

ROAD SAFETY AUDIT

Elm Square

Town of Andover

August 7, 2023

Prepared For:
Town of Andover, Massachusetts



In Cooperation With:
MassDOT



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Background

TEC, Inc. (TEC), in cooperation with the Town of Andover and the Massachusetts Department of Transportation (MassDOT), conducted this Road Safety Audit (RSA) to evaluate the existing traffic safety characteristics at Elm Square in Andover, Massachusetts. An RSA was scheduled for this intersection and its approaches in response to public feedback as a result of a fatal pedestrian crash that occurred on Tuesday, May 9, 2023. The RSA is one of a series of measures, both through planning and design efforts, that the Town of Andover has commenced to address safety concerns at the various intersections and approaches of Elm Square.

Road Safety Audit Justification

An RSA, as defined by the Federal Highway Administration (FHWA), is the *formal safety performance examination of an existing or future road or intersection by an independent, multidisciplinary team*. The purpose of the RSA is to observe, identify, and report all safety issues and identify future opportunities for safety enhancement improvements for all roadway users. This includes identifying short-term, mid-term, and long-term safety improvements that can be implemented through general maintenance, immediate installation / removal, or could be potentially incorporated into future improvement projects. Enhancements or improvements can take the form of one or more of the 4 E's of highway safety: **Engineering, Education, Emergency Response, and Enforcement.**

The U.S. Congress enacted the “Fixing America’s Surface Transportation Act” (FAST Act) in 2015. This act provides guidance and funding for the implementation of a State Highway Safety Improvement Program (HSIP), continuing upon the past SAFETEA-LU legislation from 2005. As part of this Program, all states are required to develop a Strategic Highway Safety Plan (SHSP). MassDOT guidelines require an RSA be conducted where HSIP-eligible crash clusters or segments are present within the audit area of a transportation improvement project. An intersection is defined as HSIP-eligible if the intersection is within the top five (5) percent of clusters in its respective Regional Planning Commission (RPC) boundaries based on Equivalent Property Damage Only (EPDO). The HSIP provides funding for eligible improvements that reduce fatalities and serious injuries on public roads while requiring a data-driven, strategic approach that focuses on performance.

Based on the published MassDOT database, the Elm Square intersection is not designated as a 2018-2020 HSIP Cluster (current year of eligibility). Although a high crash location designation has not been assigned to these intersections, the recent pedestrian fatality has resulted in the Town, as well as other stakeholders, reevaluating the existing traffic safety conditions of the Elm Square intersections.

Project Data

Initial Public Forum

The safety evaluation process with the general public commenced on Thursday, June 8, 2023, prior to the RSA, with a Community Forum held at the Veterans Memorial Auditorium at #50 Bartlett Street in Andover, Massachusetts. The forum, attended by many residents, public officials from the Andover community, and representatives from MassDOT, provided an overview of the existing conditions, initial countermeasures already implemented at the location, and the process moving forward including this formal RSA. The public attendees provided significant feedback on their experiences and improvement strategies for Elm Square and other locations in the general vicinity. Participants, as well as others who could not attend the forum, were also encouraged to provide thoughts and feedback via a special email address set-up specifically for this process. Both thoughts and feedback from the attendees, and thoughts emailed the Town, were included in this RSA.

Some of the ideas and feedback provided during the public forum, and later received through the Town's established email account for the Elm Square evaluation (elmsquaresafety@andoverma.us), were related to the transportation network out of the immediate vicinity of Elm Square. These items have been documented by the Town and are likely to be included in other transportation studies, planning assignments, and evaluations in the coming months. For the purpose of this RSA, only those items directly related to Elm Square and its approaches have been included within this specific document in order to provide clarity on the issues and potential countermeasures of the square itself.

Road Safety Audit Meeting

The RSA for Elm Square was conducted on Monday, June 26, 2023 at 12:00 PM, with the audit meeting held in the Main Hall (2nd Floor) of the Andover Old Town Hall, located at #20 Main Street in Andover, Massachusetts. A copy of the RSA agenda can be found in Appendix A. TEC and other team members also conducted various field visits to the audit location prior to the RSA meeting.

As presented in Table 1, the audit team consisted of a cross-section of state, regional, and local engineering, enforcement, maintenance, public transportation, pedestrian / bicycle advocacy, and emergency response professionals and was assembled in conjunction with input from MassDOT's Traffic and Safety Engineering Section. Contact information for all participating audit team members is provided in Appendix B.

Table 1: Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Andrew Flanagan	Town of Andover - Town Manager
Mike Linstrom	Town of Andover - Dep. Town Manager
Austin Simko	Town of Andover - Asst. Town Manager
Paul Materazzo	Town of Andover - Planning & ED
Monica Gregoire	Town of Andover - Planning & ED
Christopher Cronin	Town of Andover - DPW

Table 1 (Continued): Participating Audit Team Members

Audit Team Member	Agency/Affiliation
Carlos Jaquez	Town of Andover - DPW
Janet Nicosia	Town of Andover - Facilities
James McSweeney	Town of Andover - Facilities
Mark Higginbottom	Town of Andover - Police
Glen Ota	Town of Andover - Police
Patrick Keefe	Town of Andover - Police
Michael Mansfield	Town of Andover - Fire
Lisa Schletzbaum	MassDOT - Asst. State Traffic Engineer
Ana Fill	MassDOT - HQ Traffic Safety
Kevin Fitzgerald	MassDOT - HQ Traffic Safety
John Gregg	MassDOT - District 4 Traffic
Brian Fallon	MassDOT - District 4 Projects
Bob Tragert	MassDOT - District 4 Traffic Safety
Juan Guillermo	MEVA Transit
Lionel Metet	MEVA Transit
Tony Collins	Walk Bike Andover
Andrew Lewine	Walk Bike Andover
Elizabeth Maldari	Merrimack Valley Planning Commission
Patrick Reed	Merrimack Valley Planning Commission
Karim Elhamawy	Massachusetts State Police
Samuel Gregorio	TEC, Inc.
Kevin Dandrade	TEC, Inc.
Rebecca Dean	TEC, Inc.

Audit participants were provided with materials to review prior to the audit meeting. The materials included a summary of crash data, collision diagrams, traffic volume data, and a summary of the crashes. Participants were encouraged to visit the site prior to the audit and were urged to consider elements on MassDOT's Safety Review Prompt List.

On the day of the audit, a pre-audit meeting was held to discuss the project's background, the audit process, review the distributed materials, and discuss some of the issues that Team members had observed individually. The audit site walk consisted of field observations at the audit intersections. Handwritten notes and photographs documented the observations made by audit team members during the site walk. Following the audit site walk, a post-audit meeting was held where the Team confirmed the observations made in the field and offered recommendations to enhance the safety of areas noted in the site walk and pre-audit meeting. The countermeasures included low, medium, and high-cost countermeasures that could be implemented in the short, mid, and long-term.

Project Location and Description

An audit area location map for Elm Square is provided in Figure 1. A detailed description of the audit area intersections is provided in the following sections.

Existing Geometry and Infrastructure Summary

Key Roadways

State Route 28 (North Main Street / Main Street)

State Route 28 is an urban principal arterial corridor providing regional connections between New Hampshire to the north and Metro-Boston to the south. The corridor parallels Interstate 93 for its entire length. Route 28 is signed as North Main Street north of Elm Square and Main Street south of Elm Square within the Town of Andover. Near Downtown Andover, Route 28 is under the jurisdiction of the Town between the Shawsheen River to the north and School Street to the south. MassDOT holds jurisdiction to the north and south of this segment. Route 28 consists of a two-lane cross-section in the vicinity of Elm Square with turn lanes at the signalized intersection as part of a 38- to 46-foot pavement surface. Sidewalks are provided along both sides of Route 28 between Interstate 495 to the north and Philips Academy to the south including Elm Square. There is no formal bicycle accommodation along the corridor.



Route 28 Shield

Speed along Route 28 within the Town-controlled segment is regulated at various speeds documented in MassDOT Special Speed Regulation #938¹. The corridor is regulated at 30 miles per hour (mph) from School Street to Punchard Avenue, 25 mph from Punchard Avenue to the Andover Public Safety Center, and 30 mph from the Andover Public Safety Center to the Shawsheen River. Speed limit signage along Elm Street is in compliance with the above referenced speeds.

Elm Street

Elm Street is an urban minor arterial corridor under the jurisdiction of the Town of Andover. The corridor provides a local connection between Downtown Andover to the west and Route 114 adjacent to Merrimack College in North Andover to the east. Elm Street provides one travel lane in each direction within a 30 to 55-foot pavement surface in the vicinity of Elm Square. Auxiliary turn lanes are only provided at the Elm Square and Route 114 intersections. Directional flow along Elm Street is separated by a marked centerline. Sidewalks are provided along both sides of Elm Street for its entire length. There is no formal bicycle accommodation along the corridor; however, much of the corridor's shoulders east of Cheever Circle provides a sufficient width (5-feet or more) for bicycle travel. This width ends abruptly along the westbound approach without warning into the recently installed curb extensions near Cheever Circle. West of Cheever Circle and in the vicinity of Elm Square, Elm Street does not provide bicycle accommodation.

¹ MassDOT Special Speed Regulation #938 – July 22, 1974



1" = 200'

Elm Square Intersection - Andover, Massachusetts

Road Safety Audit



Figure 1

**Project Location Map
North Main Street (Route 28) / Main
Street (Route 28) at Elm Street / Central
Street intersection**



Speed along Elm Street is regulated at 35 mph by MassDOT Special Speed Regulation #358-A² between the North Andover Town Line and Walnut Avenue. No MassDOT Special Speed Regulation is provided for Elm Street west of Walnut Avenue and therefore the speed along this segment is subject to a 30 mph statutory speed limits defined in MGL Chapter 90 Section 17 for thickly settled areas / business districts. Speed limit signage along Elm Street is in compliance with the above referenced speeds.

Central Street

Central Street is an urban minor arterial corridor under the jurisdiction of the Town of Andover. The corridor provides a local connection between Downtown Andover to the east and Andover Street / Red Spring Road at the Shawsheen River to the west. Central Street provides one travel lane in each direction within a 33 to 43-foot pavement surface in the vicinity of Elm Square. Auxiliary turn lanes are only provided at the Elm Square intersection. Directional flow along Central Street is separated by a marked centerline. Sidewalks are provided along both sides of Central Street from Elm Square to the east and Philips Street to the west. There is no formal bicycle accommodation along the corridor.

No MassDOT Special Speed Regulation is provided for Central Street and therefore the speed along this segment is subject to a 30 mph statutory speed limits defined in MGL Chapter 90 Section 17 for thickly settled areas / business districts for the area near Elm Square. Regulatory speed limit signage along Central Street is posted at 30 mph near Elm Square and 35 mph further west of School Street. These regulatory speed signs are out of compliance with MGL Chapter 90 Section 18 which notes that a MassDOT Special Speed Regulation must be in place to post regulatory speed limit signage. A 20-mph school zone is posted in each direction of Central Street in the vicinity of the St. Augustine School.

Key Intersections

Elm Square, located in the heart of Downtown Andover, is a series of four (4) tightly packed intersections all within an approximate 130-foot radius from its focal point, a traffic signal-controlled intersection North Main Street / Main Street / Central Street / Elm Street. The following section describes each of the four (4) intersections in detail.

North Main Street / Main Street / Central Street / Elm Street

Central Street from the west and Elm Street from the east intersect Route 28, signed as North Main Street north of the intersection and Main Street south of the intersection, to form a four-legged, skewed, fully actuated signalized intersection. Both the Central Street eastbound and Elm Street westbound approaches enter the intersection at 130-degree angles creating a geometric skew. The intersection's cross-sectional configuration was most recently implemented as part of Federal Aid Project CM-001S(555)X, completed by



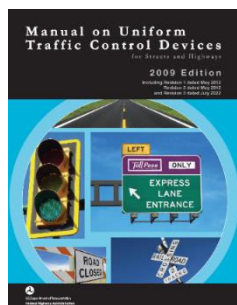
Image 1: View of Elm Square's focal intersection looking north.

² MassDOT Special Speed Regulation #358-A – September 1, 1971

MassDOT in 2010 and funded by the State Transportation Improvement Program (TIP). As part of that construction project, MassDOT initiated a Traffic Control Agreement (TCA) with the Town of Andover, which requires the Town to seek approval for modifications to the regulatory and/or traffic control conditions at the intersection and along Route 28 within that former project's limits, including changes to the traffic signal operations, to ensure the integrity of the Federal Aid funds that were used to construct the intersection improvements.

Both the Central Street eastbound and Elm Street westbound approaches consist of an exclusive left-turn lane, a through lane, and a shortened channelized right-turn lane with directional flow separated by a marked centerline. The channelized lanes are detached from the remaining traffic flow along each approach by a raised landscaped island. Both the Main Street northbound and North Main Street southbound approaches consist of a shared left-turn / through lane and a shared through / right-turn lane with directional flow separated by a marked centerline. Although through movements are allowed from each lane along both Main Street and North Main Street, the receiving lanes on the opposing intersection approaches consist of only one lane requiring a merge condition to occur within the confines of the intersection. On-street parking is permitted along several approaches to the intersection; however, the start of the several on-street parking zones are beyond the secondary intersections of Elm Square further described in this section.

Sidewalks are present along both sides of each roadway with crosswalks present across each intersection approach. Whereas the main approach crossings are signalized, separate unsignalized crosswalks are present to cross both channelized right-turn lanes. Countdown pedestrian signal indications are provided at the end of each signalized crosswalk and convey a concurrent pedestrian phasing system. A 5-second Lead Pedestrian Interval (LPI) to advance pedestrians into the crosswalk prior to conflicting permissive traffic movements is programmed into each concurrent traffic signal phase. Pedestrian push buttons are present for each signalized crosswalk end; however, the style and type of push buttons is mixed between both Accessible Pedestrian Signals (APS) and non-APS. There is no formal bicycle accommodation at the intersection. Bicycle detection marking signage (R10-22) are present at the intersection; however, the associated pavement markings for bicycle detection location do not appear at the intersection since the last pavement marking application.



Current **MUTCD** Edition (2009)

Devices (MUTCD)⁴ standards.

The traffic signal organizes phasing on a standard National Electrical Manufacturers Association (NEMA) ring and barrier structure with protected-permissive left-turn phasing on three of four intersection approaches, excluding Main Street northbound. The signal operates with full actuation from a recently installed video detection system. Some cabinet components, including the controller, were recently replaced as part of cabinet knock-down crash (See Crash #49). Since the fatal pedestrian crash in May 2023, yellow and red clearance timings, as well as pedestrian clearance timings, have been slightly modified to be consistent with the most recent MassDOT³ and *Manual on Uniform Traffic Control*

³ MassDOT *Guidance on Calculating Clearance Intervals at Traffic Signals – Interoffice Memorandum*; Massachusetts Department of Transportation – Highway Division; Boston, Massachusetts; Issued January 8, 2013.

Central Street / Essex Street

Essex Street intersects Central Street from the north to form a three-legged unsignalized intersection. The center of the intersection is 130-feet west of Route 28’s centerline. Essex Street operates with a one-way flow exiting the intersection to the north. Both the Central Street eastbound and westbound approaches operate under free-flow conditions. The Central Street eastbound approach consists of a single general-purpose travel lane widening to two lanes within the intersection for the downstream traffic signal. The Central Street westbound approach consists of a single general-purpose travel lane. Directional flow for both Central Street approaches is separated by a marked centerline. The Essex Street leg exiting the intersection consists of one travel lane.



Image 2: View of Central Street at Essex Street intersection looking east.

On-Street parking is permitted along both sides of Essex Street and the Central Street westerly leg. Sidewalks are provided along both sides of each intersection approach with crosswalks marked across the Essex Street leg and the westerly Central Street leg. There is no formal bicycle accommodation at the intersection.

Elm Street / High Street / Post Office Avenue

High Street from the north and Post Office Avenue from the south intersect Elm Street to form a four-legged unsignalized intersection. The center of the intersection is approximately 140-feet east of Route 28’s centerline. Post Office Avenue operates with a one-way flow exiting the intersection to the south. The High Street southbound approach operates under stop control while both the Elm Street eastbound and westbound approaches are free flowing. Both the Elm Street eastbound and westbound approaches consist of a single general-purpose travel lane with directional flow separated by a marked centerline. A ‘Do Not Block the Intersection’ traffic sign and associated pavement markings are provided along Elm Street westbound adjacent to High Street. Immediately west of the intersection, Elm Street’s westbound approach opens to three lanes approaching the signalized intersection. The High Street southbound approach, which curves into Elm Street from a more skewed alignment parallel to North Main Street, consists of a single general-purpose travel lane with directional flow separated by a marked centerline. The Post Office Avenue leg exiting the intersection consists of one travel lane departing one-way away from the intersection.

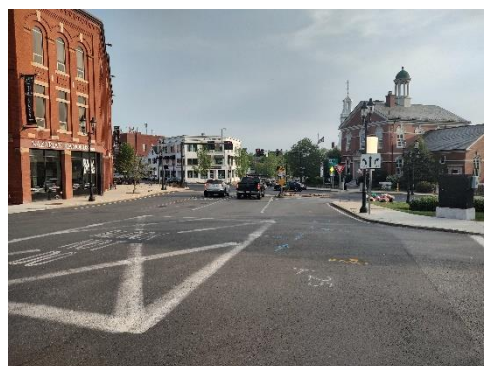


Image 3: View of Elm Street at High Street and Post Office Avenue intersection looking west.

⁴ *Manual on Uniform Traffic Control Devices for Streets and Highways – 2009 Edition*; Federal Highway Administration (FHWA); Washington, D.C.; last revised July 2022.

On-street parking is permitted along both sides of Elm Street east of the intersection and along the westerly side of Post Office Avenue south of the intersection. Sidewalks are provided along both sides of each intersection approach except for the easterly side of Post Office Avenue. A striped crosswalk is present across the High Street approach with a concrete sidewalk extension across the Post Office Avenue leg as typically seen for driveway locations. There is no formal bicycle accommodation at the intersection.

Main Street / Post Office Avenue

Post Office Avenue intersects Main Street from the east to form a three-legged unsignalized intersection. Although formally three-legged, the terminus of the Central Street channelized right-turn lane is directly opposed to the Post Office Avenue westbound approach. The center of the intersection is 100-feet south of the Central Street / Elm Street centerline. The Post Office Avenue westbound approach operates with one-way flow under stop control while both the Main Street northbound and southbound approaches are free flowing. The Post Office Avenue westbound approach consists of an exclusive right-turn lane with left-turn movements prohibited from the approach. The Main Street northbound approach consists of a single general purpose travel lane widening to two lanes for the downstream traffic signal. The Main Street southbound approach consists of single widened general-purpose travel lane narrowing from the upstream lane merge condition. Directional flow along Main Street is separated by a marked centerline.



Image 4: View of Main Street at Post Office Avenue intersection looking south.

On-Street parking is permitted along both sides of Main Street south of the intersection and along both sides of Post Office Avenue east of the intersection. Sidewalks are provided along both sides of each intersection approach with a crosswalk marked across Post Office Avenue. There is no formal pedestrian accommodation at the intersection.

Public Transportation Accommodations

The Merrimack Valley Regional Transit Authority (MEVA) operates bus service in the Town of Andover. There are currently two (2) bus routes which traverse Elm Square, including Bus Route 2 – Andover and Bus Route 21 – Andover Shuttle:

- *MEVA Bus Route 2* – MEVA Bus Route 2 operates between the Buckley Transportation Center in Lawrence and Phillips Academy. Major stops along the route include Buckley Transportation Center (Lawrence), the intersection of South Broadway / Mt. Vernon Street (Lawrence), Shawsheen Square (Andover), Elm Square (Andover), and Philips Academy (Andover). The bus may be flagged along route except in no-stop zones outlined on the MEVA website. Weekday inbound service from Philips Academy operates every 30 minutes between 5:51 AM and 7:21 PM with the first and last run of the day operating to/from Andover Square (Main Street / Chestnut

Street). Weekday outbound service from Buckley Transportation Center operates every 30 minutes between 5:30 AM and 7:00 PM. Saturday inbound service from Philips Academy operates every 60 minutes between 7:21 AM and 6:21 PM. Saturday outbound service from Buckley Transportation Center operates every 30 minutes between 7:00 AM and 6:00 PM. Sunday service is not provided.

- *MEVA Bus Route 21* – MEVA Bus Route 21 operates between the North Andover Mall in North Andover and the Andover Senior Center. Major stops along the route include the North Andover Mall (North Andover), the YMCA (Andover), Doctor’s Park (Andover), Frye Circle (Andover), Shawsheen Plaza (Andover), Andover Commons (Andover), Elm Square (Andover), Chestnut Court (Andover), and the Andover Senior Center (Andover). The bus may be flagged along route except in no-stop zones outlined on the MEVA website. Weekday inbound service from North Andover Mall operates every 70 minutes between 8:40 AM and 6:01 PM. Weekday outbound service from the Andover Senior Center operates every 70 minutes between 8:10 AM and 6:30 PM with the last run of the day operating to/from Chestnut Court. Weekend service is not provided.

Massachusetts Bay Transportation Authority (MBTA) operates commuter rail service in the vicinity of the audit area within the Town of Andover.

- The Haverhill Line MBTA commuter rail provides connections from North Station in Boston with stations at Malden Center, Oak Grove, Wyoming Hill, Melrose, Melrose Highlands, Greenwood, Wakefield, Reading, North Wilmington, Ballardvale, Andover, Lawrence, Bradford, Haverhill. During various intervals of the day, service from North Station terminates at Reading and does not proceed further north, including Andover. Inbound service from Haverhill runs between 5:27 AM and 9:32 PM, and outbound service to Haverhill runs between 5:55 AM and 10:55 PM with headways of 60 minutes to 90 minutes on weekdays. Inbound service from Reading runs between 5:18 AM and 6:48 PM, and outbound service to Reading runs between 6:40 AM and 5:55 PM with headways of 45 minutes to 135 minutes on weekdays. On weekends, all service runs between North Station and Haverhill. Weekend inbound service from Haverhill runs between 5:35 AM and 9:35 PM, and outbound service to Haverhill runs between 6:45 AM and 10:45 PM, with headways of 120 minutes to 185 minutes. The Andover MBTA Station is slightly more than 1,000-feet from Elm Square along Railroad Avenue which runs between North Main Street and Essex Street.

Traffic Count Data

Traffic volume data was obtained from Turning Movement Counts (TMCs) at the various audit area intersections. The TMCs included counts, by 15-minute intervals for all vehicles (heavy vehicle and passenger car), pedestrian, and bicycle movements. TMCs were conducted at the study area intersections during the typical weekday (7:00 AM – 7:00 PM) on Wednesday, May 24, 2023 and during the Saturday midday (11:00 AM – 1:00 PM) peak period on Saturday, June 3, 2023. Area schools were in regular session during the time of traffic counts. A detailed summary of the turning movement counts, partitioned into 15-minute intervals, is provided within Appendix D. The 2023 Existing Condition traffic volumes for

the weekday morning, weekday evening, and Saturday midday peak hours are graphically depicted in Figure 2.

General Crash History

Crash reports within the audit area were compiled and analyzed from MassDOT records for the most-recent consecutive six-year period (2017 - 2022), which includes the most recent four-year period (2017 – 2020) of complete data identified by MassDOT through the Interactive Mapping Portal for Analysis and Crash Tracking (IMPACT) database. The motor vehicle crash reports were reviewed to determine if any crash trends exist within the audit area. Additional pedestrian crash report information from 2013 - 2016 was also evaluated and represents all reported pedestrian crashes over the last 10-years. This includes two (2) pedestrian crashes which occurred in 2016. The RSA does not provide direct information from the crash report for the recent fatal pedestrian crash in May 2023 as the report has not been released by the Massachusetts State Police (MSP).

In addition to examining the number of crashes at the audit intersections, an intersection crash rate was calculated to compare the occurrence of crashes to the volume of traffic passing through the audit intersections. The crash rate per million entering vehicles (MEV) was calculated using the evening peak-hour volumes from the TMCs, and the K-factor (relation of peak-hour traffic to daily traffic) identified in Table 2. The crash rate at the intersections was compared to the statewide and district-wide averages published by MassDOT in June 2018 to determine the significance of the crash occurrence. The statewide and District 4 average for unsignalized intersections is 0.57 crashes per MEV. The statewide average for signalized intersections is 0.78 crashes per MEV, and the District 4 average is 0.73 crashes per MEV.

Table 2: Crash Rates by Key Intersection

Intersection	Total Crashes (2017–2022) ^a	EPDO ^b (2018-2020)	EPDO Threshold MVPC (2018-2020)	Crash Rate ^c (2017–2020)	Statewide Avg	District-Wide Avg
Main St / North Main St / Central St / Elm St	35	52	≥111	0.55	0.78	0.73
Central St / Essex St	7	44	≥111	0.48	0.57	0.57
Elm St / High St / Post Office Ave	8	4	≥111	0.25	0.57	0.57

^a Includes two (2) pedestrian crashes from 2016.

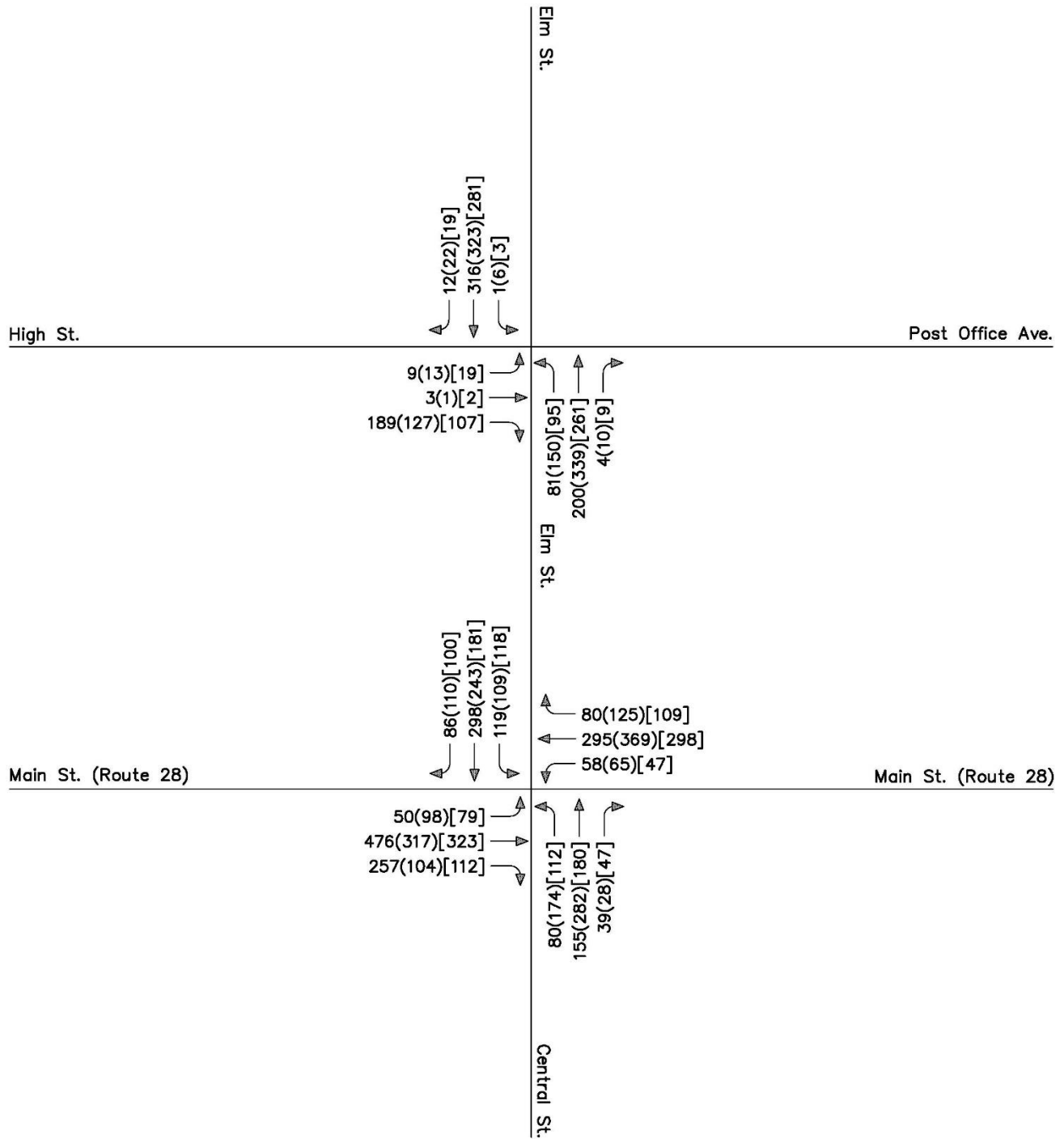
^b EPDO rank only based on crash data from HSIP-eligible 2018 through 2020 complete years.

^c Crash rate calculated for MassDOT complete years only (2017 through 2020).

The crash histories at the audit intersections were also compared against EPDO within the Merrimack Valley Planning Commission (MVPC) boundaries. EPDO ranks crashes based on the crash severity for the current 2018-2020 HSIP year of crash data. Within this current methodology, any type of injury crash (including fatal, incapacitating, non-incapacitating, and possible) has a weighting of twenty-one (21) compared to a property damage only crash. The current MVPC threshold for HSIP-eligibility is ≥111, as reported by MassDOT’s Traffic and Safety Engineering Section.



Not to Scale



XXX(XXX) = Weekday Morning(Weekday Evening)[Saturday Middy]

Figure 2

2023 Existing Conditions
Weekday Morning, Weekday Evening,
and Saturday Middy
Peak Hour Traffic Volumes



Intersection Crash Summary

The crashes in the vicinity of Elm Square have been divided into four (4) core areas including the three intersections identified in Table 2 as well as crashes along Main Street just south of Post Office Avenue. There were no reported crashes that specifically noted the intersection of Main Street / Post Office Avenue.

Main Street / North Main Street / Central Street / Elm Street

This signalized intersection of Main Street / North Main Street / Central Street / Elm Street experienced thirty-five (35) reported crashes over the most recent six-year period. The crash rate at this intersection was calculated at 0.55 crashes per MEV. The crash rate is significantly less than the district and statewide average crash rates. The 2018-2020 EPDO for this location was calculated at 52 which is also significantly less than the HSIP threshold. More than one-third (13 of 35) of crashes were rear end crashes present on all four intersection approaches. This includes three (3) on wet or snow-covered pavement. Eight (8) of the crashes at the intersection were angled crashes involving various movement conflicts at the intersection including three (3) crashes from vehicles traveling through red signal indications. An additional two (2) angled crashes involved vehicles turning left on permissive left-turn signal phasing. Seven (7) crashes involved vehicles entering or exiting the channelized right-turn lanes along Central Street and Elm Street; including two (2) crashes where vehicle exiting the channelized lanes struck a mainline vehicle and five (5) crashes where vehicles struck objects within islands or on the edge of the roadway denoting the geometric challenge of each channelized lane. Two (2) crashes at the intersection involved pedestrians, both involving left-turning vehicles conflicting with a pedestrian within a crosswalk during the concurrent pedestrian phase.

Central Street / Essex Street

This unsignalized intersection of Central Street / Essex Street experienced seven (7) reported crashes over the most recent six-year period. The crash rate at this intersection was calculated at 0.48 crashes per MEV. The crash rate is significantly less than the district and statewide average crash rates. The 2018-2020 EPDO for this location was calculated at 44 which is also significantly less than the HSIP threshold. More than half (4 of 7) of crashes involved a vehicle turning onto Essex Street including two (2) when a Central Street westbound vehicle turned right onto Essex Street traveling on the downgrade slope atop snow-covered roadways where the vehicle struck parked vehicles along the westerly side of Essex Street. An additional two (2) crashes involved vehicle exiting the Bank of America ATM driveway just west of Essex Street; including one (1) crash where a Central Street eastbound vehicle had crossed the centerline to bypass queued traffic to turn left onto Essex Street and striking the ATM exiting vehicle. Two (2) additional crashes of note at the intersection involved a wrong way driver on Essex Street (a one-way roadway) striking a vehicle attempting to turn right onto Essex Street from Central Street. There was one (1) reported pedestrian crash where a Central Street eastbound vehicle struck a pedestrian outside of a crosswalk east of Essex Street.

Elm Street / High Street / Post Office Avenue

This unsignalized intersection of Elm Street / High Street / Post Office Avenue experienced eight (8) reported crashes over the most recent six-year period. The crash rate at this intersection was calculated at 0.25 crashes per MEV. The crash rate is significantly less than the district and statewide average crash rates. The 2018-2020 EPDO for this location was calculated at 4 which is also significantly less than the HSIP threshold. More than half (5 of 8) of crashes at this location were angled crashes of which three (3) involved vehicles exiting High Street and one (1) involved a vehicle turning left into High Street. An additional three (3) crashes involved parked vehicles along the northerly side of Elm Street just east of High Street; including, one vehicle striking a westbound vehicle exiting an on-street parking stall, another involved a driver having a medical episode striking a parked vehicle, and the additional crash involving a westbound vehicle with a load protruding from the vehicle striking a parked vehicle. More than half (5 of 8) of the crashes at this intersection occurred midday between 11:00 AM and 12:30 PM. There were no reported crashes for vehicles turning onto Post Office Avenue.

Main Street, south of Post Office Avenue

Beyond crashes directly identified at the key intersections, an additional six (6) reported crashes occurred within 100-feet of the Main Street northbound stop line for the Main Street / North Main Street / Central Street / Elm Street intersection but are geometrically south of the Post Office Avenue intersection with Main Street. Four (4) of these crashes involved a parked vehicle; including two (2) where vehicles attempted to park struck other parked vehicles, one (1) where a vehicle exiting a parking space struck another vehicle, and one (1) where a bypassing vehicle struck a parked vehicle. A fifth reported crash involved a vehicle attempting to park striking a passing vehicle.

Table 3: Crash Data Summary

Parameter		Main Street / North Main Street / Central Street / Elm Street	Central Street / Essex Street	Elm Street / High Street / Post Office Avenue	Main Street, south of Post Office Avenue
Crash Year:	2016 (PED)	2	-	-	-
	2017	6	3	0	2
	2018	2	0	2	1
	2019	8	4	1	0
	2020	2	0	1	1
	2021	6	0	2	1
	2022	9	0	2	0
TOTAL		35	7	8	6
Crash Rate (MEV)		0.55	0.48	0.25	-
Statewide / District Average		0.78 / 0.73	0.57 / 0.57	0.57 / 0.57	-
EPDO (2018-2020 HSIP)		52	44	4	-
Type:	Angled	8	3	5	1
	Rear-End	13	0	0	0
	Sideswipe	5	0	0	0
	Head-on	1	0	0	0
	Single Vehicle	6	3	3	5
	Ped/Bike	2	1	0	0
	Not Reported	0	0	0	0
TOTAL		35	7	8	6
Surface Conditions:	Dry	24	5	5	4
	Wet	4	0	3	1
	Snow/Ice/Slush	6	2	0	0
	Other/Unknown	1	0	0	1
TOTAL		35	7	8	6
Severity:	Property Damage	29	5	7	6
	Non-Fatal Injury	6	2	1	0
	Fatality	0 ^b	0	0	0
	Not Reported	0	0	0	0
TOTAL		35	7	8	6
Day of Week:	Monday-Friday	29	7	7	5
	Saturday-Sunday	6	0	1	1
TOTAL		35	7	8	6
Time of Day:	6:00AM-9:00AM	4	0	1	1
	9:00AM-12:00PM	4	0	2	2
	12:00PM-3:00PM	10	1	4	2
	3:00PM-6:00PM	8	4	0	1
	6:00PM-9:00PM	7	1	0	0
	9:00PM-6:00AM	2	1	1	0
TOTAL		35	7	8	6

^a Based on three years of data (01/01/2017 to 12/31/2019) as per MassDOT direction

^b Data does not include fatal pedestrian crash in May 2023.

Audit Observations and Potential Safety Enhancements

Pre- and post- RSA site walk meetings were held at the Andover Old Town Hall, located at #20 Main Street in Andover, Massachusetts. The first stage included brief introductions, a review of the RSA process, and an overview of the safety characteristics within the audit area. Each participant was asked to provide their concerns and comments related to the safety issues at the audit intersection. At the end of the discussion about the intersection deficiencies, the group participated in a site walk to observe the audit location. The third stage of the meeting discussed potential countermeasures for the safety concerns raised during the discussions and site walk.

The RSA Team's field observations and discussions show that the Team has several general concerns about existing conditions at the study intersection, which may negatively impact safety. Concurrently, the RSA team identified many countermeasures that can be executed to improve safety in the vicinity of Elm Square. Each countermeasure considered has been categorized as short-term, mid-term, or long-term, as well as low-cost, mid-cost, and high-cost.

Several of these concerns require further evaluation and design work to develop appropriate safety enhancements. This does not mean that the countermeasure labeled as "Evaluate" or "Consider" is not an effective means of solving a safety challenge but is worded in this fashion to denote that a particular countermeasure may require a more thorough examination prior to its implementation because it may directly affect an unknown safety or capacity attribute within the surrounding Downtown area. A basic example of this may be converting the North Main Street southbound inside lane to an exclusive left-turn lane with a left-turn dedicated traffic signal phase. The countermeasure may be widely regarded as a beneficial idea; however, it would require adequate evaluate of the curb-to-curb width approaching the intersection to allow for appropriate deceleration and vehicle stacking under a change in traffic signal operations. This is a basic example; however, many countermeasures require similar evaluation to study whether a given safety measure does not result in a new safety issue.

