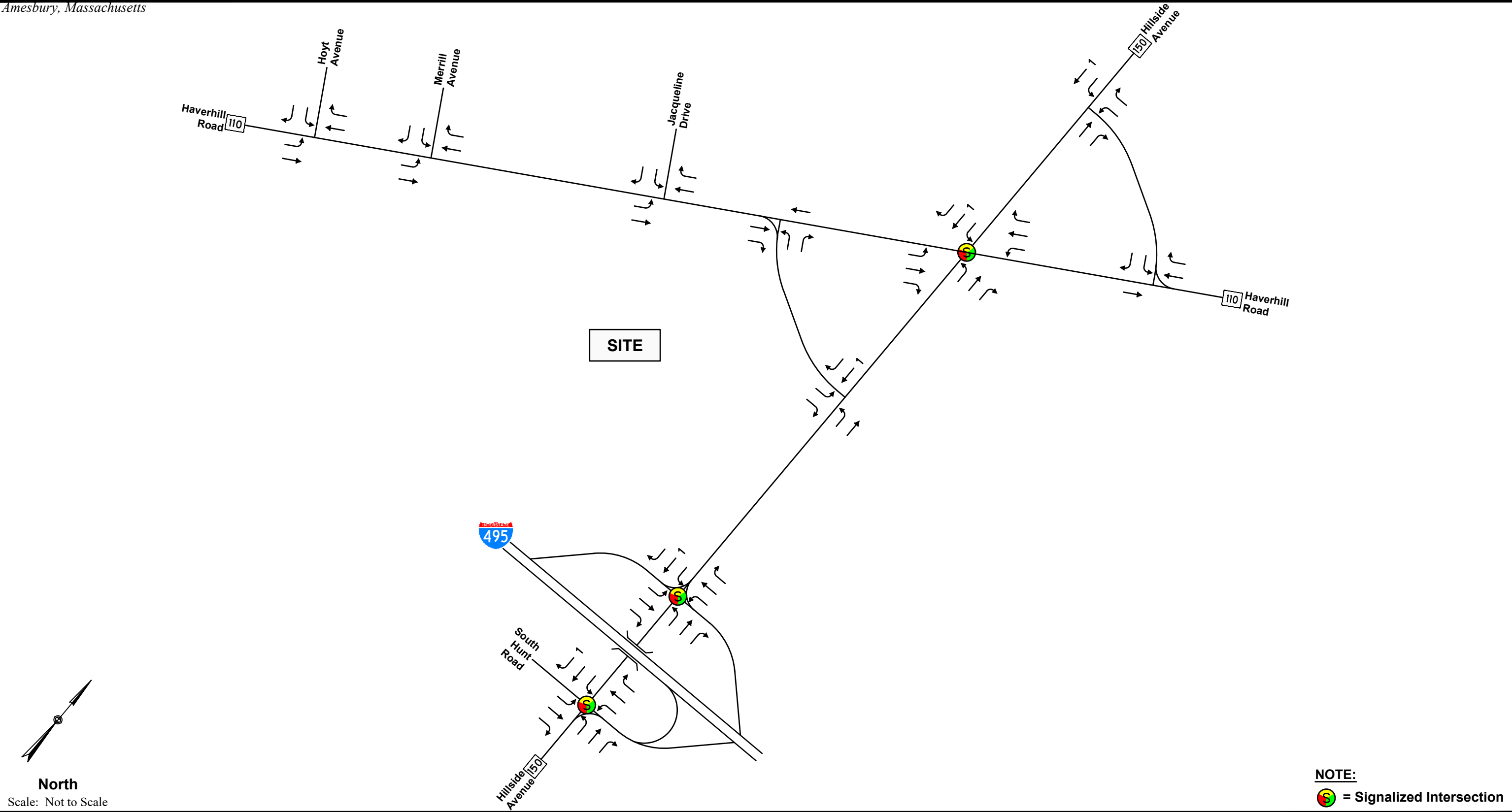
North
Scale: Not to Scale

NOTE:
 = Signalized Intersection



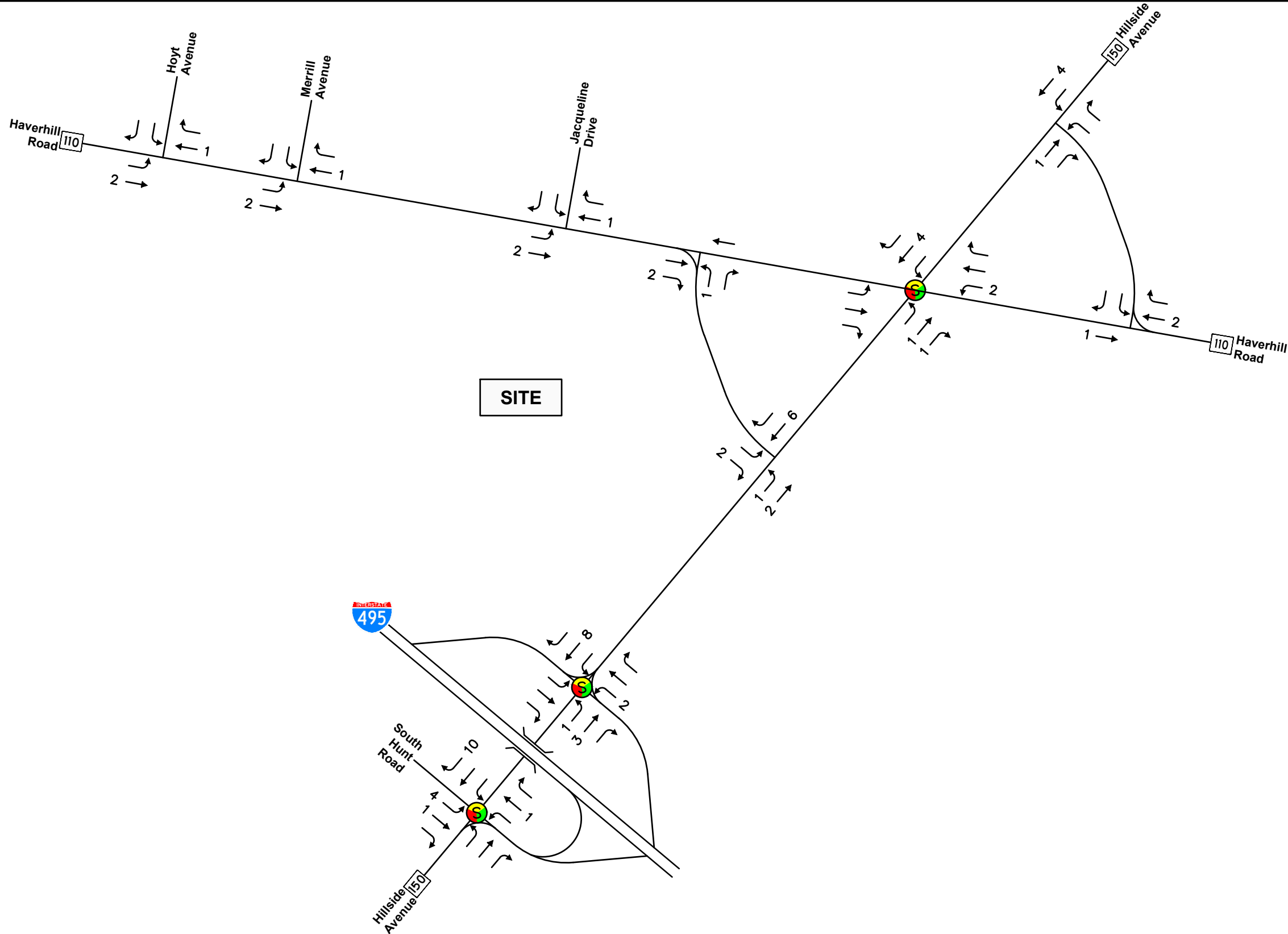
North
Scale: Not to Scale

NOTE:
 = Signalized Intersection



North
Scale: Not to Scale

NOTE:
 = Signalized Intersection



North
Scale: Not to Scale

NOTE:
S = Signalized Intersection

MDM TRANSPORTATION CONSULTANTS, INC.
Planners & Engineers

Attachments

12-14 South Hunt Road
Weekday Evening Peak Hour Volumes

□ Trip Generation Calculations

Multifamily Housing (Mid-Rise)

Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 20

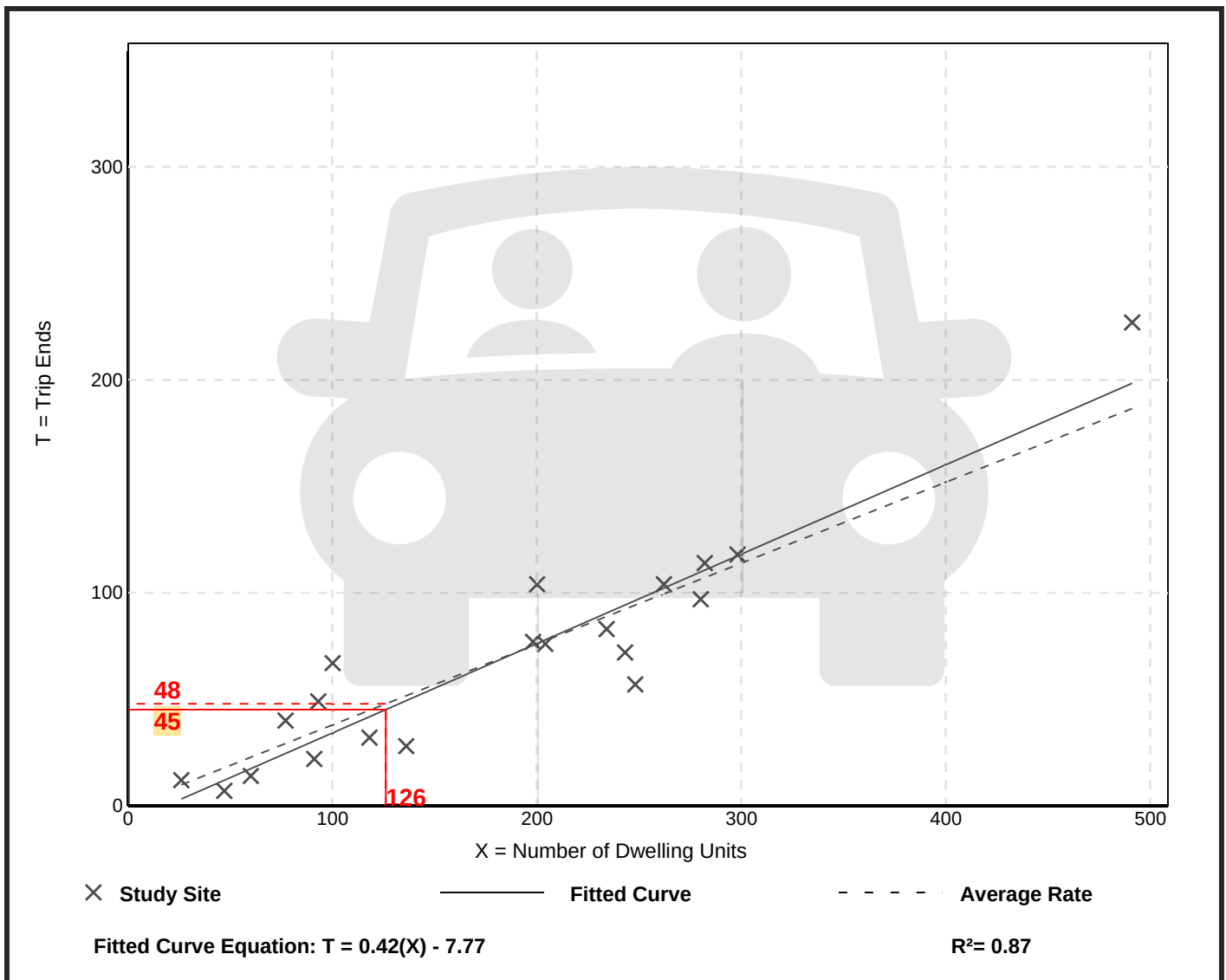
Avg. Num. of Dwelling Units: 184

Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.38	0.15 - 0.67	0.10

Data Plot and Equation



Multifamily Housing (Mid-Rise)

Not Close to Rail Transit (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 21

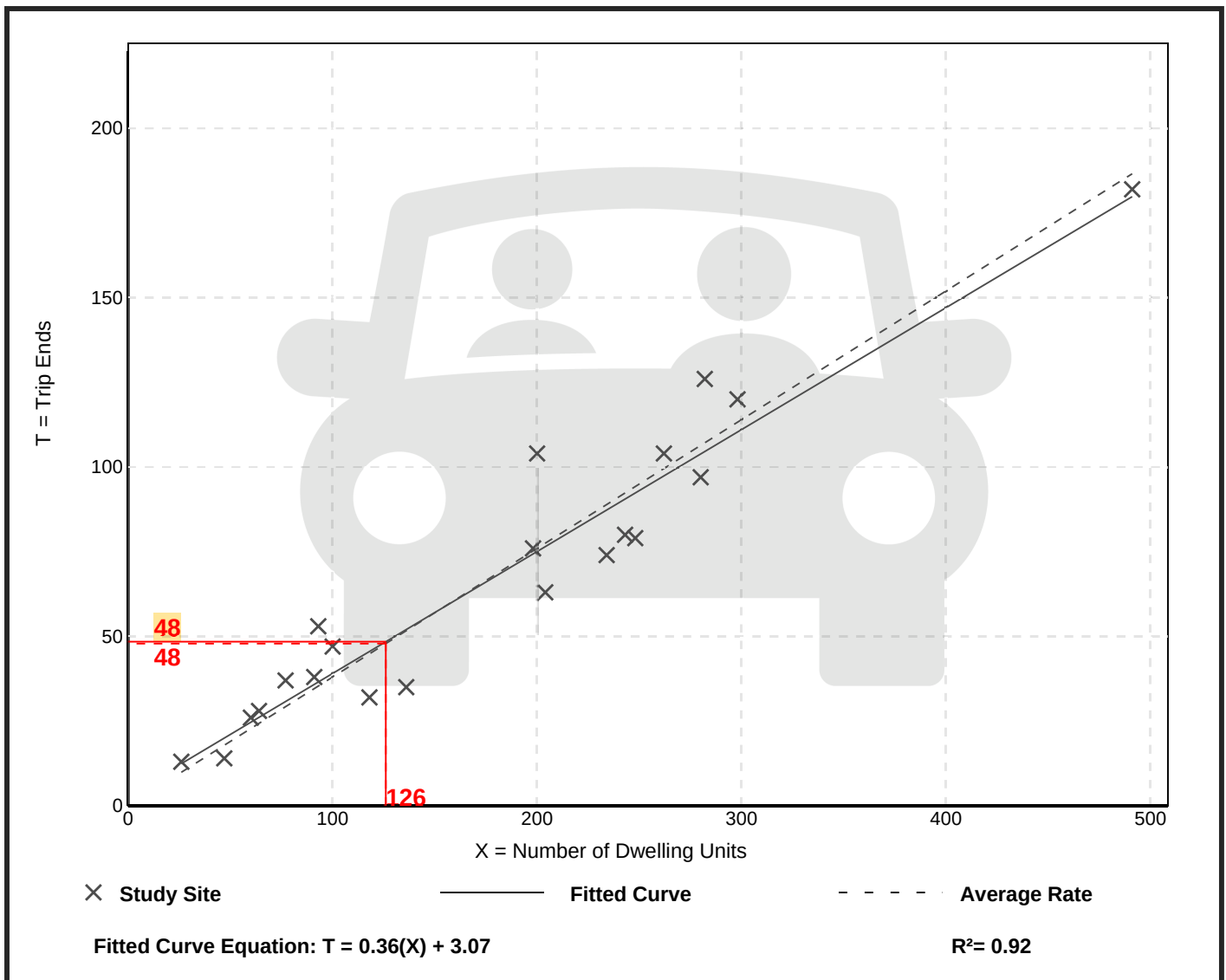
Avg. Num. of Dwelling Units: 179

Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.38	0.26 - 0.57	0.07

Data Plot and Equation



Multifamily Housing (Mid-Rise) Not Close to Rail Transit (221)