The following section outlines the primary safety issues in the vicinity of Elm Square and those potential countermeasures identified during the RSA meeting:

Safety Issue #1: Pedestrian Accommodations

Specific Observations:

Concurrent Pedestrian Phasing vs. Intersection Geometry – A primary issue identified during the RSA and through various resident correspondence from the Public Forum is related to the existing concurrent pedestrian traffic signal phasing at the intersection. The existing pedestrian phasing, which includes an LPI, provides a 'WALK' indication during the adjacent parallel green interval where right-turning vehicles must yield to pedestrians within the crosswalk. As the opposing through movement is allowed to run at the same time, the permissive opposing left-turn movement is also permitted to cross each crosswalk while yielding to pedestrians within the crosswalk. Many participants in the public forum, as

well as pedestrians visible at the intersection, do not feel comfortable using the crosswalks under the concurrent pedestrian phasing; including some pedestrian who preferably use the uncontrolled crosswalk at Essex Street. The specific concerns noted for this traffic signal phasing is outlined below:

- The geometric skew of the Main Street / North Main Street / Central Street / Elm Street intersection results in lengthened right-turn movements from both Main Street northbound and North Main Street southbound with the conflicting crosswalks 105-feet and 75-feet from the associated stop lines, respectively. Audit participants noted that vehicles will tend to take these right-turns at higher speeds due to the turning radii. The considerable length of travel between the stop line and crosswalk, as well as street furniture and ornamental fence on the northeast corner with Elm Street, impede visibility of pedestrians on the crosswalk. There is currently no prohibition for right-turns on red.



Image 5: View of Elm Street crosswalk landing from Main Street northbound stop line.

- In addition, a pedestrian standing on the landing to cross Elm Street to the north is not fully visible from the Main Street northbound stop line as a result of the street furniture and an ornamental fence. The considerable length of travel between the stop line and crosswalk would frequently include a ‘No Turn on Red’ restriction. Right turns on red after stop is permitted along the Main Street northbound and North Main Street southbound approaches.
- This similar geometric skew results in lengthened left-turn movements from both Central Street eastbound and Elm Street westbound with the conflicting crosswalks 120-feet and 130-feet from the associated stop lines, respectively. Similarly, the angled nature of the turning movement invites higher speeds. The uphill grade on Central Street also results in visibility challenges to the crosswalk across North Main Street southbound where an approaching vehicle only first sees the crosswalk immediately before the approach’s stop line. Two (2) pedestrian crashes occurred during the study period that involved left-turning vehicles, one from each of these two approaches, striking a pedestrian within the opposing parallel crosswalk.

Audit participants noted that when the Central Street left-turn phase was call, but not the Elm Street left-turn phase, the Central Street through turned on at the same time and there was no transition from the protected left-turn phase to the permissive (no yellow or all red) which exacerbated the issue of drivers making the left-turn yielding to pedestrians without a red condition in between. MEVA bus drivers also noted concerns with the overall ‘permissive’ left turn phasing.

- The lane configuration along Main Street northbound and North Main Street southbound consists of a shared left-turn / through lane and a shared through / right-turn lane. Each of the through movements along these approaches are forced to merge into one lane within the intersection as

only one receiving lane is provided. Although the merge condition issue is described in a subsequent RSA section, the added confusion and attention to oncoming traffic forces left-turning vehicles to not focus on potential pedestrians within the crosswalk they are about to conflict with during the concurrent pedestrian phasing. This is exacerbated by the intersection skew where the left-turning vehicle, who has typically proceeded into the intersection, would need to look up to 150-degrees over their shoulder to see the nearside pedestrian landing at the crosswalk terminus from the location of the typical turning maneuver.

- The traffic signal at the intersection has traffic signal indications for all four approaches that are positioned along two diagonal mast arm assemblies. The diagonal nature of the mast arm assemblies forces the left-turn phase indications (green and yellow arrows) to be positioned over the center of the intersection as opposed to on the far side of the intersection. As a left-turning vehicle enters the intersection on the ‘protected’ left turn phasing, where the opposing parallel crosswalk still indicates “DON’T WALK,” the driver temporarily loses visibility of the indication, which may have switched to its clearance interval leading and then into its ‘permissive’ phase. Some of the left-turning vehicles enter the crosswalk as the ‘WALK’ interval commences for the corresponding crosswalk and creates a conflict point.



Image 6: Left-turn signal indications along mast arm over center of intersection.

- Many participants in the public forum indicated they did not believe the pedestrian clearance interval time was sufficient to allow for a full crossing maneuver of the approaches. Clearance intervals for both vehicles and pedestrians were recently updated to meet current MassDOT and *MUTCD* standards in June 2023. Prior to this update and during the period of the six-year crash study period, the pedestrian clearance buffer was programmed as 1.0 seconds in compliance with a previous version of the *MUTCD* and corresponding to the date of the previous intersection design in 2007. This buffer represents the time between the end of the concurrent pedestrian phase and the start of the next conflicting vehicle phase. The pedestrian flashing “DON’T WALK” interval is currently timed based on the standard pedestrian walking speed of 3.5 feet per second.

- Traffic signs are present along each intersection approach to indicate that ‘Right Turning Traffic Must Yield to Pedestrians’ (R10-15R). The Central Street eastbound approach version of this sign is based on a previous version of the *MUTCD* in effect at the time of last full intersection design (2007); however, the sign identification number is the same as the current version. Whereas permissive left-turn movements are allowed during the concurrent pedestrian phase, there are currently no ‘Left Turning Traffic Must Yield to Pedestrians’ traffic signs (R10-15L). Audit participants noted that many pedestrians will wait at the intersection corners or within the channelized islands during the ‘WALK’ interval as the corresponding turning traffic



R10-15R Sign

for the concurrent phasing will not yield to pedestrians and the pedestrian deemed it not safe to proceed.

- The Town of Andover or MassDOT currently operates fourteen (14) traffic signal locations within the Town of Andover. It was noted by audit participants that the signalized intersection within Elm Square is the only signalized intersection currently programmed to operate with concurrent pedestrian phasing. The phasing at Elm Square is therefore not consistent with other traffic signal operations within the Town and may result in varied driver expectations where drivers do not expect a pedestrian in the crosswalk when they are paying attention to gaps in the opposing vehicular flow but not pedestrians in the crosswalks.

Pedestrian Traffic Signal Infrastructure – A pedestrian push button is currently provided for each signal-controlled crosswalk end. Although a push button is provided, several push buttons are not in full compliance with the current edition of the *MUTCD* or current MassDOT APS standards⁵.

- Several pedestrian push buttons are below the 42-inch mounting height currently outlined in the *MUTCD* and the Americans with Disabilities Act (ADA).
- An audit team member noted times when pushing the button did not result in the pedestrian phase coming up within the typical cycle. It is unclear if the person did not push with enough force, the ped button was faulty, or it had something to do with the phasing. This has not been replicated; however, if occurring at regular intervals this may contribute to pedestrians walking outside of a ‘WALK’ indication.
- Two pedestrian push buttons are mounted on a singular traffic signal post within the northeast channelized island as allowable by the *MUTCD*, but not preferred. With concurrent phasing enacted, each button typically would provide notification to the user for which button represents which crosswalk which is currently not provided for these push buttons. An APS push button was previously in place for the North Main Street crosswalk within this channelized island (visible in Google Earth images) but has since been replaced with a non-APS button. The previous APS push button, like others currently at the intersection, provided a walk message including the street crossing name. An audit participant noted that there has been confusion over which push button is for which crossing resulting in wrong push button pressed in relation to the crosswalk desired.
- The pedestrian push button on the intersection’s northwest corner for the Central Street crossing is further than 10-feet away from the accessible ramp opening location out of compliance with the *MUTCD*. The distance between the push button and the ramp may cause confusion to which push button is associated to which crosswalk. This is especially notable given the existing concurrent pedestrian phasing where each push button directly correlates to a particular crosswalk.

⁵ *Accessible Pedestrian Signal Installation Policy*; Massachusetts Department of Transportation – Highway Division; Boston, MA; June 1, 2012.



**W11-2 w/ W16-7p
(W16-9p would
denote 'AHEAD')**

Uncontrolled Pedestrian Crossings - There are several uncontrolled pedestrian crossing locations within the audit area including across each channelized right-turn lane at the intersection of Main Street / North Main Street / Central Street / Elm Street, across both Essex Street and Central Street at their intersection, and across Post Office Avenue opposite High Street. All four uncontrolled crossing locations do not include pedestrian crossing or advance crossing signage (W11-2, W16-7p, W16-9p). Warning signage at uncontrolled pedestrian crossings is a key factor in overall crosswalk visibility.



Image 7: Uncontrolled crossing across both Central Street and Essex Street missing pedestrian signage.

The location of the crosswalk across Central Street at Essex Street is in close proximity to the focal Elm Square intersection. Queues were observed backing up along Central Street westbound into the signalized intersection as pedestrian cross. Queues along Central Street eastbound regularly back-up past the crosswalk from the traffic signal limiting visibility to/from pedestrian attempting to cross.

Pedestrian Desire Lines – It was noted by an audit participant that the primary pedestrian desire line at the intersection is traversing from the southeast corner to the northwest corner (where the library is located) at the intersection of Main Street / North Main Street / Central Street / Elm Street. This requires pedestrians to cross over two crosswalks at the intersection to complete the overall crossing maneuver. Pedestrians will sometimes cross one of the two crossings without a 'WALK' indication to eliminate delay created by the traffic signal cycle length and signal phasing order. The intersection's skewed geometry results in only 60-feet from curb to curb along the desired line of travel and converts it to a 120-foot crossing over two traffic signal phases within the marked crosswalks.

Potential Safety Enhancements:

1. Evaluate the conversion of the pedestrian traffic signal phasing from concurrent pedestrian phasing to exclusive pedestrian phasing in conjunction with its effect on upstream locations, such as mid-block pedestrian crossings sight lines and nearby side-street intersection maneuvers.
2. Consider modifications to the pedestrian phase timings, whether exclusive or concurrent, to be timed based on a slower walking speed.
3. Implement 'No Turn on Red' prohibitions along the Main Street northbound and North Main Street southbound approaches based on the stop line to crosswalk distance and sight lines.
4. Consider the slight relocation of the ornamental fence and other street furniture to open the sight line from the Main Street northbound stop line to the Elm Street crosswalk if concurrent pedestrian operations remain.

5. Consider supplemental traffic signal housings depicting the left-turn indications on the opposite (left) side of each corresponding approach.
6. Assess the relocation and addition of traffic signal mast arm assemblies at the intersection to provide one mast arm assembly per approach which are both perpendicular to the approach and on the far side of the intersection from the approach.
7. In conjunction with retaining concurrent pedestrian phasing, update the pedestrian clearance buffer to meet current MassDOT standards by matching the yellow clearance plus all red clearance of the parallel through phase. *[This enhancement was implemented at this intersection in June 2023].*
8. In conjunction with concurrent pedestrian phasing (if retained), install ‘Left Turning Traffic Must Yield to Pedestrians’ (R10-15L) signage at the signalized intersection for all four approaches. *[See #64 in Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure]*
9. In conjunction with retaining concurrent pedestrian phasing, replace the outdated ‘Right Turning Traffic Must Yield to Pedestrians’ (R10-15R) traffic sign along Central Street eastbound with the up-to-date signage legend.
10. In conjunction with concurrent pedestrian phasing (if retained), evaluate the modification of left turn phasing at the signalized intersection to ‘protected’ only.
11. In conjunction with concurrent pedestrian phasing (if retained), evaluate switching to a left turn ‘lagging’ protection phase so to not have vehicles in the middle of the intersection attempting to turn when pedestrians first get the walk signs.
12. Consider the installation of flashing yellow arrow (FYA) signal indications for those approaches with permissive left-turn phasing and an exclusive left-turn lane.
13. Consider the implementation of approach-specific split traffic signal phasing to eliminate ‘permissive’ movements at the signalized intersection.
14. Reinstall all pedestrian push buttons at the signalized intersection to a mounting height of 42-inches.
15. Replace all non-APS pedestrian push buttons at the signalized intersection with APS push buttons with both audible and vibratory tones.
16. Check the operational condition of all pedestrian push buttons at the signalized intersection. *[See #71 in Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure]*
17. Relocate the pedestrian push button on the signalized intersection’s northwest corner to a position within 10-feet of the ramp opening while accessible to a level surface. *[See #72 in Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure]*

18. Install high visibility crosswalk pavement markings on all crosswalks in the vicinity of Elm Square.
19. Install pedestrian warning signage (W11-2 and W16-7p) facing each direction at each uncontrolled pedestrian crossing in the vicinity of the Elm Square intersections. Evaluate the placement of advance pedestrian signage (W11-2 and W16-9p), in relation to other sign clutter, where applicable for each uncontrolled crossing location. *[See #30 in Channelized Right-Turn Lanes and #65 in Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure]*
20. Evaluate pedestrian treatments for the uncontrolled Central Street crosswalk adjacent to Essex Street; including a center refuge island, raised crosswalk, or Pedestrian Hybrid Beacon (PHB). *[See #80 in Arterial Corridors within Downtown]*
21. Consider removing the channelized right-turn lanes along Central Street and Elm Street to shorten the pedestrian crossing distance and the pedestrian traffic signal timing. *[See #34 in Channelized Right-Turn Lanes]*
22. Consider curb extensions at key locations at the signalized intersection, and other uncontrolled pedestrian crossings, to shorten pedestrian crossing distance and increase visibility of pedestrians on the sidewalk landings.
23. Reevaluate the orientation of the uncontrolled pedestrian crossings across each channelized right-turn lane to provide crosswalk visibility and to relocate the yield condition closer to the Route 28 mainline. *[See #29 in Channelized Right-Turn Lanes]*
24. Consider providing traffic signalization for each channelized right-turn lane and associated crosswalk. *[See #33 in Channelized Right-Turn Lanes]*
25. Consider removing the Central Street crosswalk adjacent to Essex Street based on proximity to the focal Elm Square signalized intersection.
26. In conjunction with exclusive pedestrian phasing, consider the addition of pavement markings, traffic signs, and traffic signal infrastructure to convey the ability to diagonally cross the intersection (from the Memorial Hall Library to the Elm Square Oyster Company) to meet certain pedestrian desire lines. Ensure that supplemental pedestrian signal heads and the exclusive pedestrian timing can cover the necessary crossing distance for the associated diagonal maneuvers.
27. Realign crosswalks at the intersection to follow desired pedestrian path of travel.
28. Provide pedestrian and bicycle level wayfinding signage at the intersection, and in the vicinity of Downtown Andover, to reinforce the pedestrian desire lines at and near the intersection.

Safety Issue #2: Channelized Right-Turn Lanes

Specific Observations:

Channelized right-turn lanes are present at the intersection on both the Central Street eastbound and Elm Street westbound approaches. The channelized lanes were constructed at the intersection as part of the previous project in 2010. Each channelized lane only consists of 50 to 75-feet of storage space and the radial component of the lane is abrupt at a 35 to 40-foot radius. Yield signs (R1-2) are provided along each channelized lane; however, the sign is placed far back from the intersection point for Main Street or North Main Street. It was noted during the audit that there is a lack of yield within the channelized lanes which may be a contributing factor to two (2) crashes between these right-turning vehicles and movements along Route 28. The crosswalks across each channelized right-turn lane are also positioned only 15-feet or less from the intersection point where the yield sign conveys the yield condition is for the crosswalk and not the intersection. There are no yield pavement markings provided at the intersection.



Image 8: Yield sign located in advance of crosswalk and intersection point.

The crash reports indicated eight (8) crashes related to the channelized right-turn lanes including five (5) where objects on the island or on the side of roadway were struck. The three (3) involving striking an internal island object were all reported where the vehicle lost control. Three (3) of the channelized right-turn lane crashes involved tractor-trailer vehicles of which two (2) involved striking objects on the side of the roadway. Two (2) of the channelized right-turn lane crashes were at least partially due to the driver operating under the influence (OUI).

Potential Safety Enhancements:

29. Reevaluate the orientation of the uncontrolled pedestrian crossings across each channelized right-turn lane to provide crosswalk visibility and to relocate the yield condition closer to the Route 28 mainline. *[See #23 in Pedestrian Accommodations]*
30. Install pedestrian warning signage (W11-2 and W16-7p) on each end of the crosswalks across the channelized right-turn lanes. *[See #19 in Pedestrian Accommodations and #65 in Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure]*
31. Consider the application of yield pavement markings in conjunction with the location of the yield condition, or in advance of the crosswalk.
32. Consider converting the yield control along the channelized lanes to stop control.
33. Consider providing traffic signalization for each channelized right-turn lane and associated crosswalk. *[See #24 in Pedestrian Accommodations]*

34. Consider removing the channelized right-turn lanes along Central Street and Elm Street and replace them with widened curb radii and a potential truck apron to service larger commercial vehicles / emergency response vehicles. [See #21 in *Pedestrian Accommodations*]
35. In conjunction with removal of the channelized right-turn lanes, consider implementing ‘No Turn on Red’ prohibitions along the Central Street eastbound and Elm Street westbound approaches.

Safety Issue #3: Intersection Geometrics and Proximity

Specific Observations:

Northbound and Southbound Merge Condition - Both the Main Street northbound and North Main Street southbound approaches consist of a shared left-turn / through lane and a shared through / right-turn lane with directional flow separated by a marked centerline. Although through movements are allowed from each lane along both Main Street and North Main Street, the receiving lanes on the opposing intersection approaches consist of only one lane requiring the merge maneuver to occur within the confines of the intersection. ‘Lane Ends Merge Left’ (W9-2) traffic signs are present for each approach; however, the northbound sign is positioned 65-feet past the far side crosswalk along the easterly side of North Main Street where the lane width has already constricted to a narrower width. No merge pavement markings or dashed lane lines are provided on either receiving lane past the intersection. The crash reports indicated at least one (1) specific crash along North Main Street southbound where vehicles were merging for the lane drop.



W9-2 Sign



Image 9: Merge traffic sign to the right along North Main Street southbound.

Intersection Skew – Central Street from the west and Elm Street from the east intersect Route 28, signed as North Main Street north of the intersection and Main Street south of the intersection, to form a four-legged, skewed, fully actuated signalized intersection. Both the Central Street eastbound and Elm Street westbound approaches enter the intersection at 130-degree angles creating a geometric skew. The skew results in higher turning speeds on the obtuse turning movements, restricted sight lines for the acute turning movements, effects truck turning capabilities, increases the crossing distance for pedestrians and bicyclists, and results in challenges for pedestrians with disabilities in the absence of perpendicular crossings. As the channelized right-turn lanes are present at this location directly because of the skew, the intersection includes more conflict points than a typical four-legged intersection.

Intersection Proximity – The four (4) closely-spaced intersections that make up Elm Square are all within an approximate 130-foot radius from its focal point, which is the traffic signal-controlled intersection of North Main Street / Main Street / Central Street / Elm Street. The close proximity of these intersections adds to possible driver confusion within the square and results in queue spillovers from several intersection movements. For example, there is difficulty for vehicles exiting High Street due to vehicles

blocking the intersection along Elm Street westbound where audit participants noted that compliance to the 'Do Not Block the Intersection' pavement markings and traffic signage is quote '50/50'.

One (1) crash resulted from a Central Street eastbound vehicle which crossed the centerline to bypass queued traffic for the signalized intersection to turn left onto Essex Street and striking a vehicle exiting the bank ATM driveway just south of Essex Street.

High Street Sight Lines – Sight lines exiting High Street looking east are limited based on the location of on-street parking along the northerly side of Elm Street. Under existing conditions, the intersection sight distance (ISD) for a vehicle exiting High Street is only 100-feet, well below the American Association of State Highway and Traffic Officials (AASHTO) recommended minimums for the operating speed of the roadway. The issue is exacerbated by the location of the stop line which is an additional 15-feet back from the 'driver eye' position for sight distance measurements. Sight lines for left-turning vehicles along High Street are also impeded to the west by vehicles queued along Elm Street for the traffic signal. Many vehicles will stop first at the High Street stop line and inch forward towards Elm Street to see around the on-street parked vehicles. As the vehicle inches forward, the front of the vehicle will typically overlap with the widened pavement area for the start of the Elm Street westbound channelized right-turn lane unknowingly. There were three (3) angled crashes involving a High Street exiting vehicle during the study period.



Image 10: 'Driver eye' position for intersection sight distance looking east from High Street.

Central Street Cross-Section – The cross-sectional width along Central Street approaching Elm Square is wide. The 40 to 43-foot pavement surface east of Chestnut Street includes a single travel lane in each direction with on-street parking along both sides of the roadway. The on-street parking along the southerly side of Central Street terminates adjacent to the Bank of America parking lot. The expanded cross-section invites higher travel speeds and results in a longer crossing distance for the uncontrolled pedestrian crossing west of Essex Street. In contrast, the location of the diagonal stop line and the narrow receiving lane width on Central Street exiting the traffic signal was noted as a concern for MEVA bus drivers turning right from North Main Street southbound to Central Street westbound. Although not a bus related crash, one (1) crash at this location resulted where a southbound vehicle attempting to turn right onto Central Street crossed over the centerline and struck a stopped vehicle along Central Street. MEVA drivers noted that making the turn with vehicles stopped at the stop line becomes uncomfortable for the bus drivers. The bus drivers also noted concerns with the overall 'permissive' left turn phasing.

Grades – Vertical grades approaching the Main Street / North Main Street / Central Street / Elm Street intersection are significant with Central Street eastbound consisting of a 5% uphill grade, Elm Street westbound consisting of a 3% downgrade, and North Main Street southbound consisting of a 5% uphill grade. The grading at the intersection makes it difficult for vehicles to see pedestrians, whether in the crosswalk or on the sidewalk landings, during concurrent pedestrian phasing. This issue is exacerbated for vehicles further upstream approaching the stop line from the uphill roadway segments. Both the external

intersections of Central Street / Essex Street and Elm Street / High Street / Post Office Avenue are within these graded areas. There were eight (8) crashes reported along snow covered pavement of which two (2) involved a Central Street westbound vehicle turning right onto Essex Street along the downgrade slope where the vehicle struck parked vehicles along the westerly side of Essex Street. Three (3) of the snow-coverage roadway crashes occurred on the sloped sections. An additional eight (8) crashes occurred on wet pavement including the cabinet knock down crash along High Street and both 2016 pedestrian crashes.

On-Street Parking – On-Street parking is available on the Main Street, Elm Street, and Central Street approaches to the intersection. The on-street parking along both sides of Central Street is not delineated clearly by pavement markings; both for edge of parking lane and individual parking stalls. As the roadway cross-section is extensive, the roadway provides a fast feel when vehicles are not parked along the roadway edge.



Image 11: Significant uphill grade along Central Street eastbound approaching Route 28.

Potential Safety Enhancements:

36. Evaluate turn restrictions to Essex Street from Central Street, High Street from Elm Street, and Post Office Avenue from Elm Street to limit lane crossing maneuvers near the primary Elm Square intersection.
37. Evaluate turn restrictions along High Street at Elm Street and Post Office Avenue at Main Street to effectively result in right-in and/or right-out conditions.
38. Evaluate the traffic re-routing and cut-through traffic impacts associated with a permanent closure of the High Street southbound approach to Elm Street.
39. Evaluate the cut-through potential of reversing the one-way flow condition along Post Office Avenue to its previous flow pattern.
40. Consider modifying the inside shared left-turn / through lane along both Main Street northbound and North Main Street southbound to an exclusive left-turn lane. This will also result in a narrowing of the receiving land thereby shortening pedestrian crossing distance.
41. Consider slight pavement widening and associated pavement markings to create a formal lane merge condition outside the intersection along both Main Street northbound and North Main Street southbound. [See #57 in *Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure*]
42. Consider removal of the Main Street northbound shared right-turn lane based on its shortened length and poor utilization. This will result in a single travel lane along Main Street northbound.

43. Evaluate the effects on operations to reduce the North Main Street southbound approaches to a single general-purpose travel lane. Additional cross-sectional width can be utilized for enhanced pedestrian and bicycle treatments.
44. Split the current four-legged Elm Square intersection into two separate three-legged signalized intersections. This would result in the realignment of both Elm Street and Central Street to complete.
45. Consider modifying the traffic control at the focal Elm Square intersection to a roundabout. The allotted space between building corners may necessitate a 'peanut'-style roundabout for this location if implemented.
46. Relocate the High Street stop line and crosswalk closer to the intersection to shift the position of the perceived sight line closer to Elm Street. *[See #56 in Pavement Markings & Traffic Signs]*
47. Evaluate the installation of traffic signal control at the intersection of Elm Street / High Street. A traffic signal at this location will need to be directly interconnected with the existing signalized intersection based on proximity.
48. Prohibit on-street parking stalls along the northerly side of Elm Street to a point adjacent to the #1 Elm Square building corner to open sight line from High Street to meet recommended minimums. This would effectively remove up to four (4) on-street parking stalls.
49. Consider the reduction of the Central Street curb-to-curb width to narrow the travel lanes and shorten pedestrian crossing distances. This may further restrict on-street parking on one side of Central Street.
50. Add on-street parking pavement markings along Central Street to delineate the parking stalls and provide a narrowing effect to the travel lanes.
51. Reposition the stop line for the Central Street eastbound left-turn lane to better accommodate bus turning movements.
52. Consider modifications to the approach profiles to the intersection to shift the graded roadway conditions further upstream.
53. Evaluate the application of high friction surface treatments (HFST) to the pavement to reduce skidding and wet or snow-covered pavement crashes.

Safety Issue #4: Pavement Markings, Traffic Signs, and Traffic Signal Infrastructure

Specific Observations:

Pavement Markings – There are several noted deficiencies with pavement markings that were identified in the vicinity of Elm Square during the RSA. The following summarizes these deficiencies:

- Crosswalks along Route 28 and at the intersection of Main Street / North Main Street / Central Street / Elm Street are inlaid with brick, which does not contrast visually with the asphalt pavement in its current condition during periods when pavement markings are faded. In addition, many locations within these brick inlays show heaving and results in a hazard for pedestrians and vehicles. *[New brick inlays were installed along Route 28 locations in June 2023].*
- The location of the High Street stop line is an additional 15-feet back from the ‘driver eye’ position for sight distance measurements. As previously mentioned, this decreases the available sight lines resulting in vehicles inching forward towards Elm Street to see around the on-street parked vehicles.
- There are currently no lane merge pavement markings for the Main Street northbound and North Main Street southbound merge condition. As previously mentioned, this contributes to the merging challenges along the approaches.
- For the lengthened left-turn movements at the signalized intersection, no tracking pavement markings are provided to assist with the turn path maneuver. It was observed that some vehicles veer from the intended travel paths.
- The ‘Do Not Block the Intersection’ pavement marking along Elm Street westbound is much smaller than the actual lane width and intersection depth provided at the intersection. As previously mentioned, the ‘Do Not Block the Intersection’ is respected about 50% of the time.
- Stop lines, or portions of stop lines if diagonal, along the several approaches appear to be within 4-feet of the painted crosswalk marking. This may be due to the perceived distance to the granite inlay of the brick crosswalk as opposed to the longitudinal pavement markings. The position of



R10-6 Sign

the Elm Street westbound stop the stop line was recently relocated/reapplied by the Town in June 2023. Vehicles have since been seen violating the stop line to wait for the green indication in an area immediately adjacent to the crosswalk. There is no ‘Stop Here on Red Sign’ (R10-6)

provided for the location of the shifted stop line. Where stop lines and crosswalk lines are in close



Image 12: Vehicle waiting past the relocated stop line along Elm Street.

proximity, the front portion (engine/hood) of larger trucks may partially obstruct the view of a pedestrian immediately in front of them within the crosswalk.

- There are no lane configuration pavement markings provided along the Main Street northbound and North Main Street southbound approaches. In addition, the shortened length of the Central Street eastbound and Elm Street westbound left-turn lanes results in only one arrow and ‘ONLY’ legend in closer proximity than typically implemented. This may result in driver confusion as to the lane’s utilization at the traffic signal. At least one (1) crash involved a vehicle in the incorrect lane striking another vehicle while attempting to back-up and move to the correct lane. Two (2) crashes along Elm Street did occur when pavement markings were absent for repaving.
- North Main Street southbound left-turn vehicles are visibly seen crossing over the North Main Street centerline to turn left onto Elm Square. This is seen as a quick path to avoid conflict during the ‘permissive’ left-turn signal phase.

Traffic Signs - There are several noted deficiencies with traffic signs that were identified in the vicinity of Elm Square during the RSA. The following summarizes these deficiencies:

- Whereas permissive left-turn movements are allowed during the concurrent pedestrian phase, there are currently no ‘Left Turning Traffic Must Yield to Pedestrians’ traffic signs (R10-15L). As previously discussed, it was observed that left-turning vehicles often did not yield to pedestrians attempting to cross.
- There are several uncontrolled pedestrian crossing locations within the audit area including across each channelized right-turn lane at the intersection of Main Street / North Main Street / Central Street / Elm Street, across both Essex Street and Central Street at their intersection, and across Post Office Avenue opposite High Street. All four uncontrolled crossing locations do not include pedestrian crossing or advance crossing signage (W11-2, W16-7p, W16-9p). Lack of signage impacts crosswalk visibility.
- Street name signs at the various Elm Square intersection are a mix between white on black and white on green. Most locations within the Town of Andover are white on green which results in inconsistency and may lead to driver confusion if a driver is looking for a particular street.
- The ‘Right Turning Traffic Must Yield to Pedestrians’ (R10-15R) and the ‘Lane Ends Merge Left’ (W9-2) traffic signs along North Main Street southbound overlap resulting in the loss of sign shape as a conveyance of message.
- It was noted by an RSA participant that there is a lack of traffic signs and pavement markings provided along Essex Street to convey the one-way flow of the roadway. There is only one ‘Do Not Enter’ sign at the terminus intersection of Essex Street / Brook Street.



Image 13: Single ‘Do Not Enter’ sign at terminus of Essex Street.

There is no other signage or pavement markings to convey the flow including at the Central Street / Essex Street intersection. One (1) crash at the intersection of Central Street / Essex Street resulted from a wrong way driver along Essex Street.

Traffic Signals - There are several noted deficiencies with traffic signal infrastructure that were identified in the vicinity of Elm Square during the RSA. The following summarizes these deficiencies:

- There are no retroreflective backplates on the various signal housings at the intersection.
- As previously mentioned, an audit team member noted times when pushing the button did not result in the pedestrian phase coming up within the typical cycle. It is unclear if the person did not push with enough force, the ped button was faulty, or it had something to do with the phasing. This has not been replicated; however, if occurring at regular intervals this may contribute to pedestrians walking outside of a 'WALK' indication.
- The pedestrian push button on the intersection's northwest corner for the Central Street crossing is further than 10-feet away from the accessible ramp opening location out of compliance with the *MUTCD*.

Potential Safety Enhancements:

54. Replace the brick inlay for each crosswalk to provide a consistently smooth surface and a brighter color brick to contrast with the asphalt pavement. *[This enhancement was implemented at this intersection by the Town in June 2023].*
55. Consider the removal of the brick crosswalk inlay with a traditional hot mix asphalt surface with crosswalk markings that are consistent with others in the area. Both longitudinal and ladder styles are used in the vicinity at various crosswalks in the Downtown area.
56. Relocate the High Street stop line and crosswalk closer to the intersection to shift the position of the perceived sight line closer to Elm Street. *[See #46 in Intersection Geometrics & Proximity]*
57. Consider slight pavement widening and associated pavement markings to create a formal lane merge condition outside the intersection along both Main Street northbound and North Main Street southbound. *[See #41 in Intersection Geometrics & Proximity]*
58. Install vehicle tracking pavement markings as needed at the intersection to assist with non-typical movement paths.
59. Expand the 'Do Not Block the Intersection' pavement marking to encompass the full width and depth of conflict area along Elm Street westbound.
60. Apply lane configuration pavement markings to all travel lanes at the intersection. Install and modify lane configuration traffic signs, as necessary.

61. Consider the extension of the auxiliary turn lanes, where possible, along Central Street eastbound and Elm Street westbound.
62. Consider an increased uniform setback for all stop lines at the intersection, greater than the *MUTCD* 4-foot minimum gap, to increase the visibility of pedestrians within the crosswalks for heavy vehicles operators; the front portion (engine/hood) of larger trucks may partially obstruct the view of a pedestrian immediately in front of them within the crosswalk. Signal detection zones should be altered in conjunction with any stop line relocation.
63. Install ‘Stop Here on Red’ (R10-6) traffic signs at locations where stop lines are located further than 5-feet from the crosswalk.
64. In conjunction with retaining concurrent pedestrian phasing, install ‘Left Turning Traffic Must Yield to Pedestrians’ (R10-15L) signage at the signalized intersection for all four approaches. *[See #8 in Pedestrian Accommodations]*
65. Install pedestrian warning signage (W11-2 and W16-7p) facing each direction at each uncontrolled pedestrian crossing in the vicinity of the Elm Square intersections. Evaluate the placement of advance pedestrian signage (W11-2 and W16-9p), in relation to other sign clutter, where applicable for each uncontrolled crossing location. *[See #19 in Pedestrian Accommodations and #30 in Channelized Right-Turn Lanes]*
66. Replace all non-consistent street name signs in the vicinity of Elm Square with Town standards.
67. Separate the ‘Right Turning Traffic Must Yield to Pedestrians’ (R10-15R) and the ‘Lane Ends Merge Left’ (W9-2) traffic signs along North Main Street southbound.
68. Install supplemental traffic signage and pavement markings along Essex Street to reinforce the one-way flow nature of the roadway.
69. Complete a sign audit in the vicinity of Elm Square to document location, condition, and validity of each sign. Replace, relocate, remove traffic signage as appropriate.
70. Install retroreflective backplates to all traffic signal housings at the signalized intersection.
71. Check the operational condition of all pedestrian push buttons at the signalized intersection. *[See #16 in Pedestrian Accommodations]*
72. Relocate the pedestrian push button on the signalized intersection’s northwest corner to a position within 10-feet of the ramp opening while accessible to a level surface. *[See #17 in Pedestrian Accommodations]*

Safety Issue #5: Bicycle Accommodations

Specific Observations:

Overall Bicycle Accommodations - There is no formal bicycle accommodation along any roadway within the audit area. Audit participants noted that bicyclists do not know where to be in the intersection and along the approaches. It was also noted during the RSA, and observed directly during the field visit, that bicyclists will ride along the sidewalk through the square. In addition, these bicyclists within the sidewalk will not use the push buttons when attempting to cross that roadway. Opportunity may exist within the audit area to provide connectivity between current bicycle accommodations. There were no bicycle crashes reported in the audit area during the study period.



R10-22 Sign

There is no formal bicycle accommodation along the corridor; however, much of the corridor's shoulders east of Cheever Circle provides a sufficient width (5-foot or more) for bicycle travel. This width ends abruptly along the westbound approach without warning into the recently installed curb extensions near Cheever Circle. West of Cheever Circle and in the vicinity of Elm Square, Elm Street does not provide bicycle accommodation.

Bicycle Detection Markings – Although bicycle detection signs (R10-22) exist at the intersection, the associated pavement markings are missing from the intersection. Historical images from Google Earth depict these pavement markings in place on each intersection approach.

Potential Safety Enhancements:

73. Evaluate opportunities to provide formal bicycle accommodations along Route 28, Central Street, and Elm Street. Evaluation should include extension of these accommodations beyond the limits of Elm Square.
74. Provide signage associated with bicyclists using the push buttons in conjunction with sidewalk-level bicycling improvements.
75. Consider the installation of narrow shoulder related signage along Elm Street westbound in advance of Cheever Circle where the widened shoulder abruptly ends.
76. In conjunction with other cross-sectional improvements along Central Street, consider the inclusion of buffered or parking protected bicycle lanes.
77. Consider the installation of bicycle boxes between the crosswalks and stop lines along each signalized approach allowing for improved sight lines from vehicles to pedestrians in the crosswalk while also providing a safe space for bicycle to wait at the intersection.
78. Reapply the bicycle detection markings within each applicable lane of the signalized intersection.

Safety Issue #6: Arterial Corridors within Downtown

Specific Observations:

Route 28 Arterial Corridor - State Route 28 is an urban principal arterial corridor providing regional connections between New Hampshire to the north and Metro-Boston to the south. A significant source of traffic volumes along Route 28, as well as the Elm Street / Central Street corridors, is bypassing congestion on both Interstate 495 and Interstate 93. The corridor also provides local connections from various neighborhoods within Andover to Downtown Andover. For most of its length north of Elm Square, the corridor is four-lanes wide and experiences high travel speeds with minimal side friction off the roadway. These speeds are only exacerbated by the level of delay drivers experience at Shawsheen Square just south of Interstate 495. When approaching Elm Square, many drivers will continue to utilize the corridor as a higher speed principal arterial in contrast with the downtown nature / closed-in nature of the corridor between Elm Square and Philips Academy.



Image 14: Downtown feel of Main Street immediately south of Elm Square.