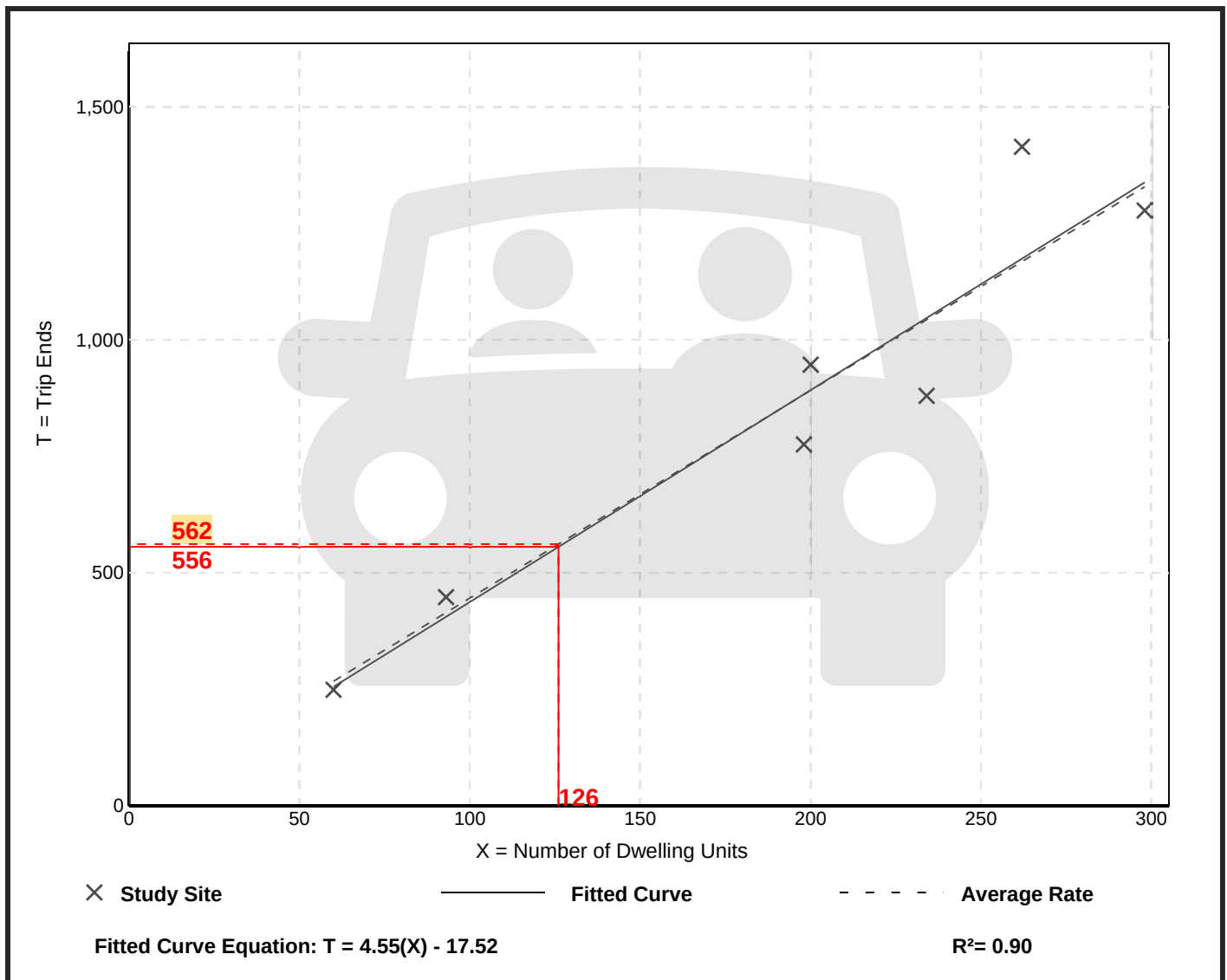
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 7
Avg. Num. of Dwelling Units: 192
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
4.46	3.76 - 5.40	0.62

Data Plot and Equation



□ Trip Distribution Calculations

Automobile Based Trips

					To/From Routes															
Workplace		Residence		Count	Route 110 (East)		Route 110 (West)		Route 150 (North)		Route 150 (South)		South Hunt Road (West)		I-495 (East)		I-495 (West)			
Newburyport	MA	Amesbury	MA	755	100%	755		0		0		0		0		0		0		
Boston	MA	Amesbury	MA	749	50%	375		0		0		0		0		0	50%	375		
Amesbury	MA	Amesbury	MA	743	10%	74	30%	223	45%	334		0	15%	111		0		0		
Haverhill	MA	Amesbury	MA	224		0		0		0		0		0		0	100%	224		
Beverly	MA	Amesbury	MA	211	100%	211		0		0		0		0		0		0		
Danvers	MA	Amesbury	MA	207	100%	207		0		0		0		0		0		0		
Salisbury	MA	Amesbury	MA	204	100%	204		0		0		0		0		0		0		
Portsmouth	NH	Amesbury	MA	200		0		0		0		0		0	100%	200		0		
Andover	MA	Amesbury	MA	187		0		0		0		0		0		0	100%	187		
Seabrook	NH	Amesbury	MA	159		0		0		0		0		0	100%	159		0		
Cambridge	MA	Amesbury	MA	148		0		0		0		0		0		0	100%	148		
Peabody	MA	Amesbury	MA	140	100%	140		0		0		0		0		0		0		
Burlington	MA	Amesbury	MA	110		0		0		0		0		0		0	100%	110		
Woburn	MA	Amesbury	MA	108		0		0		0		0		0		0	100%	108		
North Andover	MA	Amesbury	MA	100		0		0		0		0		0		0	100%	100		
Lawrence	MA	Amesbury	MA	98		0		0		0		0		0		0	100%	98		
Ipswich	MA	Amesbury	MA	88	100%	88		0		0		0		0		0		0		
Salem	NH	Amesbury	MA	86		0		0		0		0		0		0	100%	86		
Salem	MA	Amesbury	MA	80	100%	80		0		0		0		0		0		0		
Exeter	NH	Amesbury	MA	76		0		0	25%	19		0		0	75%	57		0		
Rowley	MA	Amesbury	MA	75	100%	75		0		0		0		0		0		0		
Wilmington	MA	Amesbury	MA	74		0		0		0		0		0		0	100%	74		
Gloucester	MA	Amesbury	MA	70	100%	70		0		0		0		0		0		0		
Newbury	MA	Amesbury	MA	68	100%	68		0		0		0		0		0		0		
Wakefield	MA	Amesbury	MA	64	100%	64		0		0		0		0		0		0		
Lynn	MA	Amesbury	MA	61	100%	61		0		0		0		0		0		0		
Methuen	MA	Amesbury	MA	58		0		0		0		0		0		0	100%	58		
Georgetown	MA	Amesbury	MA	55	50%	28	50%	28		0		0		0		0		0		
Hampton	NH	Amesbury	MA	55		0		0		0		0		0	100%	55		0		
Waltham	MA	Amesbury	MA	54		0		0		0		0		0		0	100%	54		
Billerica	MA	Amesbury	MA	43		0		0		0		0		0		0	100%	43		
Somerville	MA	Amesbury	MA	43		0		0		0		0		0		0	100%	43		
Middleton	MA	Amesbury	MA	41	100%	41		0		0		0		0		0		0		
Merrimac	MA	Amesbury	MA	40		0	100%	40		0		0		0		0		0		
Newington	NH	Amesbury	MA	39		0		0		0		0		0	100%	39		0		
Newton	MA	Amesbury	MA	39		0		0		0		0		0		0	100%	39		
Tewksbury	MA	Amesbury	MA	39		0		0		0		0		0		0	100%	39		
Lowell	MA	Amesbury	MA	38		0		0		0		0		0		0	100%	38		
Bedford	MA	Amesbury	MA	36		0		0		0		0		0		0	100%	36		
Quincy	MA	Amesbury	MA	36	50%	18		0		0		0		0		0	50%	18		
Topsfield	MA	Amesbury	MA	35	100%	35		0		0		0		0		0		0		
Marlborough	MA	Amesbury	MA	30		0		0		0		0		0		0	100%	30		
Epping	NH	Amesbury	MA	28		0		0	25%	7		0		0	75%	21		0		
North Hampton	NH	Amesbury	MA	28		0		0		0		0		0	100%	28		0		
Framingham	MA	Amesbury	MA	27		0		0		0		0		0		0	100%	27		
Manchester	NH	Amesbury	MA	27		0		0		0		0		0		0	100%	27		
Total					5,876		2594		291		360		0		111		559		1962	
					44.1%		5.0%		6.1%		0.0%		1.9%		9.5%		33.4%			
SAY					44%		5%		6%		0%		2%		10%		33%			

□ Capacity Analysis

2026 Baseline Weekday Morning Peak Hour
1: Route 110 & Hoyt Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	685	342	6	4	6
Future Vol, veh/h	1	685	342	6	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	745	372	7	4	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	378	0	0 1122 375
Stage 1	-	-	- - 375 -
Stage 2	-	-	- - 747 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1191	-	- - 230 676
Stage 1	-	-	- - 699 -
Stage 2	-	-	- - 472 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1191	-	- - 230 676
Mov Cap-2 Maneuver	-	-	- - 230 -
Stage 1	-	-	- - 698 -
Stage 2	-	-	- - 472 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.01	0	14.75
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	3	-	-	-	380
HCM Lane V/C Ratio	0.001	-	-	-	0.029
HCM Ctrl Dly (s/v)	8	0	-	-	14.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2026 Baseline Weekday Morning Peak Hour
2: Route 110 & Merrill Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	717	349	2	3	1
Future Vol, veh/h	0	717	349	2	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	771	375	2	3	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	377	0	0 1147 376
Stage 1	-	-	- - 376 -
Stage 2	-	-	- - 771 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1192	-	- - 222 675
Stage 1	-	-	- - 698 -
Stage 2	-	-	- - 460 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1192	-	- - 222 675
Mov Cap-2 Maneuver	-	-	- - 222 -
Stage 1	-	-	- - 698 -
Stage 2	-	-	- - 460 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	18.72
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1192	-	-	-	267
HCM Lane V/C Ratio	-	-	-	-	0.016
HCM Ctrl Dly (s/v)	0	-	-	-	18.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0

2026 Baseline Weekday Morning Peak Hour
3: Route 110 & Jacqueline Drive

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	676	344	2	3	2
Future Vol, veh/h	1	676	344	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	719	366	2	3	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	368	0	0 1088 367
Stage 1	-	-	- - 367 -
Stage 2	-	-	- - 721 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1202	-	- - 241 683
Stage 1	-	-	- - 705 -
Stage 2	-	-	- - 485 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1202	-	- - 240 683
Mov Cap-2 Maneuver	-	-	- - 240 -
Stage 1	-	-	- - 704 -
Stage 2	-	-	- - 485 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.01	0	16.28
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	3	-	-	-	325
HCM Lane V/C Ratio	0.001	-	-	-	0.016
HCM Ctrl Dly (s/v)	8	0	-	-	16.3
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0

2026 Baseline Weekday Morning Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Traffic Volume (vph)	136	363	0	78	226	0	3	144	112	10	243	105
Future Volume (vph)	136	363	0	78	226	0	3	144	112	10	243	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	16	16	16
Storage Length (ft)	115		0	130		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.942			0.960	
Flt Protected	0.950			0.950				0.999			0.999	
Satd. Flow (prot)	1805	1900	0	1685	1773	0	0	1764	0	0	2065	0
Flt Permitted	0.950			0.950				0.997			0.990	
Satd. Flow (perm)	1805	1900	0	1685	1773	0	0	1761	0	0	2047	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								61			33	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		225			225			318			318	
Travel Time (s)		5.1			5.1			7.2			7.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	33%	1%	1%	0%	0%	0%
Adj. Flow (vph)	146	390	0	84	243	0	3	155	120	11	261	113
Shared Lane Traffic (%)												
Lane Group Flow (vph)	146	390	0	84	243	0	0	278	0	0	385	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.00	1.00	1.00	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2			2			2	
Detector Template	Left	Thru		Left	Thru			Thru			Thru	
Leading Detector (ft)	20	100		20	100			100			100	
Trailing Detector (ft)	0	0		0	0			0			0	
Detector 1 Position(ft)	0	0		0	0			0			0	
Detector 1 Size(ft)	20	6		20	6			6			6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

2026 Baseline Weekday Morning Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	15.5		11.5	15.5		11.0	11.0		11.0	11.0	
Total Split (s)	19.0	26.0		15.0	22.0		39.0	39.0		39.0	39.0	
Total Split (%)	23.8%	32.5%		18.8%	27.5%		48.8%	48.8%		48.8%	48.8%	
Maximum Green (s)	13.5	20.5		9.5	16.5		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	1.5		2.5	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5			-1.0			-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)	13.2	24.5		10.2	19.2			35.6			35.6	
Actuated g/C Ratio	0.17	0.31		0.13	0.24			0.45			0.45	
v/c Ratio	0.49	0.67		0.39	0.57			0.34			0.41	
Control Delay (s/veh)	35.4	30.4		37.3	31.7			10.9			17.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	35.4	30.4		37.3	31.7			10.9			17.3	
LOS	D	C		D	C			B			B	
Approach Delay (s/veh)		31.7			33.1			10.9			17.3	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)	67	174		39	104			47			119	
Queue Length 95th (ft)	114	241		81	170			76			219	
Internal Link Dist (ft)		145			145			238			238	
Turn Bay Length (ft)	115			130								
Base Capacity (vph)	350	589		237	452			872			994	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.42	0.66		0.35	0.54			0.32			0.39	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 4:SWTL and 8:NETL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay (s/veh): 24.6

Intersection LOS: C

Intersection Capacity Utilization 59.6%

ICU Level of Service B

Analysis Period (min) 15

2026 Baseline Weekday Morning Peak Hour
5: SW Connector & Route 110

Intersection

Int Delay, s/veh 1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	1	1>	0
Traffic Vol, veh/h	501	161	0	325	77	0
Future Vol, veh/h	501	161	0	325	77	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	1	4	0
Mvmt Flow	551	177	0	357	85	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 996 639
Stage 1	-	-	- 639 -
Stage 2	-	-	- 357 -
Critical Hdwy	-	-	- 6.44 6.2
Critical Hdwy Stg 1	-	-	- 5.44 -
Critical Hdwy Stg 2	-	-	- 5.44 -
Follow-up Hdwy	-	-	- 3.536 3.3
Pot Cap-1 Maneuver	-	0	- 269 480
Stage 1	-	0	- 522 -
Stage 2	-	0	- 704 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 269 480
Mov Cap-2 Maneuver	-	-	- 269 -
Stage 1	-	-	- 522 -
Stage 2	-	-	- 704 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	24.45
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	269	-	-	-
HCM Lane V/C Ratio	0.315	-	-	-
HCM Ctrl Dly (s/v)	24.4	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	1.3	-	-	-

2026 Baseline Weekday Morning Peak Hour
6: Route 110 & NE Connector

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	482	295	12	27	0
Future Vol, veh/h	1	482	295	12	27	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	492	301	12	28	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	313	0	0 801 307
Stage 1	-	-	- - 307 -
Stage 2	-	-	- - 494 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1258	-	- - 356 738
Stage 1	-	-	- - 751 -
Stage 2	-	-	- - 617 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1258	-	- - 356 738
Mov Cap-2 Maneuver	-	-	- - 356 -
Stage 1	-	-	- - 750 -
Stage 2	-	-	- - 617 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.02	0	15.96
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	4	-	-	-	356
HCM Lane V/C Ratio	0.001	-	-	-	0.077
HCM Ctrl Dly (s/v)	7.9	0	-	-	16
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

2026 Baseline Weekday Morning Peak Hour
7: Route 150 & NE Connector

Intersection

Int Delay, s/veh 0.5

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	1>	0	1>	0	0	<1
Traffic Vol, veh/h	0	13	280	0	27	358
Future Vol, veh/h	0	13	280	0	27	358
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	14	301	0	29	385

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	744	301	0
Stage 1	301	-	-
Stage 2	443	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	385	743	-
Stage 1	755	-	-
Stage 2	651	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	374	743	-
Mov Cap-2 Maneuver	374	-	-
Stage 1	733	-	-
Stage 2	651	-	-

Approach	NB	NE	SW
HCM Ctrl Dly, s/v	9.94	0	0.55
HCM LOS	A		

Minor Lane/Major Mvmt	NET	NER	NBLn1	SWL	SWT
Capacity (veh/h)	-	-	743	126	-
HCM Lane V/C Ratio	-	-	0.019	0.023	-
HCM Ctrl Dly (s/v)	-	-	9.9	7.9	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

2026 Baseline Weekday Morning Peak Hour
8: Route 150 & SW Connector

Intersection

Int Delay, s/veh 3.1

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	0	161	77	259	321	0
Future Vol, veh/h	0	161	77	259	321	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	4	1	0	0
Mvmt Flow	0	173	83	278	345	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	789	345	345
Stage 1	345	-	-
Stage 2	444	-	-
Critical Hdwy	6.4	6.2	4.14
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.236
Pot Cap-1 Maneuver	362	702	1203
Stage 1	721	-	-
Stage 2	651	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	333	702	1203
Mov Cap-2 Maneuver	333	-	-
Stage 1	663	-	-
Stage 2	651	-	-