Central Street / Elm Street – The congestion present at the intersection, especially during the peak commute hours, is also present along the Central Street and Elm Street approaches as drivers utilize each roadway as a bypass to/from Interstate 93 to the west and Route 114 to the east. The travel time and queuing, which sometimes results in drivers waiting up to three or four cycles to pass through the intersection, results in many drivers attempting to ‘beat’ the red on these side-street approaches.

Central Street Speed Signage vs. Regulation - No MassDOT Special Speed Regulation is provided for Central Street and therefore the speed along this segment is subject to a 30 mph statutory speed limits defined in MGL Chapter 90 Section 17 for thickly settled areas / business districts for the area near Elm Square. Regulatory speed limit signage along Central Street is posted at 30 mph near Elm Square and 35 mph further west of School Street. These regulatory speed signs are out of compliance with MGL Chapter 90 Section 18 which notes that a MassDOT Special Speed Regulation must be in place to post regulatory speed limit signage. Under MGL Chapter 90 Section 17, the speed along Central Street would statutorily be 30 mph for its entire length based on the thickly settled nature of the corridor between Elm Square and the Shawsheen River crossing.

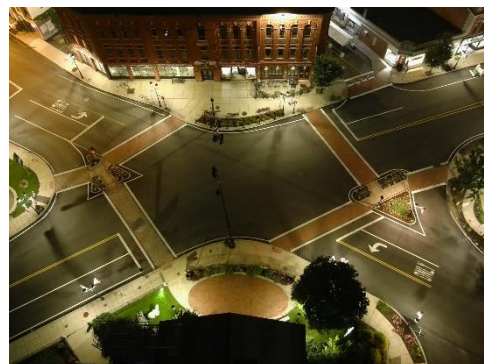


Image 15: Overhead view of Elm Square lighting at night.

Roadway Lighting – Sixteen (16) crashes at the various Elm Square intersections occurred when ambient light conditions were dark. This includes all three (3) pedestrian crashes evaluated. Half (8 of 16) of these dark condition crashes occurred on snow-covered or wet pavement.

Potential Safety Enhancements:

79. Evaluate a Road Diet along Route 28 between Shawsheen Square and Elm Square to narrow the cross-section of the corridor and provide additional space for enhanced pedestrian and bicycle accommodations and create a theme for traffic calming in advance of Elm Square.
80. Evaluate pedestrian treatments for the uncontrolled Central Street crosswalk adjacent to Essex Street; including a center refuge island, raised crosswalk, or Pedestrian Hybrid Beacon (PHB).
[See #20 in Pedestrian Accommodations]
81. Evaluate the applicability of a raised intersection at the focal intersection of Elm Square in relation to approach grades and other geometric features.
82. Consider the installation of street planters or other street scape infrastructure to increase the feel of narrowness for vehicles through Elm Square.
83. Evaluate the traffic signal cycle length and coordination conditions for opportunities to reduce delay across all modes.
84. Remove regulatory speed signage from Central Street. Complete an engineering study to rezone the speed along Central Street.
85. Consider the installation of traditional street luminaries along each Elm Square approach.
86. Evaluate the existing pedestrian-level post lighting along each approach to enhance the overall light conditions in the audit area. See crosswalk lighting near Philips Academy
87. Complete a separate lighting audit to identify low light areas that may require further illumination.
88. Provide enhanced, but balanced, lighting for each luminaire location within the audit area.

Summary of Road Safety Audit

Each improvement considered has been categorized as short-term, mid-term, or long-term. Additionally, a cost category has been assigned to each improvement based on the definitions shown in Table 4 includes a summary of the potential safety enhancements. Safety benefit estimates are subjective, based on engineering experience and the relative percentage of crashes that may be reduced by the enhancement based on known and documented crash reduction factors (such as FHWA documented crash reduction factors).

Note that some costs are noted with two cost thresholds. This is included as some enhancements may require additional measures to ensure regulatory compliance. In addition, some enhancements are defined to mitigate multiple safety issues. Enhancements are identified in Table 5.

Table 4: Estimated Time Frame and Costs Breakdown

Time Frame		Costs	
Short-Term	<1 Year	Low	<\$10,000
Mid-Term	1-3 Years	Medium	\$10,001-\$50,000
Long-Term	>3 Years	High	>\$50,000

Each countermeasure listed in Table 5 is accompanied by jurisdiction for the responsible party for implementation is the countermeasure is enacted. As the roadways in the vicinity of Elm Square are under the direct jurisdiction of the Town of Andover, the Town is listed on each measure. Note that MassDOT is also listed for many countermeasures jointly with the Town. This is directly related to the Traffic Control Agreement (TCA) between the Town and MassDOT where regulatory countermeasures within the limits of the previous federal/state-funded project are subject to review and approval by MassDOT in perpetuity to ensure the integrity of the Federal Aid funds that were used to construct the improvements in 2010.

Table 5: Potential Safety Enhancement Summary

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pedestrian Accommodations	1	Evaluate the conversion of the pedestrian traffic signal phasing from concurrent pedestrian phasing to exclusive pedestrian phasing in conjunction with its effect on upstream locations.	High	Short-Term	Low-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	2	Consider modifications to the pedestrian phase timings, whether exclusive or concurrent, to be timed based on a slower walking speed.	Medium	Short-Term	Low-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	3	Implement 'No Turn on Red' prohibitions along the Main Street northbound and North Main Street southbound approaches.	High	Short-Term	Low-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	4	Consider the slight relocation of the ornamental fence and other street furniture to open the sight line from the Main Street northbound stop line to the Elm Street crosswalk.	Medium	Short-Term	Low to Mid-Cost	Town of Andover
Pedestrian Accommodations	5	Consider supplemental traffic signal housings depicting the left-turn indications on the opposite (left) side of each corresponding approach.	Medium	Short-Term	Mid-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	6	Assess the relocation and addition of traffic signal mast arm assemblies at the intersection to provide one mast arm assembly per approach (perpendicular to the approach and on the far side of the intersection from the approach).	Medium	Long-Term	High-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	7	Update the pedestrian clearance buffer to meet current MassDOT standards by matching the yellow clearance plus all red clearance of the parallel through phase.	Medium	Short-Term (Completed in June 2023)	Low-Cost	Town of Andover / MassDOT

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pedestrian Accommodations	8	Install 'Left Turn Yield to Pedestrians' signage at the signalized intersection for all four approaches. [See #64 in <i>Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure</i>]	Medium	Short-Term	Low-Cost	Town of Andover
Pedestrian Accommodations	9	Replace the outdated 'Right Turn Yield to Pedestrians' traffic sign along Central Street eastbound with the up-to-date signage legend.	Low	Short-Term	Low-Cost	Town of Andover
Pedestrian Accommodations	10	Evaluate the modification of left turn phasing at the signalized intersection to 'protected' only.	High	Short-Term	Low-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	11	Evaluate switching to a left turn 'lagging' protection phase so to not have vehicles in the middle of the intersection attempting to turn when pedestrians first get the walk signs.	High	Short-Term	Low-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	12	Consider the installation of flashing yellow arrow signal indications for those approaches with permissive left-turn phasing and an exclusive left-turn lane.	Medium	Short-Term	Mid-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	13	Consider the implementation of approach-specific split traffic signal phasing to eliminate 'permissive' movements at the signalized intersection.	Medium	Mid-Term	Low-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	14	Reinstall all pedestrian push buttons at the signalized intersection to a mounting height of 42-inches.	Low	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pedestrian Accommodations	15	Replace all non-APS pedestrian push buttons at the signalized intersection with APS push buttons with both audible and vibratory tones.	Medium	Short-Term	Mid-Cost	Town of Andover
Pedestrian Accommodations	16	Check the operational condition of all pedestrian push buttons at the signalized intersection. <i>[See #71 in Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure]</i>	Medium	Short-Term	Low-Cost	Town of Andover
Pedestrian Accommodations	17	Relocate the pedestrian push button on the signalized intersection's northwest corner to a position within 10-feet of the ramp opening while accessible to a level surface. <i>[See #72 in Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure]</i>	Low	Short-Term	Mid-Cost	Town of Andover
Pedestrian Accommodations	18	Install high visibility crosswalk pavement markings to all crosswalks in the vicinity of Elm Square.	High	Short-Term	Low-Cost	Town of Andover
Pedestrian Accommodations	19	Install pedestrian warning signage facing each direction at each uncontrolled pedestrian crossing in the vicinity of the Elm Square intersections. Evaluate the placement of advance pedestrian signage where applicable for each uncontrolled crossing location. <i>[See also in Channelized Right-Turn Lanes, in Intersection Geometrics and Proximity, and in Pavement Markings & Traffic Signs]</i>	Medium	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pedestrian Accommodations	20	Evaluate pedestrian treatments for the uncontrolled Central Street crosswalk adjacent to Essex Street; including a center refuge island, raised crosswalk, or Pedestrian Hybrid Beacon (PHB). <i>[See #80 in Arterial Corridors within Downtown]</i>	Medium to High	Mid-Term to Long-Term	Mid-Cost to High-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	21	Consider removing the channelized right-turn lanes along Central Street and Elm Street to shorten the pedestrian crossing distance and the pedestrian traffic signal timing. <i>[See #34 in Channelized Right-Turn Lanes]</i>	High	Mid-Term	Mid to High-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	22	Consider curb extensions at key locations at the signalized intersection, and other uncontrolled pedestrian crossings, to shorten pedestrian crossing distance and increase visibility of pedestrians on the sidewalk landings.	High	Mid-Term	Mid-Cost	Town of Andover
Pedestrian Accommodations	23	Reevaluate the orientation of the uncontrolled pedestrian crossings across each channelized right-turn lane to provide crosswalk visibility and to relocate the yield condition closer to the Route 28 mainline. <i>[See #29 in Channelized Right-Turn Lanes]</i>	Medium	Short to Mid-Term	Mid-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	24	Consider providing traffic signalization for each channelized right-turn lane and associated crosswalk. <i>[See #33 in Channelized Right-Turn Lanes]</i>	High	Long-Term	High-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	25	Consider removal of the Central Street crosswalk adjacent to Essex Street based on proximity to the focal Elm Square signalized intersection.	Medium	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pedestrian Accommodations	26	Consider the addition of pavement markings, traffic signs, and traffic signal infrastructure to convey the ability to diagonally cross the intersection to meet desired pedestrian paths in conjunction with exclusive ped phasing.	Medium	Mid-Term	Mid-Cost	Town of Andover / MassDOT
Pedestrian Accommodations	27	Realign crosswalks at the intersection to follow desired pedestrian path of travel.	High	Mid-Term	Mid-Cost	Town of Andover
Pedestrian Accommodations	28	Provide pedestrian and bicycle level wayfinding signage at the intersection, and in the vicinity of Downtown Andover.	Low	Short-Term	Mid-Cost	Town of Andover
Channelized Right-Turn Lanes	29	Reevaluate the orientation of the uncontrolled pedestrian crossings across each channelized right-turn lane to provide crosswalk visibility and to relocate the yield condition closer to the Route 28 mainline.	Medium	Short to Mid-Term	Mid-Cost	Town of Andover / MassDOT
Channelized Right-Turn Lanes	30	Install pedestrian warning signage facing each direction at each uncontrolled pedestrian crossing in the vicinity of the Elm Square intersections. Evaluate the placement of advance pedestrian signage where applicable for each uncontrolled crossing location. [See #19 in Pedestrian Accommodations, #65 in Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure]	Medium	Short-Term	Low-Cost	Town of Andover
Channelized Right-Turn Lanes	31	Consider the application of yield pavement markings in conjunction with the location of the yield condition, or in advance of the crosswalk.	Medium	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Channelized Right-Turn Lanes	32	Consider converting the yield control along the channelized lanes to stop control.	Medium	Short-Term	Low-Cost	Town of Andover / MassDOT
Channelized Right-Turn Lanes	33	Consider providing traffic signalization for each channelized right-turn lane crosswalk. [See #24 in Pedestrian Accommodations]	High	Long-Term	High-Cost	Town of Andover / MassDOT
Channelized Right-Turn Lanes	34	Consider removing the channelized right-turn lanes along Central Street and Elm Street and replace them with widened curb radii and a potential truck apron to service larger commercial vehicles / emergency response vehicles. [See #21 in Pedestrian Accommodations]	High	Mid-Term	Mid to High-Cost	Town of Andover / MassDOT
Channelized Right-Turn Lanes	35	Consider implementing 'No Turn on Red' prohibitions along the Central Street eastbound and Elm Street westbound approaches if signalized.	Medium	Short-Term	Low-Cost	Town of Andover / MassDOT
Intersection Geometrics & Proximity	36	Evaluate turn restrictions to Essex Street from Central Street, High Street from Elm Street, and Post Office Avenue from Elm Street to limit lane crossing maneuvers.	Medium	Mid-Term	Low-Cost	Town of Andover
Intersection Geometrics & Proximity	37	Evaluate turn restrictions along High Street at Elm Street and Post Office Avenue at Main Street to effectively result in right-in and/or right-out conditions.	Medium	Mid-Term	Low-Cost	Town of Andover
Intersection Geometrics & Proximity	38	Evaluate the traffic re-routing and cut-through traffic impacts associated with a permanent closure of the High Street southbound approach to Elm Street.	Medium	Long-Term	Mid-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Intersection Geometrics & Proximity	39	Evaluate the cut-through potential of reversing the one-way flow condition along Post Office Avenue to its previous flow pattern.	Low	Mid-Term	Low-Cost	Town of Andover
Intersection Geometrics & Proximity	40	Consider modifying the inside shared left-turn / through lane along both Main Street northbound and North Main Street southbound to an exclusive left-turn lane.	Medium	Short-Term	Mid-Cost	Town of Andover / MassDOT
Intersection Geometrics & Proximity	41	Consider slight pavement widening and associated pavement markings to create a formal lane merge condition outside the intersection along both Main Street northbound and North Main Street southbound. [See #57 in <i>Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure</i>]	Medium	Long-Term	Mid to High-Cost	Town of Andover / MassDOT
Intersection Geometrics & Proximity	42	Consider complete removal of the Main Street northbound shared right-turn lane based on its shortened length and poor utilization.	Medium	Short-Term	Low to Mid-Cost	Town of Andover / MassDOT
Intersection Geometrics & Proximity	43	Evaluate the effects on operations to reduce the North Main Street southbound approaches to a single general-purpose travel lane.	Medium	Long-Term	High-Cost	Town of Andover / MassDOT
Intersection Geometrics & Proximity	44	Split the current four-legged Elm Square intersection into two separate three-legged signalized intersections.	Medium	Long-Term	High-Cost	Town of Andover / MassDOT

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Intersection Geometrics & Proximity	45	Consider modifying the traffic control at the focal Elm Square intersection to a roundabout. The allotted space between building corners may necessitate a 'peanut'-style roundabout for this location if implemented.	High	Long-Term	High-Cost	Town of Andover / MassDOT
Intersection Geometrics & Proximity	46	Relocate the High Street stop line and crosswalk closer to the intersection to shift the position of the perceived sight line closer to Elm Street. [See #56 in <i>Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure</i>]	Medium	Mid-Term	Mid-Cost	Town of Andover
Intersection Geometrics & Proximity	47	Evaluate the installation of traffic signal control at the intersection of Elm Street / High Street.	Medium	Long-Term	High-Cost	Town of Andover / MassDOT
Intersection Geometrics & Proximity	48	Prohibit on-street parking stalls along the northerly side of Elm Street to a point adjacent to the #1 Elm Square building corner to open sight line from High Street to meet recommended minimums.	High	Short-Term	Low-Cost	Town of Andover
Intersection Geometrics & Proximity	49	Consider the reduction of the Central Street curb-to-curb width to narrow the travel lanes and shorten pedestrian crossing distances.	High	Long-Term	High-Cost	Town of Andover
Intersection Geometrics & Proximity	50	Add on-street parking pavement markings along Central Street to delineate the parking stalls and provide a narrowing effect to the travel lanes.	Medium	Short-Term	Low-Cost	Town of Andover
Intersection Geometrics & Proximity	51	Reposition the stop line for the Central Street eastbound left-turn lane to better accommodate bus turning movements.	Medium	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Intersection Geometrics & Proximity	52	Consider modifications to the approach profiles to the intersection to shift the graded roadway conditions further upstream.	Medium	Long-Term	High-Cost	Town of Andover
Intersection Geometrics & Proximity	53	Evaluate the application of high friction surface treatments to the pavement to reduce skidding and wet or snow-covered pavement crashes.	High	Mid-Term	High-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	54	Replace the brick inlay for each crosswalk to provide a consistently smooth surface and a brighter color brick to contrast with the asphalt pavement.	Medium	Short-Term (Completed in June 2023)	Mid-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	55	Consider the removal of the brick crosswalk inlay with a traditional hot mix asphalt surface with crosswalk markings that are consistent with others in the area.	Medium	Short-Term	Mid-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	56	Relocate the High Street stop line and crosswalk closer to the intersection to shift the position of the perceived sight line closer to Elm Street. [See #46 in Intersection Geometrics & Proximity]	Medium	Mid-Term	Mid-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	57	Consider slight pavement widening and associated pavement markings to create a formal lane merge condition outside the intersection along both Main Street northbound and North Main Street southbound. [See #41 in Intersection Geometrics & Proximity]	Medium	Long-Term	Mid to High-Cost	Town of Andover / MassDOT
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	58	Install vehicle tracking pavement markings as needed at the intersection to assist with non-typical movement paths.	Low	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	59	Expand the 'Do Not Block the Intersection' pavement marking to encompass the full width and depth of conflict area along Elm Street westbound.	Medium	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	60	Apply lane configuration pavement markings to all travel lanes at the intersection. Install and modify lane configuration traffic signs, as necessary.	Medium	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	61	Consider extension of the auxiliary turn lanes, where possible, along Central Street eastbound and Elm Street westbound.	Medium	Mid-Term	Mid to High-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	62	Consider an increased uniform setback for all stop lines at the intersection, greater than the <i>MUTCD</i> 4-foot minimum gap, to increase the visibility of pedestrians within the crosswalks for heavy vehicles operators.	Medium	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	63	Install 'Stop Here on Red' traffic signs at locations where stop lines are located further than 5-feet from the crosswalk.	Low	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	64	Install 'Left Turn Yield to Pedestrians' signage at the signalized intersection for all four approaches. [See #8 in <i>Pedestrian Accommodations</i>]	Medium	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	65	Install pedestrian warning signage facing each direction at each uncontrolled pedestrian crossing in the vicinity of the Elm Square intersections. Evaluate the placement of advance pedestrian signage where applicable for each uncontrolled crossing location. [See #19 in <i>Pedestrian Accommodations</i> , #30 in <i>Channelized Right-Turn Lanes</i>]	Medium	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	66	Replace all non-consistent street name signs in the vicinity of Elm Square with Town standards.	Low	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	67	Separate the 'Right Turning Traffic Must Yield to Pedestrians' and the 'Lane Ends Merge Left' traffic signs along North Main Street southbound.	Low	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	68	Install supplemental traffic signage and pavement markings along Essex Street to reinforce the one-way flow nature of the roadway.	High	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	69	Complete a sign audit in the vicinity of Elm Square to document location, condition, and validity of each sign. Replace, relocate, remove traffic signage as appropriate.	Medium	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	70	Install retroreflective backplates to all traffic signal housings at the signalized intersection.	Medium	Short-Term	Low-Cost	Town of Andover
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	71	Check the operational condition of all pedestrian push buttons at the signalized intersection. [See #16 in <i>Pedestrian Accommodations</i>]	Medium	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Pavement Markings, Traffic Signs, & Traffic Signal Infrastructure	72	Relocate the pedestrian push button on the signalized intersection's northwest corner to a position within 10-feet of the ramp opening while accessible to a level surface. <i>[See #17 in Pedestrian Accommodations]</i>	Low	Short-Term	Mid-Cost	Town of Andover
Bicycle Accommodations	73	Evaluate opportunities to provide formal bicycle accommodations along Route 28, Central Street, and Elm Street.	High	Short to Long-Term	Low to High-Cost	Town of Andover / MassDOT
Bicycle Accommodations	74	Provide signage associated with bicyclists using the push buttons in conjunction with sidewalk-level bicycling improvements.	Low	Short-Term	Low-Cost	Town of Andover
Bicycle Accommodations	75	Consider the installation of narrow shoulder related signage along Elm Street westbound in advance of Cheever Circle where the widened shoulder abruptly ends.	Medium	Short-Term	Low-Cost	Town of Andover
Bicycle Accommodations	76	In conjunction with other cross-sectional improvements along Central Street, consider the inclusion of buffered or parking protected bicycle lanes.	High	Short-Term	Low-Cost	Town of Andover
Bicycle Accommodations	77	Consider the installation of bicycle boxes between the crosswalks and stop lines along each signalized approach allowing for improved sight lines from vehicles to pedestrians in the crosswalk while also providing a safe space for bicycle to wait at the intersection.	High	Short-Term	Low-Cost	Town of Andover / MassDOT
Bicycle Accommodations	78	Reapply the bicycle detection markings within each applicable lane of the signalized intersection.	Low	Short-Term	Low-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Arterial Corridors through Downtown	79	Evaluate a Road Diet along Route 28 between Shawsheen Square and Elm Square to narrow the cross-section of the corridor and provide additional space for enhanced pedestrian and bicycle accommodations and create a theme for traffic calming in advance of Elm Square.	Medium	Long-Term	High-Cost	Town of Andover / MassDOT
Arterial Corridors through Downtown	80	Evaluate pedestrian treatments for the uncontrolled Central Street crosswalk adjacent to Essex Street; including a center refuge island, raised crosswalk, or Pedestrian Hybrid Beacon (PHB). [See #20 in <i>Pedestrian Accommodations</i>]	Medium to High	Mid-Term to Long-Term	Mid-Cost to High-Cost	Town of Andover / MassDOT
Arterial Corridors through Downtown	81	Evaluate the applicability of a raised intersection at the focal intersection of Elm Square in relation to approach grades and other geometric features.	Medium	Long-Term	High-Cost	Town of Andover / MassDOT
Arterial Corridors through Downtown	82	Consider the installation of street planters or other street scape infrastructure to increase the feel of narrowness for vehicles through Elm Square.	Low	Short-Term	Low-Cost	Town of Andover
Arterial Corridors through Downtown	83	Evaluate the traffic signal cycle length and coordination conditions for opportunities to reduce delay across all modes.	Medium	Short-Term	Low-Cost	Town of Andover / MassDOT
Arterial Corridors through Downtown	84	Remove regulatory speed signage from Central Street. Complete an engineering study to rezone the speed along Central Street.	Low	Short-Term	Low-Cost	Town of Andover / MassDOT
Arterial Corridors through Downtown	85	Consider the installation of traditional street luminaries along each Elm Square approach.	Medium	Mid-Term	Mid-Cost	Town of Andover

Table 5: Potential Safety Enhancement Summary (Continued)

Safety Issue	#	Potential Safety Enhancement	Safety Payoff	Time Frame	Cost	Jurisdiction
Arterial Corridors through Downtown	86	Evaluate the existing pedestrian-level post lighting along each approach to enhance the overall light conditions in the audit area.	Medium	Short-Term	Low-Cost	Town of Andover
Arterial Corridors through Downtown	87	Complete a separate lighting audit to identify low light areas that may require further illumination.	Medium	Short-Term	Low-Cost	Town of Andover
Arterial Corridor through Downtown	88	Provide enhanced, but balanced, lighting for each luminaire location within the audit area.	Medium	Short-Term	Mid-Cost	Town of Andover

Appendix A. RSA Meeting Agenda

Appendix B. RSA Audit Team Contact List

Participating Audit Team Members

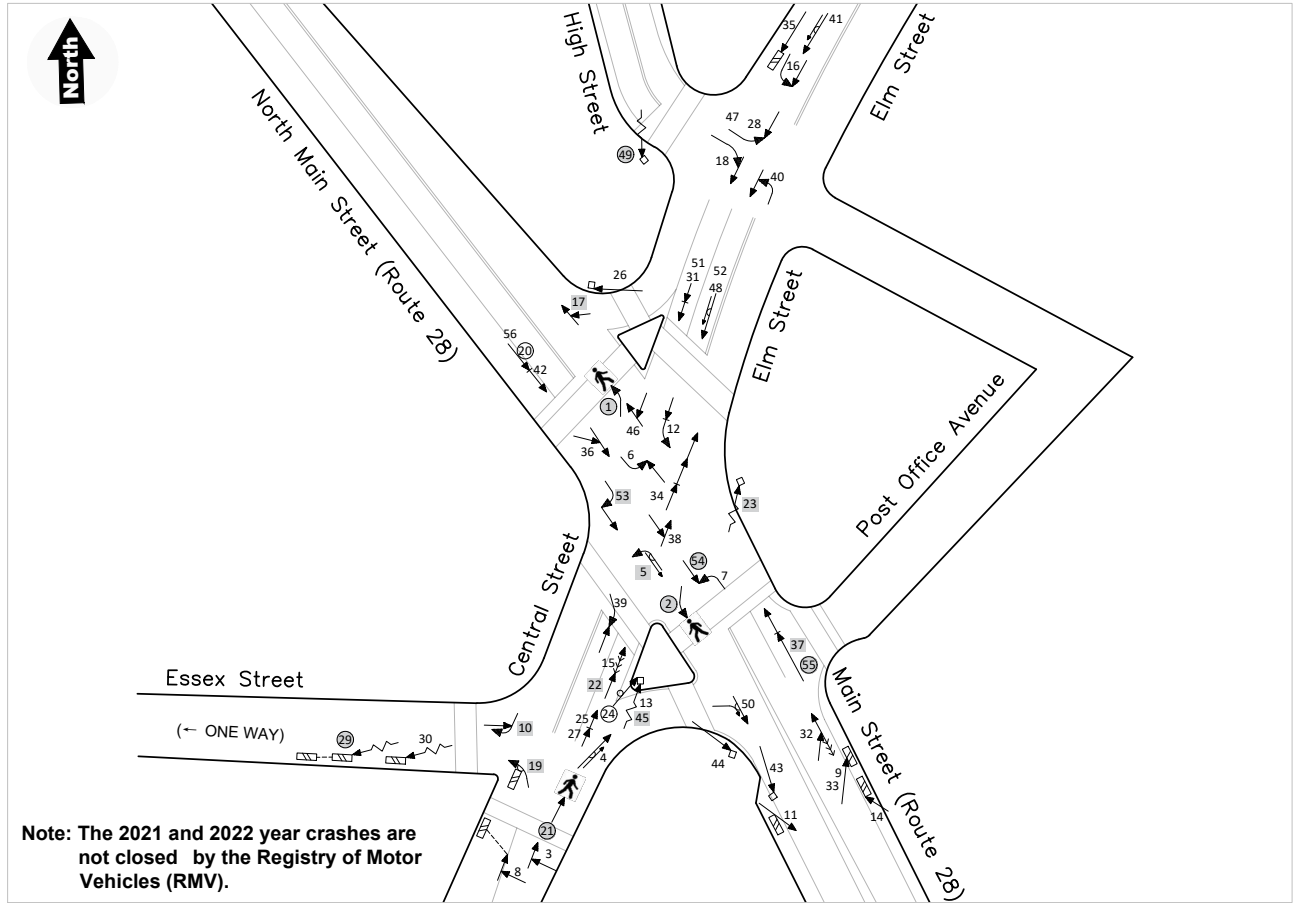
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Andrew Lewine	Walk Bike Andover	walkbikeandover@gmail.com
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Patrick Reed	Merrimack Valley Planning Commission	preed@mvpc.org
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Appendix C. Detailed Crash Data

Not to Scale

Elm Square Evaluation - Andover, Massachusetts
Road Safety Audit

LOCATION: Elm Square
 CITY/STATE: Andover, Massachusetts
 TIME PERIOD: 01/01/2017- 12/31/2022
 PREPARED BY: TEC, Inc.
 SOURCE: Town of Andover Police Department / MassDOT



LEGEND						SHOW FOR COLLISION		
→	VEHICLE PATH	↔	HEAD-ON COLLISION	□	FIXED OBJECT	1. Approximate location of collision, 2. Direction of collision, 3. Type of collision and vehicles involved, 4. Time, Day, Date 5. Any other pertinent factors mentioned on the report.		
←←←	BACKING VEHICLE	↘	ANGLED COLLISION	⊠	MOVEABLE OBJECT			
↔↔↔	SIDESWIPE COLLISION	→□	FIXED OBJECT COLLISION	⊞	PARKED VEHICLE			
→	PEDESTRIAN COLLISION	↻	OVERTURNED VEHICLE	○	PERSONAL INJURY			
→	CYCLIST COLLISION	↘	OUT-OF-CONTROL VEHICLE	⊙	FATALITY			
→	REAR-END COLLISION	⊞	NIGHT TIME CRASH	A	ANIMAL			
SUMMARY OF CRASHES ON DIAGRAM [no fatal collisions]								
	REAR-END	SIDESWIPE	HEAD-ON	ANGLED	SINGLE VEH	PED/BIKE	OTHER / UNK	TOTAL
PROPERTY DAMAGE ONLY	10	5	1	17	14	0	0	47
FATAL /NON-FATAL INJURY	2	0	0	1	3	3	0	9
UNKNOWN / NOT REPORTED	0	0	0	0	0	0	0	0
TOTAL	12	5	1	18	17	3	0	56

Figure F-1

Collision Diagram
2017-2022 Collision Data



TEC, Inc.
 282 Merrimack Street, 2nd Floor
 Lawrence, MA 01843
 978-794-1792
 www.TheEngineeringCorp.com

Crash Data Summary Tables
 North Main Street / Main Street @ Central Street / Elm Street - Andover, Massachusetts
 01/01/2017 - 12/31/2022

Note: The 2021 and 2022 year crashes are not closed by the Registry of Motor Vehicles (RMV)

Collision Diagram #	Crash Number	Crash Date	Crash Time	Age D1	Age D2	Age D3	Ambient Light	Weather Condition	Road Surface	Number of Vehicles	Crash Severity	Manner of Collision	Driver Contributing Codes	Detailed Narrative (from Crash Report)
1	4276474	10/27/2016	5:57 PM	N/A			Dark - Lighted	Rain	Wet	1	Non-fatal Injury	Pedestrian	No Improper Driving	MV1 was traveling EB on Central Street attempting to turn left onto North Main street strikes a pedestrian traveling WB to EB in the crosswalk. Pedestrian claimed to have the walk signal. MV1 operator reported that he had the green arrow signal indication for the left turn.
2	4297058	11/29/2016	6:44 PM	N/A			Dark - Lighted	Rain	Wet	1	Non-fatal Injury	Pedestrian	No Improper Driving	MV1 was traveling SB on Elm Street attempting to turn left onto Main street strikes a pedestrian traveling EB to WB in the crosswalk.
3	4305950	1/4/2017	5:51 PM	#N/A	#N/A		Daylight	Cloudy	Dry	4	Property Damage Only	Angled	Failure to Keep in Proper Lane	MV1 exiting ATM lane from Bank of America to make left turn onto Central Street stopped is waved into traffic by unknown vehicle. MV1 struck by MV2 who bypassed stopped traffic on Central Street.
4	4474188	1/30/2017	8:33 AM	82	60		Daylight	Clear	Dry	2	Property Damage Only	Sideswipe	No Improper Driving	MV1 (semi-trailer truck) attempts to take widened right-turn from Central Street EB to Main Street in channelized lane. MV1 strikes MV2 also traveling along Central Street EB attempting to take right-turn from outside lane.
5	4319974	1/31/2017	8:59 PM	50	37		Dark - Lighted	Snow	Snow	2	Property Damage Only	Sideswipe	Failure to Keep in Proper Lane	MV1 was traveling North Main Street SB with green signal indication. MV2 was traveling NB on Main Street attempting to turn left onto Central Street with green signal indication strikes MV1.
6	4329196	2/14/2017	3:27 PM	30	N/A		Daylight	Clear	Dry	2	Property Damage Only	Angled	Disregarded Traffic Controls	MV1 was traveling SB on North Main Street attempting to turn left onto Elm Street with green arrow. MV2 traveling NB on Main Street attempts to bypass MV1 and strikes vehicle. MV2 fled scene.
7	4338548	3/12/2017	12:18 PM	29	24		Daylight	Clear	Dry	2	Property Damage Only	Angled	Inattention / Distracted	MV1 was traveling NB on Main Street attempting to turn left onto Central Street in front of MV2 travelling SB on North Main Street. MV1 struck by MV2.
8	4384120	6/21/2017	4:52 PM	52	19	N/A	Daylight	Clear	Dry	3	Property Damage Only	Angled	Wrong Side / Wrong Way	MV1 traveling on Central Street EB backed up in traffic for Elm Square. MV2 enters Central Street from rear lot of 23 Main Street (Bank of America) waved in by unknown vehicle. MV1 attempts to bypass queued traffic over roadway centerline and strikes MV2. MV1 makes contact with MV3, a parked vehicle along Central Street WB after initial collision.
9	4477766	7/18/2017	1:27 PM	N/A	N/A		Daylight	Cloudy	Dry	2	Property Damage Only	Single Vehicle	Other	MV1 was parked in the on-street parking area immediately south of Post Office Avenue along Main Street NB. The operator on MV1 alleges the vehicle mirror was struck by another vehicle during the time it was parked there.
10	4480856	9/12/2017	10:04 PM	23	24		Dark - Lighted	Clear	Dry	2	Property Damage Only	Angled	Wrong Side / Wrong Way	MV1 was traveling WB on Central Street immediately after Elm Square. MV2 was traveling wrong way on Essex Street. MV1 collided with MV2 when making a right turn onto Essex Street.
11	4483515	9/22/2017	4:28 PM	65	N/A		Daylight	Rain	Wet	2	Property Damage Only	Single Vehicle	Inattention / Distracted	MV1 and MV2 were both legally parked in front of 11 Main Street along Main Street SB immediately south of Central Street. MV1 struck MV2 when attempted to pull out of the roadside parking spot.
12	4484007	10/11/2017	9:33 AM	28	67		Daylight	Clear	Dry	2	Property Damage Only	Rear-end	Followed Too Closely	MV1 and MV2 were both traveling WB on Elm Street behind one another. MV1 was rear-ended by MV2 while waiting to turn left onto Main Street.
13	4486392	12/25/2017	1:20 PM	N/A			Daylight	Snow	Snow	1	Property Damage Only	Single Vehicle	Other	MV1 was traveling EB on Central Street. MV1 lost control and struck a light pole located at the crossing island.
14	4494692	1/25/2018	10:56 AM		73		Daylight	Clear	Not Reported	1	Property Damage Only	Single Vehicle	Inattention / Distracted	MV1 was legally parked in front of 8 Main Street (Indra Salon) within on-street parking area. MV2 struck the rear end of MV1 when attempted to pull out of the roadside parking spot.
15	4559464	6/25/2018	8:26 AM	19	57		Daylight	Clear	Dry	2	Property Damage Only	Rear-end	Other	MV1 and MV2 were both traveling EB on Central Street behind one another. MV1 stalled. Driver of MV1 attempts to push vehicle and it rolled back and collided with MV2 that was behind.
16	4573535	6/29/2018	12:07 PM	25	70		Daylight	Clear	Dry	2	Property Damage Only	Angled	Inattention / Distracted	MV1 (truck) was traveling WB on Elm Street. MV2 was parked in front of 1 Elm Square. MV2 pulled into the traffic and was struck by MV1.

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Collision Diagram #	Crash Number	Crash Date	Crash Time	Age D1	Age D2	Age D3	Ambient Light	Weather Condition	Road Surface	Number of Vehicles	Crash Severity	Manner of Collision	Driver Contributing Codes	Detailed Narrative (from Crash Report)
17	4574180	7/20/2018	8:49 PM	49	20		Dark - Lighted	Clear	Dry	2	Property Damage Only	Angled	Failure to Yield Right-of-Way	MV1 was traveling NB on North Main Street passing through Elm Square. MV2 was traveling EB on Elm Street. MV2 struck MV1 when attempted to make a right turn onto North Main Street within channelized lane.
18	4614721	10/23/2018	7:35 AM	18	48		Daylight	Cloudy	Dry	2	Property Damage Only	Angled	Over-Steering / Over-Correcting	MV1 was traveling SB on High Street. MV2 was traveling WB on Elm Street. MV1 struck MV2 when attempted to make a right turn onto Elm Street.
19	4648375	1/4/2019	4:48 PM	47	32		Dark - Lighted	Clear	Dry	2	Property Damage Only	Single Vehicle	No Improper Driving	MV1 was traveling EB on Central Street. MV2 (semi-trailer truck) parked along Central Street WB immediately after Essex Street. MV1 attempts to turn left onto Essex Street and strikes tailgate of MV2.
20	4748624	1/6/2019	1:10 PM	19	59		Daylight	Cloudy	Dry	2	Non-fatal injury	Rear-end	Disregarded Traffic Controls	MV1 and MV2 were both traveling SB on North Main Street behind one another. Approaching the intersection, at the right lane, MV1 was rear ended by MV2 after stopping at the red light. [MV2 involved in second crash on Central Street after paperwork exchange]. Operator of MV2 was OUI.
21	4653992	1/14/2019	7:50 PM	53			Dark - Lighted	Clear	Dry	1	Non-fatal injury	Pedestrian	No Improper Driving	MV1 was traveling EB on Central Street passing Essex Street. MV1 struck a pedestrian which was crossing Central Street. According to witnesses, pedestrian was not within a marked crosswalk. The incident occurred just north of the existing crosswalk.
22	4672642	2/15/2019	9:07 PM	40	60		Dark - Lighted	Clear	Wet	2	Property Damage Only	Angled	Disregarded Traffic Controls	MV1 and MV2 were both traveling EB on Central Street behind one another. MV1 stops at red light and begins to reverse to get into left-turn lane. MV1 backs into MV2.
23	4679822	3/24/2019	8:11 PM	27			Dark - Lighted	Clear	Dry	1	Property Damage Only	Single Vehicle	No Improper Driving	MV1 was traveling NB on Main Street. MV1 was cut off by another vehicle and to avoid collision, MV1 swerved to the right striking the curb and the iron bollard in from of 2 Elm Square. MV1 operator was unlicensed.
24	4693274	4/4/2019	4:26 PM	55			Daylight	Clear	Dry	1	Non-fatal injury	Single Vehicle	Erratic / Aggressive / Reckless Driving	MV1 was traveling EB on Central Street. MV1 lost control, struck a light pole located at the crossing island, and rolled over afterwards. Operator of MV1 was OUI.
25	4718835	6/19/2019	11:44 AM	68	75		Daylight	Clear	Dry	2	Property Damage Only	Rear-end	Inattention / Distracted	MV1 and MV2 were both traveling EB on Central Street in the right lane. MV1 rear ended MV2 after both stopped at the signal. MV1 operator admits to not paying attention.
26	4731887	7/18/2019	1:55 PM	33			Daylight	Cloudy	Not Reported	1	Property Damage Only	Single Vehicle	Inattention / Distracted	MV1 (semi-trailer truck) was traveling WB on Elm Street. When attempted to make a right turn onto North Main Street within channelized lane, MV1 struck a light pole located on the northwest corner.
27	4756731	9/26/2019	1:59 PM	62	48		Daylight	Clear	Dry	2	Property Damage Only	Rear-end	Followed Too Closely	MV1 and MV2 were both traveling EB on Central Street passing Essex Street behind one another. Approaching the intersection MV1 was rear ended by MV2.
28	4774443	11/10/2019	11:21 AM	48	30		Daylight	Clear	Dry	2	Property Damage Only	Angled	Failure to Keep in Proper Lane	MV1 was traveling WB on Elm Street. MV2 was traveling SB on High Street. Unknown vehicle waved vehicle out of High Street. MV1 bypasses unknown vehicle on left. MV2 collided with MV1 after attempted to make a left turn onto Elm Street.
29	4782967	12/2/2019	5:43 PM	17	N/A	N/A	Dark - Not Lighted	Snow	Snow	3	Non-fatal injury	Single Vehicle	Excessive Speed	MV1 was traveling WB on Central Street. MV2 and MV3 were both legally parked on the southside of Essex Street. MV1 slid and lost control after making a right turn onto Essex Street and cashed into MV2 causing MV2 to collide with MV3.
30	4792219	12/17/2019	2:03 PM	N/A	19		Daylight	Snow	Snow	2	Property Damage Only	Single Vehicle	Other	MV2 was traveling WB on Central Street. MV1 was legally parked on the southside of Essex Street. MV2 slid and lost control, after making a right turn onto Essex Street and cashed into MV1.
31	4792768	12/17/2019	1:04 PM	21	64		Daylight	Snow	Snow	2	Property Damage Only	Rear-end	Excessive Speed	MV1 and MV2 were both traveling WB on Elm Street behind one another. MV2 stopped at the red light and was rear ended by MV1 which did not stop in time. Slippery road due to snow was considered in this incident.
32	4800497	1/7/2020	12:36 PM	20	31		Daylight	Clear	Dry	2	Property Damage Only	Angled	Other	MV1 was traveling NB on Main Street. MV2 was in front of 2 Main Street trying to park. At the same time, when MV1 was changing from the left lane to the right lane the MV2 was backing up. This caused MV1 to crash into MV2.

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Collision Diagram #	Crash Number	Crash Date	Crash Time	Age D1	Age D2	Age D3	Ambient Light	Weather Condition	Road Surface	Number of Vehicles	Crash Severity	Manner of Collision	Driver Contributing Codes	Detailed Narrative (from Crash Report)
33	4828193	3/7/2020	11:26 AM	89	N/A		Daylight	Clear	Dry	2	Property Damage Only	Single Vehicle	Inattention / Distracted	MV2 was parked in front of 4 Main Street (bobbles and Lace). MV2 cashed into MV1 when attempted to parallel park behind MV1.
34	4851481	6/6/2020	5:32 PM	63	19	28	Daylight	Clear	Dry	3	Property Damage Only	Rear-end	Inattention / Distracted	MV1, MV2, and MV3 were all traveling EB on Central Street. After crossing the intersection to Elm Street, MV2 was rear ended by MV3 and pushed into MV1.
35	4871532	8/19/2020	2:44 PM	51	N/A		Daylight	Clear	Dry	2	Property Damage Only	Single Vehicle	Other	MV1 was traveling EB on Elm Street. MV2 was parked near 7 Elm Street and was unoccupied. Operator of MV1 has medical episode while stopped and front bumper makes contact with MV2.
36	4880568	9/17/2020	2:04 PM	43	43		Daylight	Clear	Dry	2	Property Damage Only	Angled	Other	MV1 and MV2 were both traveling SB on North Main Street in adjacent lanes. At the intersection, the vehicles collided when attempted to merge into the single lane.
37	4923314	1/26/2021	8:45 PM	78	41		Dark - Lighted	Snow	Snow	2	Property Damage Only	Rear-end	Followed Too Closely	MV2 and MV2 were both traveling NB on Main Street. Approaching the intersection, MV1 was rear ended by MV2. It was reported that the signal was on flashing mode due to inclement weather.
38	4962480	4/21/2021	7:27 AM	19	31		Daylight	Clear	Dry	2	Property Damage Only	Angled	Disregarded Traffic Controls	MV1 was traveling EB on Central Street. MV2 was traveling SB on North Main Street. MV2 went through the red light and struck MV1 passing through intersection.
39	4993760	5/17/2021	11:29 AM	20	29		Daylight	Clear	Dry	2	Property Damage Only	Head-on	Failure to Keep in Proper Lane	MV1 was traveling SB on North Main Street. MV2 (Semi-trailer truck) was traveling EB on Central Street. When attempted to make a right turn onto Central Street, MV1 drove in the Central Street EB lane and struck MV2. MV2 was stopped a the red signal.
40	4993685	6/4/2021	11:15 AM	19			Daylight	Clear	Dry	1	Property Damage Only	Angled	No Improper Driving	MV1 was traveling WB on Elm Street. MV2 was traveling EB on Elm Street. MV2 struck MV1 when attempted to make a left turn onto High Street. MV2 fled scene.
41	4993790	7/9/2021	12:12 PM	25	N/A	N/A	Daylight	Rain	Wet	3	Property Damage Only	Single Vehicle	Other	MV1 traveling WB on Elm Street. The plastic pipe transported by MV1 shifted out of MV1 and hit the driver side mirror of MV2 and MV3, each parked on the near and far sides of Elm Square.
42	4993797	7/20/2021	10:58 AM	36	63		Daylight	Clear	Dry	2	Property Damage Only	Rear-end	Followed Too Closely	MV1 and MV2 were both traveling SB on North Main Street behind one another. Approaching the intersection, in the left lane, MV1 stopped in traffic. MV2 did not stop on time and rear ended MV1.
43	5017541	9/21/2021	8:10 AM	59	N/A		Daylight	Clear	Dry	2	Property Damage Only	Single Vehicle	Other	MV1 pulling into shoulder along Main Street SB adjacent to #10 Main Street strikes trailer support bar of electronic display sign trailer.
44	5042241	12/3/2021	12:01 PM	35			Daylight	Clear	Dry	1	Property Damage Only	Single Vehicle	Made an Improper Turn	MV1 (Semi-trailer truck) was traveling EB on Central Street. When attempted to make a right turn onto Main Street within channelized lane, MV1 struck a light pole located on the southeast corner.
45	5046538	12/9/2021	4:44 AM	43			Dark - Lighted	Snow	Snow	1	Property Damage Only	Single Vehicle	Erratic / Aggressive / Reckless Driving	MV1 was traveling EB on Central Street attempting to turn right onto Main Street utilizing channelized lane. MV1 lost control and struck the light pole located at the crossing island. MV1 operator was reported to be OUI.
46	5134268	1/7/2022	7:58 AM	37	45		Daylight	Snow	Snow	2	Property Damage Only	Angled	Excessive Speed	MV1 was traveling WB on Elm Street. MV2 was traveling NB on Main Street. MV1 attempting to stop for intersection could not stop due to weather conditions, and struck MV2.
47	5092401	4/1/2022	12:21 PM	58	88		Daylight	Cloudy	Wet	2	Property Damage Only	Angled	Disregarded Traffic Controls	MV1 was traveling EB on Elm Street. MV2 was traveling SB on High Street. MV2 collided with MV1 after attempted to make a left turn onto Elm Street.
48	5101880	5/7/2022	2:06 PM	50	51		Daylight	Cloudy	Dry	2	Property Damage Only	Sideswipe	Other	MV1 and MV2 were both traveling WB on Elm Street in adjacent lanes. MV2 struck MV1 when attempted to pass MV1 in the left lane. It is reported that, at the time Elm Street was in the process of being repaved and did not have the usual lane markings.
49	5103632	5/16/2022	12:15 AM	52			Dark - Lighted	Rain	Wet	1	Non-fatal Injury	Single Vehicle	Other	MV1 was traveling SB on High Street. MV1 lost control drove over the curb and struck the traffic signal cabinet.
50	5129190	7/15/2022	4:00 PM	59	46		Daylight	Clear	Dry	2	Property Damage Only	Sideswipe	Failure to Yield Right-of-Way	MV1 Was traveling EB on Central Street. MV2 was traveling SB on Main Street through intersection. MV2 struck MV1 when attempted to make a right turn onto Main Street within channelized right-turn lane.

Crash Data Summary Tables

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01/01/2017 - 12/31/2022

Note: The 2021 and 2022 year crashes are not closed by the Registry of Motor Vehicles (RMV)

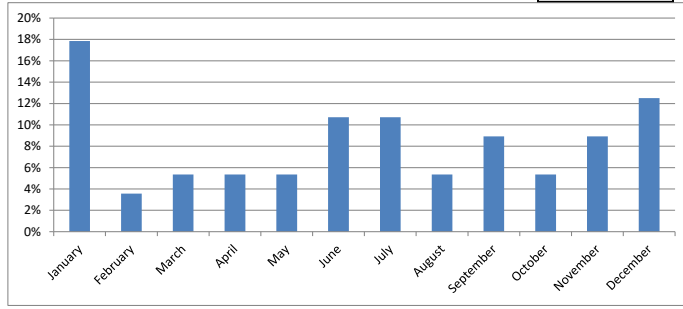
Collision Diagram #	Crash Number	Crash Date	Crash Time	Age D1	Age D2	Age D3	Ambient Light	Weather Condition	Road Surface	Number of Vehicles	Crash Severity	Manner of Collision	Driver Contributing Codes	Detailed Narrative (from Crash Report)
51	5140518	8/15/2022	2:56 PM	31	19		Daylight	Clear	Dry	2	Property Damage Only	Rear-end	Followed Too Closely	MV1 traveling WB on Elm Street when MV2 rear-ends approaching traffic signal.
52	5145841	8/31/2022	4:10 PM	88	75		Daylight	Clear	Dry	2	Property Damage Only	Sideswipe	Failure to Yield Right-of-Way	MV1 traveling WB on Elm Street . MV2 pulled out of High Street and struck MV1 when attempted to merge into the left lane. It was noted that due to recent paving there was no marked lanes.
53	5178013	11/15/2022	5:56 PM	21	43		Dark - Lighted	Clear	Dry	2	Property Damage Only	Angled	Failure to Keep in Proper Lane	MV1 and MV2 were both traveling SB on North Main Street. MV1 struck MV2 in the right lane when attempted to make a right turn onto Central Street.
54	5178583	11/18/2022	7:21 PM	16	33		Dark - Lighted	Clear	Dry	2	Non-fatal Injury	Angled	Disregarded Traffic Controls	MV1 was traveling NB on Main Street. MV2 was traveling SB on North Main Street passing through intersection. MV1 struck MV2 when attempted to make a left turn onto Central Street.
55	5181969	11/27/2022	7:04 PM	71	34		Dark - Lighted	Rain	Wet	2	Non-fatal Injury	Rear-end	No Improper Driving	MV1 and MV2 were both traveling NB on Main Street behind one another. MV1 was rear ended by MV2 when it stopped at the red signal.
56	5192190	12/20/2022	3:33 PM	55	32		Daylight	Clear	Dry	2	Property Damage Only	Rear-end	No Improper Driving	MV1 and MV2 were both traveling SB on North Main Street, in the right lane, behind one another. MV1 was rear ended by MV2 after stopping in traffic.

Elm Square

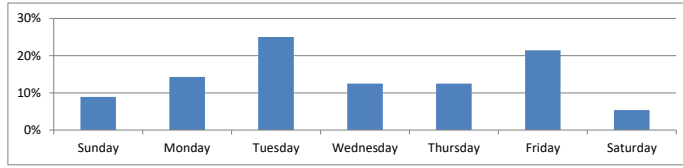
56

Ambient Light

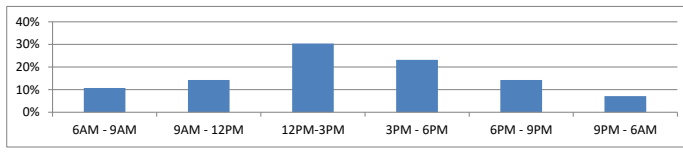
	4276474	10/27/2016
	4297058	11/29/2016
Month	#	%
January	10	18%
February	2	4%
March	3	5%
April	3	5%
May	3	5%
June	6	11%
July	6	11%
August	3	5%
September	5	9%
October	3	5%
November	5	9%
December	7	13%



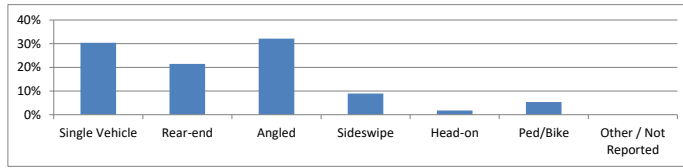
Day of Week	#	%
Sunday	5	9%
Monday	8	14%
Tuesday	14	25%
Wednesday	7	13%
Thursday	7	13%
Friday	12	21%
Saturday	3	5%



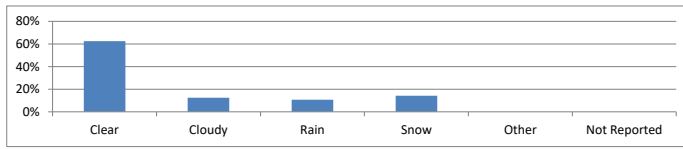
Time of Day	#	%
6AM - 9AM	6	11%
9AM - 12PM	8	14%
12PM-3PM	17	30%
3PM - 6PM	13	23%
6PM - 9PM	8	14%
9PM - 6AM	4	7%



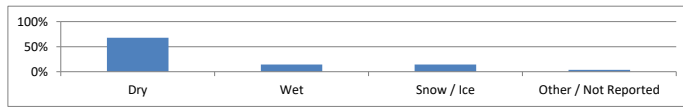
Manner of Collision	#	%
Single Vehicle	17	30%
Rear-end	12	21%
Angled	18	32%
Sideswipe	5	9%
Head-on	1	2%
Ped/Bike	3	5%
Other / Not Reported	0	0%



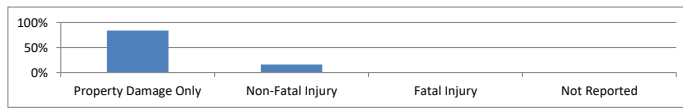
Weather Conditions	#	%
Clear	35	63%
Cloudy	7	13%
Rain	6	11%
Snow	8	14%
Other	0	0%
Not Reported	0	0%



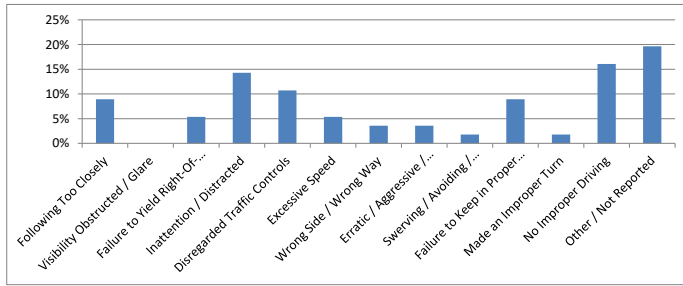
Road Surface	#	%
Dry	38	68%
Wet	8	14%
Snow / Ice	8	14%
Other / Not Reported	2	4%



Crash Severity	#	%
Property Damage Only	47	84%
Non-Fatal Injury	9	16%
Fatal Injury	0	0%
Not Reported	0	0%



Main Contributing Factor from Narrative	#	%
Following Too Closely	5	9%
Visibility Obstructed / Glare	0	0%
Failure to Yield Right-Of-Way	3	5%
Inattention / Distracted	8	14%
Disregarded Traffic Controls	6	11%
Excessive Speed	3	5%
Wrong Side / Wrong Way	2	4%
Erratic / Aggressive / Reckless Driving	2	4%
Swerving / Avoiding / Over-Steering / Over-Correcting	1	2%
Failure to Keep in Proper Lane	5	9%
Made an Improper Turn	1	2%
No Improper Driving	9	16%
Other / Not Reported	11	20%



Appendix D. Traffic Volumes

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	5	153	43	24	41	11	11	41	24	15	13	8	389
07:15 AM	9	119	47	21	41	24	8	51	11	11	45	2	389
07:30 AM	12	105	50	21	65	25	11	49	13	12	40	11	414
07:45 AM	10	146	72	28	77	22	20	45	12	11	38	12	493
Total	36	523	212	94	224	82	50	186	60	49	136	33	1685
08:00 AM	5	112	71	30	80	21	20	72	24	18	33	11	497
08:15 AM	19	109	65	25	73	19	12	89	20	18	39	8	496
08:30 AM	16	109	49	36	68	24	6	89	24	33	45	8	507
08:45 AM	13	98	48	14	59	19	11	86	21	43	50	10	472
Total	53	428	233	105	280	83	49	336	89	112	167	37	1972
09:00 AM	19	98	60	31	65	25	10	72	23	38	51	11	503
09:15 AM	14	103	34	20	43	11	16	57	23	23	33	9	386
09:30 AM	17	70	39	22	38	12	14	66	16	16	40	12	362
09:45 AM	16	81	34	32	67	22	7	63	13	22	41	13	411
Total	66	352	167	105	213	70	47	258	75	99	165	45	1662
10:00 AM	17	72	26	23	42	19	13	60	21	21	23	14	351
10:15 AM	12	67	19	19	49	22	10	74	18	25	34	11	360
10:30 AM	9	63	29	29	40	17	13	55	23	17	32	14	341
10:45 AM	15	77	33	13	48	23	12	48	26	29	34	13	371
Total	53	279	107	84	179	81	48	237	88	92	123	52	1423
11:00 AM	13	65	29	21	43	17	6	54	14	24	46	16	348
11:15 AM	7	71	26	20	43	15	7	68	12	24	30	6	329
11:30 AM	20	77	23	24	42	29	13	47	21	21	37	7	361
11:45 AM	21	87	26	28	41	15	14	67	18	28	44	10	399
Total	61	300	104	93	169	76	40	236	65	97	157	39	1437
12:00 PM	28	82	22	34	55	24	12	70	24	31	43	15	440
12:15 PM	16	87	28	30	41	24	12	78	28	28	42	9	423
12:30 PM	17	75	22	31	42	28	8	73	33	21	52	13	415
12:45 PM	18	79	40	23	43	24	15	77	24	32	43	10	428
Total	79	323	112	118	181	100	47	298	109	112	180	47	1706
01:00 PM	25	68	35	21	35	22	10	61	24	32	46	11	390
01:15 PM	20	70	41	20	24	20	11	71	35	27	42	5	386
01:30 PM	15	70	42	25	59	21	8	62	22	29	38	6	397
01:45 PM	15	70	42	22	54	26	12	81	26	23	38	15	424
Total	75	278	160	88	172	89	41	275	107	111	164	37	1597
02:00 PM	18	75	28	22	40	16	16	62	23	26	42	10	378
02:15 PM	11	77	34	16	33	30	8	80	21	31	44	14	399
02:30 PM	16	84	36	27	38	20	15	80	23	41	36	12	428
02:45 PM	12	85	49	17	53	22	23	85	18	31	40	11	446
Total	57	321	147	82	164	88	62	307	85	129	162	47	1651
03:00 PM	30	101	40	25	45	32	9	95	21	49	44	7	498
03:15 PM	26	87	28	24	48	34	15	96	30	43	57	10	498
03:30 PM	26	105	28	20	43	28	11	91	30	37	62	9	490
03:45 PM	27	69	27	20	47	19	20	88	29	41	76	6	469
Total	109	362	123	89	183	113	55	370	110	170	239	32	1955
04:00 PM	20	84	28	20	57	21	11	94	30	44	44	9	462
04:15 PM	24	63	25	19	55	22	17	100	21	48	76	11	481
04:30 PM	23	87	24	28	66	31	17	97	31	51	72	8	535
04:45 PM	22	69	28	26	62	22	19	85	31	32	64	8	468
Total	89	303	105	93	240	96	64	376	113	175	256	36	1946
05:00 PM	29	67	26	35	66	27	13	89	35	46	65	5	503
05:15 PM	24	94	26	20	49	30	16	98	28	45	81	7	518
05:30 PM	24	52	27	18	59	20	11	80	28	45	78	4	446

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 2

Groups Printed- Cars - Trucks

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
05:45 PM	21	78	23	21	53	30	15	88	23	36	78	11	477
Total	98	291	102	94	227	107	55	355	114	172	302	27	1944
06:00 PM	20	74	35	29	65	22	13	77	25	51	63	20	494
06:15 PM	22	60	24	32	48	22	17	61	31	35	73	11	436
06:30 PM	21	54	25	21	30	25	11	57	26	29	84	8	391
06:45 PM	13	73	16	18	49	18	13	60	33	20	48	7	368
Total	76	261	100	100	192	87	54	255	115	135	268	46	1689
Grand Total	852	4021	1672	1145	2424	1072	612	3489	1130	1453	2319	478	20667
Apprch %	13	61.4	25.5	24.7	52.2	23.1	11.7	66.7	21.6	34.2	54.6	11.2	
Total %	4.1	19.5	8.1	5.5	11.7	5.2	3	16.9	5.5	7	11.2	2.3	
Cars	841	3933	1621	1119	2399	1054	574	3409	1111	1435	2291	467	20254
% Cars	98.7	97.8	96.9	97.7	99	98.3	93.8	97.7	98.3	98.8	98.8	97.7	98
Trucks	11	88	51	26	25	18	38	80	19	18	28	11	413
% Trucks	1.3	2.2	3.1	2.3	1	1.7	6.2	2.3	1.7	1.2	1.2	2.3	2

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	10	146	72	228	28	77	22	127	20	45	12	77	11	38	12	61	493
08:00 AM	5	112	71	188	30	80	21	131	20	72	24	116	18	33	11	62	497
08:15 AM	19	109	65	193	25	73	19	117	12	89	20	121	18	39	8	65	496
08:30 AM	16	109	49	174	36	68	24	128	6	89	24	119	33	45	8	86	507
Total Volume	50	476	257	783	119	298	86	503	58	295	80	433	80	155	39	274	1993
% App. Total	6.4	60.8	32.8		23.7	59.2	17.1		13.4	68.1	18.5		29.2	56.6	14.2		
PHF	.658	.815	.892	.859	.826	.931	.896	.960	.725	.829	.833	.895	.606	.861	.813	.797	.983
Cars	47	471	251	769	114	296	84	494	53	291	79	423	77	152	39	268	1954
% Cars	94.0	98.9	97.7	98.2	95.8	99.3	97.7	98.2	91.4	98.6	98.8	97.7	96.3	98.1	100	97.8	98.0
Trucks	3	5	6	14	5	2	2	9	5	4	1	10	3	3	0	6	39
% Trucks	6.0	1.1	2.3	1.8	4.2	0.7	2.3	1.8	8.6	1.4	1.3	2.3	3.8	1.9	0	2.2	2.0

Accurate Counts

978-664-2565

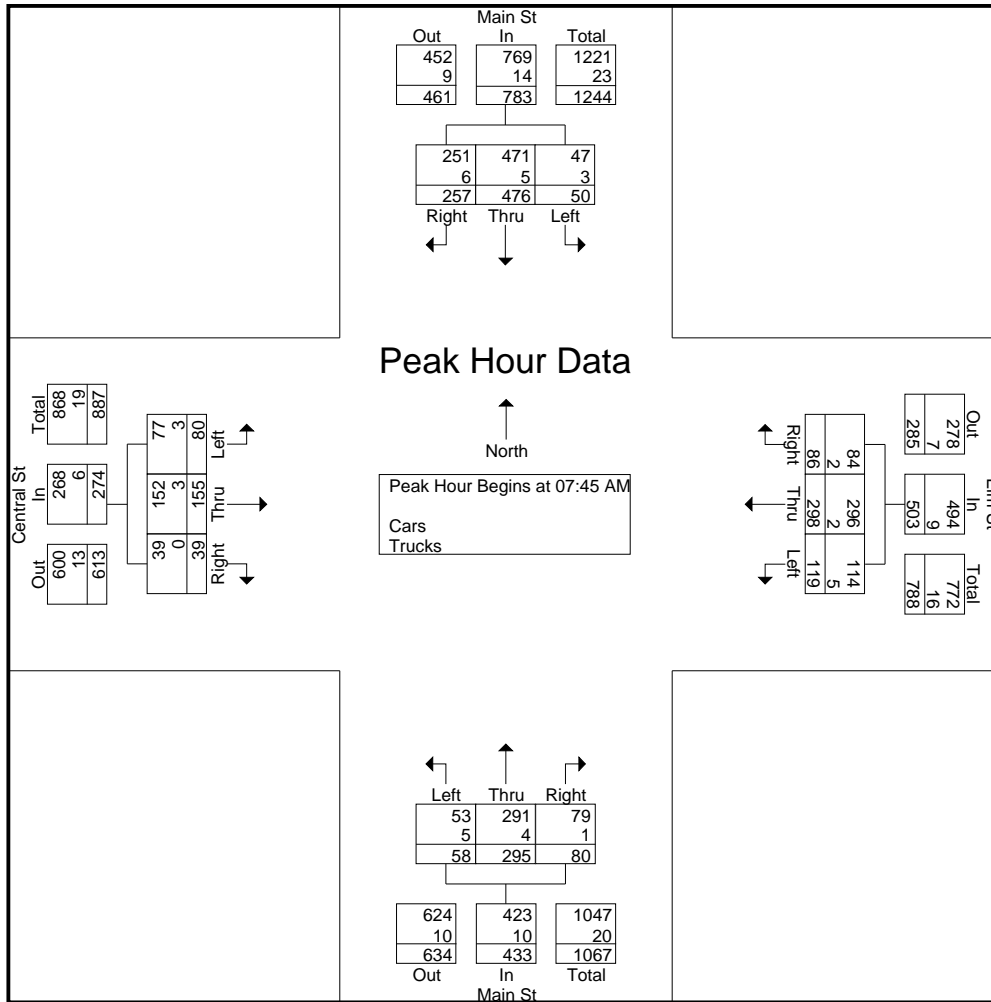
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 3

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				08:00 AM				08:15 AM			
+0 mins.	10	146	72	228	28	77	22	127	20	72	24	116	18	39	8	65
+15 mins.	5	112	71	188	30	80	21	131	12	89	20	121	33	45	8	86
+30 mins.	19	109	65	193	25	73	19	117	6	89	24	119	43	50	10	103
+45 mins.	16	109	49	174	36	68	24	128	11	86	21	118	38	51	11	100
Total Volume	50	476	257	783	119	298	86	503	49	336	89	474	132	185	37	354
% App. Total	6.4	60.8	32.8		23.7	59.2	17.1		10.3	70.9	18.8		37.3	52.3	10.5	
PHF	.658	.815	.892	.859	.826	.931	.896	.960	.613	.944	.927	.979	.767	.907	.841	.859
Cars	47	471	251	769	114	296	84	494	44	331	88	463	127	183	36	346
% Cars	94	98.9	97.7	98.2	95.8	99.3	97.7	98.2	89.8	98.5	98.9	97.7	96.2	98.9	97.3	97.7
Trucks	3	5	6	14	5	2	2	9	5	5	1	11	5	2	1	8
% Trucks	6	1.1	2.3	1.8	4.2	0.7	2.3	1.8	10.2	1.5	1.1	2.3	3.8	1.1	2.7	2.3

Accurate Counts

978-664-2565

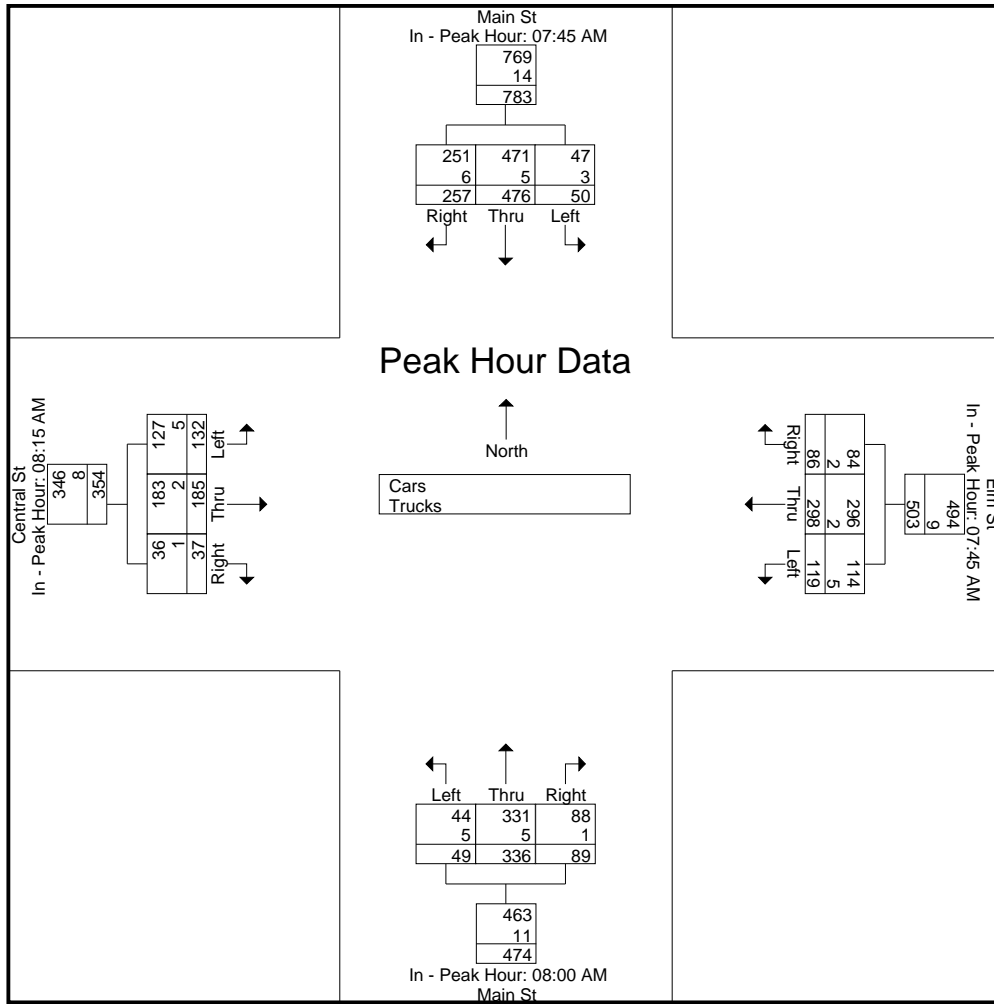
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 4

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 12:00 PM

12:00 PM	28	82	22	132	34	55	24	113	12	70	24	106	31	43	15	89	440
12:15 PM	16	87	28	131	30	41	24	95	12	78	28	118	28	42	9	79	423
12:30 PM	17	75	22	114	31	42	28	101	8	73	33	114	21	52	13	86	415
12:45 PM	18	79	40	137	23	43	24	90	15	77	24	116	32	43	10	85	428
Total Volume	79	323	112	514	118	181	100	399	47	298	109	454	112	180	47	339	1706
% App. Total	15.4	62.8	21.8		29.6	45.4	25.1		10.4	65.6	24		33	53.1	13.9		
PHF	.705	.928	.700	.938	.868	.823	.893	.883	.783	.955	.826	.962	.875	.865	.783	.952	.969
Cars	78	318	107	503	115	180	96	391	45	292	106	443	112	179	46	337	1674
% Cars	98.7	98.5	95.5	97.9	97.5	99.4	96.0	98.0	95.7	98.0	97.2	97.6	100	99.4	97.9	99.4	98.1
Trucks	1	5	5	11	3	1	4	8	2	6	3	11	0	1	1	2	32
% Trucks	1.3	1.5	4.5	2.1	2.5	0.6	4.0	2.0	4.3	2.0	2.8	2.4	0	0.6	2.1	0.6	1.9

Accurate Counts

978-664-2565

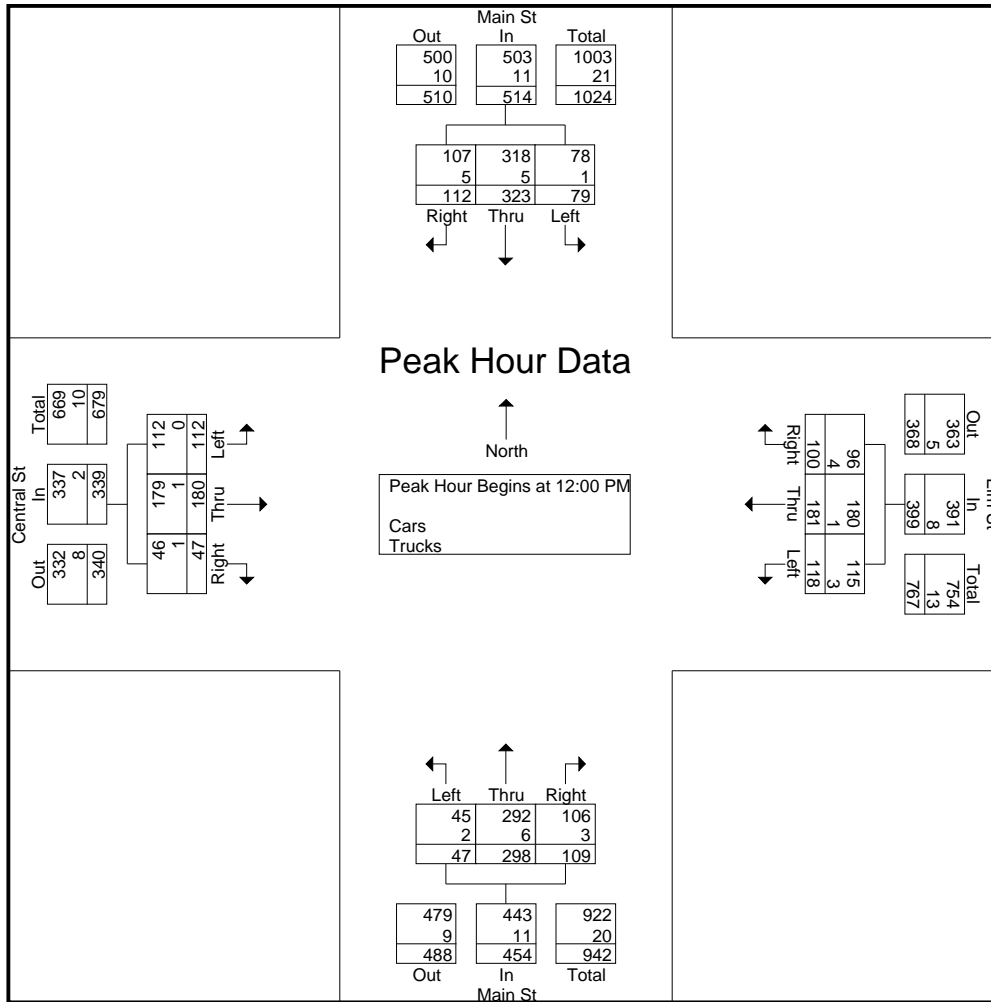
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 5

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	12:45 PM				12:00 PM				12:00 PM				12:00 PM			
+0 mins.	18	79	40	137	34	55	24	113	12	70	24	106	31	43	15	89
+15 mins.	25	68	35	128	30	41	24	95	12	78	28	118	28	42	9	79
+30 mins.	20	70	41	131	31	42	28	101	8	73	33	114	21	52	13	86
+45 mins.	15	70	42	127	23	43	24	90	15	77	24	116	32	43	10	85
Total Volume	78	287	158	523	118	181	100	399	47	298	109	454	112	180	47	339
% App. Total	14.9	54.9	30.2		29.6	45.4	25.1		10.4	65.6	24		33	53.1	13.9	
PHF	.780	.908	.940	.954	.868	.823	.893	.883	.783	.955	.826	.962	.875	.865	.783	.952
Cars	77	282	153	512	115	180	96	391	45	292	106	443	112	179	46	337
% Cars	98.7	98.3	96.8	97.9	97.5	99.4	96	98	95.7	98	97.2	97.6	100	99.4	97.9	99.4
Trucks	1	5	5	11	3	1	4	8	2	6	3	11	0	1	1	2
% Trucks	1.3	1.7	3.2	2.1	2.5	0.6	4	2	4.3	2	2.8	2.4	0	0.6	2.1	0.6