Approach	SB	NE	SW
HCM Ctrl Dly, s/v	11.79	1.88	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	412	-	702	-
HCM Lane V/C Ratio	0.069	-	0.247	-
HCM Ctrl Dly (s/v)	8.2	0	11.8	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.2	-	1	-

2026 Baseline Weekday Morning Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	0	0	0	0	<1	1	1	1	0	0	1>	0
Traffic Volume (vph)	0	0	0	62	0	118	74	373	0	0	205	312
Future Volume (vph)	0	0	0	62	0	118	74	373	0	0	205	312
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	65		0	0		0
Storage Lanes	0		0	0		1	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850					0.918	
Flt Protected					0.950		0.950					
Satd. Flow (prot)	0	0	0	0	1805	1553	1805	1863	0	0	1730	0
Flt Permitted					0.950		0.346					
Satd. Flow (perm)	0	0	0	0	1805	1553	657	1863	0	0	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						130					148	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			700			1201	
Travel Time (s)		6.8			6.8			15.9			27.3	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	68	0	130	81	410	0	0	225	343
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	68	130	81	410	0	0	568	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2	1	1	2			2	
Detector Template		Thru			Thru	Right	Left	Thru			Thru	
Leading Detector (ft)		100			100	20	20	100			100	
Trailing Detector (ft)		0			0	0	0	0			0	
Detector 1 Position(ft)					0	0	0	0			0	
Detector 1 Size(ft)					6	20	20	6			6	
Detector 1 Type					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)					0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					

2026 Baseline Weekday Morning Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase				8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0	10.0	6.0	10.0			10.0	
Minimum Split (s)				15.0	15.0	15.0	11.5	15.5			15.5	
Total Split (s)				16.0	16.0	16.0	17.0	64.0			47.0	
Total Split (%)				20.0%	20.0%	20.0%	21.3%	80.0%			58.8%	
Maximum Green (s)				11.0	11.0	11.0	11.5	58.5			41.5	
Yellow Time (s)				4.0	4.0	4.0	4.5	4.5			4.5	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0	-1.0	-1.5	-1.5			-1.5	
Total Lost Time (s)					4.0	4.0	4.0	4.0			4.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Recall Mode				None	None	None	None	C-Min			C-Min	
Act Effct Green (s)					11.3	11.3	63.7	64.5			54.8	
Actuated g/C Ratio					0.14	0.14	0.80	0.81			0.69	
v/c Ratio					0.27	0.39	0.13	0.27			0.46	
Control Delay (s/veh)					33.6	10.0	3.7	3.9			7.4	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay (s/veh)					33.6	10.0	3.7	3.9			7.4	
LOS					C	A	A	A			A	
Approach Delay (s/veh)					18.1			3.8			7.4	
Approach LOS					B			A			A	
Queue Length 50th (ft)					31	0	6	38			100	
Queue Length 95th (ft)					66	47	m27	118			193	
Internal Link Dist (ft)		220			220			620			1121	
Turn Bay Length (ft)						50	65					
Base Capacity (vph)					272	344	709	1504			1232	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.25	0.38	0.11	0.27			0.46	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NETL and 6:SWT, Start of Yellow, Master Intersection

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.46

Intersection Signal Delay (s/veh): 7.7

Intersection LOS: A

Intersection Capacity Utilization 53.3%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

2026 Baseline Weekday Morning Peak Hour
10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	0	<1	1	0	<1>	0	1	1	1
Traffic Volume (vph)	29	28	4	13	42	323	8	95	24	134	22	110
Future Volume (vph)	29	28	4	13	42	323	8	95	24	134	22	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	0		125	0		0	115		65
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982				0.850		0.974				0.850
Flt Protected	0.950				0.988			0.997		0.950		
Satd. Flow (prot)	1805	1866	0	0	1877	1599	0	1845	0	1770	1900	1615
Flt Permitted	0.460				0.907			0.991		0.636		
Satd. Flow (perm)	874	1866	0	0	1723	1599	0	1834	0	1185	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				336		16				115
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			300			700	
Travel Time (s)		6.8			6.8			6.8			15.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	30	29	4	14	44	336	8	99	25	140	23	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	33	0	0	58	336	0	132	0	140	23	115
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2		1	2	1
Detector Template	Left	Thru			Thru	Right		Thru		Left	Thru	Right
Leading Detector (ft)	20	100			100	20		100		20	100	20
Trailing Detector (ft)	0	0			0	0		0		0	0	0
Detector 1 Position(ft)	0	0			0	0		0		0	0	0
Detector 1 Size(ft)	20	6			6	20		6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2			6		6

2026 Baseline Weekday Morning Peak Hour
10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	7	4		8	8	1	2	2		1	6	7
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	6.0	6.0	10.0	10.0		6.0	10.0	6.0
Minimum Split (s)	11.5	15.5		11.5	11.5	11.5	15.5	15.5		11.5	15.5	11.5
Total Split (s)	12.0	33.0		21.0	21.0	15.0	32.0	32.0		15.0	47.0	12.0
Total Split (%)	15.0%	41.3%		26.3%	26.3%	18.8%	40.0%	40.0%		18.8%	58.8%	15.0%
Maximum Green (s)	6.5	27.5		15.5	15.5	9.5	26.5	26.5		9.5	41.5	6.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.5	-1.5			-1.5	-1.5		-1.5		-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	None
Act Effct Green (s)	18.1	18.9			9.6	18.7		42.4		56.2	57.0	68.7
Actuated g/C Ratio	0.23	0.24			0.12	0.23		0.53		0.70	0.71	0.86
v/c Ratio	0.10	0.07			0.28	0.53		0.13		0.15	0.02	0.08
Control Delay (s/veh)	21.1	18.9			34.9	5.7		12.9		8.5	9.0	1.1
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay (s/veh)	21.1	18.9			34.9	5.7		12.9		8.5	9.0	1.1
LOS	C	B			C	A		B		A	A	A
Approach Delay (s/veh)		20.0			10.0			12.9			5.5	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)	11	11			27	0		32		22	3	0
Queue Length 95th (ft)	28	28			59	51		78		78	m16	20
Internal Link Dist (ft)		220			220			220			620	
Turn Bay Length (ft)	135					125				115		65
Base Capacity (vph)	307	678			366	657		979		916	1353	1403
Starvation Cap Reductn	0	0			0	0		0		0	0	0
Spillback Cap Reductn	0	0			0	0		0		0	0	0
Storage Cap Reductn	0	0			0	0		0		0	0	0
Reduced v/c Ratio	0.10	0.05			0.16	0.51		0.13		0.15	0.02	0.08

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 50 (63%), Referenced to phase 2:NETL and 6:SWTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay (s/veh): 9.7

Intersection LOS: A

Intersection Capacity Utilization 46.7%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

2026 Baseline Weekday Evening Peak Hour
1: Route 110 & Hoyt Avenue

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	531	736	7	6	2
Future Vol, veh/h	0	531	736	7	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	565	783	7	6	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	790	0	0 1352 787
Stage 1	-	-	- 787 -
Stage 2	-	-	- 565 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	839	-	- 167 395
Stage 1	-	-	- 452 -
Stage 2	-	-	- 573 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	839	-	- 167 395
Mov Cap-2 Maneuver	-	-	- 167 -
Stage 1	-	-	- 452 -
Stage 2	-	-	- 573 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	24.26
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	839	-	-	-	195
HCM Lane V/C Ratio	-	-	-	-	0.044
HCM Ctrl Dly (s/v)	0	-	-	-	24.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2026 Baseline Weekday Evening Peak Hour
2: Route 110 & Merrill Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	3	526	731	4	4	1
Future Vol, veh/h	3	526	731	4	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	560	778	4	4	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	782	0	0 1346 780
Stage 1	-	-	- - 780 -
Stage 2	-	-	- - 566 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	845	-	- - 169 399
Stage 1	-	-	- - 456 -
Stage 2	-	-	- - 572 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	845	-	- - 168 399
Mov Cap-2 Maneuver	-	-	- - 168 -
Stage 1	-	-	- - 453 -
Stage 2	-	-	- - 572 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.05	0	24.53
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	10	-	-	-	190
HCM Lane V/C Ratio	0.004	-	-	-	0.028
HCM Ctrl Dly (s/v)	9.3	0	-	-	24.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2026 Baseline Weekday Evening Peak Hour
3: Route 110 & Jacqueline Drive

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	543	719	4	4	0
Future Vol, veh/h	0	543	719	4	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	578	765	4	4	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	769	0	0 1345 767
Stage 1	-	-	- - 767 -
Stage 2	-	-	- - 578 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	854	-	- - 169 405
Stage 1	-	-	- - 462 -
Stage 2	-	-	- - 565 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	854	-	- - 169 405
Mov Cap-2 Maneuver	-	-	- - 169 -
Stage 1	-	-	- - 462 -
Stage 2	-	-	- - 565 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	26.88
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	854	-	-	-	169
HCM Lane V/C Ratio	-	-	-	-	0.025
HCM Ctrl Dly (s/v)	0	-	-	-	26.9
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2026 Baseline Weekday Evening Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Traffic Volume (vph)	140	315	1	92	395	0	3	292	117	3	186	129
Future Volume (vph)	140	315	1	92	395	0	3	292	117	3	186	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	16	16	16
Storage Length (ft)	115		0	130		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt								0.962			0.945	
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1805	1900	0	1668	1773	0	0	1828	0	0	2023	0
Flt Permitted	0.950			0.950				0.998			0.997	
Satd. Flow (perm)	1805	1900	0	1668	1773	0	0	1824	0	0	2017	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								24			42	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		225			225			318			318	
Travel Time (s)		5.1			5.1			7.2			7.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	146	328	1	96	411	0	3	304	122	3	194	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	146	329	0	96	411	0	0	429	0	0	331	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.00	1.00	1.00	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2			2			2	
Detector Template	Left	Thru		Left	Thru			Thru			Thru	
Leading Detector (ft)	20	100		20	100			100			100	
Trailing Detector (ft)	0	0		0	0			0			0	
Detector 1 Position(ft)	0	0		0	0			0			0	
Detector 1 Size(ft)	20	6		20	6			6			6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

2026 Baseline Weekday Evening Peak Hour

4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	15.5		11.5	15.5		11.0	11.0		11.0	11.0	
Total Split (s)	18.0	34.0		21.0	37.0		45.0	45.0		45.0	45.0	
Total Split (%)	18.0%	34.0%		21.0%	37.0%		45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	12.5	28.5		15.5	31.5		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	1.5		2.5	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5			-1.0			-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)	14.2	27.7		17.7	28.8			45.0			45.0	
Actuated g/C Ratio	0.14	0.28		0.18	0.29			0.45			0.45	
v/c Ratio	0.57	0.63		0.33	0.81			0.51			0.36	
Control Delay (s/veh)	48.7	38.0		37.8	45.4			18.4			18.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	48.7	38.0		37.8	45.4			18.4			18.6	
LOS	D	D		D	D			B			B	
Approach Delay (s/veh)		41.2			44.0			18.4			18.6	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	87	194		52	238			126			120	
Queue Length 95th (ft)	148	261		103	338			229			209	
Internal Link Dist (ft)		145			145			238			238	
Turn Bay Length (ft)	115			130								
Base Capacity (vph)	275	595		324	587			856			955	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.53	0.55		0.30	0.70			0.50			0.35	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 4:SWTL and 8:NETL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay (s/veh): 32.1

Intersection LOS: C

Intersection Capacity Utilization 63.0%

ICU Level of Service B

Analysis Period (min) 15

2026 Baseline Weekday Evening Peak Hour
5: SW Connector & Route 110

Intersection

Int Delay, s/veh 3.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	1	1>	0
Traffic Vol, veh/h	440	84	0	524	115	4
Future Vol, veh/h	440	84	0	524	115	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	454	87	0	540	119	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 1037 497
Stage 1	-	-	- 497 -
Stage 2	-	-	- 540 -
Critical Hdwy	-	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	-	- 0	- 258 577
Stage 1	-	- 0	- 615 -
Stage 2	-	- 0	- 588 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 258 577
Mov Cap-2 Maneuver	-	-	- 258 -
Stage 1	-	-	- 615 -
Stage 2	-	-	- 588 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	30.07
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	263	-	-	-
HCM Lane V/C Ratio	0.466	-	-	-
HCM Ctrl Dly (s/v)	30.1	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	2.3	-	-	-

2026 Baseline Weekday Evening Peak Hour
6: Route 110 & NE Connector

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	425	480	20	11	1
Future Vol, veh/h	1	425	480	20	11	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	447	505	21	12	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	526	0	0 965 516
Stage 1	-	-	- 516 -
Stage 2	-	-	- 449 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1051	-	- 285 563
Stage 1	-	-	- 603 -
Stage 2	-	-	- 647 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1051	-	- 285 563
Mov Cap-2 Maneuver	-	-	- 285 -
Stage 1	-	-	- 603 -
Stage 2	-	-	- 647 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.02	0	17.66
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	4	-	-	-	297
HCM Lane V/C Ratio	0.001	-	-	-	0.043
HCM Ctrl Dly (s/v)	8.4	0	-	-	17.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2026 Baseline Weekday Evening Peak Hour
7: Route 150 & NE Connector

Intersection

Int Delay, s/veh 0.4

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	1>	0	1>	0	0	<1
Traffic Vol, veh/h	0	21	432	0	12	318
Future Vol, veh/h	0	21	432	0	12	318
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	0	22	450	0	13	331

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	806	450	0
Stage 1	450	-	-
Stage 2	356	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	354	613	-
Stage 1	647	-	-
Stage 2	713	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	349	613	-
Mov Cap-2 Maneuver	349	-	-
Stage 1	638	-	-
Stage 2	713	-	-

Approach	NB	NE	SW
HCM Ctrl Dly, s/v	11.09	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NBLn1	SWL	SWT
Capacity (veh/h)	-	-	613	65	-
HCM Lane V/C Ratio	-	-	0.036	0.011	-
HCM Ctrl Dly (s/v)	-	-	11.1	8.2	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

2026 Baseline Weekday Evening Peak Hour
8: Route 150 & SW Connector

Intersection

Int Delay, s/veh 2.1

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	0	84	119	412	279	0
Future Vol, veh/h	0	84	119	412	279	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	88	124	429	291	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	968	291	291
Stage 1	291	-	-
Stage 2	677	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	284	753	1283
Stage 1	764	-	-
Stage 2	508	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	248	753	1283
Mov Cap-2 Maneuver	248	-	-
Stage 1	667	-	-
Stage 2	508	-	-

Approach	SB	NE	SW
HCM Ctrl Dly, s/v	10.41	1.82	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	403	-	753	-
HCM Lane V/C Ratio	0.097	-	0.116	-
HCM Ctrl Dly (s/v)	8.1	0	10.4	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.3	-	0.4	-

2026 Baseline Weekday Evening Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	0	0	0	0	<1	1	1	1	0	0	1>	0
Traffic Volume (vph)	0	0	0	70	0	165	198	448	0	0	201	251
Future Volume (vph)	0	0	0	70	0	165	198	448	0	0	201	251
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	65		0	0		0
Storage Lanes	0		0	0		1	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850					0.925	
Flt Protected					0.950		0.950					
Satd. Flow (prot)	0	0	0	0	1805	1599	1787	1900	0	0	1758	0
Flt Permitted					0.950		0.386					
Satd. Flow (perm)	0	0	0	0	1805	1599	726	1900	0	0	1758	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						185					88	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			700			1201	
Travel Time (s)		6.8			6.8			15.9			27.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	79	0	185	222	503	0	0	226	282
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	79	185	222	503	0	0	508	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2	1	1	2			2	
Detector Template		Thru			Thru	Right	Left	Thru			Thru	
Leading Detector (ft)		100			100	20	20	100			100	
Trailing Detector (ft)		0			0	0	0	0			0	
Detector 1 Position(ft)					0	0	0	0			0	
Detector 1 Size(ft)					6	20	20	6			6	
Detector 1 Type					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)					0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)						0.0		0.0			0.0	
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					

2026 Baseline Weekday Evening Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase				8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0	10.0	6.0	10.0			10.0	
Minimum Split (s)				15.0	15.0	15.0	11.5	15.5			15.5	
Total Split (s)				30.0	30.0	30.0	17.0	70.0			53.0	
Total Split (%)				30.0%	30.0%	30.0%	17.0%	70.0%			53.0%	
Maximum Green (s)				25.0	25.0	25.0	11.5	64.5			47.5	
Yellow Time (s)				4.0	4.0	4.0	4.5	4.5			4.5	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0	-1.0	-1.5	-1.5			-1.5	
Total Lost Time (s)					4.0	4.0	4.0	4.0			4.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Recall Mode				None	None	None	None	C-Min			C-Min	
Act Effct Green (s)					11.9	11.9	80.1	80.1			66.2	
Actuated g/C Ratio					0.12	0.12	0.80	0.80			0.66	
v/c Ratio					0.37	0.52	0.32	0.33			0.43	
Control Delay (s/veh)					45.3	11.8	2.3	1.8			8.1	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay (s/veh)					45.3	11.8	2.3	1.8			8.1	
LOS					D	B	A	A			A	
Approach Delay (s/veh)					21.8			1.9			8.1	
Approach LOS					C			A			A	
Queue Length 50th (ft)					48	0	13	32			104	
Queue Length 95th (ft)					90	59	m19	40			196	
Internal Link Dist (ft)		220			220			620			1121	
Turn Bay Length (ft)						50	65					
Base Capacity (vph)					469	552	718	1521			1192	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.17	0.34	0.31	0.33			0.43	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NETL and 6:SWT, Start of Yellow, Master Intersection