Accurate Counts

978-664-2565

File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

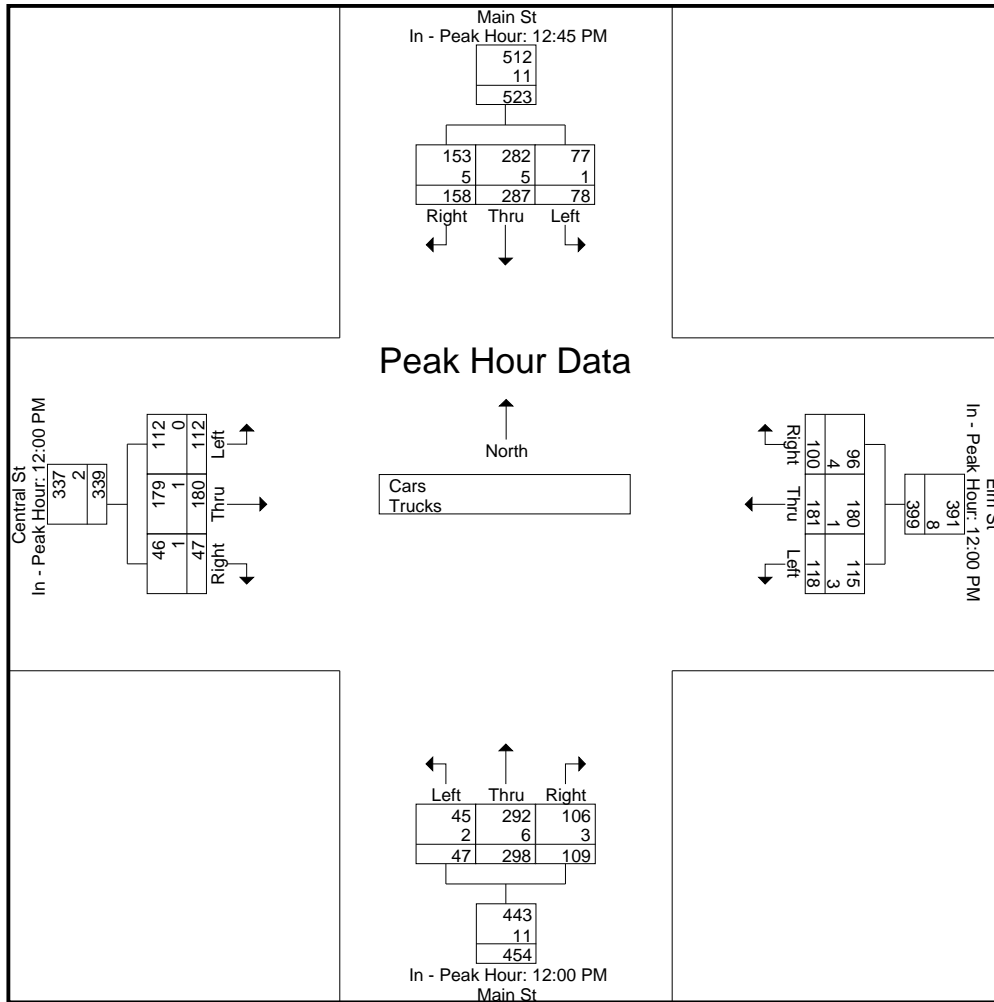
Page No : 6

N/S Street : Main Street

E/W Street : Elm St / Central St

City/State : Andover, MA

Weather : Clear



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	23	87	24	134	28	66	31	125	17	97	31	145	51	72	8	131	535
04:45 PM	22	69	28	119	26	62	22	110	19	85	31	135	32	64	8	104	468
05:00 PM	29	67	26	122	35	66	27	128	13	89	35	137	46	65	5	116	503
05:15 PM	24	94	26	144	20	49	30	99	16	98	28	142	45	81	7	133	518
Total Volume	98	317	104	519	109	243	110	462	65	369	125	559	174	282	28	484	2024
% App. Total	18.9	61.1	20		23.6	52.6	23.8		11.6	66	22.4		36	58.3	5.8		
PHF	.845	.843	.929	.901	.779	.920	.887	.902	.855	.941	.893	.964	.853	.870	.875	.910	.946
Cars	98	315	100	513	109	239	110	458	62	365	124	551	174	282	27	483	2005
% Cars	100	99.4	96.2	98.8	100	98.4	100	99.1	95.4	98.9	99.2	98.6	100	100	96.4	99.8	99.1
Trucks	0	2	4	6	0	4	0	4	3	4	1	8	0	0	1	1	19
% Trucks	0	0.6	3.8	1.2	0	1.6	0	0.9	4.6	1.1	0.8	1.4	0	0	3.6	0.2	0.9

Accurate Counts

978-664-2565

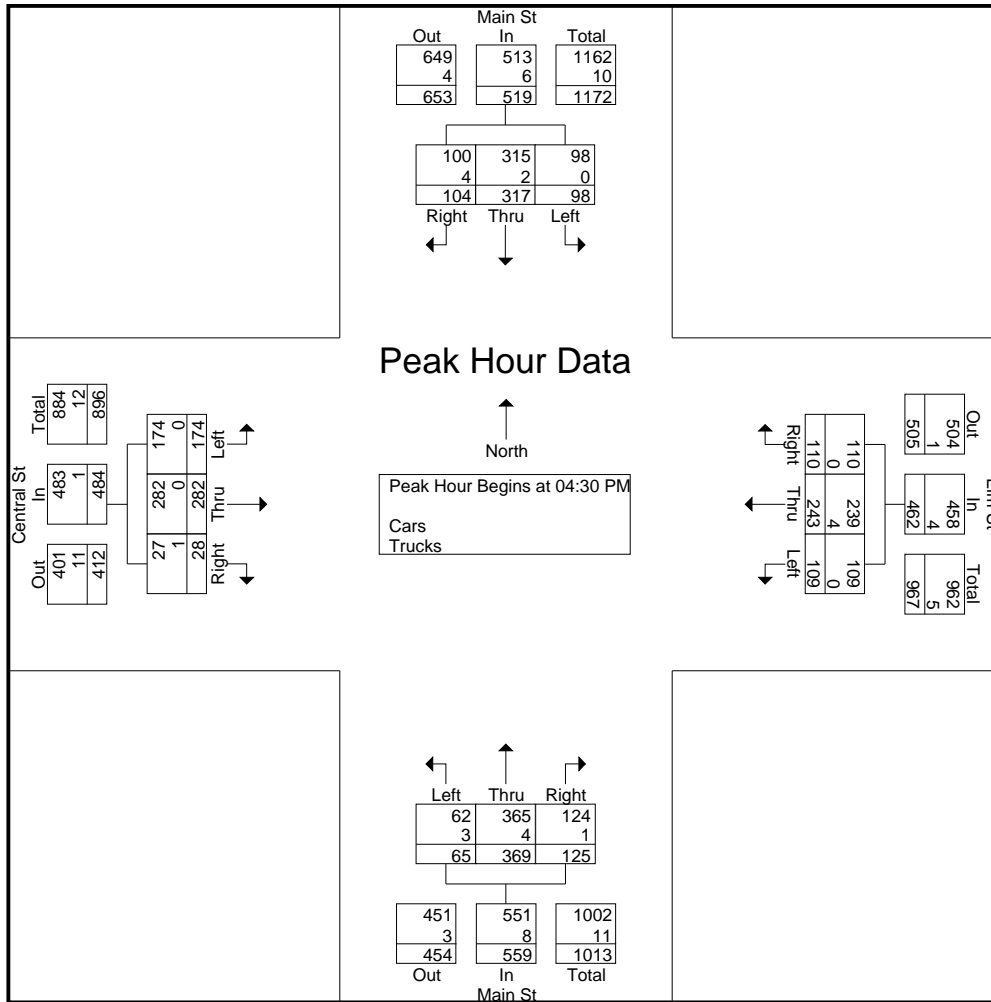
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 7

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:45 PM				04:30 PM				04:30 PM				05:15 PM			
+0 mins.	12	85	49	146	28	66	31	125	17	97	31	145	45	81	7	133
+15 mins.	30	101	40	171	26	62	22	110	19	85	31	135	45	78	4	127
+30 mins.	26	87	28	141	35	66	27	128	13	89	35	137	36	78	11	125
+45 mins.	26	105	28	159	20	49	30	99	16	98	28	142	51	63	20	134
Total Volume	94	378	145	617	109	243	110	462	65	369	125	559	177	300	42	519
% App. Total	15.2	61.3	23.5		23.6	52.6	23.8		11.6	66	22.4		34.1	57.8	8.1	
PHF	.783	.900	.740	.902	.779	.920	.887	.902	.855	.941	.893	.964	.868	.926	.525	.968
Cars	92	374	143	609	109	239	110	458	62	365	124	551	177	299	41	517
% Cars	97.9	98.9	98.6	98.7	100	98.4	100	99.1	95.4	98.9	99.2	98.6	100	99.7	97.6	99.6
Trucks	2	4	2	8	0	4	0	4	3	4	1	8	0	1	1	2
% Trucks	2.1	1.1	1.4	1.3	0	1.6	0	0.9	4.6	1.1	0.8	1.4	0	0.3	2.4	0.4

Accurate Counts

978-664-2565

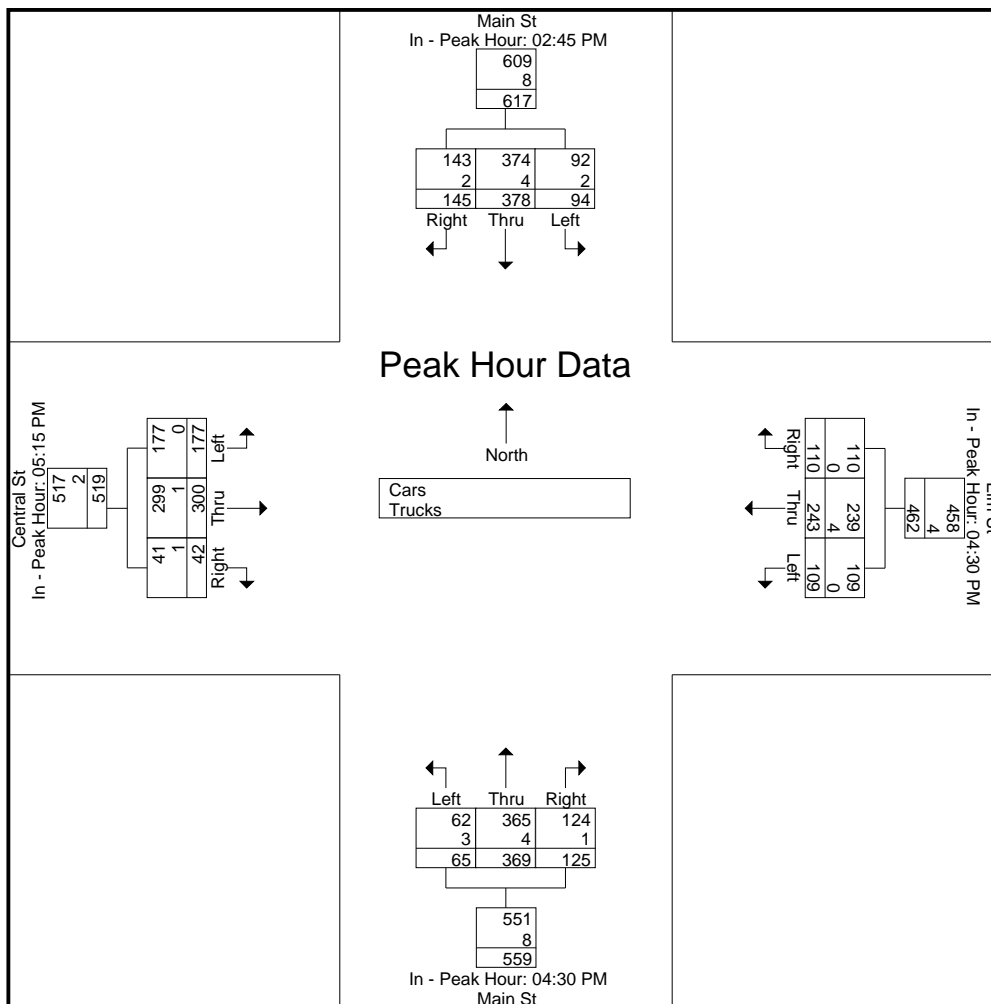
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 8

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 1

Groups Printed- Cars

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	5	147	43	23	40	11	11	40	23	15	13	8	379
07:15 AM	9	114	43	19	41	24	7	47	11	11	40	2	368
07:30 AM	12	105	49	21	64	25	10	48	13	12	39	11	409
07:45 AM	9	142	71	28	76	22	19	45	11	11	37	12	483
Total	35	508	206	91	221	82	47	180	58	49	129	33	1639
08:00 AM	5	112	71	28	79	21	19	70	24	17	32	11	489
08:15 AM	17	109	61	24	73	18	9	88	20	17	38	8	482
08:30 AM	16	108	48	34	68	23	6	88	24	32	45	8	500
08:45 AM	13	90	46	14	59	19	10	85	20	40	50	10	456
Total	51	419	226	100	279	81	44	331	88	106	165	37	1927
09:00 AM	19	93	58	30	62	25	10	69	23	38	50	10	487
09:15 AM	14	101	33	20	43	11	15	56	23	23	33	9	381
09:30 AM	17	67	39	21	38	12	13	62	16	16	39	12	352
09:45 AM	16	80	33	32	67	21	6	61	13	21	40	13	403
Total	66	341	163	103	210	69	44	248	75	98	162	44	1623
10:00 AM	17	69	26	23	42	19	12	59	21	21	23	13	345
10:15 AM	12	63	17	18	49	21	10	72	18	25	32	10	347
10:30 AM	9	60	29	29	39	17	12	53	21	16	31	14	330
10:45 AM	15	74	32	10	46	22	11	47	25	27	33	13	355
Total	53	266	104	80	176	79	45	231	85	89	119	50	1377
11:00 AM	13	64	27	21	43	17	6	52	13	24	45	16	341
11:15 AM	7	71	23	20	43	15	7	68	12	23	29	5	323
11:30 AM	19	74	23	24	42	29	13	45	21	21	37	7	355
11:45 AM	21	86	25	27	40	15	12	65	17	27	43	10	388
Total	60	295	98	92	168	76	38	230	63	95	154	38	1407
12:00 PM	28	80	22	34	55	23	12	68	23	31	43	15	434
12:15 PM	16	86	26	30	40	23	11	75	27	28	42	9	413
12:30 PM	17	75	21	30	42	26	8	72	33	21	52	12	409
12:45 PM	17	77	38	21	43	24	14	77	23	32	42	10	418
Total	78	318	107	115	180	96	45	292	106	112	179	46	1674
01:00 PM	25	68	34	21	34	22	9	60	24	32	46	11	386
01:15 PM	20	69	39	18	24	20	10	70	34	27	42	5	378
01:30 PM	15	68	42	24	59	21	8	59	21	29	36	6	388
01:45 PM	15	68	41	22	54	25	11	80	25	23	38	13	415
Total	75	273	156	85	171	88	38	269	104	111	162	35	1567
02:00 PM	18	73	28	22	40	16	15	61	23	26	42	10	374
02:15 PM	11	71	32	15	33	29	7	78	21	31	43	14	385
02:30 PM	15	81	35	27	37	19	14	76	23	41	36	12	416
02:45 PM	12	85	48	16	53	21	22	80	18	28	40	10	433
Total	56	310	143	80	163	85	58	295	85	126	161	46	1608
03:00 PM	29	99	40	25	45	31	8	92	21	49	43	7	489
03:15 PM	26	86	27	22	46	34	14	94	29	43	57	10	488
03:30 PM	25	104	28	20	43	28	10	90	30	37	61	9	485
03:45 PM	27	69	25	19	45	19	19	88	26	40	76	6	459
Total	107	358	120	86	179	112	51	364	106	169	237	32	1921
04:00 PM	20	79	28	20	54	20	10	91	30	44	42	9	447
04:15 PM	23	63	24	19	55	22	16	94	21	47	76	10	470
04:30 PM	23	86	24	28	66	31	16	97	31	51	72	8	533
04:45 PM	22	68	26	26	61	22	18	84	31	32	64	8	462
Total	88	296	102	93	236	95	60	366	113	174	254	35	1912
05:00 PM	29	67	25	35	66	27	13	87	35	46	65	5	500
05:15 PM	24	94	25	20	46	30	15	97	27	45	81	6	510
05:30 PM	22	50	27	18	59	20	10	80	28	45	78	4	441

Accurate Counts

978-664-2565

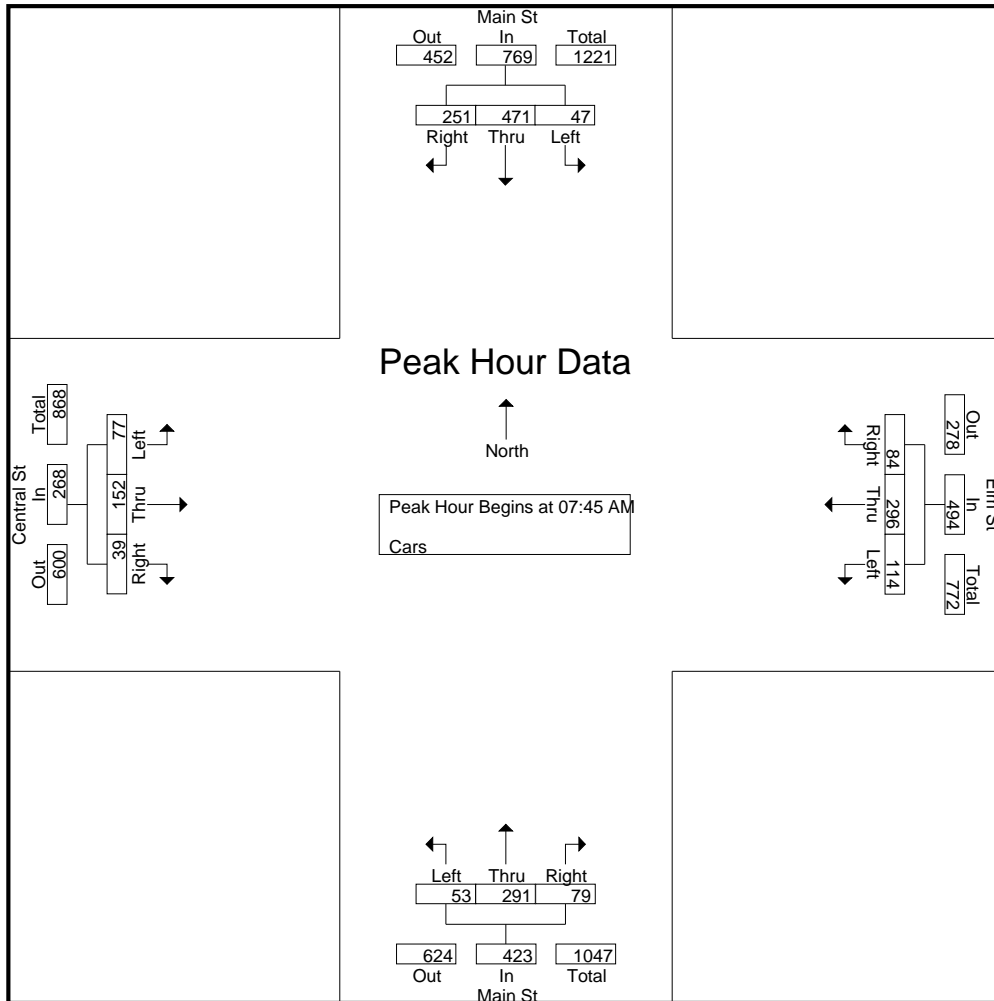
N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 2

Groups Printed- Cars

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
05:45 PM	21	78	22	21	53	28	14	87	23	36	77	11	471
Total	96	289	99	94	224	105	52	351	113	172	301	26	1922
06:00 PM	20	74	35	29	65	22	13	76	25	51	63	20	493
06:15 PM	22	60	22	32	48	21	16	59	31	35	73	11	430
06:30 PM	21	54	25	21	30	25	11	57	26	28	84	7	389
06:45 PM	13	72	15	18	49	18	12	60	33	20	48	7	365
Total	76	260	97	100	192	86	52	252	115	134	268	45	1677
Grand Total	841	3933	1621	1119	2399	1054	574	3409	1111	1435	2291	467	20254
Apprch %	13.2	61.5	25.3	24.5	52.5	23.1	11.3	66.9	21.8	34.2	54.6	11.1	
Total %	4.2	19.4	8	5.5	11.8	5.2	2.8	16.8	5.5	7.1	11.3	2.3	

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	9	142	71	222	28	76	22	126	19	45	11	75	11	37	12	60	483
08:00 AM	5	112	71	188	28	79	21	128	19	70	24	113	17	32	11	60	489
08:15 AM	17	109	61	187	24	73	18	115	9	88	20	117	17	38	8	63	482
08:30 AM	16	108	48	172	34	68	23	125	6	88	24	118	32	45	8	85	500
Total Volume	47	471	251	769	114	296	84	494	53	291	79	423	77	152	39	268	1954
% App. Total	6.1	61.2	32.6		23.1	59.9	17		12.5	68.8	18.7		28.7	56.7	14.6		
PHF	.691	.829	.884	.866	.838	.937	.913	.965	.697	.827	.823	.896	.602	.844	.813	.788	.977



Accurate Counts

978-664-2565

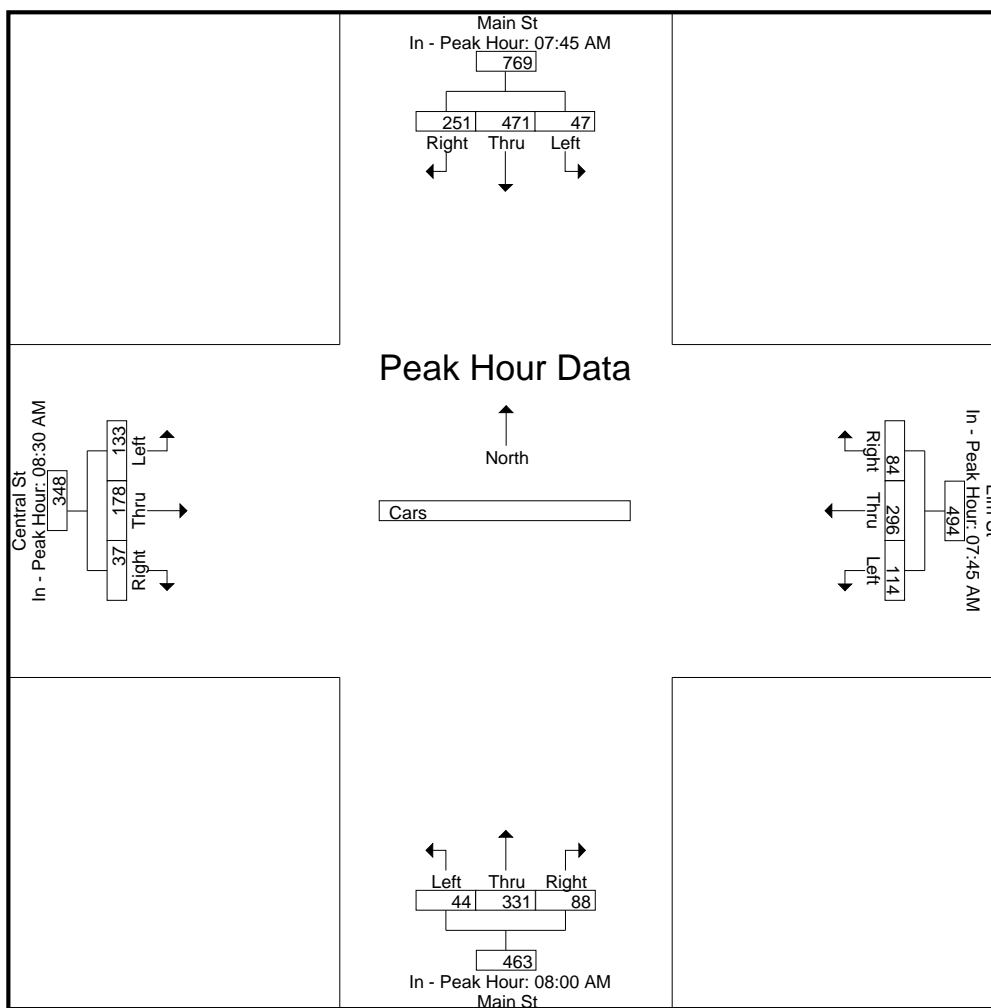
N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 3

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				08:00 AM				08:30 AM			
+0 mins.	9	142	71	222	28	76	22	126	19	70	24	113	32	45	8	85
+15 mins.	5	112	71	188	28	79	21	128	9	88	20	117	40	50	10	100
+30 mins.	17	109	61	187	24	73	18	115	6	88	24	118	38	50	10	98
+45 mins.	16	108	48	172	34	68	23	125	10	85	20	115	23	33	9	65
Total Volume	47	471	251	769	114	296	84	494	44	331	88	463	133	178	37	348
% App. Total	6.1	61.2	32.6		23.1	59.9	17		9.5	71.5	19		38.2	51.1	10.6	
PHF	.691	.829	.884	.866	.838	.937	.913	.965	.579	.940	.917	.981	.831	.890	.925	.870



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 12:00 PM

12:00 PM	28	80	22	130	34	55	23	112	12	68	23	103	31	43	15	89	434
12:15 PM	16	86	26	128	30	40	23	93	11	75	27	113	28	42	9	79	413
12:30 PM	17	75	21	113	30	42	26	98	8	72	33	113	21	52	12	85	409
12:45 PM	17	77	38	132	21	43	24	88	14	77	23	114	32	42	10	84	418
Total Volume	78	318	107	503	115	180	96	391	45	292	106	443	112	179	46	337	1674
% App. Total	15.5	63.2	21.3		29.4	46	24.6		10.2	65.9	23.9		33.2	53.1	13.6		
PHF	.696	.924	.704	.953	.846	.818	.923	.873	.804	.948	.803	.971	.875	.861	.767	.947	.964

Accurate Counts

978-664-2565

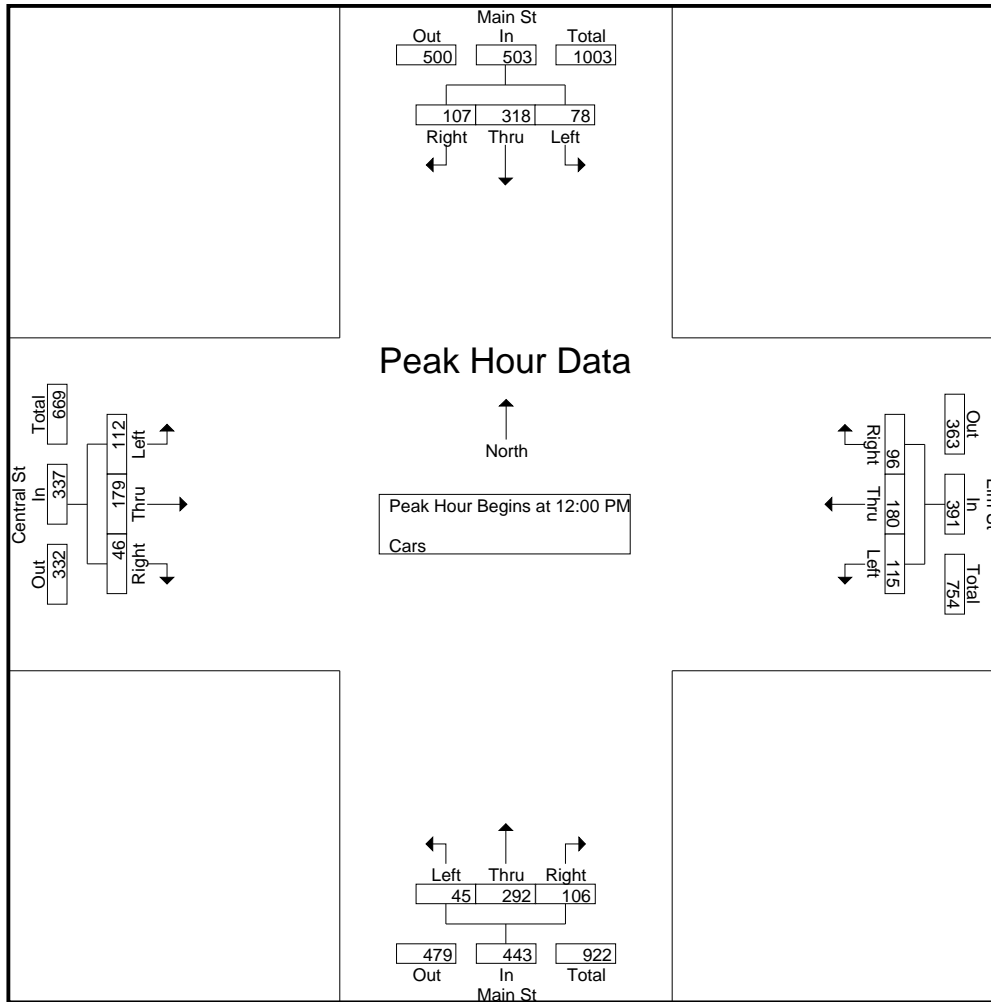
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 4

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	12:45 PM				12:00 PM				12:00 PM				12:00 PM			
+0 mins.	17	77	38	132	34	55	23	112	12	68	23	103	31	43	15	89
+15 mins.	25	68	34	127	30	40	23	93	11	75	27	113	28	42	9	79
+30 mins.	20	69	39	128	30	42	26	98	8	72	33	113	21	52	12	85
+45 mins.	15	68	42	125	21	43	24	88	14	77	23	114	32	42	10	84
Total Volume	77	282	153	512	115	180	96	391	45	292	106	443	112	179	46	337
% App. Total	15	55.1	29.9		29.4	46	24.6		10.2	65.9	23.9		33.2	53.1	13.6	
PHF	.770	.916	.911	.970	.846	.818	.923	.873	.804	.948	.803	.971	.875	.861	.767	.947

Accurate Counts

978-664-2565

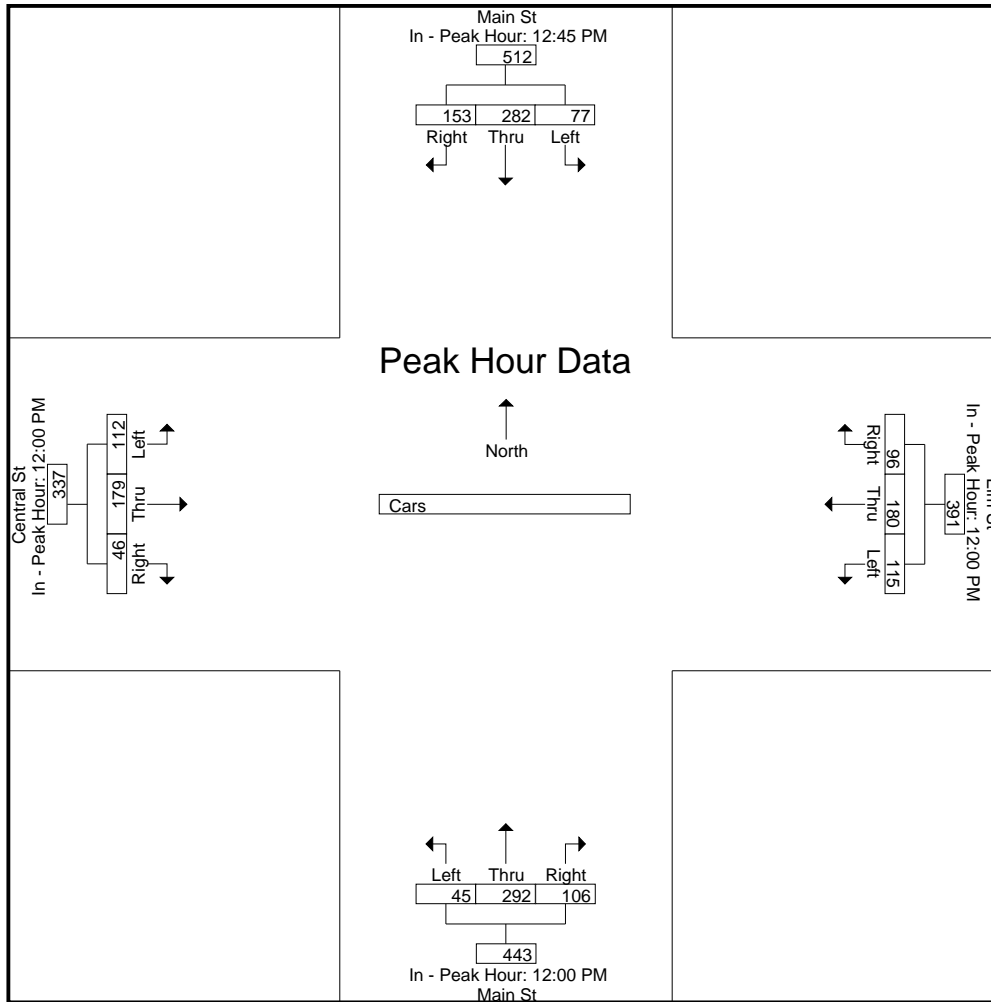
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 5

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

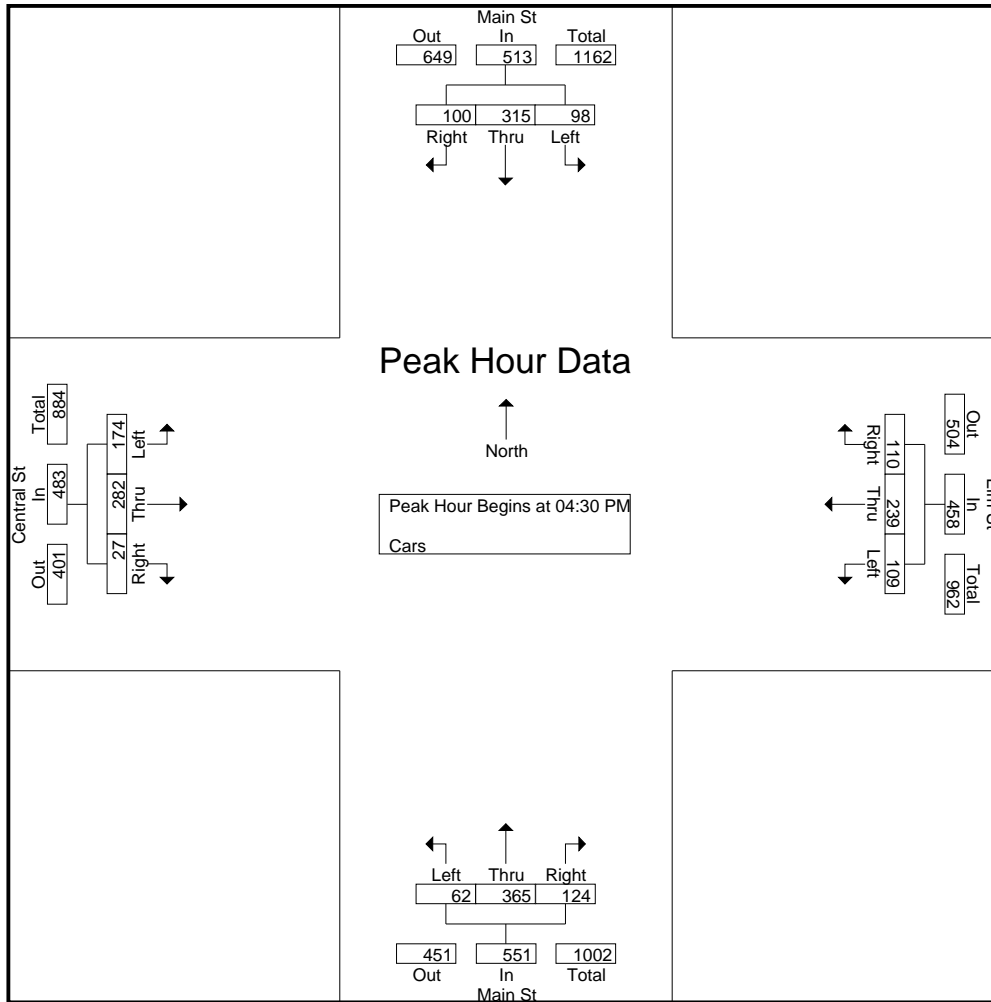
04:30 PM	23	86	24	133	28	66	31	125	16	97	31	144	51	72	8	131	533
04:45 PM	22	68	26	116	26	61	22	109	18	84	31	133	32	64	8	104	462
05:00 PM	29	67	25	121	35	66	27	128	13	87	35	135	46	65	5	116	500
05:15 PM	24	94	25	143	20	46	30	96	15	97	27	139	45	81	6	132	510
Total Volume	98	315	100	513	109	239	110	458	62	365	124	551	174	282	27	483	2005
% App. Total	19.1	61.4	19.5		23.8	52.2	24		11.3	66.2	22.5		36	58.4	5.6		
PHF	.845	.838	.962	.897	.779	.905	.887	.895	.861	.941	.886	.957	.853	.870	.844	.915	.940

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:45 PM				04:15 PM				04:30 PM				05:15 PM			
+0 mins.	12	85	48	145	19	55	22	96	16	97	31	144	45	81	6	132
+15 mins.	29	99	40	168	28	66	31	125	18	84	31	133	45	78	4	127
+30 mins.	26	86	27	139	26	61	22	109	13	87	35	135	36	77	11	124
+45 mins.	25	104	28	157	35	66	27	128	15	97	27	139	51	63	20	134
Total Volume	92	374	143	609	108	248	102	458	62	365	124	551	177	299	41	517
% App. Total	15.1	61.4	23.5		23.6	54.1	22.3		11.3	66.2	22.5		34.2	57.8	7.9	
PHF	.793	.899	.745	.906	.771	.939	.823	.895	.861	.941	.886	.957	.868	.923	.513	.965

Accurate Counts

978-664-2565

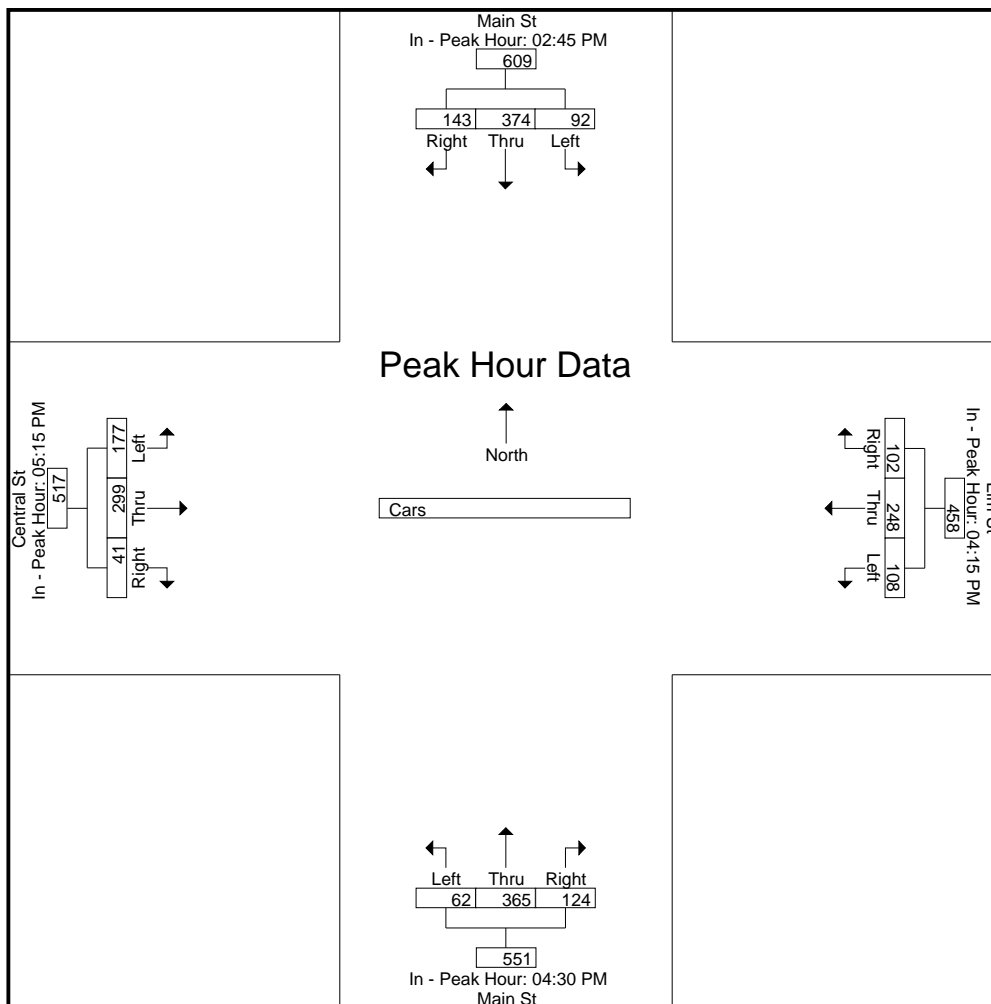
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 7

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 1

Groups Printed- Trucks

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	6	0	1	1	0	0	1	1	0	0	0	10
07:15 AM	0	5	4	2	0	0	1	4	0	0	5	0	21
07:30 AM	0	0	1	0	1	0	1	1	0	0	1	0	5
07:45 AM	1	4	1	0	1	0	1	0	1	0	1	0	10
Total	1	15	6	3	3	0	3	6	2	0	7	0	46
08:00 AM	0	0	0	2	1	0	1	2	0	1	1	0	8
08:15 AM	2	0	4	1	0	1	3	1	0	1	1	0	14
08:30 AM	0	1	1	2	0	1	0	1	0	1	0	0	7
08:45 AM	0	8	2	0	0	0	1	1	1	3	0	0	16
Total	2	9	7	5	1	2	5	5	1	6	2	0	45
09:00 AM	0	5	2	1	3	0	0	3	0	0	1	1	16
09:15 AM	0	2	1	0	0	0	1	1	0	0	0	0	5
09:30 AM	0	3	0	1	0	0	1	4	0	0	1	0	10
09:45 AM	0	1	1	0	0	1	1	2	0	1	1	0	8
Total	0	11	4	2	3	1	3	10	0	1	3	1	39
10:00 AM	0	3	0	0	0	0	1	1	0	0	0	1	6
10:15 AM	0	4	2	1	0	1	0	2	0	0	2	1	13
10:30 AM	0	3	0	0	1	0	1	2	2	1	1	0	11
10:45 AM	0	3	1	3	2	1	1	1	1	2	1	0	16
Total	0	13	3	4	3	2	3	6	3	3	4	2	46
11:00 AM	0	1	2	0	0	0	0	2	1	0	1	0	7
11:15 AM	0	0	3	0	0	0	0	0	0	1	1	1	6
11:30 AM	1	3	0	0	0	0	0	2	0	0	0	0	6
11:45 AM	0	1	1	1	1	0	2	2	1	1	1	0	11
Total	1	5	6	1	1	0	2	6	2	2	3	1	30
12:00 PM	0	2	0	0	0	1	0	2	1	0	0	0	6
12:15 PM	0	1	2	0	1	1	1	3	1	0	0	0	10
12:30 PM	0	0	1	1	0	2	0	1	0	0	0	1	6
12:45 PM	1	2	2	2	0	0	1	0	1	0	1	0	10
Total	1	5	5	3	1	4	2	6	3	0	1	1	32
01:00 PM	0	0	1	0	1	0	1	1	0	0	0	0	4
01:15 PM	0	1	2	2	0	0	1	1	1	0	0	0	8
01:30 PM	0	2	0	1	0	0	0	3	1	0	2	0	9
01:45 PM	0	2	1	0	0	1	1	1	1	0	0	2	9
Total	0	5	4	3	1	1	3	6	3	0	2	2	30
02:00 PM	0	2	0	0	0	0	1	1	0	0	0	0	4
02:15 PM	0	6	2	1	0	1	1	2	0	0	1	0	14
02:30 PM	1	3	1	0	1	1	1	4	0	0	0	0	12
02:45 PM	0	0	1	1	0	1	1	5	0	3	0	1	13
Total	1	11	4	2	1	3	4	12	0	3	1	1	43
03:00 PM	1	2	0	0	0	1	1	3	0	0	1	0	9
03:15 PM	0	1	1	2	2	0	1	2	1	0	0	0	10
03:30 PM	1	1	0	0	0	0	1	1	0	0	1	0	5
03:45 PM	0	0	2	1	2	0	1	0	3	1	0	0	10
Total	2	4	3	3	4	1	4	6	4	1	2	0	34
04:00 PM	0	5	0	0	3	1	1	3	0	0	2	0	15
04:15 PM	1	0	1	0	0	0	1	6	0	1	0	1	11
04:30 PM	0	1	0	0	0	0	1	0	0	0	0	0	2
04:45 PM	0	1	2	0	1	0	1	1	0	0	0	0	6
Total	1	7	3	0	4	1	4	10	0	1	2	1	34
05:00 PM	0	0	1	0	0	0	0	2	0	0	0	0	3
05:15 PM	0	0	1	0	3	0	1	1	1	0	0	1	8
05:30 PM	2	2	0	0	0	0	1	0	0	0	0	0	5

Accurate Counts

978-664-2565

File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 2

N/S Street : Main Street

E/W Street : Elm St / Central St

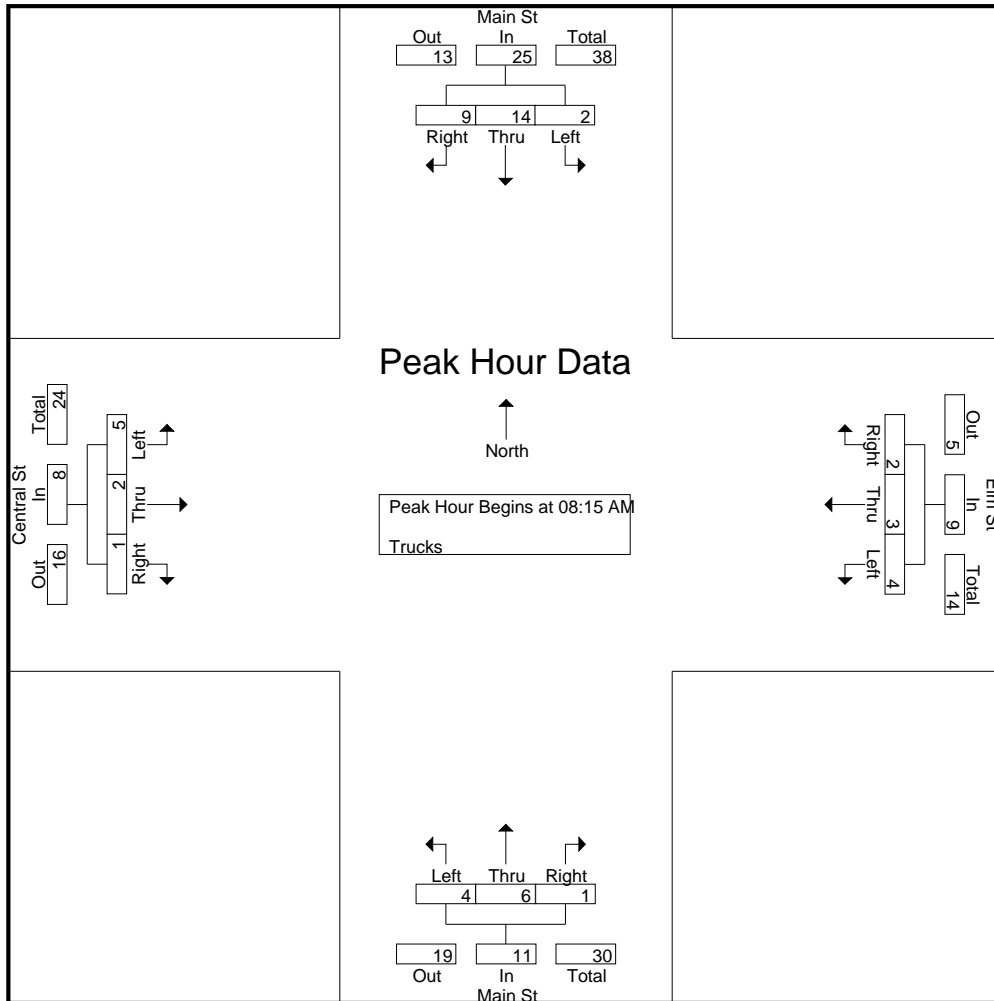
City/State : Andover, MA

Weather : Clear

Groups Printed- Trucks

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
05:45 PM	0	0	1	0	0	2	1	1	0	0	1	0	6
Total	2	2	3	0	3	2	3	4	1	0	1	1	22
06:00 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
06:15 PM	0	0	2	0	0	1	1	2	0	0	0	0	6
06:30 PM	0	0	0	0	0	0	0	0	0	1	0	1	2
06:45 PM	0	1	1	0	0	0	1	0	0	0	0	0	3
Total	0	1	3	0	0	1	2	3	0	1	0	1	12
Grand Total	11	88	51	26	25	18	38	80	19	18	28	11	413
Apprch %	7.3	58.7	34	37.7	36.2	26.1	27.7	58.4	13.9	31.6	49.1	19.3	
Total %	2.7	21.3	12.3	6.3	6.1	4.4	9.2	19.4	4.6	4.4	6.8	2.7	

Start Time	Main St From North				Elm St From East			Main St From South				Central St From West				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right		App. Total
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	2	0	4	6	1	0	1	2	3	1	0	4	1	1	0	2	14
08:30 AM	0	1	1	2	2	0	1	3	0	1	0	1	1	0	0	1	7
08:45 AM	0	8	2	10	0	0	0	0	1	1	1	3	3	0	0	3	16
09:00 AM	0	5	2	7	1	3	0	4	0	3	0	3	0	1	1	2	16
Total Volume	2	14	9	25	4	3	2	9	4	6	1	11	5	2	1	8	53
% App. Total	8	56	36		44.4	33.3	22.2		36.4	54.5	9.1		62.5	25	12.5		
PHF	.250	.438	.563	.625	.500	.250	.500	.563	.333	.500	.250	.688	.417	.500	.250	.667	.828



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

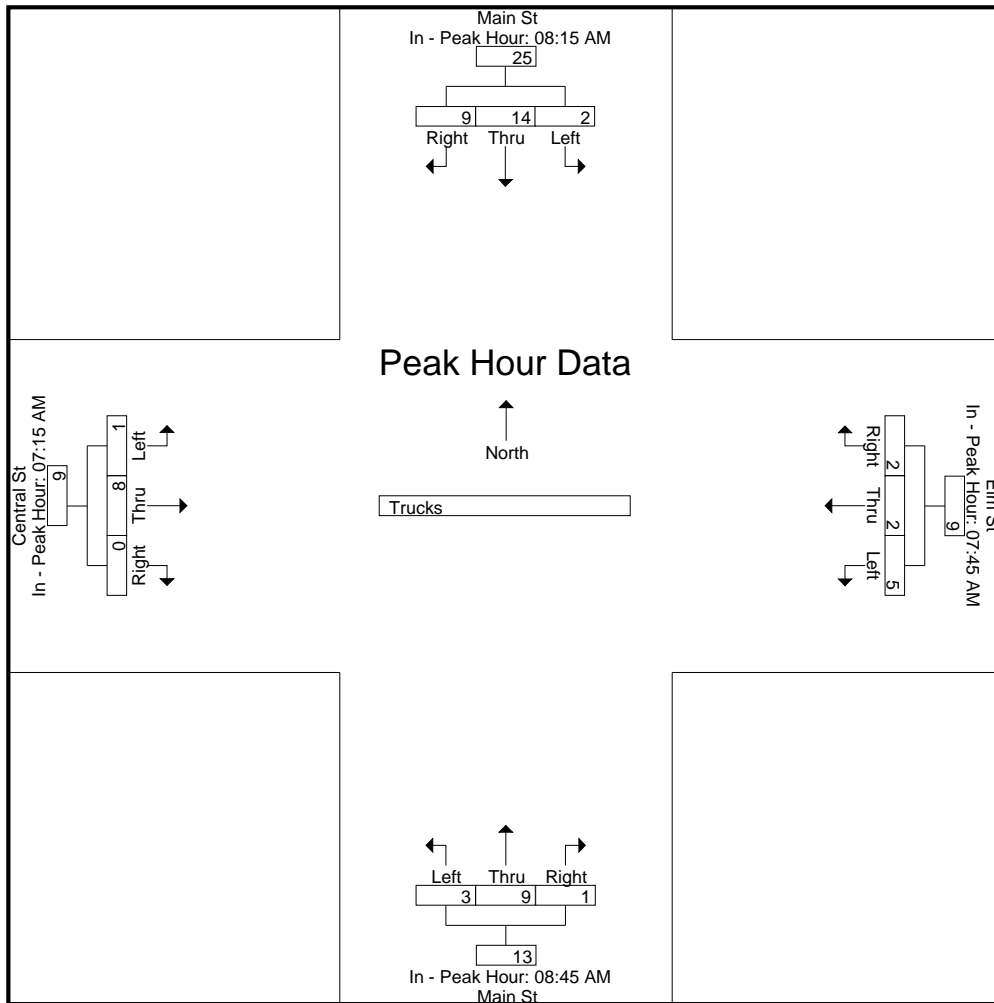
File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 3

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:15 AM				07:45 AM				08:45 AM				07:15 AM			
+0 mins.	2	0	4	6	0	1	0	1	1	1	1	3	0	5	0	5
+15 mins.	0	1	1	2	2	1	0	3	0	3	0	3	0	1	0	1
+30 mins.	0	8	2	10	1	0	1	2	1	1	0	2	0	1	0	1
+45 mins.	0	5	2	7	2	0	1	3	1	4	0	5	1	1	0	2
Total Volume	2	14	9	25	5	2	2	9	3	9	1	13	1	8	0	9
% App. Total	8	56	36		55.6	22.2	22.2		23.1	69.2	7.7		11.1	88.9	0	
PHF	.250	.438	.563	.625	.625	.500	.500	.750	.750	.563	.250	.650	.250	.400	.000	.450



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 10:15 AM

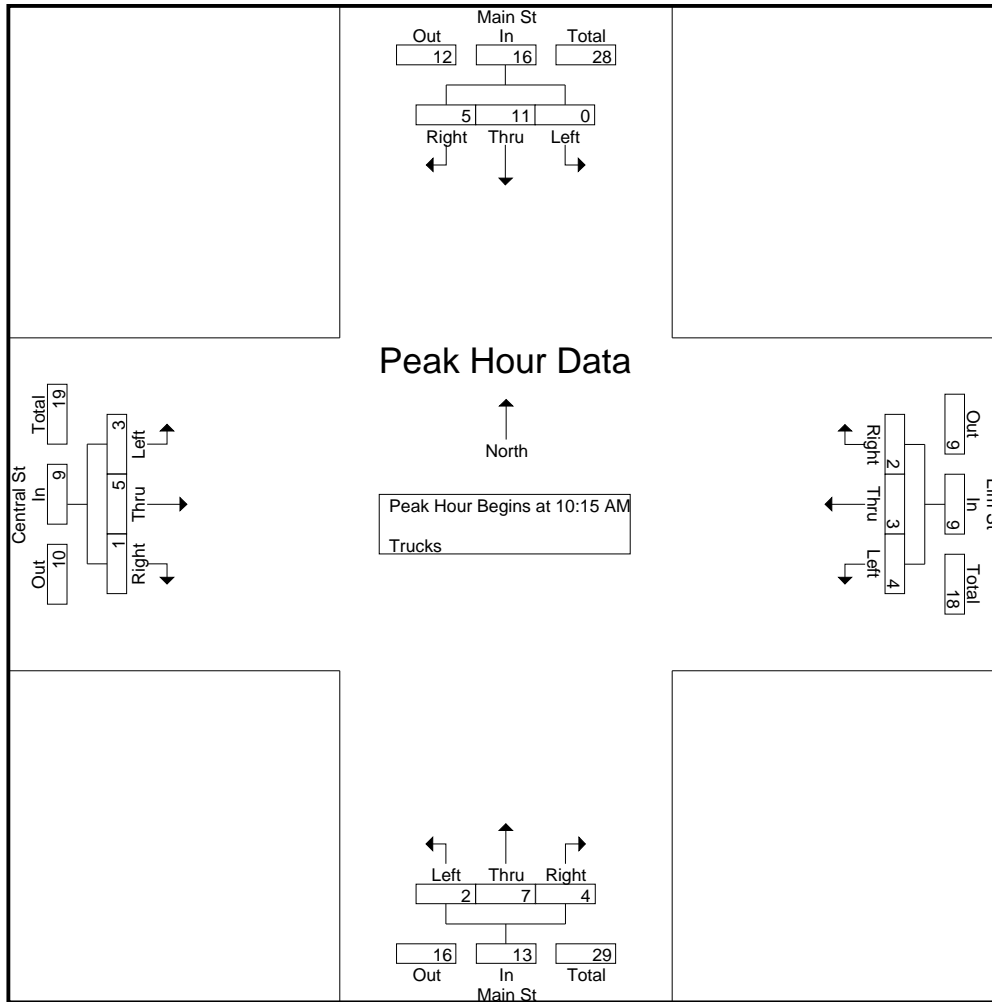
10:15 AM	0	4	2	6	1	0	1	2	0	2	0	2	0	2	1	3	13
10:30 AM	0	3	0	3	0	1	0	1	1	2	2	5	1	1	0	2	11
10:45 AM	0	3	1	4	3	2	1	6	1	1	1	3	2	1	0	3	16
11:00 AM	0	1	2	3	0	0	0	0	0	2	1	3	0	1	0	1	7
Total Volume	0	11	5	16	4	3	2	9	2	7	4	13	3	5	1	9	47
% App. Total	0	68.8	31.2		44.4	33.3	22.2		15.4	53.8	30.8		33.3	55.6	11.1		
PHF	.000	.688	.625	.667	.333	.375	.500	.375	.500	.875	.500	.650	.375	.625	.250	.750	.734

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	10:00 AM				10:00 AM				11:30 AM				10:00 AM			
+0 mins.	0	3	0	3	0	0	0	0	0	2	0	2	0	0	1	1
+15 mins.	0	4	2	6	1	0	1	2	2	2	1	5	0	2	1	3
+30 mins.	0	3	0	3	0	1	0	1	0	2	1	3	1	1	0	2
+45 mins.	0	3	1	4	3	2	1	6	1	3	1	5	2	1	0	3
Total Volume	0	13	3	16	4	3	2	9	3	9	3	15	3	4	2	9
% App. Total	0	81.2	18.8		44.4	33.3	22.2		20	60	20		33.3	44.4	22.2	
PHF	.000	.813	.375	.667	.333	.375	.500	.375	.375	.750	.750	.750	.375	.500	.500	.750

Accurate Counts

978-664-2565

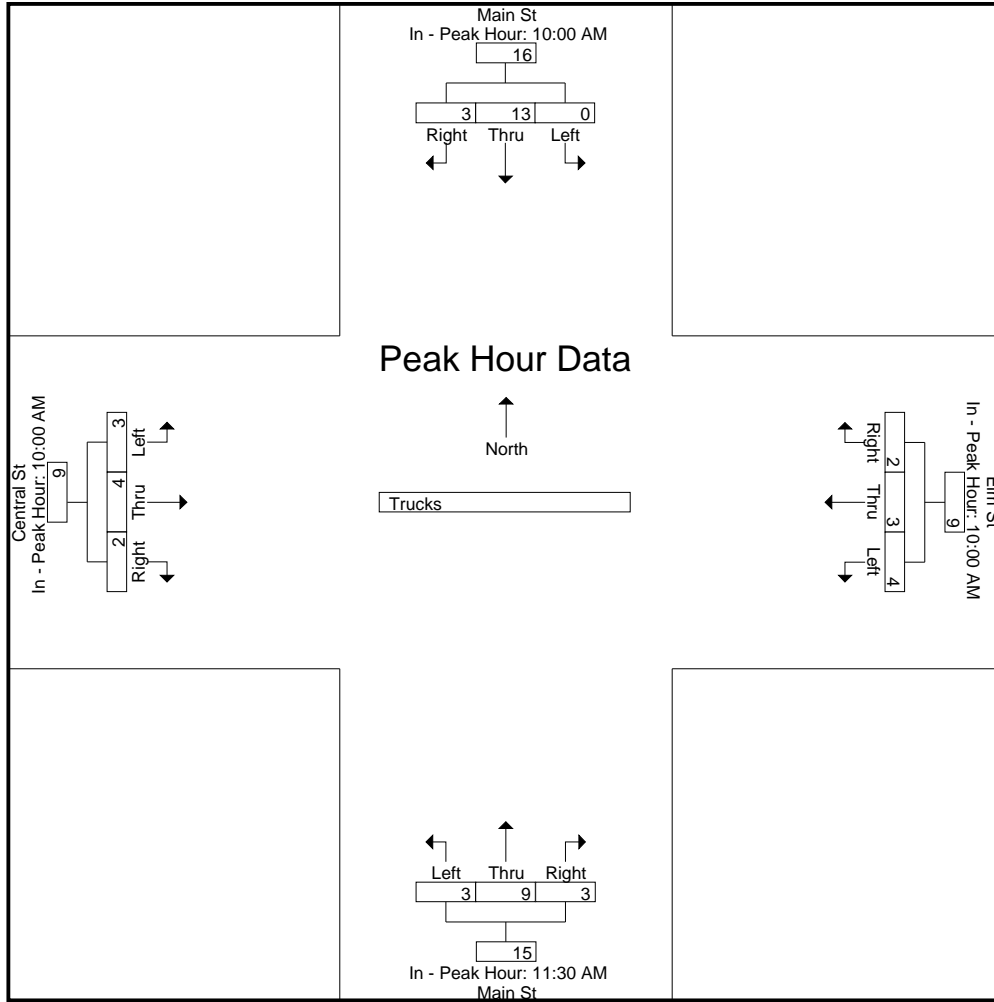
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 5

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 02:15 PM

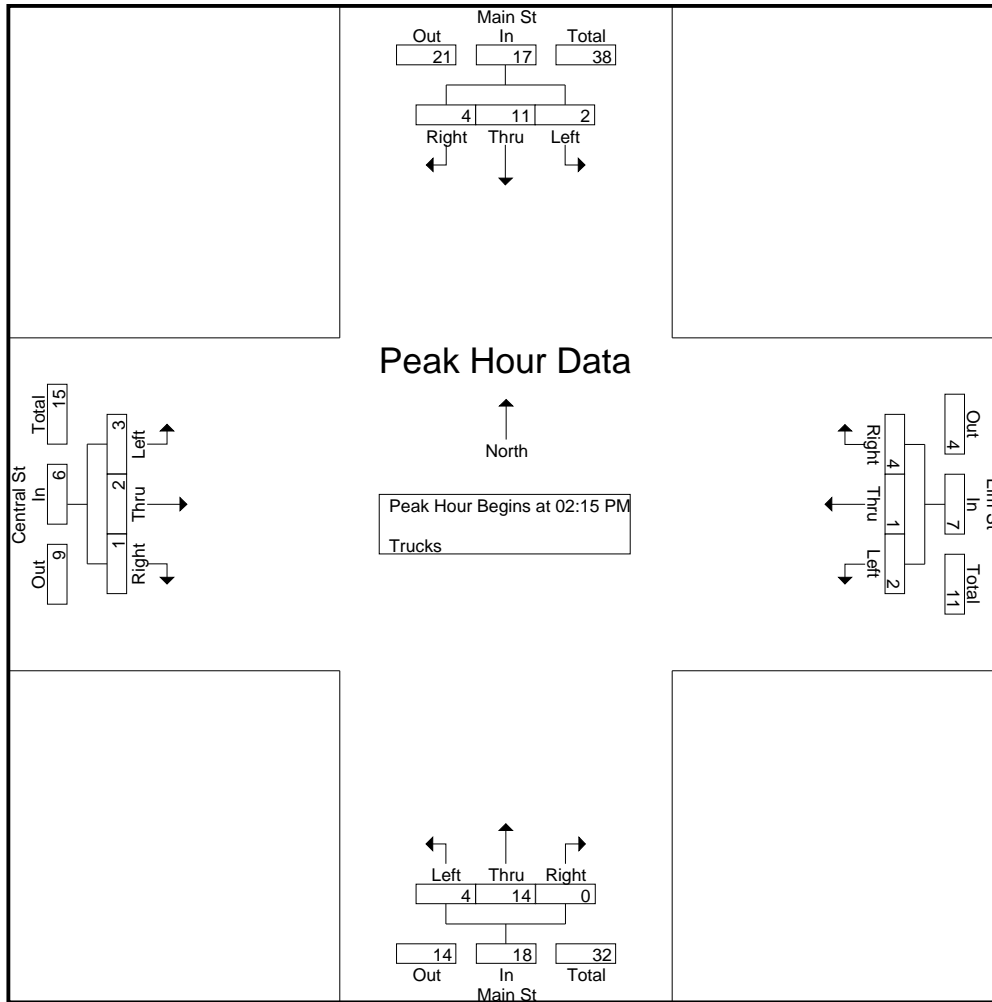
02:15 PM	0	6	2	8	1	0	1	2	1	2	0	3	0	1	0	1	14
02:30 PM	1	3	1	5	0	1	1	2	1	4	0	5	0	0	0	0	12
02:45 PM	0	0	1	1	1	0	1	2	1	5	0	6	3	0	1	4	13
03:00 PM	1	2	0	3	0	0	1	1	1	3	0	4	0	1	0	1	9
Total Volume	2	11	4	17	2	1	4	7	4	14	0	18	3	2	1	6	48
% App. Total	11.8	64.7	23.5		28.6	14.3	57.1		22.2	77.8	0		50	33.3	16.7		
PHF	.500	.458	.500	.531	.500	.250	1.00	.875	1.00	.700	.000	.750	.250	.500	.250	.375	.857

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:15 PM				03:15 PM				02:30 PM				02:15 PM			
+0 mins.	0	6	2	8	2	2	0	4	1	4	0	5	0	1	0	1
+15 mins.	1	3	1	5	0	0	0	0	1	5	0	6	0	0	0	0
+30 mins.	0	0	1	1	1	2	0	3	1	3	0	4	3	0	1	4
+45 mins.	1	2	0	3	0	3	1	4	1	2	1	4	0	1	0	1
Total Volume	2	11	4	17	3	7	1	11	4	14	1	19	3	2	1	6
% App. Total	11.8	64.7	23.5		27.3	63.6	9.1		21.1	73.7	5.3		50	33.3	16.7	
PHF	.500	.458	.500	.531	.375	.583	.250	.688	1.000	.700	.250	.792	.250	.500	.250	.375

Accurate Counts

978-664-2565

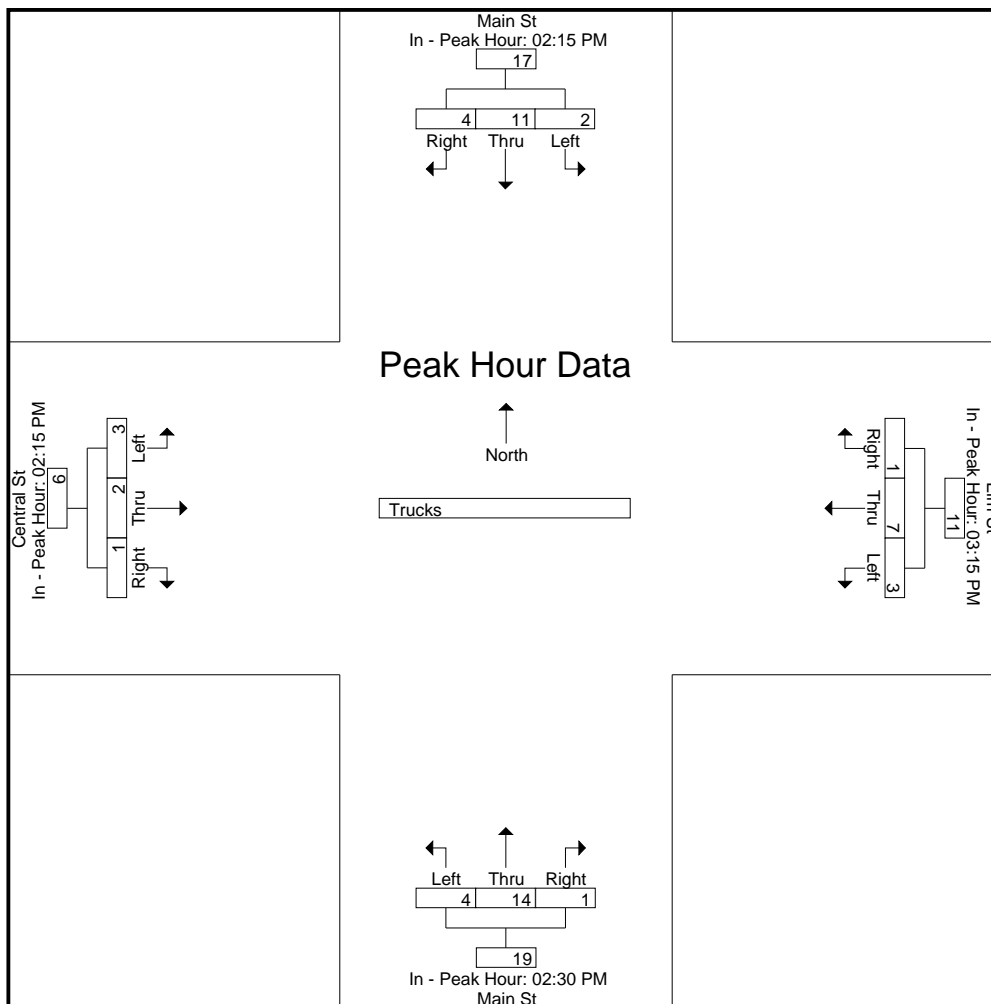
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 7

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

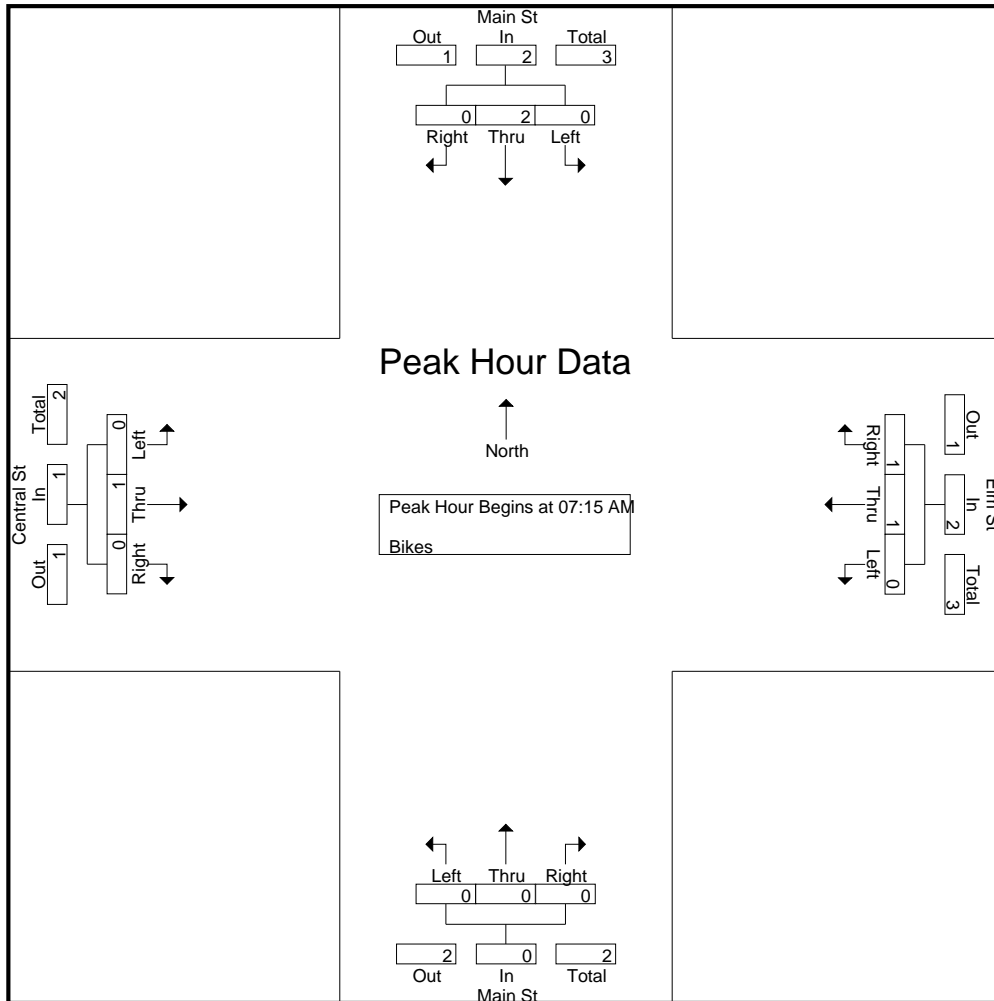
Page No : 2

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

Groups Printed- Bikes

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	3	0	0	0	7	1	0	0	4	0	0	0	5	0	0	0	20	20
Apprch %	0	100	0		0	87.5	12.5		0	100	0		0	100	0				
Total %	0	15	0		0	35	5		0	20	0		0	25	0		0	100	

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total	
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:15 AM																		
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	1	1	0	0	0	0	0	1	0	1	0	2
07:45 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	2
08:00 AM	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	2	0	2	0	1	1	2	0	0	0	0	0	1	0	1	0	5
% App. Total	0	100	0		0	50	50		0	0	0		0	100	0			
PHF	.000	.500	.000	.500	.000	.250	.250	.500	.000	.000	.000	.000	.000	.250	.000	.250		.625