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay (s/veh): 7.5

Intersection LOS: A

Intersection Capacity Utilization 55.3%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

2026 Baseline Weekday Evening Peak Hour
10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	0	<1	1	0	<1>	0	1	1	1
Traffic Volume (vph)	272	135	19	27	13	274	17	110	16	114	53	99
Future Volume (vph)	272	135	19	27	13	274	17	110	16	114	53	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	0		125	0		0	115		65
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982				0.850		0.985				0.850
Flt Protected	0.950				0.967			0.994		0.950		
Satd. Flow (prot)	1787	1866	0	0	1837	1615	0	1860	0	1805	1900	1615
Flt Permitted	0.505				0.687			0.969		0.578		
Satd. Flow (perm)	950	1866	0	0	1305	1615	0	1813	0	1098	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				334		6				121
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			300			700	
Travel Time (s)		6.8			6.8			6.8			15.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	332	165	23	33	16	334	21	134	20	139	65	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	332	188	0	0	49	334	0	175	0	139	65	121
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2		1	2	1
Detector Template	Left	Thru			Thru	Right		Thru		Left	Thru	Right
Leading Detector (ft)	20	100			100	20		100		20	100	20
Trailing Detector (ft)	0	0			0	0		0		0	0	0
Detector 1 Position(ft)	0	0			0	0		0		0	0	0
Detector 1 Size(ft)	20	6			6	20		6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2			6		6

2026 Baseline Weekday Evening Peak Hour
10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	7	4		8	8	1	2	2		1	6	7
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	6.0	6.0	10.0	10.0		6.0	10.0	6.0
Minimum Split (s)	11.5	15.5		11.5	11.5	11.5	15.5	15.5		11.5	15.5	11.5
Total Split (s)	12.0	50.0		38.0	38.0	19.0	31.0	31.0		19.0	50.0	12.0
Total Split (%)	12.0%	50.0%		38.0%	38.0%	19.0%	31.0%	31.0%		19.0%	50.0%	12.0%
Maximum Green (s)	6.5	44.5		32.5	32.5	13.5	25.5	25.5		13.5	44.5	6.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.5	-1.5			-1.5	-1.5		-1.5		-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	None
Act Effct Green (s)	32.2	32.2			10.4	22.6		45.3		59.8	59.8	84.7
Actuated g/C Ratio	0.32	0.32			0.10	0.23		0.45		0.60	0.60	0.85
v/c Ratio	0.70	0.31			0.36	0.54		0.21		0.19	0.06	0.09
Control Delay (s/veh)	36.2	24.5			48.6	6.5		19.0		12.5	12.0	0.6
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay (s/veh)	36.2	24.5			48.6	6.5		19.0		12.5	12.0	0.6
LOS	D	C			D	A		B		B	B	A
Approach Delay (s/veh)		32.0			11.9			19.0			8.0	
Approach LOS		C			B			B			A	
Queue Length 50th (ft)	164	79			30	0		69		54	22	7
Queue Length 95th (ft)	225	121			58	40		108		50	28	0
Internal Link Dist (ft)		220			220			220			620	
Turn Bay Length (ft)	135					125				115		65
Base Capacity (vph)	474	863			443	680		823		762	1136	1387
Starvation Cap Reductn	0	0			0	0		0		0	0	0
Spillback Cap Reductn	0	0			0	0		0		0	0	0
Storage Cap Reductn	0	0			0	0		0		0	0	0
Reduced v/c Ratio	0.70	0.22			0.11	0.49		0.21		0.18	0.06	0.09

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0.5 (1%), Referenced to phase 2:NETL and 6:SWTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay (s/veh): 19.3

Intersection LOS: B

Intersection Capacity Utilization 50.4%

ICU Level of Service A

Analysis Period (min) 15

2033 No Build Weekday Morning Peak Hour
1: Route 110 & Hoyt Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	735	367	6	4	6
Future Vol, veh/h	1	735	367	6	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	799	399	7	4	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	405	0	0 1203 402
Stage 1	-	-	- - 402 -
Stage 2	-	-	- - 801 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1164	-	- - 205 652
Stage 1	-	-	- - 680 -
Stage 2	-	-	- - 445 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1164	-	- - 205 652
Mov Cap-2 Maneuver	-	-	- - 205 -
Stage 1	-	-	- - 679 -
Stage 2	-	-	- - 445 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.01	0	15.66
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	2	-	-	-	348
HCM Lane V/C Ratio	0.001	-	-	-	0.031
HCM Ctrl Dly (s/v)	8.1	0	-	-	15.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 No Build Weekday Morning Peak Hour
2: Route 110 & Merrill Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	770	374	2	3	1
Future Vol, veh/h	0	770	374	2	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	828	402	2	3	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	404	0	0 1231 403
Stage 1	-	-	- 403 -
Stage 2	-	-	- 828 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1165	-	- 198 652
Stage 1	-	-	- 679 -
Stage 2	-	-	- 433 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1165	-	- 198 652
Mov Cap-2 Maneuver	-	-	- 198 -
Stage 1	-	-	- 679 -
Stage 2	-	-	- 433 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	20.31
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1165	-	-	-	239
HCM Lane V/C Ratio	-	-	-	-	0.018
HCM Ctrl Dly (s/v)	0	-	-	-	20.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 No Build Weekday Morning Peak Hour
3: Route 110 & Jacqueline Drive

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	726	369	2	3	2
Future Vol, veh/h	1	726	369	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	772	393	2	3	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	395	0	0 1168 394
Stage 1	-	-	- - 394 -
Stage 2	-	-	- - 774 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1175	-	- - 216 660
Stage 1	-	-	- - 686 -
Stage 2	-	-	- - 458 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1175	-	- - 215 660
Mov Cap-2 Maneuver	-	-	- - 215 -
Stage 1	-	-	- - 685 -
Stage 2	-	-	- - 458 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.01	0	17.44
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	2	-	-	-	295
HCM Lane V/C Ratio	0.001	-	-	-	0.018
HCM Ctrl Dly (s/v)	8.1	0	-	-	17.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 No Build Weekday Morning Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Traffic Volume (vph)	147	389	0	84	242	0	3	160	120	14	265	113
Future Volume (vph)	147	389	0	84	242	0	3	160	120	14	265	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	16	16	16
Storage Length (ft)	115		0	130		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt								0.943			0.961	
Flt Protected	0.950			0.950							0.998	
Satd. Flow (prot)	1805	1900	0	1685	1773	0	0	1768	0	0	2065	0
Flt Permitted	0.950			0.950				0.997			0.985	
Satd. Flow (perm)	1805	1900	0	1685	1773	0	0	1763	0	0	2038	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								59			33	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		225			225			318			318	
Travel Time (s)		5.1			5.1			7.2			7.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	33%	1%	1%	0%	0%	0%
Adj. Flow (vph)	158	418	0	90	260	0	3	172	129	15	285	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	418	0	90	260	0	0	304	0	0	422	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.00	1.00	1.00	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2			2			2	
Detector Template	Left	Thru		Left	Thru			Thru			Thru	
Leading Detector (ft)	20	100		20	100			100			100	
Trailing Detector (ft)	0	0		0	0			0			0	
Detector 1 Position(ft)	0	0		0	0			0			0	
Detector 1 Size(ft)	20	6		20	6			6			6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

2033 No Build Weekday Morning Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	15.5		11.5	15.5		11.0	11.0		11.0	11.0	
Total Split (s)	19.0	26.0		15.0	22.0		39.0	39.0		39.0	39.0	
Total Split (%)	23.8%	32.5%		18.8%	27.5%		48.8%	48.8%		48.8%	48.8%	
Maximum Green (s)	13.5	20.5		9.5	16.5		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	1.5		2.5	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5			-1.0			-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)	13.7	25.2		10.4	19.6			34.7			34.7	
Actuated g/C Ratio	0.17	0.32		0.13	0.25			0.43			0.43	
v/c Ratio	0.51	0.70		0.41	0.60			0.38			0.47	
Control Delay (s/veh)	35.4	31.0		37.6	32.5			21.5			18.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	35.4	31.0		37.6	32.5			21.5			18.5	
LOS	D	C		D	C			C			B	
Approach Delay (s/veh)		32.2			33.8			21.5			18.5	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	72	185		42	111			113			140	
Queue Length 95th (ft)	122	272		86	190			168			235	
Internal Link Dist (ft)		145			145			238			238	
Turn Bay Length (ft)	115			130								
Base Capacity (vph)	355	600		238	460			861			976	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.45	0.70		0.38	0.57			0.35			0.43	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 50 (63%), Referenced to phase 4:SWTL and 8:NETL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay (s/veh): 27.1

Intersection LOS: C

Intersection Capacity Utilization 65.3%

ICU Level of Service C

Analysis Period (min) 15

2033 No Build Weekday Morning Peak Hour
5: SW Connector & Route 110

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	1	1>	0
Traffic Vol, veh/h	538	173	0	349	83	0
Future Vol, veh/h	538	173	0	349	83	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	1	4	0
Mvmt Flow	591	190	0	384	91	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 1070 686
Stage 1	-	-	- 686 -
Stage 2	-	-	- 384 -
Critical Hdwy	-	-	- 6.44 6.2
Critical Hdwy Stg 1	-	-	- 5.44 -
Critical Hdwy Stg 2	-	-	- 5.44 -
Follow-up Hdwy	-	-	- 3.536 3.3
Pot Cap-1 Maneuver	-	- 0	- 243 451
Stage 1	-	- 0	- 496 -
Stage 2	-	- 0	- 684 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 243 451
Mov Cap-2 Maneuver	-	-	- 243 -
Stage 1	-	-	- 496 -
Stage 2	-	-	- 684 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	28.5
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	243	-	-	-
HCM Lane V/C Ratio	0.376	-	-	-
HCM Ctrl Dly (s/v)	28.5	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	1.7	-	-	-

2033 No Build Weekday Morning Peak Hour
6: Route 110 & NE Connector

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	520	316	13	29	0
Future Vol, veh/h	1	520	316	13	29	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	531	322	13	30	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	336	0	0 862 329
Stage 1	-	-	- 329 -
Stage 2	-	-	- 533 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1235	-	- 328 717
Stage 1	-	-	- 734 -
Stage 2	-	-	- 593 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1235	-	- 328 717
Mov Cap-2 Maneuver	-	-	- 328 -
Stage 1	-	-	- 733 -
Stage 2	-	-	- 593 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.02	0	17.07
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	3	-	-	-	328
HCM Lane V/C Ratio	0.001	-	-	-	0.09
HCM Ctrl Dly (s/v)	7.9	0	-	-	17.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

2033 No Build Weekday Morning Peak Hour
7: Route 150 & NE Connector

Intersection

Int Delay, s/veh 0.5

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	1>	0	1>	0	0	<1
Traffic Vol, veh/h	0	14	301	0	29	392
Future Vol, veh/h	0	14	301	0	29	392
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	15	324	0	31	422

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	808	324	0
Stage 1	324	-	-
Stage 2	484	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	353	722	-
Stage 1	738	-	-
Stage 2	624	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	342	722	-
Mov Cap-2 Maneuver	342	-	-
Stage 1	714	-	-
Stage 2	624	-	-

Approach	NB	NE	SW
HCM Ctrl Dly, s/v	10.09	0	0.55
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NBLn1	SWL	SWT
Capacity (veh/h)	-	-	722	124	-
HCM Lane V/C Ratio	-	-	0.021	0.025	-
HCM Ctrl Dly (s/v)	-	-	10.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

2033 No Build Weekday Morning Peak Hour
8: Route 150 & SW Connector

Intersection

Int Delay, s/veh 3.2

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	0	173	83	283	348	0
Future Vol, veh/h	0	173	83	283	348	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	4	1	0	0
Mvmt Flow	0	186	89	304	374	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	857	374	374
Stage 1	374	-	-
Stage 2	483	-	-
Critical Hdwy	6.4	6.2	4.14
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.236
Pot Cap-1 Maneuver	330	676	1173
Stage 1	700	-	-
Stage 2	625	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	300	676	1173
Mov Cap-2 Maneuver	300	-	-
Stage 1	636	-	-
Stage 2	625	-	-

Approach	SB	NE	SW
HCM Ctrl Dly, s/v	12.33	1.89	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	408	-	676	-
HCM Lane V/C Ratio	0.076	-	0.275	-
HCM Ctrl Dly (s/v)	8.3	0	12.3	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-

2033 No Build Weekday Morning Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	0	0	0	0	<1	1	1	1	0	0	1>	0
Traffic Volume (vph)	0	0	0	66	0	129	79	403	0	0	222	337
Future Volume (vph)	0	0	0	66	0	129	79	403	0	0	222	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	65		0	0		0
Storage Lanes	0		0	0		1	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850					0.919	
Flt Protected					0.950		0.950					
Satd. Flow (prot)	0	0	0	0	1805	1553	1805	1863	0	0	1732	0
Flt Permitted					0.950		0.307					
Satd. Flow (perm)	0	0	0	0	1805	1553	583	1863	0	0	1732	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						142					148	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			700			1201	
Travel Time (s)		6.8			6.8			15.9			27.3	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	73	0	142	87	443	0	0	244	370
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	73	142	87	443	0	0	614	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2	1	1	2			2	
Detector Template		Thru			Thru	Right	Left	Thru			Thru	
Leading Detector (ft)		100			100	20	20	100			100	
Trailing Detector (ft)		0			0	0	0	0			0	
Detector 1 Position(ft)					0	0	0	0			0	
Detector 1 Size(ft)					6	20	20	6			6	
Detector 1 Type					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)					0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					

2033 No Build Weekday Morning Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase				8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0	10.0	6.0	10.0			10.0	
Minimum Split (s)				15.0	15.0	15.0	11.5	15.5			15.5	
Total Split (s)				16.0	16.0	16.0	17.0	64.0			47.0	
Total Split (%)				20.0%	20.0%	20.0%	21.3%	80.0%			58.8%	
Maximum Green (s)				11.0	11.0	11.0	11.5	58.5			41.5	
Yellow Time (s)				4.0	4.0	4.0	4.5	4.5			4.5	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0	-1.0	-1.5	-1.5			-1.5	
Total Lost Time (s)					4.0	4.0	4.0	4.0			4.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Recall Mode				None	None	None	None	C-Min			C-Min	
Act Effct Green (s)					11.3	11.3	60.7	60.7			50.9	
Actuated g/C Ratio					0.14	0.14	0.76	0.76			0.64	
v/c Ratio					0.29	0.42	0.15	0.31			0.53	
Control Delay (s/veh)					33.8	9.9	3.4	3.8			8.6	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay (s/veh)					33.8	9.9	3.4	3.8			8.6	
LOS					C	A	A	A			A	
Approach Delay (s/veh)					18.0			3.7			8.6	
Approach LOS					B			A			A	
Queue Length 50th (ft)					33	0	7	42			117	
Queue Length 95th (ft)					70	49	21	93			225	
Internal Link Dist (ft)		220			220			620			1121	
Turn Bay Length (ft)						50	65					
Base Capacity (vph)					273	355	640	1415			1155	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.27	0.40	0.14	0.31			0.53	
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 0 (0%), Referenced to phase 2:NETL and 6:SWT, Start of Yellow, Master Intersection												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.53												
Intersection Signal Delay (s/veh): 8.2	Intersection LOS: A											
Intersection Capacity Utilization 55.7%	ICU Level of Service B											
Analysis Period (min) 15												

2033 No Build Weekday Morning Peak Hour
 10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	0	<1	1	0	<1>	0	1	1	1
Traffic Volume (vph)	31	30	4	14	45	349	9	102	26	145	24	119
Future Volume (vph)	31	30	4	14	45	349	9	102	26	145	24	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	0		125	0		0	115		65
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850		0.974				0.850
Flt Protected	0.950				0.988			0.997		0.950		
Satd. Flow (prot)	1805	1868	0	0	1877	1599	0	1845	0	1770	1900	1615
Flt Permitted	0.489				0.913			0.990		0.622		
Satd. Flow (perm)	929	1868	0	0	1735	1599	0	1832	0	1159	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				364		16				124
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			300			700	
Travel Time (s)		6.8			6.8			6.8			15.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	32	31	4	15	47	364	9	106	27	151	25	124
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	35	0	0	62	364	0	142	0	151	25	124
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2		1	2	1
Detector Template	Left	Thru			Thru	Right		Thru		Left	Thru	Right
Leading Detector (ft)	20	100			100	20		100		20	100	20
Trailing Detector (ft)	0	0			0	0		0		0	0	0
Detector 1 Position(ft)	0	0			0	0		0		0	0	0
Detector 1 Size(ft)	20	6			6	20		6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2			6		6