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

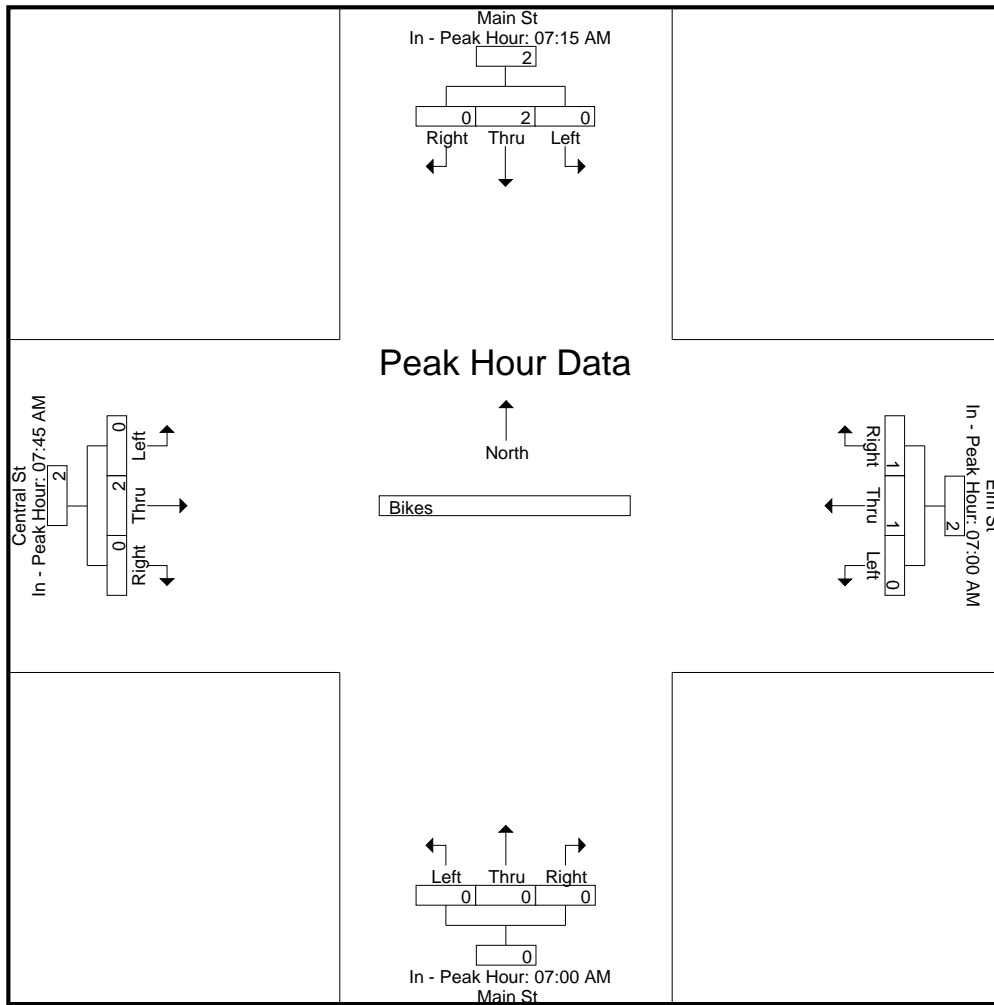
File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 3

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM				07:00 AM				07:00 AM				07:45 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	1	0	1	0	0	1	1	0	0	0	0	0	0	0	0
+45 mins.	0	1	0	1	0	1	0	1	0	0	0	0	0	2	0	2
Total Volume	0	2	0	2	0	1	1	2	0	0	0	0	0	2	0	2
% App. Total	0	100	0		0	50	50		0	0	0		0	100	0	
PHF	.000	.500	.000	.500	.000	.250	.250	.500	.000	.000	.000	.000	.000	.250	.000	.250



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 10:30 AM

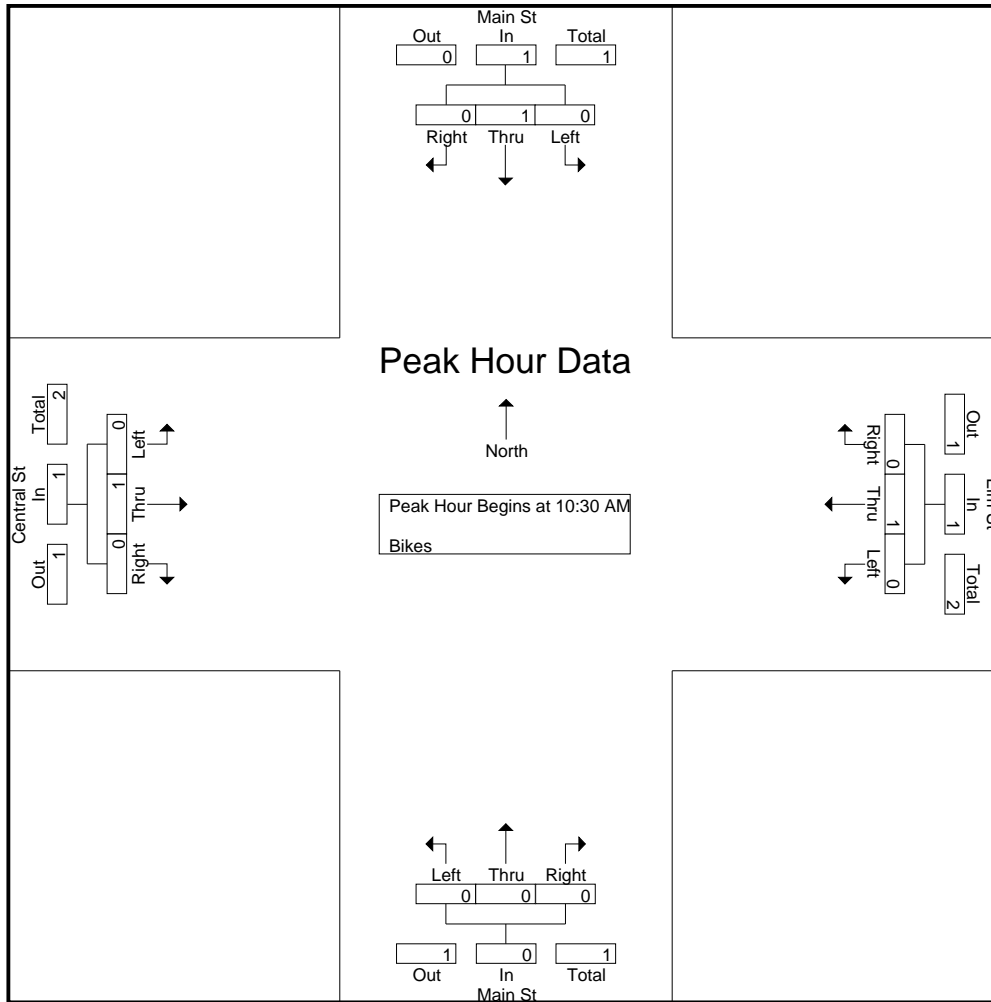
10:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	2
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	3
% App. Total	0	100	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.375

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

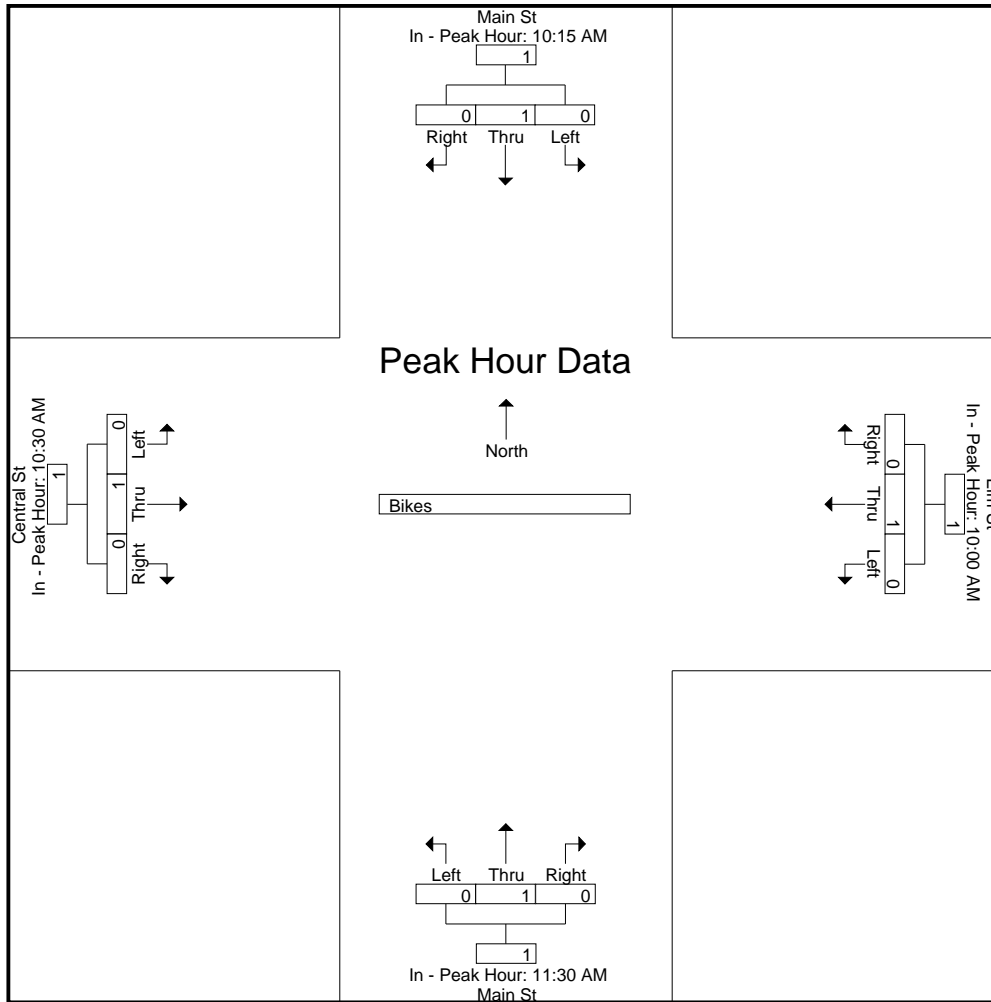
	10:15 AM				10:00 AM				11:30 AM				10:30 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	1	0	1	0	1	0	1
Total Volume	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1
% App. Total	0	100	0		0	100	0		0	100	0		0	100	0	
PHF	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 5



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:30 PM

03:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
03:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1
Total Volume	0	0	0	0	0	3	0	3	0	1	0	1	0	0	0	0	4
% App. Total	0	0	0	0	0	100	0	3	0	100	0	1	0	0	0	0	4
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.000	.250	.000	.250	.000	.000	.000	.000	1.00

Accurate Counts

978-664-2565

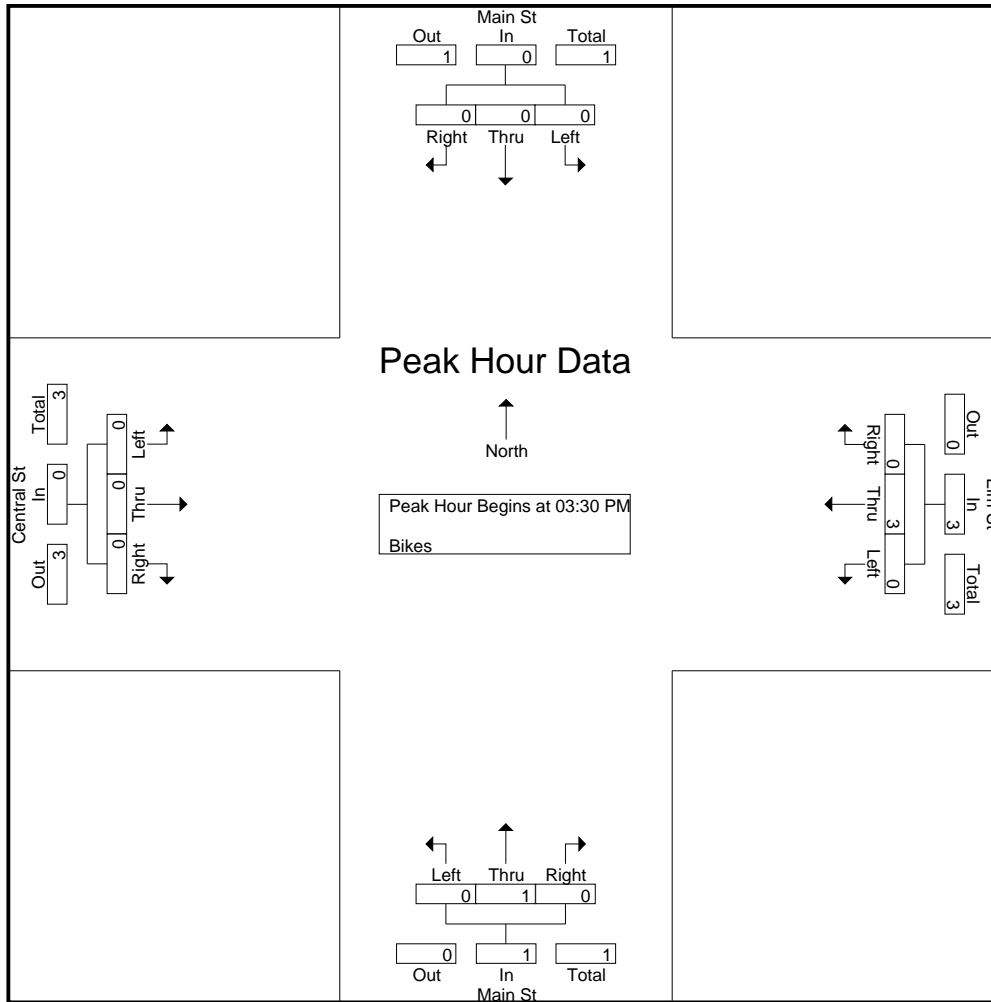
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 6

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

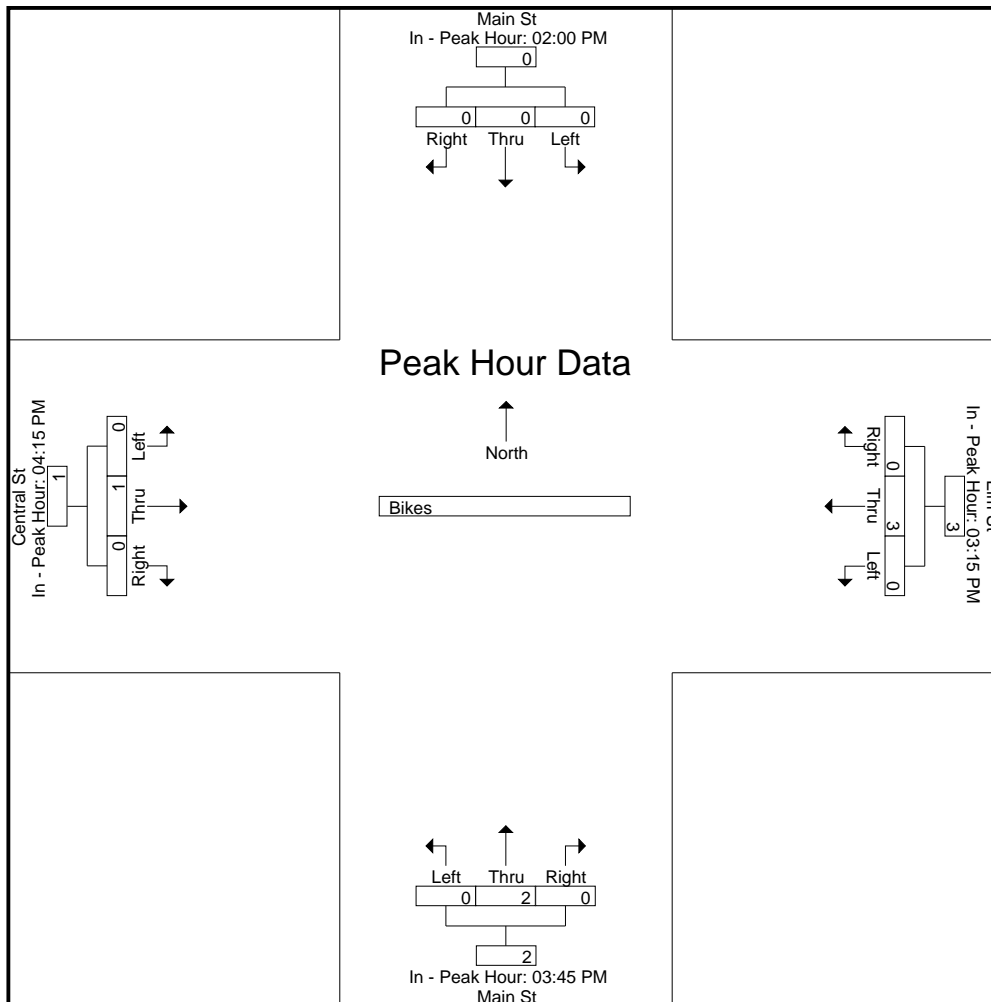
	02:00 PM				03:15 PM				03:45 PM				04:15 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	1
Total Volume	0	0	0	0	0	3	0	3	0	2	0	2	0	1	0	1
% App. Total	0	0	0	0	0	100	0	0	0	100	0	0	0	100	0	0
PHF	.000	.000	.000	.000	.000	.750	.000	.750	.000	.500	.000	.500	.000	.250	.000	.250

Accurate Counts

978-664-2565

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Clear

File Name : 12650001
Site Code : 12650001
Start Date : 5/24/2023
Page No : 7



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 1

Groups Printed- Peds

Start Time	Main St From North		Elm St From East		Main St From South		Central St From West		Exclu. Total	Inclu. Total	Int. Total
	EB	WB	NB	SB	EB	WB	NB	SB			
07:00 AM	0	1	0	0	0	0	0	0	1	0	1
07:15 AM	0	0	4	1	0	0	0	0	1	4	5
07:30 AM	0	0	2	3	0	0	0	0	3	2	5
07:45 AM	0	0	3	0	0	0	0	0	0	3	3
Total	0	1	9	4	0	0	0	0	5	9	14
08:00 AM	1	0	0	0	0	1	2	0	1	3	4
08:15 AM	1	4	2	0	0	0	1	0	4	4	8
08:30 AM	0	0	3	0	3	0	0	3	3	6	9
08:45 AM	1	2	4	3	3	1	0	3	9	8	17
Total	3	6	9	3	6	2	3	6	17	21	38
09:00 AM	0	2	5	2	0	2	1	0	6	6	12
09:15 AM	2	2	1	2	0	2	2	1	7	5	12
09:30 AM	1	0	0	1	1	1	3	1	3	5	8
09:45 AM	1	1	2	2	0	0	1	1	4	4	8
Total	4	5	8	7	1	5	7	3	20	20	40
10:00 AM	0	2	4	3	3	0	7	0	5	14	19
10:15 AM	0	0	1	1	1	2	5	3	6	7	13
10:30 AM	0	1	3	2	1	0	3	3	6	7	13
10:45 AM	1	1	0	1	0	2	3	1	5	4	9
Total	1	4	8	7	5	4	18	7	22	32	54
11:00 AM	0	1	0	1	3	2	3	6	10	6	16
11:15 AM	0	1	3	2	2	1	2	2	6	7	13
11:30 AM	0	0	0	1	1	1	1	2	4	2	6
11:45 AM	0	1	1	4	3	3	4	1	9	8	17
Total	0	3	4	8	9	7	10	11	29	23	52
12:00 PM	1	0	4	3	4	2	4	1	6	13	19
12:15 PM	0	0	2	3	1	0	6	2	5	9	14
12:30 PM	0	2	1	2	3	1	1	4	9	5	14
12:45 PM	0	0	2	5	0	0	0	1	6	2	8
Total	1	2	9	13	8	3	11	8	26	29	55
01:00 PM	0	0	4	3	0	1	0	6	10	4	14
01:15 PM	0	0	1	1	2	0	4	3	4	7	11
01:30 PM	0	2	2	1	1	0	1	0	3	4	7
01:45 PM	0	3	6	2	1	1	3	3	9	10	19
Total	0	5	13	7	4	2	8	12	26	25	51
02:00 PM	0	1	1	1	2	2	2	2	6	5	11
02:15 PM	0	0	0	1	0	1	1	0	2	1	3
02:30 PM	2	0	2	1	6	1	2	6	8	12	20
02:45 PM	0	0	0	0	4	0	3	0	0	7	7
Total	2	1	3	3	12	4	8	8	16	25	41
03:00 PM	0	0	3	1	3	8	6	6	15	12	27
03:15 PM	1	4	0	1	4	0	2	5	10	7	17
03:30 PM	0	0	2	2	2	0	8	5	7	12	19
03:45 PM	1	1	3	5	7	0	5	10	16	16	32
Total	2	5	8	9	16	8	21	26	48	47	95
04:00 PM	1	0	2	1	1	0	0	1	2	4	6
04:15 PM	1	1	0	2	1	3	1	1	7	3	10
04:30 PM	2	1	0	0	1	0	2	6	7	5	12
04:45 PM	1	1	1	1	4	2	3	6	10	9	19
Total	5	3	3	4	7	5	6	14	26	21	47
05:00 PM	0	0	0	1	2	1	5	9	11	7	18
05:15 PM	2	8	0	2	1	2	1	1	13	4	17
05:30 PM	0	2	0	0	0	1	5	1	4	5	9

Accurate Counts

978-664-2565

File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

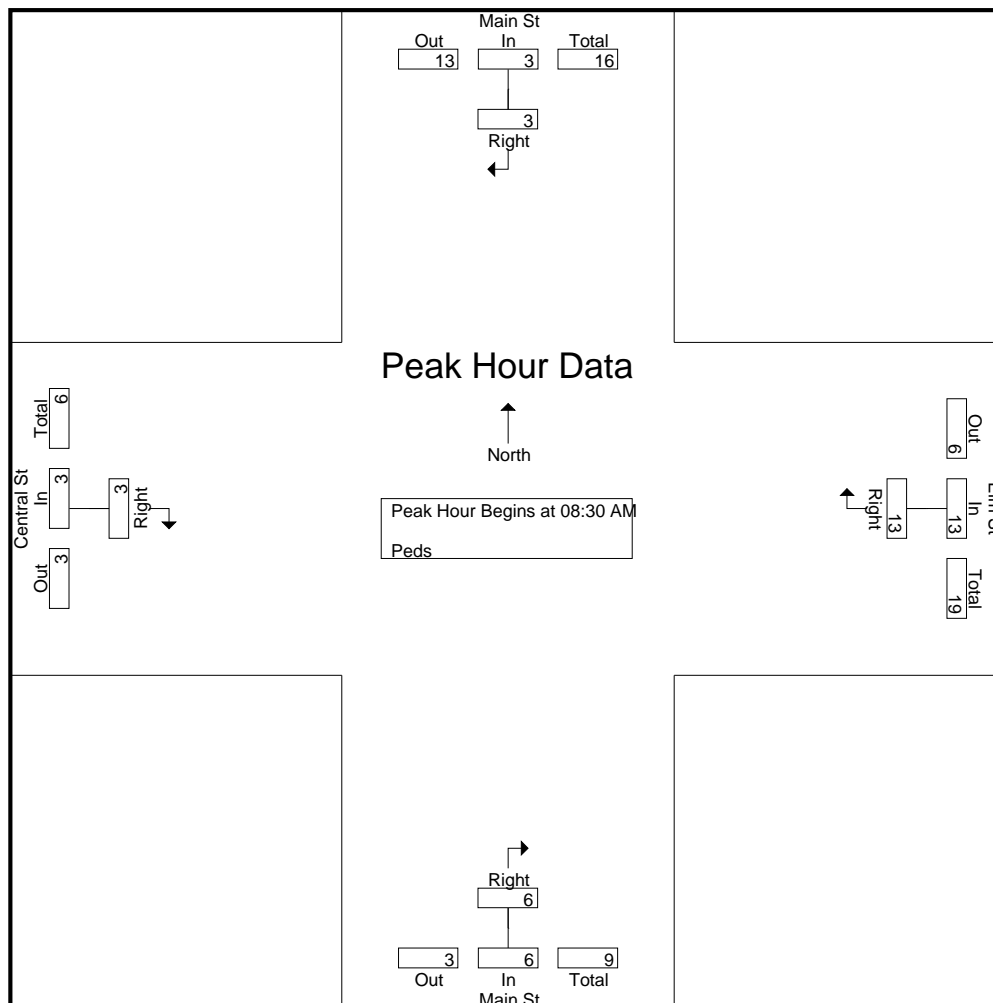
Page No : 2

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

Groups Printed- Peds

Start Time	Main St From North		Elm St From East		Main St From South		Central St From West		Exclu. Total	Inclu. Total	Int. Total
	EB	WB	NB	SB	EB	WB	NB	SB			
05:45 PM	0	0	0	0	0	2	0	0	2	0	2
Total	2	10	0	3	3	6	11	11	30	16	46
06:00 PM	1	1	0	0	0	1	1	2	4	2	6
06:15 PM	1	0	1	0	1	0	0	1	1	3	4
06:30 PM	0	0	1	0	0	1	3	0	1	4	5
06:45 PM	0	0	0	0	3	1	1	0	1	4	5
Total	2	1	2	0	4	3	5	3	7	13	20
Grand Total	22	46	76	68	75	49	108	109	272	281	553
Apprch %	100		100		100		100				
Total %	7.8		27		26.7		38.4		49.2	50.8	

Start Time	Main St From North		Elm St From East		Main St From South		Central St From West		Int. Total	
	EB	App. Total	NB	App. Total	EB	App. Total	NB	App. Total		
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:30 AM										
08:30 AM	0	0	3	3	3	3	0	0	6	
08:45 AM	1	1	4	4	3	3	0	0	8	
09:00 AM	0	0	5	5	0	0	1	1	6	
09:15 AM	2	2	1	1	0	0	2	2	5	
Total Volume	3	3	13	13	6	6	3	3	25	
% App. Total	100		100		100		100			
PHF	.375	.375	.650	.650	.500	.500	.375	.375	.781	



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

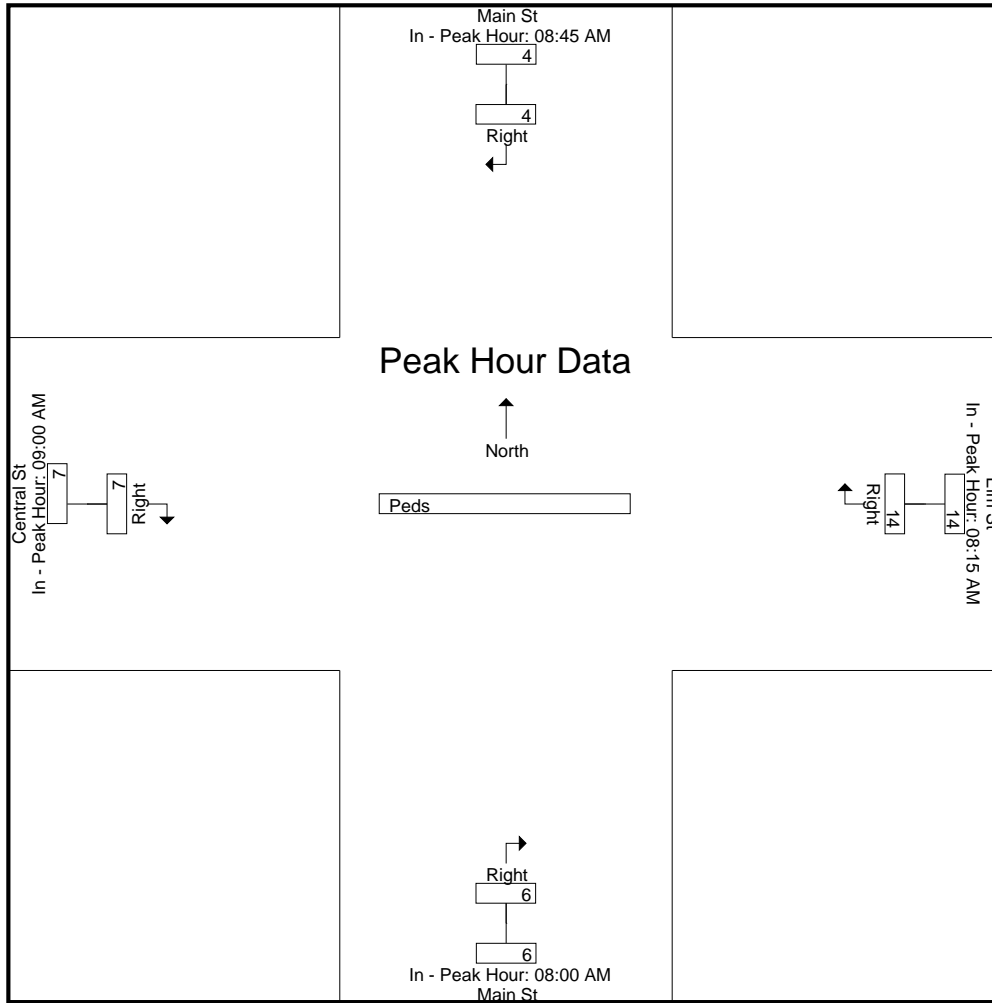
File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 3

Start Time	Main St From North		Elm St From East		Main St From South		Central St From West		Int. Total
	EB	App. Total	NB	App. Total	EB	App. Total	NB	App. Total	

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:45 AM		08:15 AM		08:00 AM		09:00 AM	
+0 mins.	1	1	2	2	0	0	1	1
+15 mins.	0	0	3	3	0	0	2	2
+30 mins.	2	2	4	4	3	3	3	3
+45 mins.	1	1	5	5	3	3	1	1
Total Volume	4	4	14	14	6	6	7	7
% App. Total	100		100		100		100	
PHF	.500	.500	.700	.700	.500	.500	.583	.583



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:45 AM

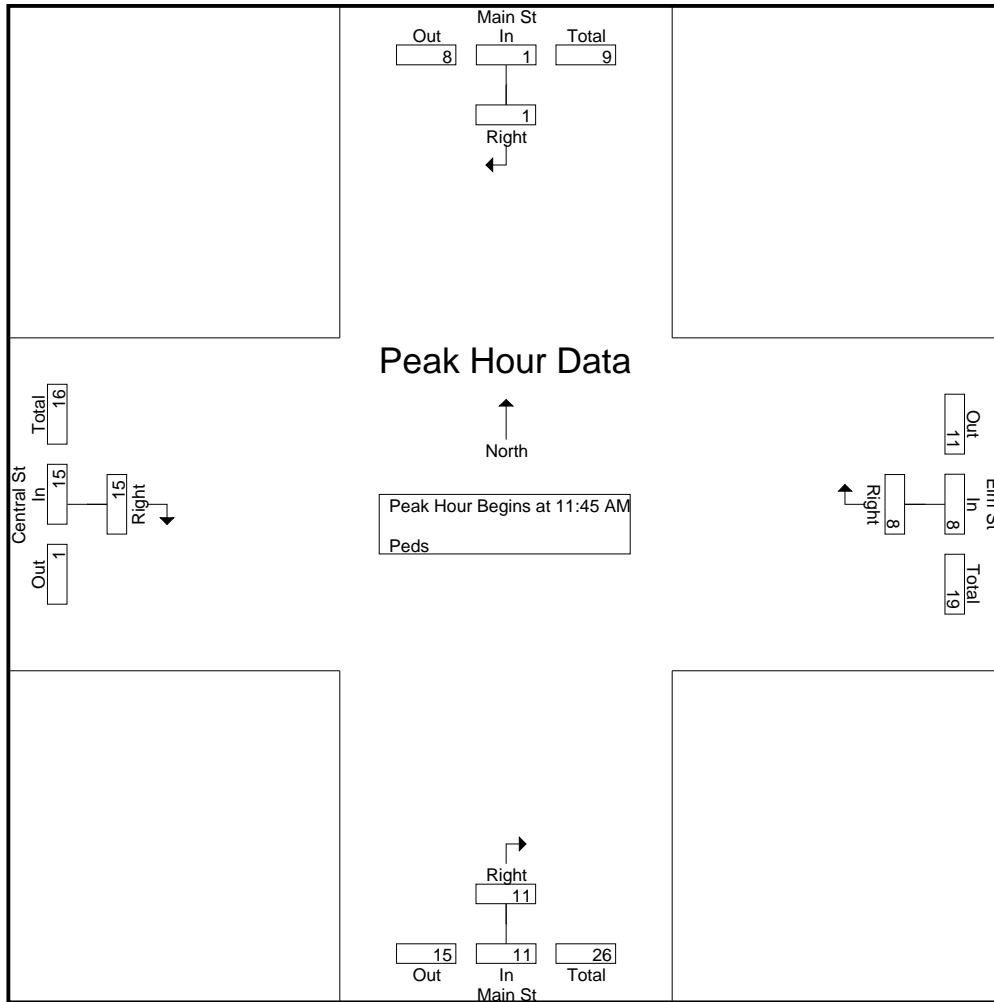
11:45 AM	0	0	1	1	3	3	4	4	8
12:00 PM	1	1	4	4	4	4	4	4	13
12:15 PM	0	0	2	2	1	1	6	6	9
12:30 PM	0	0	1	1	3	3	1	1	5
Total Volume	1	1	8	8	11	11	15	15	35
% App. Total	100		100		100		100		
PHF	.250	.250	.500	.500	.688	.688	.625	.625	.673

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	10:00 AM		01:00 PM		11:45 AM		10:00 AM	
+0 mins.	0	0	4	4	3	3	7	7
+15 mins.	0	0	1	1	4	4	5	5
+30 mins.	0	0	2	2	1	1	3	3
+45 mins.	1	1	6	6	3	3	3	3
Total Volume	1	1	13	13	11	11	18	18
% App. Total	100		100		100		100	
PHF	.250	.250	.542	.542	.688	.688	.643	.643

Accurate Counts

978-664-2565

File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

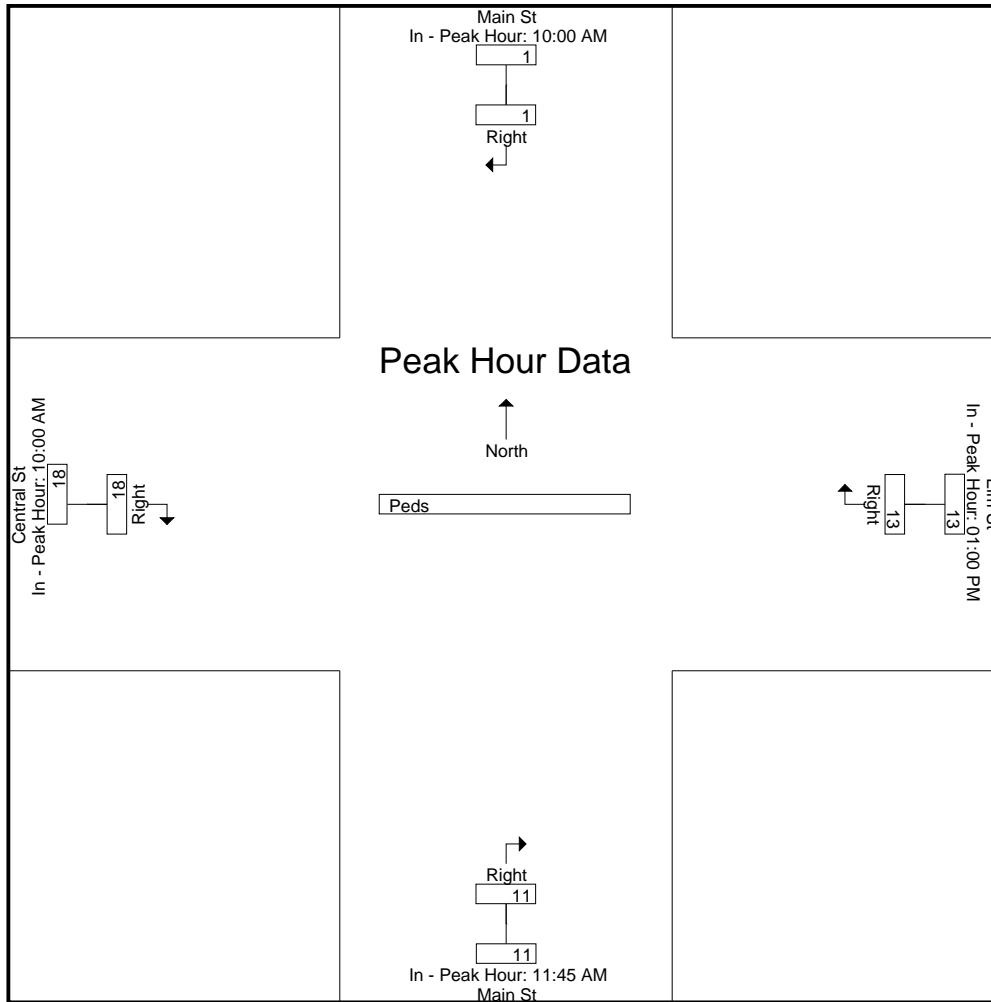
Page No : 5

N/S Street : Main Street

E/W Street : Elm St / Central St

City/State : Andover, MA

Weather : Clear



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:00 PM

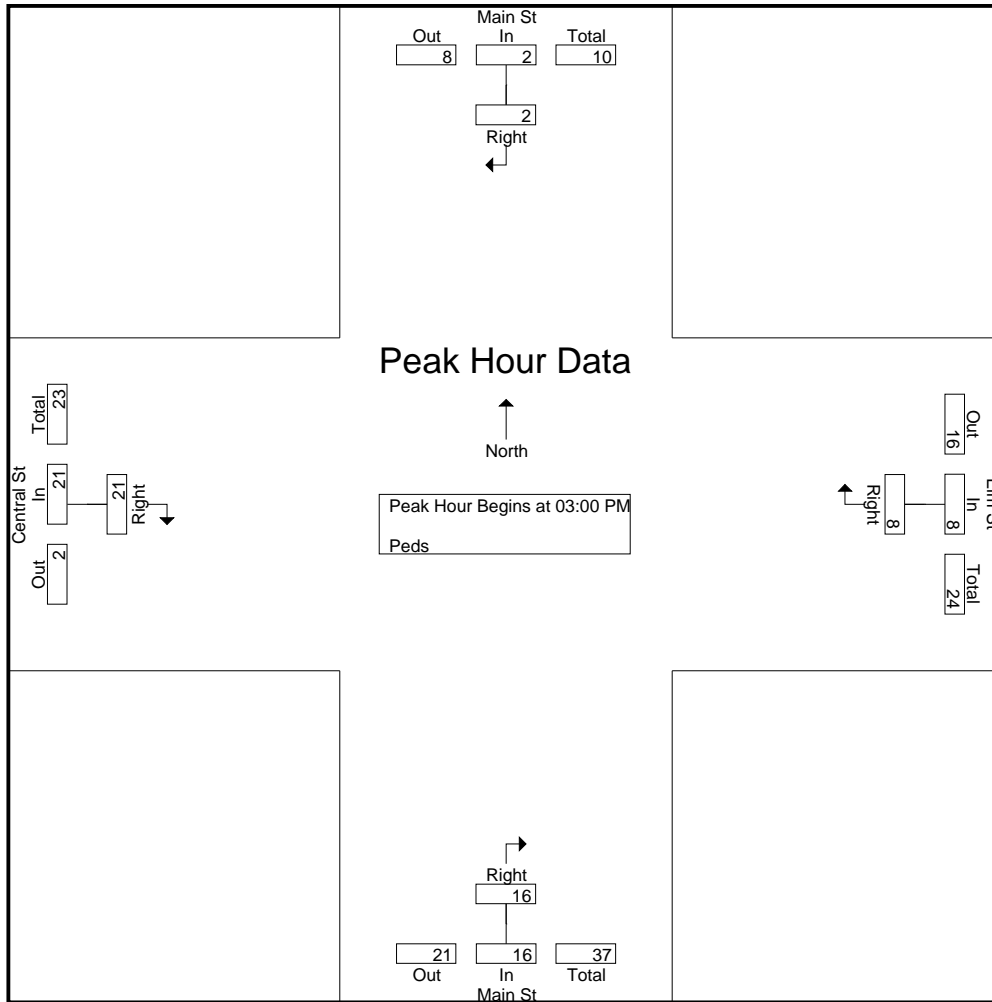
03:00 PM	0	0	3	3	3	3	6	6	12
03:15 PM	1	1	0	0	4	4	2	2	7
03:30 PM	0	0	2	2	2	2	8	8	12
03:45 PM	1	1	3	3	7	7	5	5	16
Total Volume	2	2	8	8	16	16	21	21	47
% App. Total	100		100		100		100		
PHF	.500	.500	.667	.667	.571	.571	.656	.656	.734