2033 No Build Weekday Morning Peak Hour
10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	7	4		8	8	1	2	2		1	6	7
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	6.0	6.0	10.0	10.0		6.0	10.0	6.0
Minimum Split (s)	11.5	15.5		11.5	11.5	11.5	15.5	15.5		11.5	15.5	11.5
Total Split (s)	12.0	33.0		21.0	21.0	15.0	32.0	32.0		15.0	47.0	12.0
Total Split (%)	15.0%	41.3%		26.3%	26.3%	18.8%	40.0%	40.0%		18.8%	58.8%	15.0%
Maximum Green (s)	6.5	27.5		15.5	15.5	9.5	26.5	26.5		9.5	41.5	6.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.5	-1.5			-1.5	-1.5		-1.5		-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	None
Act Effct Green (s)	20.0	20.8			9.8	21.7		40.1		54.3	55.1	65.3
Actuated g/C Ratio	0.25	0.26			0.12	0.27		0.50		0.68	0.69	0.82
v/c Ratio	0.10	0.07			0.29	0.52		0.15		0.17	0.02	0.09
Control Delay (s/veh)	20.4	18.4			34.9	5.1		13.9		8.6	8.4	1.4
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay (s/veh)	20.4	18.4			34.9	5.1		13.9		8.6	8.4	1.4
LOS	C	B			C	A		B		A	A	A
Approach Delay (s/veh)		19.4			9.4			13.9			5.6	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)	12	11			29	0		35		30	5	0
Queue Length 95th (ft)	29	30			62	52		85		79	m13	28
Internal Link Dist (ft)		220			220			220			620	
Turn Bay Length (ft)	135					125				115		65
Base Capacity (vph)	328	679			368	720		930		874	1308	1342
Starvation Cap Reductn	0	0			0	0		0		0	0	0
Spillback Cap Reductn	0	0			0	0		0		0	0	0
Storage Cap Reductn	0	0			0	0		0		0	0	0
Reduced v/c Ratio	0.10	0.05			0.17	0.51		0.15		0.17	0.02	0.09

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 50 (63%), Referenced to phase 2:NETL and 6:SWTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay (s/veh): 9.6

Intersection LOS: A

Intersection Capacity Utilization 48.3%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

2033 No Build Weekday Evening Peak Hour
1: Route 110 & Hoyt Avenue

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	572	791	7	6	2
Future Vol, veh/h	0	572	791	7	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	609	841	7	6	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	849	0	0 1454 845
Stage 1	-	-	- 845 -
Stage 2	-	-	- 609 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	798	-	- 145 366
Stage 1	-	-	- 425 -
Stage 2	-	-	- 547 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	798	-	- 145 366
Mov Cap-2 Maneuver	-	-	- 145 -
Stage 1	-	-	- 425 -
Stage 2	-	-	- 547 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	27.19
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	798	-	-	-	171
HCM Lane V/C Ratio	-	-	-	-	0.05
HCM Ctrl Dly (s/v)	0	-	-	-	27.2
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.2

2033 No Build Weekday Evening Peak Hour
2: Route 110 & Merrill Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	3	567	786	4	4	1
Future Vol, veh/h	3	567	786	4	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	603	836	4	4	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	840	0	0 1448 838
Stage 1	-	-	- 838 -
Stage 2	-	-	- 610 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	803	-	- 146 369
Stage 1	-	-	- 428 -
Stage 2	-	-	- 546 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	803	-	- 145 369
Mov Cap-2 Maneuver	-	-	- 145 -
Stage 1	-	-	- 425 -
Stage 2	-	-	- 546 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.05	0	27.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	9	-	-	-	165
HCM Lane V/C Ratio	0.004	-	-	-	0.032
HCM Ctrl Dly (s/v)	9.5	0	-	-	27.5
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 No Build Weekday Evening Peak Hour
3: Route 110 & Jacqueline Drive

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	585	773	4	4	0
Future Vol, veh/h	0	585	773	4	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	622	822	4	4	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	827	0	0 1447 824
Stage 1	-	-	- 824 -
Stage 2	-	-	- 622 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	813	-	- 146 376
Stage 1	-	-	- 434 -
Stage 2	-	-	- 539 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	813	-	- 146 376
Mov Cap-2 Maneuver	-	-	- 146 -
Stage 1	-	-	- 434 -
Stage 2	-	-	- 539 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	30.33
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	813	-	-	-	146
HCM Lane V/C Ratio	-	-	-	-	0.029
HCM Ctrl Dly (s/v)	0	-	-	-	30.3
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 No Build Weekday Evening Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Traffic Volume (vph)	151	338	1	101	423	0	3	318	127	6	207	139
Future Volume (vph)	151	338	1	101	423	0	3	318	127	6	207	139
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	16	16	16
Storage Length (ft)	115		0	130		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.962			0.947	
Flt Protected	0.950			0.950							0.999	
Satd. Flow (prot)	1805	1900	0	1668	1773	0	0	1828	0	0	2025	0
Flt Permitted	0.950			0.950				0.998			0.993	
Satd. Flow (perm)	1805	1900	0	1668	1773	0	0	1824	0	0	2013	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								24			40	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		225			225			318			318	
Travel Time (s)		5.1			5.1			7.2			7.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	157	352	1	105	441	0	3	331	132	6	216	145
Shared Lane Traffic (%)												
Lane Group Flow (vph)	157	353	0	105	441	0	0	466	0	0	367	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.00	1.00	1.00	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2			2			2	
Detector Template	Left	Thru		Left	Thru			Thru			Thru	
Leading Detector (ft)	20	100		20	100			100			100	
Trailing Detector (ft)	0	0		0	0			0			0	
Detector 1 Position(ft)	0	0		0	0			0			0	
Detector 1 Size(ft)	20	6		20	6			6			6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

2033 No Build Weekday Evening Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	15.5		11.5	15.5		11.0	11.0		11.0	11.0	
Total Split (s)	18.0	34.0		21.0	37.0		45.0	45.0		45.0	45.0	
Total Split (%)	18.0%	34.0%		21.0%	37.0%		45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	12.5	28.5		15.5	31.5		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	1.5		2.5	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5			-1.0			-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)	14.2	28.7		18.2	30.1			43.6			43.6	
Actuated g/C Ratio	0.14	0.29		0.18	0.30			0.44			0.44	
v/c Ratio	0.61	0.65		0.35	0.83			0.58			0.41	
Control Delay (s/veh)	50.7	38.1		38.2	46.0			19.2			20.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	50.7	38.1		38.2	46.0			19.2			20.2	
LOS	D	D		D	D			B			C	
Approach Delay (s/veh)		42.0			44.5			19.2			20.2	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)	94	207		57	255			136			146	
Queue Length 95th (ft)	162	285		112	368			200			228	
Internal Link Dist (ft)		145			145			238			238	
Turn Bay Length (ft)	115			130								
Base Capacity (vph)	273	600		331	593			833			926	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.58	0.59		0.32	0.74			0.56			0.40	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 4:SWTL and 8:NETL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay (s/veh): 32.9

Intersection LOS: C

Intersection Capacity Utilization 66.7%

ICU Level of Service C

Analysis Period (min) 15

2033 No Build Weekday Evening Peak Hour
5: SW Connector & Route 110

Intersection

Int Delay, s/veh 3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	1	1>	0
Traffic Vol, veh/h	473	92	0	563	125	4
Future Vol, veh/h	473	92	0	563	125	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	488	95	0	580	129	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 1115 535
Stage 1	-	-	- 535 -
Stage 2	-	-	- 580 -
Critical Hdwy	-	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	-	- 0	- 232 549
Stage 1	-	- 0	- 591 -
Stage 2	-	- 0	- 564 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 232 549
Mov Cap-2 Maneuver	-	-	- 232 -
Stage 1	-	-	- 591 -
Stage 2	-	-	- 564 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	38.24
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	236	-	-	-
HCM Lane V/C Ratio	0.563	-	-	-
HCM Ctrl Dly (s/v)	38.2	-	-	-
HCM Lane LOS	E	-	-	-
HCM 95th %tile Q(veh)	3.1	-	-	-

2033 No Build Weekday Evening Peak Hour
6: Route 110 & NE Connector

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	460	517	21	12	1
Future Vol, veh/h	1	460	517	21	12	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	484	544	22	13	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	566	0	0 1042 555
Stage 1	-	-	- 555 -
Stage 2	-	-	- 486 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1016	-	- 257 535
Stage 1	-	-	- 579 -
Stage 2	-	-	- 622 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1016	-	- 256 535
Mov Cap-2 Maneuver	-	-	- 256 -
Stage 1	-	-	- 578 -
Stage 2	-	-	- 622 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.02	0	19.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	4	-	-	-	267
HCM Lane V/C Ratio	0.001	-	-	-	0.051
HCM Ctrl Dly (s/v)	8.5	0	-	-	19.2
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

2033 No Build Weekday Evening Peak Hour
7: Route 150 & NE Connector

Intersection

Int Delay, s/veh 0.4

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	1>	0	1>	0	0	<1
Traffic Vol, veh/h	0	22	467	0	13	351
Future Vol, veh/h	0	22	467	0	13	351
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	0	23	486	0	14	366

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	879	486	0
Stage 1	486	-	-
Stage 2	393	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	321	585	-
Stage 1	622	-	-
Stage 2	687	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	316	585	-
Mov Cap-2 Maneuver	316	-	-
Stage 1	613	-	-
Stage 2	687	-	-

Approach	NB	NE	SW
HCM Ctrl Dly, s/v	11.4	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NBLn1	SWL	SWT
Capacity (veh/h)	-	-	585	64	-
HCM Lane V/C Ratio	-	-	0.039	0.012	-
HCM Ctrl Dly (s/v)	-	-	11.4	8.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

2033 No Build Weekday Evening Peak Hour
8: Route 150 & SW Connector

Intersection

Int Delay, s/veh 2.1

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	0	92	129	448	309	0
Future Vol, veh/h	0	92	129	448	309	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	96	134	467	322	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1057	322	0
Stage 1	322	-	-
Stage 2	735	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	251	724	1249
Stage 1	739	-	-
Stage 2	478	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	215	724	1249
Mov Cap-2 Maneuver	215	-	-
Stage 1	632	-	-
Stage 2	478	-	-

Approach	SB	NE	SW
HCM Ctrl Dly, s/v	10.73	1.84	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	402	-	724	-
HCM Lane V/C Ratio	0.108	-	0.132	-
HCM Ctrl Dly (s/v)	8.2	0	10.7	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.4	-	0.5	-

2033 No Build Weekday Evening Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	0	0	0	0	<1	1	1	1	0	0	1>	0
Traffic Volume (vph)	0	0	0	77	0	178	213	486	0	0	224	272
Future Volume (vph)	0	0	0	77	0	178	213	486	0	0	224	272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	65		0	0		0
Storage Lanes	0		0	0		1	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850					0.926	
Flt Protected					0.950		0.950					
Satd. Flow (prot)	0	0	0	0	1805	1599	1787	1900	0	0	1759	0
Flt Permitted					0.950		0.354					
Satd. Flow (perm)	0	0	0	0	1805	1599	666	1900	0	0	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						200					86	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			700			1201	
Travel Time (s)		6.8			6.8			15.9			27.3	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	87	0	200	239	546	0	0	252	306
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	87	200	239	546	0	0	558	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2	1	1	2			2	
Detector Template		Thru			Thru	Right	Left	Thru			Thru	
Leading Detector (ft)		100			100	20	20	100			100	
Trailing Detector (ft)		0			0	0	0	0			0	
Detector 1 Position(ft)					0	0	0	0			0	
Detector 1 Size(ft)					6	20	20	6			6	
Detector 1 Type					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)					0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					

2033 No Build Weekday Evening Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase				8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0	10.0	6.0	10.0			10.0	
Minimum Split (s)				15.0	15.0	15.0	11.5	15.5			15.5	
Total Split (s)				30.0	30.0	30.0	17.0	70.0			53.0	
Total Split (%)				30.0%	30.0%	30.0%	17.0%	70.0%			53.0%	
Maximum Green (s)				25.0	25.0	25.0	11.5	64.5			47.5	
Yellow Time (s)				4.0	4.0	4.0	4.5	4.5			4.5	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0	-1.0	-1.5	-1.5			-1.5	
Total Lost Time (s)					4.0	4.0	4.0	4.0			4.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Recall Mode				None	None	None	None	C-Min			C-Min	
Act Effct Green (s)					12.2	12.2	79.8	79.8			65.6	
Actuated g/C Ratio					0.12	0.12	0.80	0.80			0.66	
v/c Ratio					0.40	0.54	0.37	0.36			0.47	
Control Delay (s/veh)					45.7	11.6	2.6	1.9			9.1	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay (s/veh)					45.7	11.6	2.6	1.9			9.1	
LOS					D	B	A	A			A	
Approach Delay (s/veh)					21.9			2.1			9.1	
Approach LOS					C			A			A	
Queue Length 50th (ft)					53	0	14	35			125	
Queue Length 95th (ft)					96	61	m21	46			236	
Internal Link Dist (ft)		220			220			620			1121	
Turn Bay Length (ft)						50	65					
Base Capacity (vph)					469	563	677	1516			1183	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.19	0.36	0.35	0.36			0.47	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NETL and 6:SWT, Start of Yellow, Master Intersection

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay (s/veh): 8.0

Intersection LOS: A

Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

2033 No Build Weekday Evening Peak Hour
10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	0	<1	1	0	<1>	0	1	1	1
Traffic Volume (vph)	296	146	20	29	15	297	18	118	17	123	57	116
Future Volume (vph)	296	146	20	29	15	297	18	118	17	123	57	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	0		125	0		0	115		65
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982				0.850		0.985				0.850
Flt Protected	0.950				0.968			0.994		0.950		
Satd. Flow (prot)	1787	1866	0	0	1839	1615	0	1860	0	1805	1900	1615
Flt Permitted	0.507				0.683			0.969		0.564		
Satd. Flow (perm)	954	1866	0	0	1298	1615	0	1813	0	1072	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				362		6				141
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			300			700	
Travel Time (s)		6.8			6.8			6.8			15.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	361	178	24	35	18	362	22	144	21	150	70	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	361	202	0	0	53	362	0	187	0	150	70	141
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2		1	2	1
Detector Template	Left	Thru			Thru	Right		Thru		Left	Thru	Right
Leading Detector (ft)	20	100			100	20		100		20	100	20
Trailing Detector (ft)	0	0			0	0		0		0	0	0
Detector 1 Position(ft)	0	0			0	0		0		0	0	0
Detector 1 Size(ft)	20	6			6	20		6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2			6		6

2033 No Build Weekday Evening Peak Hour
 10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	7	4		8	8	1	2	2		1	6	7
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	6.0	6.0	10.0	10.0		6.0	10.0	6.0
Minimum Split (s)	11.5	15.5		11.5	11.5	11.5	15.5	15.5		11.5	15.5	11.5
Total Split (s)	12.0	50.0		38.0	38.0	19.0	31.0	31.0		19.0	50.0	12.0
Total Split (%)	12.0%	50.0%		38.0%	38.0%	19.0%	31.0%	31.0%		19.0%	50.0%	12.0%
Maximum Green (s)	6.5	44.5		32.5	32.5	13.5	25.5	25.5		13.5	44.5	6.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.5	-1.5			-1.5	-1.5		-1.5		-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	None
Act Effct Green (s)	32.5	32.5			10.6	23.4		44.4		59.5	59.5	84.5
Actuated g/C Ratio	0.33	0.33			0.11	0.23		0.44		0.60	0.60	0.85
v/c Ratio	0.76	0.33			0.38	0.55		0.23		0.21	0.06	0.10
Control Delay (s/veh)	39.3	24.9			48.9	6.3		19.6		12.3	11.3	0.6
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay (s/veh)	39.3	24.9			48.9	6.3		19.6		12.3	11.3	0.6
LOS	D	C			D	A		B		B	B	A
Approach Delay (s/veh)		34.2			11.7			19.6			7.5	
Approach LOS		C			B			B			A	
Queue Length 50th (ft)	183	86			32	0		74		50	21	5
Queue Length 95th (ft)	248	130			62	40		117		57	32	0
Internal Link Dist (ft)		220			220			220			620	
Turn Bay Length (ft)	135					125				115		65
Base Capacity (vph)	478	863			441	704		808		747	1130	1386
Starvation Cap Reductn	0	0			0	0		0		0	0	0
Spillback Cap Reductn	0	0			0	0		0		0	0	0
Storage Cap Reductn	0	0			0	0		0		0	0	0
Reduced v/c Ratio	0.76	0.23			0.12	0.51		0.23		0.20	0.06	0.10

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0.5 (1%), Referenced to phase 2:NETL and 6:SWTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay (s/veh): 20.0

Intersection LOS: B

Intersection Capacity Utilization 53.1%

ICU Level of Service A

Analysis Period (min) 15

2033 Build Weekday Morning Peak Hour
1: Route 110 & Hoyt Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	736	369	6	4	6
Future Vol, veh/h	1	736	369	6	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	800	401	7	4	7

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	408	0	0 1207 404
Stage 1	-	-	- 404 -
Stage 2	-	-	- 802 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1162	-	- 205 651
Stage 1	-	-	- 678 -
Stage 2	-	-	- 445 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1162	-	- 204 651
Mov Cap-2 Maneuver	-	-	- 204 -
Stage 1	-	-	- 677 -
Stage 2	-	-	- 445 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.01	0	15.71
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	2	-	-	-	347
HCM Lane V/C Ratio	0.001	-	-	-	0.031
HCM Ctrl Dly (s/v)	8.1	0	-	-	15.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 Build Weekday Morning Peak Hour
2: Route 110 & Merrill Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	771	376	2	3	1
Future Vol, veh/h	0	771	376	2	3	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	0	829	404	2	3	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	406	0	0 1234 405
Stage 1	-	-	- - 405 -
Stage 2	-	-	- - 829 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1163	-	- - 197 650
Stage 1	-	-	- - 678 -
Stage 2	-	-	- - 432 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1163	-	- - 197 650
Mov Cap-2 Maneuver	-	-	- - 197 -
Stage 1	-	-	- - 678 -
Stage 2	-	-	- - 432 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	20.38
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1163	-	-	-	238
HCM Lane V/C Ratio	-	-	-	-	0.018
HCM Ctrl Dly (s/v)	0	-	-	-	20.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 Build Weekday Morning Peak Hour
3: Route 110 & Jacqueline Drive

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	735	372	2	3	2
Future Vol, veh/h	1	735	372	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	782	396	2	3	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	398	0	0 1181 397
Stage 1	-	-	- - 397 -
Stage 2	-	-	- - 784 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1172	-	- - 212 657
Stage 1	-	-	- - 684 -
Stage 2	-	-	- - 453 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1172	-	- - 212 657
Mov Cap-2 Maneuver	-	-	- - 212 -
Stage 1	-	-	- - 683 -
Stage 2	-	-	- - 453 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.01	0	17.63
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	2	-	-	-	290
HCM Lane V/C Ratio	0.001	-	-	-	0.018
HCM Ctrl Dly (s/v)	8.1	0	-	-	17.6
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 Build Weekday Morning Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Traffic Volume (vph)	148	397	0	86	244	0	3	161	127	14	265	114
Future Volume (vph)	148	397	0	86	244	0	3	161	127	14	265	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	16	16	16
Storage Length (ft)	115		0	130		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frnt								0.941			0.961	
Flt Protected	0.950			0.950							0.998	
Satd. Flow (prot)	1805	1900	0	1685	1773	0	0	1765	0	0	2065	0
Flt Permitted	0.950			0.950				0.997			0.985	
Satd. Flow (perm)	1805	1900	0	1685	1773	0	0	1760	0	0	2038	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								62			33	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		225			225			318			318	
Travel Time (s)		5.1			5.1			7.2			7.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	33%	1%	1%	0%	0%	0%
Adj. Flow (vph)	159	427	0	92	262	0	3	173	137	15	285	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	159	427	0	92	262	0	0	313	0	0	423	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.00	1.00	1.00	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2			2			2	
Detector Template	Left	Thru		Left	Thru			Thru			Thru	
Leading Detector (ft)	20	100		20	100			100			100	
Trailing Detector (ft)	0	0		0	0			0			0	
Detector 1 Position(ft)	0	0		0	0			0			0	
Detector 1 Size(ft)	20	6		20	6			6			6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

2033 Build Weekday Morning Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	15.5		11.5	15.5		11.0	11.0		11.0	11.0	
Total Split (s)	19.0	26.0		15.0	22.0		39.0	39.0		39.0	39.0	
Total Split (%)	23.8%	32.5%		18.8%	27.5%		48.8%	48.8%		48.8%	48.8%	
Maximum Green (s)	13.5	20.5		9.5	16.5		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	1.5		2.5	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5			-1.0			-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)	13.7	25.5		10.4	19.9			34.4			34.4	
Actuated g/C Ratio	0.17	0.32		0.13	0.25			0.43			0.43	
v/c Ratio	0.51	0.70		0.42	0.59			0.40			0.47	
Control Delay (s/veh)	35.4	31.0		37.8	32.1			21.7			18.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	35.4	31.0		37.8	32.1			21.7			18.8	
LOS	D	C		D	C			C			B	
Approach Delay (s/veh)		32.2			33.6			21.7			18.8	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	73	188		42	111			120			142	
Queue Length 95th (ft)	122	279		87	193			163			235	
Internal Link Dist (ft)		145			145			238			238	
Turn Bay Length (ft)	115			130								
Base Capacity (vph)	355	606		239	465			858			974	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.45	0.70		0.38	0.56			0.36			0.43	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 50 (63%), Referenced to phase 4:SWTL and 8:NETL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay (s/veh): 27.1

Intersection LOS: C

Intersection Capacity Utilization 65.9%

ICU Level of Service C

Analysis Period (min) 15

2033 Build Weekday Morning Peak Hour
5: SW Connector & Route 110

Intersection

Int Delay, s/veh 2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	1	1>	0
Traffic Vol, veh/h	547	173	0	352	83	0
Future Vol, veh/h	547	173	0	352	83	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	1	4	0
Mvmt Flow	601	190	0	387	91	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 1083 696
Stage 1	-	-	- 696 -
Stage 2	-	-	- 387 -
Critical Hdwy	-	-	- 6.44 6.2
Critical Hdwy Stg 1	-	-	- 5.44 -
Critical Hdwy Stg 2	-	-	- 5.44 -
Follow-up Hdwy	-	-	- 3.536 3.3
Pot Cap-1 Maneuver	-	- 0	- 238 445
Stage 1	-	- 0	- 491 -
Stage 2	-	- 0	- 682 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 238 445
Mov Cap-2 Maneuver	-	-	- 238 -
Stage 1	-	-	- 491 -
Stage 2	-	-	- 682 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	29.18
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	238	-	-	-
HCM Lane V/C Ratio	0.383	-	-	-
HCM Ctrl Dly (s/v)	29.2	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	1.7	-	-	-

2033 Build Weekday Morning Peak Hour
6: Route 110 & NE Connector

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	535	320	13	29	0
Future Vol, veh/h	1	535	320	13	29	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	546	327	13	30	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	340	0	0 881 333
Stage 1	-	-	- 333 -
Stage 2	-	-	- 548 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1231	-	- 320 713
Stage 1	-	-	- 731 -
Stage 2	-	-	- 583 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1231	-	- 319 713
Mov Cap-2 Maneuver	-	-	- 319 -
Stage 1	-	-	- 730 -
Stage 2	-	-	- 583 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.01	0	17.42
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	3	-	-	-	319
HCM Lane V/C Ratio	0.001	-	-	-	0.093
HCM Ctrl Dly (s/v)	7.9	0	-	-	17.4
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

2033 Build Weekday Morning Peak Hour
7: Route 150 & NE Connector

Intersection

Int Delay, s/veh 0.5

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	1>	0	1>	0	0	<1
Traffic Vol, veh/h	0	14	303	0	29	393
Future Vol, veh/h	0	14	303	0	29	393
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	15	326	0	31	423

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	811	326	0
Stage 1	326	-	-
Stage 2	485	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	352	720	-
Stage 1	736	-	-
Stage 2	623	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	340	720	-
Mov Cap-2 Maneuver	340	-	-
Stage 1	712	-	-
Stage 2	623	-	-

Approach	NB	NE	SW
HCM Ctrl Dly, s/v	10.11	0	0.55
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NBLn1	SWL	SWT
Capacity (veh/h)	-	-	720	124	-
HCM Lane V/C Ratio	-	-	0.021	0.025	-
HCM Ctrl Dly (s/v)	-	-	10.1	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0.1	-

2033 Build Weekday Morning Peak Hour
8: Route 150 & SW Connector

Intersection

Int Delay, s/veh 3.2

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	0	173	83	291	350	0
Future Vol, veh/h	0	173	83	291	350	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	4	1	0	0
Mvmt Flow	0	186	89	313	376	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	868	376	376
Stage 1	376	-	-
Stage 2	491	-	-
Critical Hdwy	6.4	6.2	4.14
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.236
Pot Cap-1 Maneuver	326	675	1171
Stage 1	698	-	-
Stage 2	619	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	296	675	1171
Mov Cap-2 Maneuver	296	-	-
Stage 1	634	-	-
Stage 2	619	-	-

Approach	SB	NE	SW
HCM Ctrl Dly, s/v	12.36	1.85	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	399	-	675	-
HCM Lane V/C Ratio	0.076	-	0.276	-
HCM Ctrl Dly (s/v)	8.3	0	12.4	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.2	-	1.1	-

2033 Build Weekday Morning Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	0	0	0	0	<1	1	1	1	0	0	1>	0
Traffic Volume (vph)	0	0	0	66	0	130	79	406	0	0	226	349
Future Volume (vph)	0	0	0	66	0	130	79	406	0	0	226	349
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	65		0	0		0
Storage Lanes	0		0	0		1	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850					0.918	
Flt Protected					0.950		0.950					
Satd. Flow (prot)	0	0	0	0	1805	1553	1805	1863	0	0	1731	0
Flt Permitted					0.950		0.296					
Satd. Flow (perm)	0	0	0	0	1805	1553	562	1863	0	0	1731	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						143					151	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			700			1001	
Travel Time (s)		6.8			6.8			15.9			22.8	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	0%	0%	0%	4%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	73	0	143	87	446	0	0	248	384
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	73	143	87	446	0	0	632	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2	1	1	2			2	
Detector Template		Thru			Thru	Right	Left	Thru			Thru	
Leading Detector (ft)		100			100	20	20	100			100	
Trailing Detector (ft)		0			0	0	0	0			0	
Detector 1 Position(ft)					0	0	0	0			0	
Detector 1 Size(ft)					6	20	20	6			6	
Detector 1 Type					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)					0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0			0.0	
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					

2033 Build Weekday Morning Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase				8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0	10.0	6.0	10.0			10.0	
Minimum Split (s)				15.0	15.0	15.0	11.5	15.5			15.5	
Total Split (s)				16.0	16.0	16.0	17.0	64.0			47.0	
Total Split (%)				20.0%	20.0%	20.0%	21.3%	80.0%			58.8%	
Maximum Green (s)				11.0	11.0	11.0	11.5	58.5			41.5	
Yellow Time (s)				4.0	4.0	4.0	4.5	4.5			4.5	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0	-1.0	-1.5	-1.5			-1.5	
Total Lost Time (s)					4.0	4.0	4.0	4.0			4.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Recall Mode				None	None	None	None	C-Min			C-Min	
Act Effct Green (s)					11.3	11.3	60.7	60.7			50.9	
Actuated g/C Ratio					0.14	0.14	0.76	0.76			0.64	
v/c Ratio					0.29	0.42	0.16	0.32			0.55	
Control Delay (s/veh)					33.8	9.9	3.2	3.6			8.9	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay (s/veh)					33.8	9.9	3.2	3.6			8.9	
LOS					C	A	A	A			A	
Approach Delay (s/veh)					18.0			3.6			8.9	
Approach LOS					B			A			A	
Queue Length 50th (ft)					33	0	7	42			123	
Queue Length 95th (ft)					70	49	18	81			236	
Internal Link Dist (ft)		220			220			620			921	
Turn Bay Length (ft)						50	65					
Base Capacity (vph)					273	356	628	1415			1156	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.27	0.40	0.14	0.32			0.55	
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 80												
Offset: 0 (0%), Referenced to phase 2:NETL and 6:SWT, Start of Yellow, Master Intersection												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.55												
Intersection Signal Delay (s/veh): 8.3	Intersection LOS: A											
Intersection Capacity Utilization 56.6%	ICU Level of Service B											
Analysis Period (min) 15												

2033 Build Weekday Morning Peak Hour
 10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	0	<1	1	0	<1>	0	1	1	1
Traffic Volume (vph)	31	30	4	14	45	352	9	102	26	148	24	120
Future Volume (vph)	31	30	4	14	45	352	9	102	26	148	24	120
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	0		125	0		0	115		65
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983				0.850		0.974				0.850
Flt Protected	0.950				0.988			0.997		0.950		
Satd. Flow (prot)	1805	1868	0	0	1877	1599	0	1845	0	1770	1900	1615
Flt Permitted	0.489				0.913			0.990		0.622		
Satd. Flow (perm)	929	1868	0	0	1735	1599	0	1832	0	1159	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4				367		16				125
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			300			700	
Travel Time (s)		6.8			6.8			6.8			15.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	0%	0%	0%	2%	0%	0%
Adj. Flow (vph)	32	31	4	15	47	367	9	106	27	154	25	125
Shared Lane Traffic (%)												
Lane Group Flow (vph)	32	35	0	0	62	367	0	142	0	154	25	125
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2		1	2	1
Detector Template	Left	Thru			Thru	Right		Thru		Left	Thru	Right
Leading Detector (ft)	20	100			100	20		100		20	100	20
Trailing Detector (ft)	0	0			0	0		0		0	0	0
Detector 1 Position(ft)	0	0			0	0		0		0	0	0
Detector 1 Size(ft)	20	6			6	20		6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2			6		6

2033 Build Weekday Morning Peak Hour
 10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	7	4		8	8	1	2	2		1	6	7
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	6.0	6.0	10.0	10.0		6.0	10.0	6.0
Minimum Split (s)	11.5	15.5		11.5	11.5	11.5	15.5	15.5		11.5	15.5	11.5
Total Split (s)	12.0	33.0		21.0	21.0	15.0	32.0	32.0		15.0	47.0	12.0
Total Split (%)	15.0%	41.3%		26.3%	26.3%	18.8%	40.0%	40.0%		18.8%	58.8%	15.0%
Maximum Green (s)	6.5	27.5		15.5	15.5	9.5	26.5	26.5		9.5	41.5	6.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.5	-1.5			-1.5	-1.5		-1.5		-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	None
Act Effct Green (s)	20.0	20.8			9.8	21.7		40.1		54.3	55.1	65.3
Actuated g/C Ratio	0.25	0.26			0.12	0.27		0.50		0.68	0.69	0.82
v/c Ratio	0.10	0.07			0.29	0.52		0.15		0.18	0.02	0.09
Control Delay (s/veh)	20.4	18.4			34.9	5.1		13.9		8.4	8.2	1.4
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay (s/veh)	20.4	18.4			34.9	5.1		13.9		8.4	8.2	1.4
LOS	C	B			C	A		B		A	A	A
Approach Delay (s/veh)		19.4			9.4			13.9			5.5	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)	12	11			29	0		35		32	5	0
Queue Length 95th (ft)	29	30			62	52		86		76	m12	27
Internal Link Dist (ft)		220			220			220			620	
Turn Bay Length (ft)	135					125				115		65
Base Capacity (vph)	328	679			368	722		929		875	1308	1343
Starvation Cap Reductn	0	0			0	0		0		0	0	0
Spillback Cap Reductn	0	0			0	0		0		0	0	0
Storage Cap Reductn	0	0			0	0		0		0	0	0
Reduced v/c Ratio	0.10	0.05			0.17	0.51		0.15		0.18	0.02	0.09

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 50 (63%), Referenced to phase 2:NETL and 6:SWTL, Start of Yellow

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.52

Intersection Signal Delay (s/veh): 9.5

Intersection LOS: A

Intersection Capacity Utilization 48.5%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

2033 Build Weekday Morning Peak Hour
11: Site Driveway & Route 110

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	773	1	3	376	2	9
Future Vol, veh/h	773	1	3	376	2	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	840	1	3	409	2	10

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	841
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	794
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	794
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.08	17.01
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	312	-	-	14	-
HCM Lane V/C Ratio	0.038	-	-	0.004	-
HCM Ctrl Dly (s/v)	17	-	-	9.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2033 Build Weekday Morning Peak Hour
12: Route 150 & Site Driveway

Intersection

Int Delay, s/veh 0.4

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	8	16	4	366	521	2
Future Vol, veh/h	8	16	4	366	521	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	17	4	398	566	2

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	974	567	568
Stage 1	567	-	-
Stage 2	407	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	279	523	1004
Stage 1	567	-	-
Stage 2	672	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	278	523	1004
Mov Cap-2 Maneuver	278	-	-
Stage 1	564	-	-
Stage 2	672	-	-

Approach	SE	NE	SW
HCM Ctrl Dly, s/v	14.53	0.09	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SELn1	SWT	SWR
Capacity (veh/h)	19	-	404	-
HCM Lane V/C Ratio	0.004	-	0.065	-
HCM Ctrl Dly (s/v)	8.6	0	14.5	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.2	-

2033 Build Weekday Evening Peak Hour
1: Route 110 & Hoyt Avenue

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	573	792	7	6	2
Future Vol, veh/h	0	573	792	7	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	610	843	7	6	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	850	0	0 1456 846
Stage 1	-	-	- 846 -
Stage 2	-	-	- 610 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	797	-	- 145 365
Stage 1	-	-	- 424 -
Stage 2	-	-	- 546 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	797	-	- 145 365
Mov Cap-2 Maneuver	-	-	- 145 -
Stage 1	-	-	- 424 -
Stage 2	-	-	- 546 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	27.26
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	797	-	-	-	170
HCM Lane V/C Ratio	-	-	-	-	0.05
HCM Ctrl Dly (s/v)	0	-	-	-	27.3
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.2

2033 Build Weekday Evening Peak Hour
2: Route 110 & Merrill Avenue

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	3	568	787	4	4	1
Future Vol, veh/h	3	568	787	4	4	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	3	604	837	4	4	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	841	0	0 1450 839
Stage 1	-	-	- 839 -
Stage 2	-	-	- 611 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	803	-	- 146 368
Stage 1	-	-	- 427 -
Stage 2	-	-	- 546 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	803	-	- 145 368
Mov Cap-2 Maneuver	-	-	- 145 -
Stage 1	-	-	- 425 -
Stage 2	-	-	- 546 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.05	0	27.57
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	9	-	-	-	165
HCM Lane V/C Ratio	0.004	-	-	-	0.032
HCM Ctrl Dly (s/v)	9.5	0	-	-	27.6
HCM Lane LOS	A	A	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 Build Weekday Evening Peak Hour
3: Route 110 & Jacqueline Drive

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	590	781	4	4	0
Future Vol, veh/h	0	590	781	4	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	628	831	4	4	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	835	0	0 1461 833
Stage 1	-	-	- 833 -
Stage 2	-	-	- 628 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	807	-	- 144 372
Stage 1	-	-	- 430 -
Stage 2	-	-	- 536 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	807	-	- 144 372
Mov Cap-2 Maneuver	-	-	- 144 -
Stage 1	-	-	- 430 -
Stage 2	-	-	- 536 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	30.85
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	807	-	-	-	144
HCM Lane V/C Ratio	-	-	-	-	0.03
HCM Ctrl Dly (s/v)	0	-	-	-	30.8
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 Build Weekday Evening Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Traffic Volume (vph)	152	342	1	108	430	0	3	318	130	6	208	140
Future Volume (vph)	152	342	1	108	430	0	3	318	130	6	208	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	16	16	16
Storage Length (ft)	115		0	130		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.961			0.947	
Flt Protected	0.950			0.950							0.999	
Satd. Flow (prot)	1805	1900	0	1668	1773	0	0	1826	0	0	2025	0
Flt Permitted	0.950			0.950				0.998			0.993	
Satd. Flow (perm)	1805	1900	0	1668	1773	0	0	1822	0	0	2013	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								25			40	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		225			225			318			318	
Travel Time (s)		5.1			5.1			7.2			7.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	158	356	1	113	448	0	3	331	135	6	217	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	357	0	113	448	0	0	469	0	0	369	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.00	1.00	1.00	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2			2			2	
Detector Template	Left	Thru		Left	Thru			Thru			Thru	
Leading Detector (ft)	20	100		20	100			100			100	
Trailing Detector (ft)	0	0		0	0			0			0	
Detector 1 Position(ft)	0	0		0	0			0			0	
Detector 1 Size(ft)	20	6		20	6			6			6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

2033 Build Weekday Evening Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	15.5		11.5	15.5		11.0	11.0		11.0	11.0	
Total Split (s)	18.0	34.0		21.0	37.0		45.0	45.0		45.0	45.0	
Total Split (%)	18.0%	34.0%		21.0%	37.0%		45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	12.5	28.5		15.5	31.5		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	1.5		2.5	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5			-1.0			-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)	14.2	24.9		19.6	30.3			43.6			43.6	
Actuated g/C Ratio	0.14	0.25		0.20	0.30			0.44			0.44	
v/c Ratio	0.62	0.76		0.35	0.83			0.58			0.41	
Control Delay (s/veh)	51.3	45.1		37.9	46.8			18.8			20.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	51.3	45.1		37.9	46.8			18.8			20.1	
LOS	D	D		D	D			B			C	
Approach Delay (s/veh)		47.0			45.0			18.8			20.1	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)	94	209		61	258			135			149	
Queue Length 95th (ft)	164	292		120	#382			200			227	
Internal Link Dist (ft)		145			145			238			238	
Turn Bay Length (ft)	115			130								
Base Capacity (vph)	271	570		331	591			828			922	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.58	0.63		0.34	0.76			0.57			0.40	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 4:SWTL and 8:NETL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay (s/veh): 34.3

Intersection LOS: C

Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

2033 Build Weekday Evening Peak Hour
5: SW Connector & Route 110

Intersection

Int Delay, s/veh 4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	1	1>	0
Traffic Vol, veh/h	478	92	0	571	125	4
Future Vol, veh/h	478	92	0	571	125	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	493	95	0	589	129	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 1129 540
Stage 1	-	-	- 540 -
Stage 2	-	-	- 589 -
Critical Hdwy	-	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	-	- 0	- 228 546
Stage 1	-	- 0	- 588 -
Stage 2	-	- 0	- 559 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 228 546
Mov Cap-2 Maneuver	-	-	- 228 -
Stage 1	-	-	- 588 -
Stage 2	-	-	- 559 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	39.51
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	232	-	-	-
HCM Lane V/C Ratio	0.573	-	-	-
HCM Ctrl Dly (s/v)	39.5	-	-	-
HCM Lane LOS	E	-	-	-
HCM 95th %tile Q(veh)	3.2	-	-	-

2033 Build Weekday Evening Peak Hour
6: Route 110 & NE Connector

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	467	531	21	12	1
Future Vol, veh/h	1	467	531	21	12	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	1	492	559	22	13	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	581	0	0 1064 570
Stage 1	-	-	- 570 -
Stage 2	-	-	- 494 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	1003	-	- 249 525
Stage 1	-	-	- 570 -
Stage 2	-	-	- 618 -
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	1003	-	- 249 525
Mov Cap-2 Maneuver	-	-	- 249 -
Stage 1	-	-	- 569 -
Stage 2	-	-	- 618 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.02	0	19.66
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	4	-	-	-	259
HCM Lane V/C Ratio	0.001	-	-	-	0.053
HCM Ctrl Dly (s/v)	8.6	0	-	-	19.7
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

2033 Build Weekday Evening Peak Hour
7: Route 150 & NE Connector

Intersection

Int Delay, s/veh 0.4

Movement	NBL	NBR	NET	NER	SWL	SWT
Lane Configurations	1>	0	1>	0	0	<1
Traffic Vol, veh/h	0	22	468	0	13	353
Future Vol, veh/h	0	22	468	0	13	353
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	1
Mvmt Flow	0	23	488	0	14	368

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	882	488	0
Stage 1	488	-	-
Stage 2	395	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	319	584	-
Stage 1	622	-	-
Stage 2	685	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	314	584	-
Mov Cap-2 Maneuver	314	-	-
Stage 1	612	-	-
Stage 2	685	-	-

Approach	NB	NE	SW
HCM Ctrl Dly, s/v	11.41	0	0.3
HCM LOS	B		

Minor Lane/Major Mvmt	NET	NER	NBLn1	SWL	SWT
Capacity (veh/h)	-	-	584	64	-
HCM Lane V/C Ratio	-	-	0.039	0.012	-
HCM Ctrl Dly (s/v)	-	-	11.4	8.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

2033 Build Weekday Evening Peak Hour
8: Route 150 & SW Connector

Intersection

Int Delay, s/veh 2.1

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	0	92	129	451	317	0
Future Vol, veh/h	0	92	129	451	317	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	96	134	470	330	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1069	330	330
Stage 1	330	-	-
Stage 2	739	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	247	716	1241
Stage 1	733	-	-
Stage 2	476	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	211	716	1241
Mov Cap-2 Maneuver	211	-	-
Stage 1	625	-	-
Stage 2	476	-	-

Approach	SB	NE	SW
HCM Ctrl Dly, s/v	10.8	1.84	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	400	-	716	-
HCM Lane V/C Ratio	0.108	-	0.134	-
HCM Ctrl Dly (s/v)	8.3	0	10.8	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.4	-	0.5	-

2033 Build Weekday Evening Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	0	0	0	0	<1	1	1	1	0	0	1>	0
Traffic Volume (vph)	0	0	0	77	0	181	213	497	0	0	226	278
Future Volume (vph)	0	0	0	77	0	181	213	497	0	0	226	278
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		50	65		0	0		0
Storage Lanes	0		0	0		1	1		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850					0.926	
Flt Protected					0.950		0.950					
Satd. Flow (prot)	0	0	0	0	1805	1599	1787	1900	0	0	1759	0
Flt Permitted					0.950		0.348					
Satd. Flow (perm)	0	0	0	0	1805	1599	655	1900	0	0	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						203					87	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			700			1001	
Travel Time (s)		6.8			6.8			15.9			22.8	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%	0%
Adj. Flow (vph)	0	0	0	87	0	203	239	558	0	0	254	312
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	87	203	239	558	0	0	566	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2			2	1	1	2			2	
Detector Template		Thru			Thru	Right	Left	Thru			Thru	
Leading Detector (ft)		100			100	20	20	100			100	
Trailing Detector (ft)		0			0	0	0	0			0	
Detector 1 Position(ft)					0	0	0	0			0	
Detector 1 Size(ft)					6	20	20	6			6	
Detector 1 Type					Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Queue (s)					0.0	0.0	0.0	0.0			0.0	
Detector 1 Delay (s)					0.0	0.0	0.0	0.0			0.0	
Detector 2 Position(ft)					94			94			94	
Detector 2 Size(ft)					6			6			6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)						0.0		0.0			0.0	
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					

2033 Build Weekday Evening Peak Hour
9: Route 150 & I-495 SB Ramps

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase				8	8	8	5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0	10.0	6.0	10.0			10.0	
Minimum Split (s)				15.0	15.0	15.0	11.5	15.5			15.5	
Total Split (s)				30.0	30.0	30.0	17.0	70.0			53.0	
Total Split (%)				30.0%	30.0%	30.0%	17.0%	70.0%			53.0%	
Maximum Green (s)				25.0	25.0	25.0	11.5	64.5			47.5	
Yellow Time (s)				4.0	4.0	4.0	4.5	4.5			4.5	
All-Red Time (s)				1.0	1.0	1.0	1.0	1.0			1.0	
Lost Time Adjust (s)					-1.0	-1.0	-1.5	-1.5			-1.5	
Total Lost Time (s)					4.0	4.0	4.0	4.0			4.0	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Recall Mode				None	None	None	None	C-Min			C-Min	
Act Effct Green (s)					12.4	12.4	79.6	79.6			65.4	
Actuated g/C Ratio					0.12	0.12	0.80	0.80			0.65	
v/c Ratio					0.39	0.54	0.38	0.37			0.48	
Control Delay (s/veh)					45.2	11.4	2.7	2.1			9.4	
Queue Delay					0.0	0.0	0.0	0.0			0.0	
Total Delay (s/veh)					45.2	11.4	2.7	2.1			9.4	
LOS					D	B	A	A			A	
Approach Delay (s/veh)					21.5			2.3			9.4	
Approach LOS					C			A			A	
Queue Length 50th (ft)					53	0	14	36			127	
Queue Length 95th (ft)					94	60	m22	48			250	
Internal Link Dist (ft)		220			220			620			921	
Turn Bay Length (ft)						50	65					
Base Capacity (vph)					469	565	668	1513			1180	
Starvation Cap Reductn					0	0	0	0			0	
Spillback Cap Reductn					0	0	0	0			0	
Storage Cap Reductn					0	0	0	0			0	
Reduced v/c Ratio					0.19	0.36	0.36	0.37			0.48	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 2:NETL and 6:SWT, Start of Yellow, Master Intersection

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay (s/veh): 8.1

Intersection LOS: A

Intersection Capacity Utilization 59.1%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

2033 Build Weekday Evening Peak Hour
10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	0	<1	1	0	<1>	0	1	1	1
Traffic Volume (vph)	297	146	20	29	15	307	18	118	17	125	57	116
Future Volume (vph)	297	146	20	29	15	307	18	118	17	125	57	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	135		0	0		125	0		0	115		65
Storage Lanes	1		0	0		1	0		0	1		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982				0.850		0.985				0.850
Flt Protected	0.950				0.968			0.994		0.950		
Satd. Flow (prot)	1787	1866	0	0	1839	1615	0	1860	0	1805	1900	1615
Flt Permitted	0.507				0.683			0.969		0.564		
Satd. Flow (perm)	954	1866	0	0	1298	1615	0	1813	0	1072	1900	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				374		6				141
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		300			300			300			700	
Travel Time (s)		6.8			6.8			6.8			15.9	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	362	178	24	35	18	374	22	144	21	152	70	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	202	0	0	53	374	0	187	0	152	70	141
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2	1		2		1	2	1
Detector Template	Left	Thru			Thru	Right		Thru		Left	Thru	Right
Leading Detector (ft)	20	100			100	20		100		20	100	20
Trailing Detector (ft)	0	0			0	0		0		0	0	0
Detector 1 Position(ft)	0	0			0	0		0		0	0	0
Detector 1 Size(ft)	20	6			6	20		6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	pm+ov
Protected Phases	7	4			8	1		2		1	6	7
Permitted Phases	4			8		8	2			6		6

2033 Build Weekday Evening Peak Hour
 10: Route 150 & I-495 NB Ramps/South Hunt Road

Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Detector Phase	7	4		8	8	1	2	2		1	6	7
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	6.0	6.0	10.0	10.0		6.0	10.0	6.0
Minimum Split (s)	11.5	15.5		11.5	11.5	11.5	15.5	15.5		11.5	15.5	11.5
Total Split (s)	12.0	50.0		38.0	38.0	19.0	31.0	31.0		19.0	50.0	12.0
Total Split (%)	12.0%	50.0%		38.0%	38.0%	19.0%	31.0%	31.0%		19.0%	50.0%	12.0%
Maximum Green (s)	6.5	44.5		32.5	32.5	13.5	25.5	25.5		13.5	44.5	6.5
Yellow Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	-1.5	-1.5			-1.5	-1.5		-1.5		-1.5	-1.5	-1.5
Total Lost Time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead	Lag	Lag		Lead		Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None		None	None	None	C-Min	C-Min		None	C-Min	None
Act Effct Green (s)	32.5	32.5			10.6	23.5		44.4		59.5	59.5	84.5
Actuated g/C Ratio	0.33	0.33			0.11	0.24		0.44		0.60	0.60	0.85
v/c Ratio	0.76	0.33			0.38	0.56		0.23		0.21	0.06	0.10
Control Delay (s/veh)	39.5	24.9			48.9	6.3		19.7		12.1	11.1	0.7
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay (s/veh)	39.5	24.9			48.9	6.3		19.7		12.1	11.1	0.7
LOS	D	C			D	A		B		B	B	A
Approach Delay (s/veh)		34.3			11.6			19.7			7.5	
Approach LOS		C			B			B			A	
Queue Length 50th (ft)	184	86			32	0		74		50	21	5
Queue Length 95th (ft)	248	130			62	40		117		59	33	0
Internal Link Dist (ft)		220			220			220			620	
Turn Bay Length (ft)	135					125				115		65
Base Capacity (vph)	478	863			441	713		807		747	1130	1386
Starvation Cap Reductn	0	0			0	0		0		0	0	0
Spillback Cap Reductn	0	0			0	0		0		0	0	0
Storage Cap Reductn	0	0			0	0		0		0	0	0
Reduced v/c Ratio	0.76	0.23			0.12	0.52		0.23		0.20	0.06	0.10

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0.5 (1%), Referenced to phase 2:NETL and 6:SWTL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay (s/veh): 19.9

Intersection LOS: B

Intersection Capacity Utilization 53.8%

ICU Level of Service A

Analysis Period (min) 15

2033 Build Weekday Evening Peak Hour
11: Site Driveway & Route 110

Intersection

Int Delay, s/veh 0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	571	1	8	790	1	5
Future Vol, veh/h	571	1	8	790	1	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	621	1	9	859	1	5

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	622
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	959
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	959
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.09	15.89
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	337	-	-	18	-
HCM Lane V/C Ratio	0.019	-	-	0.009	-
HCM Ctrl Dly (s/v)	15.9	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2033 Build Weekday Evening Peak Hour
12: Route 150 & Site Driveway

Intersection

Int Delay, s/veh 0.3

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	3	8	14	577	401	8
Future Vol, veh/h	3	8	14	577	401	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	9	15	627	436	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1098	440	445
Stage 1	440	-	-
Stage 2	658	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	236	617	1116
Stage 1	649	-	-
Stage 2	515	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	231	617	1116
Mov Cap-2 Maneuver	231	-	-
Stage 1	635	-	-
Stage 2	515	-	-

Approach	SE	NE	SW
HCM Ctrl Dly, s/v	13.75	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SELn1	SWT	SWR
Capacity (veh/h)	43	-	423	-
HCM Lane V/C Ratio	0.014	-	0.028	-
HCM Ctrl Dly (s/v)	8.3	0	13.7	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.1	-

2033 Alternative Access Build Weekday Morning Peak Hour
3: Route 110 & Jacqueline Drive

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	1	743	376	2	3	2
Future Vol, veh/h	1	743	376	2	3	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	1	2	0	0	0
Mvmt Flow	1	790	400	2	3	2

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	402	0	0 1194 401
Stage 1	-	-	- - 401 -
Stage 2	-	-	- - 793 -
Critical Hdwy	4.1	-	- - 6.4 6.2
Critical Hdwy Stg 1	-	-	- - 5.4 -
Critical Hdwy Stg 2	-	-	- - 5.4 -
Follow-up Hdwy	2.2	-	- - 3.5 3.3
Pot Cap-1 Maneuver	1167	-	- - 208 653
Stage 1	-	-	- - 681 -
Stage 2	-	-	- - 449 -
Platoon blocked, %		-	- -
Mov Cap-1 Maneuver	1167	-	- - 208 653
Mov Cap-2 Maneuver	-	-	- - 208 -
Stage 1	-	-	- - 679 -
Stage 2	-	-	- - 449 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0.01	0	17.83
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	2	-	-	-	286
HCM Lane V/C Ratio	0.001	-	-	-	0.019
HCM Ctrl Dly (s/v)	8.1	0	-	-	17.8
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 Alternative Access Build Weekday Morning Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Traffic Volume (vph)	149	404	0	86	244	0	3	160	120	14	265	114
Future Volume (vph)	149	404	0	86	244	0	3	160	120	14	265	114
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	16	16	16
Storage Length (ft)	115		0	130		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt								0.943			0.961	
Flt Protected	0.950			0.950							0.998	
Satd. Flow (prot)	1805	1900	0	1685	1773	0	0	1768	0	0	2065	0
Flt Permitted	0.950			0.950				0.997			0.985	
Satd. Flow (perm)	1805	1900	0	1685	1773	0	0	1763	0	0	2038	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								59			33	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		225			225			318			318	
Travel Time (s)		5.1			5.1			7.2			7.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	33%	1%	1%	0%	0%	0%
Adj. Flow (vph)	160	434	0	92	262	0	3	172	129	15	285	123
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	434	0	92	262	0	0	304	0	0	423	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.00	1.00	1.00	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2			2			2	
Detector Template	Left	Thru		Left	Thru			Thru			Thru	
Leading Detector (ft)	20	100		20	100			100			100	
Trailing Detector (ft)	0	0		0	0			0			0	
Detector 1 Position(ft)	0	0		0	0			0			0	
Detector 1 Size(ft)	20	6		20	6			6			6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

2033 Alternative Access Build Weekday Morning Peak Hour

4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	15.5		11.5	15.5		11.0	11.0		11.0	11.0	
Total Split (s)	19.0	26.0		15.0	22.0		39.0	39.0		39.0	39.0	
Total Split (%)	23.8%	32.5%		18.8%	27.5%		48.8%	48.8%		48.8%	48.8%	
Maximum Green (s)	13.5	20.5		9.5	16.5		34.0	34.0		34.0	34.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	1.5		2.5	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5			-1.0			-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)	13.8	25.8		10.4	20.1			34.1			34.1	
Actuated g/C Ratio	0.17	0.32		0.13	0.25			0.43			0.43	
v/c Ratio	0.52	0.71		0.42	0.59			0.39			0.48	
Control Delay (s/veh)	35.4	31.0		37.8	31.8			21.8			19.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	35.4	31.0		37.8	31.8			21.8			19.0	
LOS	D	C		D	C			C			B	
Approach Delay (s/veh)		32.2			33.3			21.8			19.0	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	73	190		42	110			117			144	
Queue Length 95th (ft)	123	284		87	193			159			235	
Internal Link Dist (ft)		145			145			238			238	
Turn Bay Length (ft)	115			130								
Base Capacity (vph)	356	611		239	470			856			972	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.45	0.71		0.38	0.56			0.36			0.44	

Intersection Summary

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 50 (63%), Referenced to phase 4:SWTL and 8:NETL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay (s/veh): 27.2

Intersection LOS: C

Intersection Capacity Utilization 66.2%

ICU Level of Service C

Analysis Period (min) 15

2033 Alternative Access Build Weekday Morning Peak Hour
5: SW Connector & Route 110

Intersection

Int Delay, s/veh 2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	1	1>	0
Traffic Vol, veh/h	555	173	0	352	87	0
Future Vol, veh/h	555	173	0	352	87	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	1	0	0	1	4	0
Mvmt Flow	610	190	0	387	96	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 1092 705
Stage 1	-	-	- 705 -
Stage 2	-	-	- 387 -
Critical Hdwy	-	-	- 6.44 6.2
Critical Hdwy Stg 1	-	-	- 5.44 -
Critical Hdwy Stg 2	-	-	- 5.44 -
Follow-up Hdwy	-	-	- 3.536 3.3
Pot Cap-1 Maneuver	-	- 0	- 235 440
Stage 1	-	- 0	- 486 -
Stage 2	-	- 0	- 682 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 235 440
Mov Cap-2 Maneuver	-	-	- 235 -
Stage 1	-	-	- 486 -
Stage 2	-	-	- 682 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	30.37
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	235	-	-	-
HCM Lane V/C Ratio	0.406	-	-	-
HCM Ctrl Dly (s/v)	30.4	-	-	-
HCM Lane LOS	D	-	-	-
HCM 95th %tile Q(veh)	1.9	-	-	-

2033 Alternative Access Build Weekday Morning Peak Hour
8: Route 150 & SW Connector

Intersection

Int Delay, s/veh 3.2

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	0	173	87	283	350	0
Future Vol, veh/h	0	173	87	283	350	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	4	1	0	0
Mvmt Flow	0	186	94	304	376	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	868	376	376
Stage 1	376	-	-
Stage 2	491	-	-
Critical Hdwy	6.4	6.2	4.14
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.236
Pot Cap-1 Maneuver	326	675	1171
Stage 1	698	-	-
Stage 2	619	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	294	675	1171
Mov Cap-2 Maneuver	294	-	-
Stage 1	631	-	-
Stage 2	619	-	-

Approach	SB	NE	SW
HCM Ctrl Dly, s/v	12.36	1.96	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	423	-	675	-
HCM Lane V/C Ratio	0.08	-	0.276	-
HCM Ctrl Dly (s/v)	8.3	0	12.4	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.3	-	1.1	-

2033 Alternative Access Build Weekday Morning Peak Hour
 11: Site Driveway & Route 110

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	773	1	7	376	2	17
Future Vol, veh/h	773	1	7	376	2	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	840	1	8	409	2	18

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	841
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	794
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	794
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.18	16.61
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	331	-	-	33	-
HCM Lane V/C Ratio	0.062	-	-	0.01	-
HCM Ctrl Dly (s/v)	16.6	-	-	9.6	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

2033 Alternative Access Build Weekday Morning Peak Hour
12: Route 150 & Site Driveway

Intersection

Int Delay, s/veh 0.2

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	0	1	0	1	1>	0
Traffic Vol, veh/h	0	16	0	370	521	2
Future Vol, veh/h	0	16	0	370	521	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	17	0	402	566	2

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 567	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.22	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.318	- -	- -
Pot Cap-1 Maneuver	0 523	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 523	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	SE	NE	SW
HCM Ctrl Dly, s/v	12.12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NET SELn1	SWT	SWR
Capacity (veh/h)	- 523	- -	- -
HCM Lane V/C Ratio	- 0.033	- -	- -
HCM Ctrl Dly (s/v)	- 12.1	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0.1	- -	- -

2033 Build Weekday Evening Peak Hour
3: Route 110 & Jacqueline Drive

Intersection

Int Delay, s/veh 0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	0	<1	1>	0	1>	0
Traffic Vol, veh/h	0	593	795	4	4	0
Future Vol, veh/h	0	593	795	4	4	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	0	631	846	4	4	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	850	0	0 1479 848
Stage 1	-	-	- 848 -
Stage 2	-	-	- 631 -
Critical Hdwy	4.1	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	2.2	-	- 3.5 3.3
Pot Cap-1 Maneuver	797	-	- 140 364
Stage 1	-	-	- 423 -
Stage 2	-	-	- 534 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	797	-	- 140 364
Mov Cap-2 Maneuver	-	-	- 140 -
Stage 1	-	-	- 423 -
Stage 2	-	-	- 534 -

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	0	31.53
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	797	-	-	-	140
HCM Lane V/C Ratio	-	-	-	-	0.03
HCM Ctrl Dly (s/v)	0	-	-	-	31.5
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0	-	-	-	0.1

2033 Build Weekday Evening Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	1	1>	0	1	1>	0	0	<1>	0	0	<1>	0
Traffic Volume (vph)	152	345	1	108	430	0	3	318	127	6	208	140
Future Volume (vph)	152	345	1	108	430	0	3	318	127	6	208	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	10	10	10	12	12	12	16	16	16
Storage Length (ft)	115		0	130		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't								0.962			0.947	
Flt Protected	0.950			0.950							0.999	
Satd. Flow (prot)	1805	1900	0	1668	1773	0	0	1828	0	0	2025	0
Flt Permitted	0.950			0.950				0.998			0.993	
Satd. Flow (perm)	1805	1900	0	1668	1773	0	0	1824	0	0	2013	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)								24			40	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		225			225			318			318	
Travel Time (s)		5.1			5.1			7.2			7.2	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%	0%
Adj. Flow (vph)	158	359	1	113	448	0	3	331	132	6	217	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	360	0	113	448	0	0	466	0	0	369	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.09	1.09	1.09	1.00	1.00	1.00	0.85	0.85	0.85
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2			2			2	
Detector Template	Left	Thru		Left	Thru			Thru			Thru	
Leading Detector (ft)	20	100		20	100			100			100	
Trailing Detector (ft)	0	0		0	0			0			0	
Detector 1 Position(ft)	0	0		0	0			0			0	
Detector 1 Size(ft)	20	6		20	6			6			6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex			Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

2033 Build Weekday Evening Peak Hour
4: Route 150 & Route 110

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.5	15.5		11.5	15.5		11.0	11.0		11.0	11.0	
Total Split (s)	18.0	34.0		21.0	37.0		45.0	45.0		45.0	45.0	
Total Split (%)	18.0%	34.0%		21.0%	37.0%		45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	12.5	28.5		15.5	31.5		40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.5	1.5		2.5	1.5		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-1.5	-1.5		-1.5	-1.5			-1.0			-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)	14.3	25.1		19.5	30.3			43.4			43.4	
Actuated g/C Ratio	0.14	0.25		0.20	0.30			0.43			0.43	
v/c Ratio	0.61	0.75		0.35	0.83			0.58			0.41	
Control Delay (s/veh)	50.7	44.7		38.0	46.6			19.1			20.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	50.7	44.7		38.0	46.6			19.1			20.3	
LOS	D	D		D	D			B			C	
Approach Delay (s/veh)		46.5			44.9			19.1			20.3	
Approach LOS		D			D			B			C	
Queue Length 50th (ft)	94	211		61	258			137			149	
Queue Length 95th (ft)	163	291		120	#382			203			230	
Internal Link Dist (ft)		145			145			238			238	
Turn Bay Length (ft)	115			130								
Base Capacity (vph)	273	573		330	591			829			922	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.58	0.63		0.34	0.76			0.56			0.40	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 75 (75%), Referenced to phase 4:SWTL and 8:NETL, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay (s/veh): 34.3

Intersection LOS: C

Intersection Capacity Utilization 67.2%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

2033 Build Weekday Evening Peak Hour
5: SW Connector & Route 110

Intersection

Int Delay, s/veh 5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	1	1>	0
Traffic Vol, veh/h	481	92	0	571	139	4
Future Vol, veh/h	481	92	0	571	139	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	496	95	0	589	143	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 1132 543
Stage 1	-	-	- 543 -
Stage 2	-	-	- 589 -
Critical Hdwy	-	-	- 6.4 6.2
Critical Hdwy Stg 1	-	-	- 5.4 -
Critical Hdwy Stg 2	-	-	- 5.4 -
Follow-up Hdwy	-	-	- 3.5 3.3
Pot Cap-1 Maneuver	-	- 0	- 227 543
Stage 1	-	- 0	- 586 -
Stage 2	-	- 0	- 559 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 227 543
Mov Cap-2 Maneuver	-	-	- 227 -
Stage 1	-	-	- 586 -
Stage 2	-	-	- 559 -

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0	44.74
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	231	-	-	-
HCM Lane V/C Ratio	0.64	-	-	-
HCM Ctrl Dly (s/v)	44.7	-	-	-
HCM Lane LOS	E	-	-	-
HCM 95th %tile Q(veh)	3.9	-	-	-

2033 Build Weekday Evening Peak Hour
8: Route 150 & SW Connector

Intersection

Int Delay, s/veh 2.2

Movement	SBL	SBR	NEL	NET	SWT	SWR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	0	92	143	448	317	0
Future Vol, veh/h	0	92	143	448	317	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	1	0
Mvmt Flow	0	96	149	467	330	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1095	330	330
Stage 1	330	-	-
Stage 2	765	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	239	716	1241
Stage 1	733	-	-
Stage 2	463	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	200	716	1241
Mov Cap-2 Maneuver	200	-	-
Stage 1	614	-	-
Stage 2	463	-	-

Approach	SB	NE	SW
HCM Ctrl Dly, s/v	10.8	2.01	0
HCM LOS	B		

Minor Lane/Major Mvmt	NEL	NET SBLn1	SWT	SWR
Capacity (veh/h)	436	-	716	-
HCM Lane V/C Ratio	0.12	-	0.134	-
HCM Ctrl Dly (s/v)	8.3	0	10.8	-
HCM Lane LOS	A	A	B	-
HCM 95th %tile Q(veh)	0.4	-	0.5	-

2033 Build Weekday Evening Peak Hour
11: Site Driveway & Route 110

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1>	0	0	<1	1>	0
Traffic Vol, veh/h	571	1	22	790	1	8
Future Vol, veh/h	571	1	22	790	1	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	621	1	24	859	1	9

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	622
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.12
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.218
Pot Cap-1 Maneuver	-	-	959
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	959
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.24	15.09
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	367	-	-	49	-
HCM Lane V/C Ratio	0.027	-	-	0.025	-
HCM Ctrl Dly (s/v)	15.1	-	-	8.8	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

2033 Build Weekday Evening Peak Hour
12: Route 150 & Site Driveway

Intersection

Int Delay, s/veh 0.1

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	0	1	0	1	1>	0
Traffic Vol, veh/h	0	8	0	591	401	8
Future Vol, veh/h	0	8	0	591	401	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	0	642	436	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	- 440	- 0	- 0
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -
Critical Hdwy	- 6.22	- -	- -
Critical Hdwy Stg 1	- -	- -	- -
Critical Hdwy Stg 2	- -	- -	- -
Follow-up Hdwy	- 3.318	- -	- -
Pot Cap-1 Maneuver	0 617	0 -	- -
Stage 1	0 -	0 -	- -
Stage 2	0 -	0 -	- -
Platoon blocked, %		- -	- -
Mov Cap-1 Maneuver	- 617	- -	- -
Mov Cap-2 Maneuver	- -	- -	- -
Stage 1	- -	- -	- -
Stage 2	- -	- -	- -

Approach	SE	NE	SW
HCM Ctrl Dly, s/v	10.92	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NET SELn1	SWT	SWR
Capacity (veh/h)	- 617	- -	- -
HCM Lane V/C Ratio	- 0.014	- -	- -
HCM Ctrl Dly (s/v)	- 10.9	- -	- -
HCM Lane LOS	- B	- -	- -
HCM 95th %tile Q(veh)	- 0	- -	- -