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:45 PM		03:00 PM		02:30 PM		03:00 PM	
+0 mins.	1	1	3	3	6	6	6	6
+15 mins.	1	1	0	0	4	4	2	2
+30 mins.	1	1	2	2	3	3	8	8
+45 mins.	2	2	3	3	4	4	5	5
Total Volume	5	5	8	8	17	17	21	21
% App. Total	100		100		100		100	
PHF	.625	.625	.667	.667	.708	.708	.656	.656

Accurate Counts

978-664-2565

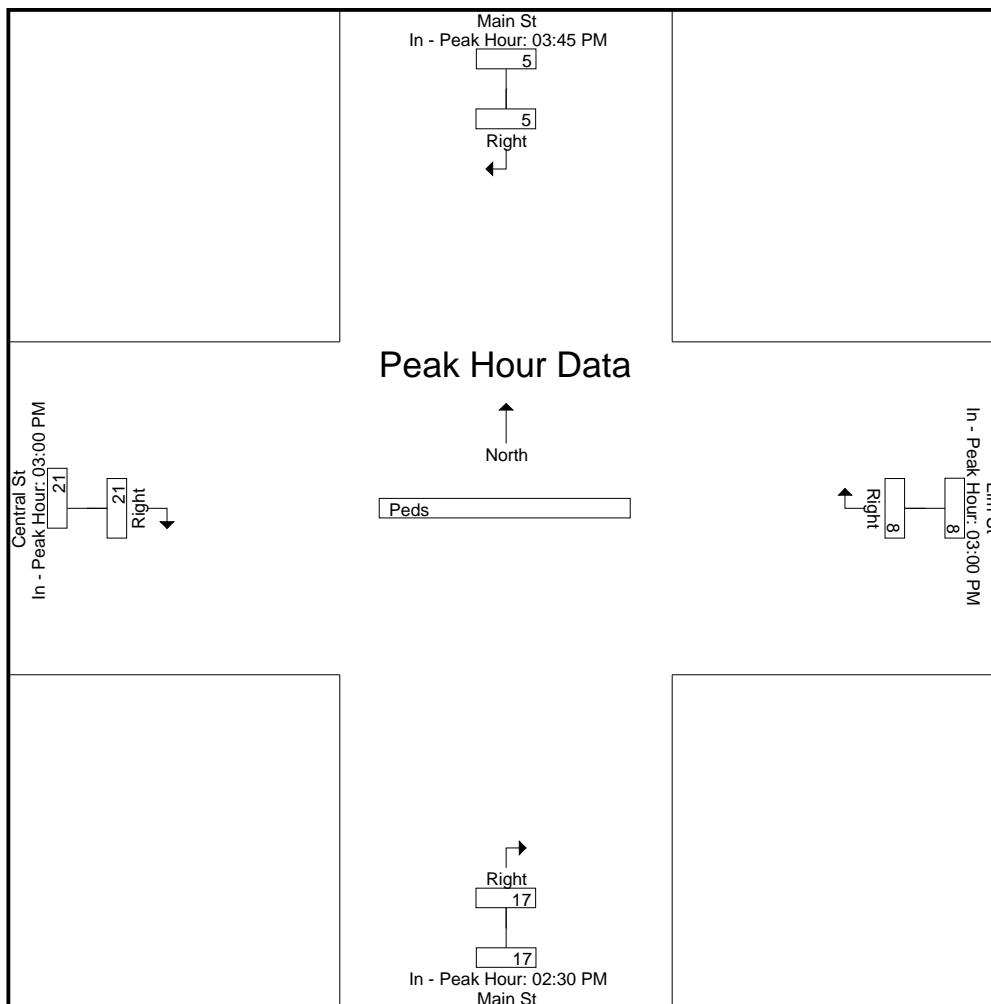
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 7

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 1

Groups Printed- Wide Right Crosswalk

Start Time	Elm St From East		Central St From West		Exclu. Total	Inclu. Total	Int. Total
	NB	SB	NB	SB			
07:00 AM	1	1	0	0	1	1	2
07:15 AM	1	4	0	0	4	1	5
07:30 AM	3	1	0	0	1	3	4
07:45 AM	0	3	1	0	3	1	4
Total	5	9	1	0	9	6	15
08:00 AM	0	1	1	1	2	1	3
08:15 AM	2	1	0	1	2	2	4
08:30 AM	0	3	0	2	5	0	5
08:45 AM	2	5	3	6	11	5	16
Total	4	10	4	10	20	8	28
09:00 AM	0	4	3	2	6	3	9
09:15 AM	3	1	1	2	3	4	7
09:30 AM	1	1	0	3	4	1	5
09:45 AM	3	2	5	1	3	8	11
Total	7	8	9	8	16	16	32
10:00 AM	5	4	2	8	12	7	19
10:15 AM	1	2	4	5	7	5	12
10:30 AM	2	3	2	4	7	4	11
10:45 AM	2	1	2	3	4	4	8
Total	10	10	10	20	30	20	50
11:00 AM	2	1	3	3	4	5	9
11:15 AM	1	1	4	2	3	5	8
11:30 AM	1	1	3	2	3	4	7
11:45 AM	1	3	4	5	8	5	13
Total	5	6	14	12	18	19	37
12:00 PM	3	2	2	6	8	5	13
12:15 PM	3	3	3	8	11	6	17
12:30 PM	4	0	2	2	2	6	8
12:45 PM	4	2	1	0	2	5	7
Total	14	7	8	16	23	22	45
01:00 PM	7	4	7	1	5	14	19
01:15 PM	2	0	1	4	4	3	7
01:30 PM	3	2	2	2	4	5	9
01:45 PM	4	3	4	2	5	8	13
Total	16	9	14	9	18	30	48
02:00 PM	3	1	3	4	5	6	11
02:15 PM	1	0	2	1	1	3	4
02:30 PM	0	1	6	5	6	6	12
02:45 PM	0	0	2	10	10	2	12
Total	4	2	13	20	22	17	39
03:00 PM	1	3	10	6	9	11	20
03:15 PM	1	6	3	2	8	4	12
03:30 PM	2	0	4	5	5	6	11
03:45 PM	4	2	3	5	7	7	14
Total	8	11	20	18	29	28	57
04:00 PM	3	2	0	0	2	3	5
04:15 PM	3	0	3	2	2	6	8
04:30 PM	1	0	5	2	2	6	8
04:45 PM	0	1	3	2	3	3	6
Total	7	3	11	6	9	18	27
05:00 PM	1	0	5	6	6	6	12
05:15 PM	4	0	2	1	1	6	7
05:30 PM	1	0	1	4	4	2	6

Accurate Counts

978-664-2565

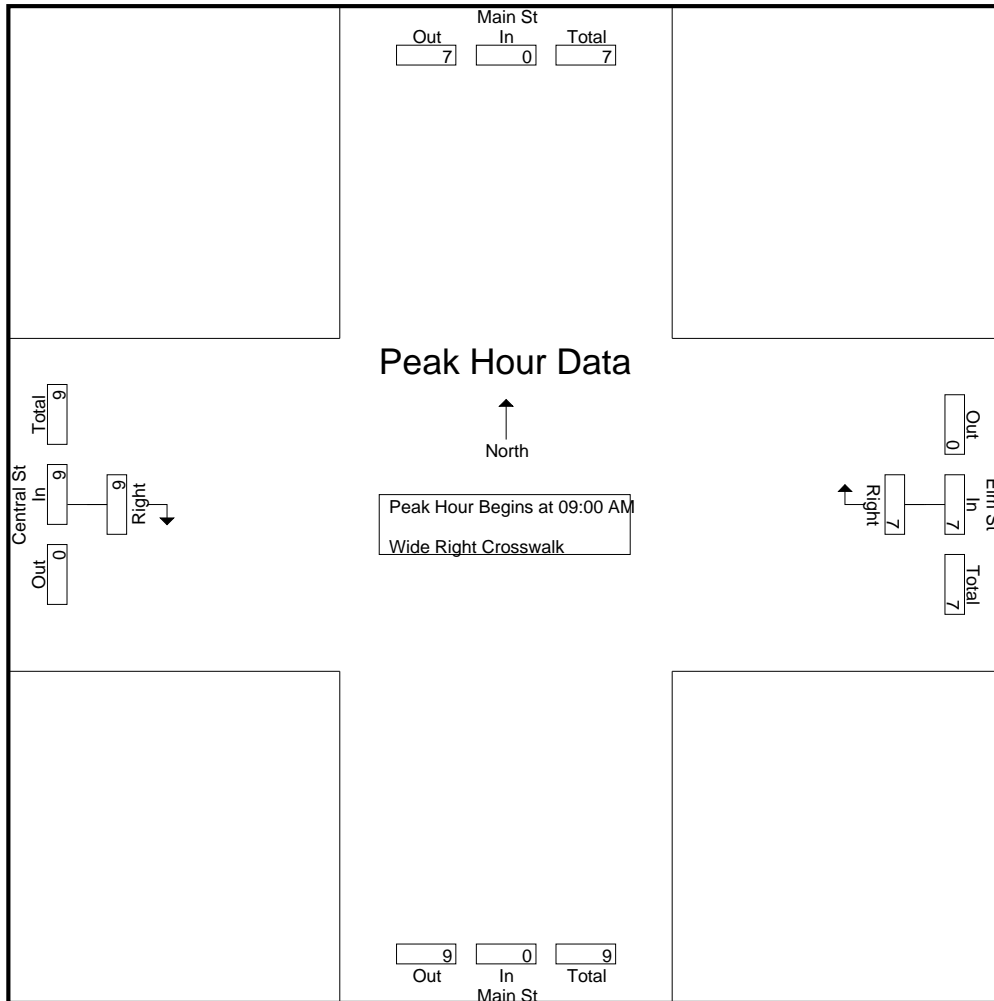
N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 2

Groups Printed- Wide Right Crosswalk

Start Time	Elm St From East		Central St From West		Exclu. Total	Inclu. Total	Int. Total
	NB	SB	NB	SB			
05:45 PM	0	0	0	0	0	0	0
Total	6	0	8	11	11	14	25
06:00 PM	0	2	3	1	3	3	6
06:15 PM	0	2	0	0	2	0	2
06:30 PM	0	1	0	2	3	0	3
06:45 PM	0	1	0	3	4	0	4
Total	0	6	3	6	12	3	15
Grand Total	86	81	115	136	217	201	418
Apprch %	100		100				
Total %	42.8		57.2		51.9	48.1	

Start Time	Elm St From East		App. Total	Central St From West		Int. Total
	NB	SB		NB	SB	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1						
Peak Hour for Entire Intersection Begins at 09:00 AM						
09:00 AM	0		0	3	3	3
09:15 AM	3		3	1	1	4
09:30 AM	1		1	0	0	1
09:45 AM	3		3	5	5	8
Total Volume	7		7	9	9	16
% App. Total	100			100		
PHF	.583		.583	.450	.450	.500



Accurate Counts

978-664-2565

File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 3

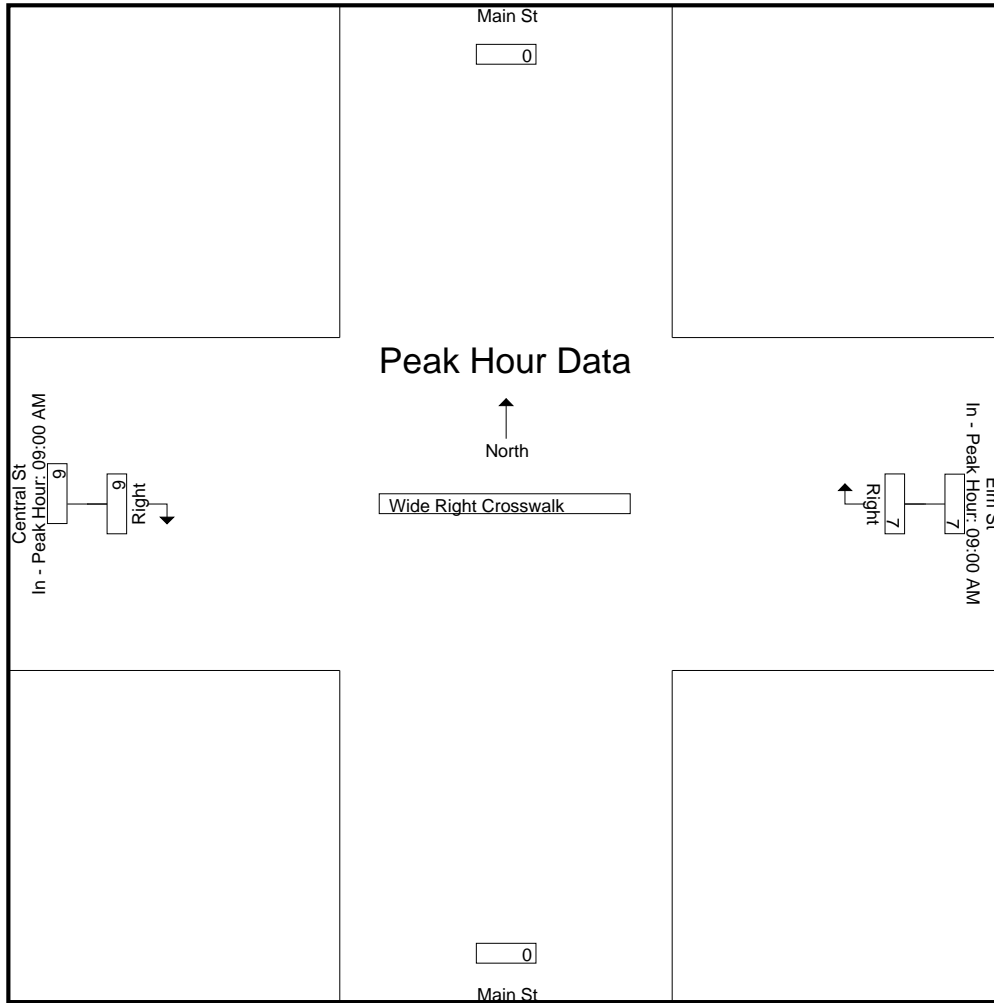
N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

Start Time	Elm St From East		Central St From West		Int. Total
	NB	App. Total	NB	App. Total	

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	09:00 AM		09:00 AM	
+0 mins.	0	0	3	3
+15 mins.	3	3	1	1
+30 mins.	1	1	0	0
+45 mins.	3	3	5	5
Total Volume	7	7	9	9
% App. Total	100		100	
PHF	.583	.583	.450	.450



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 12:15 PM

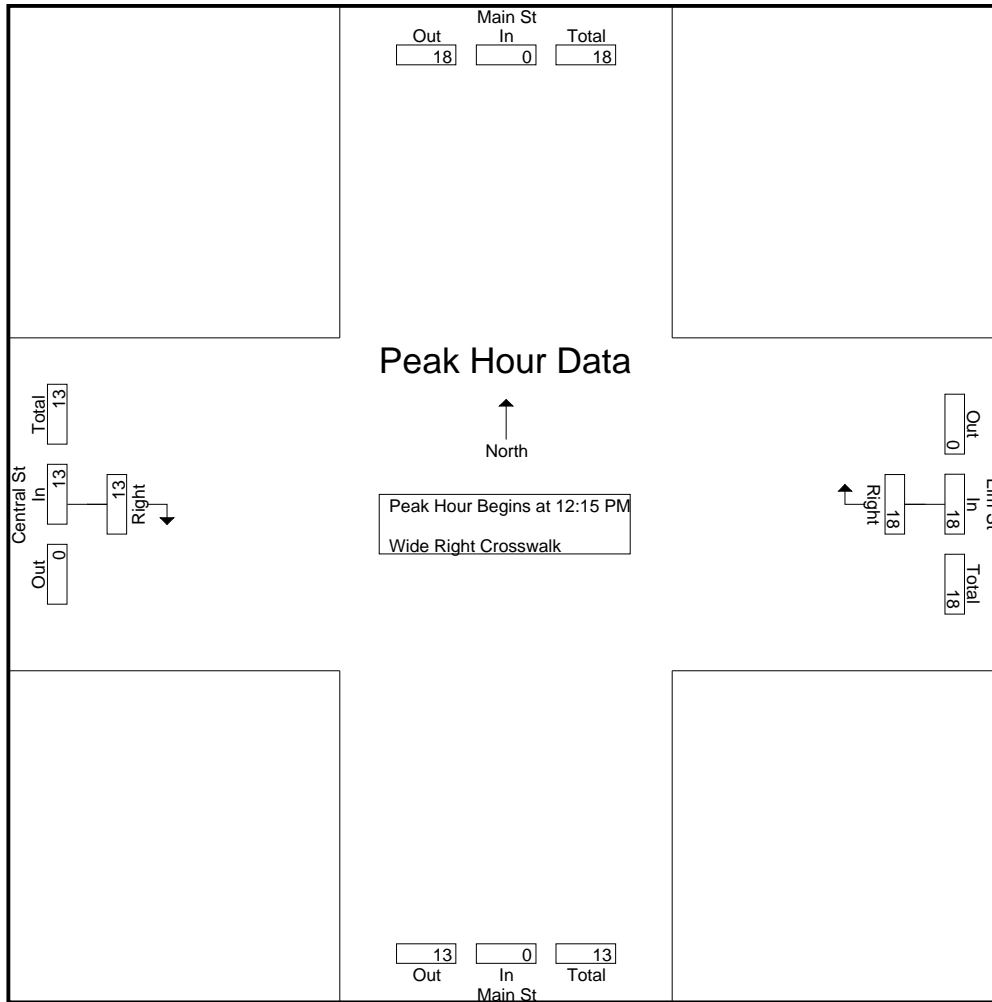
12:15 PM	3	3	3	3	6
12:30 PM	4	4	2	2	6
12:45 PM	4	4	1	1	5
01:00 PM	7	7	7	7	14
Total Volume	18	18	13	13	31
% App. Total	100		100		
PHF	.643	.643	.464	.464	.554

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

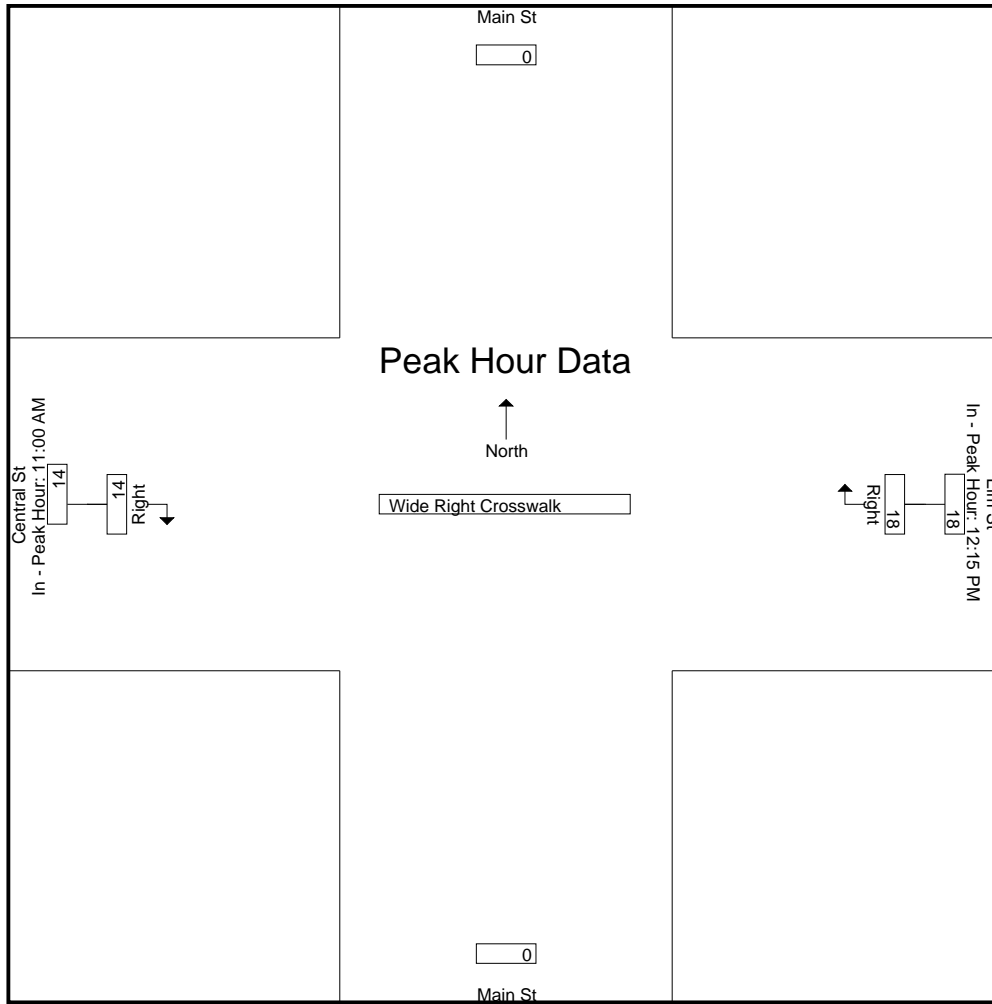
	12:15 PM		11:00 AM	
+0 mins.	3	3	3	3
+15 mins.	4	4	4	4
+30 mins.	4	4	3	3
+45 mins.	7	7	4	4
Total Volume	18	18	14	14
% App. Total	100		100	
PHF	.643	.643	.875	.875

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 5



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 03:00 PM

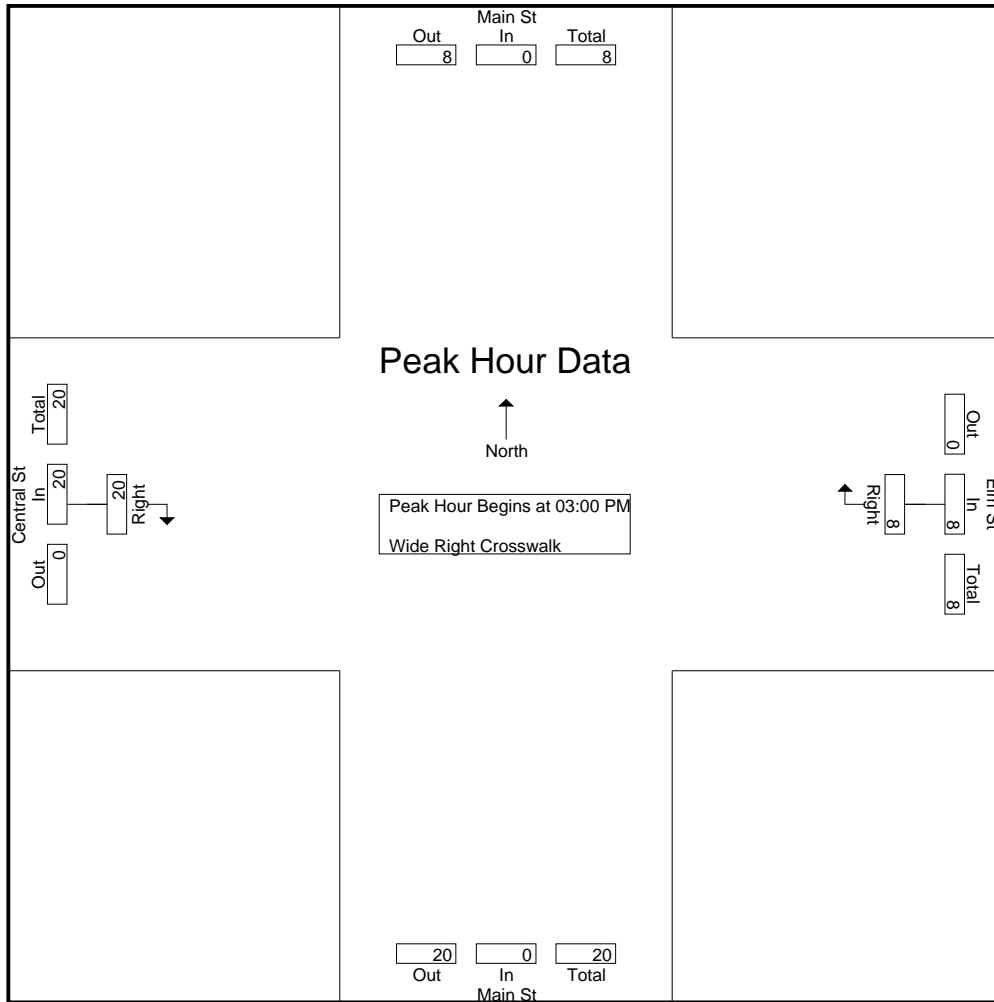
03:00 PM	1	1	10	10	11
03:15 PM	1	1	3	3	4
03:30 PM	2	2	4	4	6
03:45 PM	4	4	3	3	7
Total Volume	8	8	20	20	28
% App. Total	100		100		
PHF	.500	.500	.500	.500	.636

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Clear

File Name : 12650001
 Site Code : 12650001
 Start Date : 5/24/2023
 Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	03:30 PM		02:30 PM	
+0 mins.	2	2	6	6
+15 mins.	4	4	2	2
+30 mins.	3	3	10	10
+45 mins.	3	3	3	3
Total Volume	12	12	21	21
% App. Total	100	100	100	100
PHF	.750	.750	.525	.525

Accurate Counts

978-664-2565

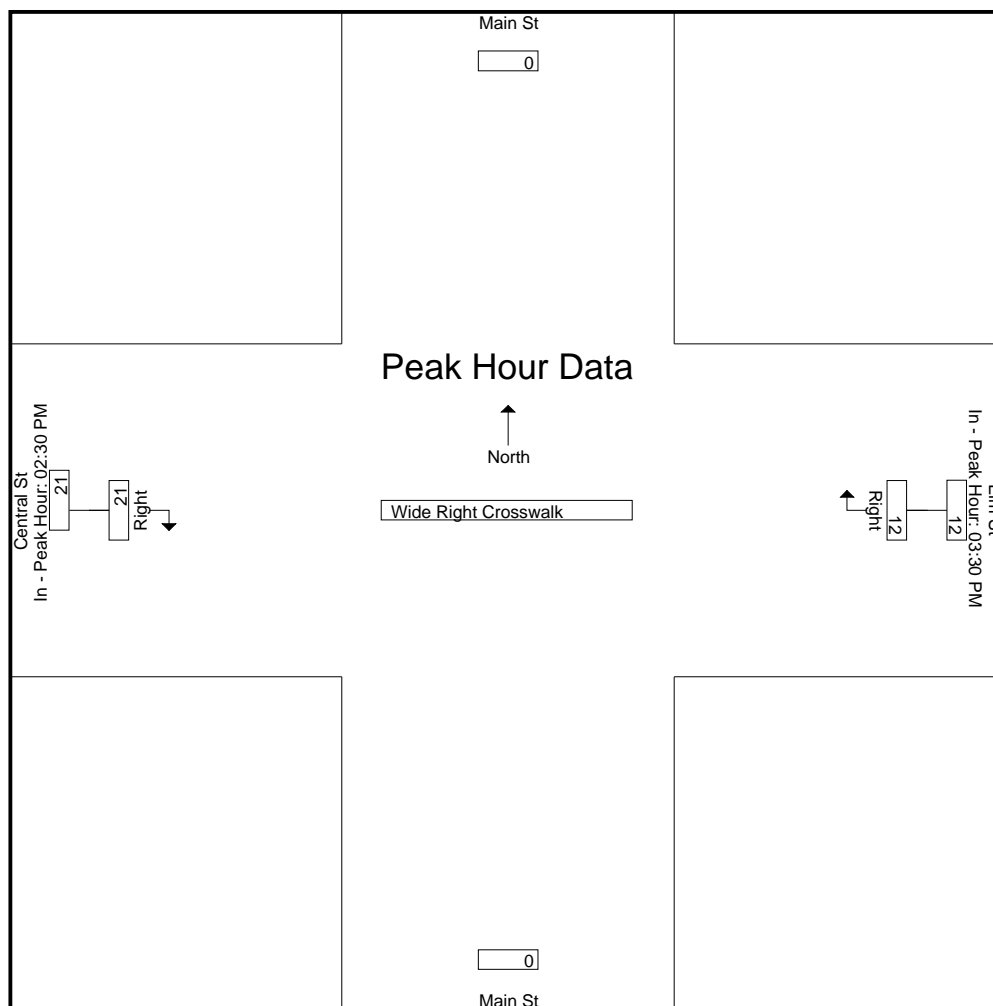
File Name : 12650001

Site Code : 12650001

Start Date : 5/24/2023

Page No : 7

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 1

Groups Printed- Cars - Trucks

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	3	0	31	0	44	1	0	0	1	2	23	0	105
07:15 AM	0	0	31	0	54	1	0	0	0	15	47	1	149
07:30 AM	1	0	38	0	78	0	0	0	0	13	53	0	183
07:45 AM	3	1	47	1	78	4	3	0	1	19	40	1	198
Total	7	1	147	1	254	6	3	0	2	49	163	2	635
08:00 AM	0	0	55	0	78	1	1	0	0	17	43	1	196
08:15 AM	4	2	46	0	74	3	0	0	0	23	55	2	209
08:30 AM	2	0	41	0	86	4	0	0	0	22	62	0	217
08:45 AM	3	1	28	0	65	2	0	0	0	26	61	1	187
Total	9	3	170	0	303	10	1	0	0	88	221	4	809
09:00 AM	4	1	31	1	83	2	2	0	0	20	71	2	217
09:15 AM	3	0	19	0	56	2	0	0	0	13	58	0	151
09:30 AM	5	0	15	0	62	6	0	0	1	17	47	2	155
09:45 AM	7	0	20	1	94	4	0	0	0	11	62	4	203
Total	19	1	85	2	295	14	2	0	1	61	238	8	726
10:00 AM	2	0	21	0	62	4	1	1	0	12	50	2	155
10:15 AM	1	0	26	1	57	2	1	0	3	17	43	3	154
10:30 AM	6	0	22	0	60	7	2	0	0	22	39	3	161
10:45 AM	5	0	21	1	62	3	1	0	0	21	61	1	176
Total	14	0	90	2	241	16	5	1	3	72	193	9	646
11:00 AM	1	0	16	0	61	2	3	0	0	17	54	0	154
11:15 AM	6	0	23	0	58	3	0	0	0	12	37	2	141
11:30 AM	4	0	20	1	74	3	0	0	0	13	62	2	179
11:45 AM	7	0	23	0	67	5	1	0	2	16	64	3	188
Total	18	0	82	1	260	13	4	0	2	58	217	7	662
12:00 PM	9	2	41	1	73	8	1	0	3	26	64	6	234
12:15 PM	2	0	18	0	75	2	2	0	1	17	66	0	183
12:30 PM	2	0	29	1	68	3	1	0	1	27	73	2	207
12:45 PM	6	0	19	1	65	6	1	0	1	25	58	1	183
Total	19	2	107	3	281	19	5	0	6	95	261	9	807
01:00 PM	5	0	22	0	53	7	2	1	0	19	76	1	186
01:15 PM	3	0	19	1	39	8	3	0	4	31	63	4	175
01:30 PM	1	0	26	0	77	3	1	0	1	11	61	2	183
01:45 PM	6	1	28	0	71	0	0	0	1	16	62	0	185
Total	15	1	95	1	240	18	6	1	6	77	262	7	729
02:00 PM	4	0	20	1	60	4	0	0	0	22	57	3	171
02:15 PM	6	1	16	1	60	1	1	0	1	16	62	0	165
02:30 PM	3	0	19	0	64	3	1	0	2	14	61	0	167
02:45 PM	2	0	14	0	77	4	2	1	2	18	53	2	175
Total	15	1	69	2	261	12	4	1	5	70	233	5	678
03:00 PM	4	0	22	0	78	7	1	0	0	17	73	4	206
03:15 PM	4	0	25	0	72	10	1	2	2	32	78	3	229
03:30 PM	1	0	18	3	71	3	1	0	0	39	87	1	224
03:45 PM	4	0	25	1	58	2	0	0	3	33	97	2	225
Total	13	0	90	4	279	22	3	2	5	121	335	10	884
04:00 PM	1	0	30	0	70	3	0	0	1	23	72	1	201
04:15 PM	2	1	25	0	72	2	0	0	1	38	76	1	218
04:30 PM	1	0	30	0	92	3	1	0	1	38	89	1	256
04:45 PM	1	0	29	1	80	7	1	0	4	32	82	3	240
Total	5	1	114	1	314	15	2	0	7	131	319	6	915
05:00 PM	4	1	42	3	84	8	0	1	2	38	88	3	274
05:15 PM	7	0	26	2	67	4	4	1	1	42	80	3	237
05:30 PM	2	1	29	1	65	4	3	3	3	44	85	7	247

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Clear

File Name : 12650002
 Site Code : 12650002
 Start Date : 5/24/2023
 Page No : 2

Groups Printed- Cars - Trucks

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
05:45 PM	7	0	35	2	70	7	1	1	4	38	77	3	245
Total	20	2	132	8	286	23	8	6	10	162	330	16	1003
06:00 PM	10	1	42	3	70	5	4	1	5	32	83	6	262
06:15 PM	0	0	23	0	68	4	1	0	4	24	88	1	213
06:30 PM	4	0	21	1	53	1	2	0	2	33	93	5	215
06:45 PM	1	0	21	3	56	6	6	0	1	16	79	3	192
Total	15	1	107	7	247	16	13	1	12	105	343	15	882
Grand Total	169	13	1288	32	3261	184	56	12	59	1089	3115	98	9376
Apprch %	11.5	0.9	87.6	0.9	93.8	5.3	44.1	9.4	46.5	25.3	72.4	2.3	
Total %	1.8	0.1	13.7	0.3	34.8	2	0.6	0.1	0.6	11.6	33.2	1	
Cars	165	13	1274	31	3202	182	56	12	58	1069	3080	98	9240
% Cars	97.6	100	98.9	96.9	98.2	98.9	100	100	98.3	98.2	98.9	100	98.5
Trucks	4	0	14	1	59	2	0	0	1	20	35	0	136
% Trucks	2.4	0	1.1	3.1	1.8	1.1	0	0	1.7	1.8	1.1	0	1.5

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	4	2	46	52	0	74	3	77	0	0	0	0	23	55	2	80	209
08:30 AM	2	0	41	43	0	86	4	90	0	0	0	0	22	62	0	84	217
08:45 AM	3	1	28	32	0	65	2	67	0	0	0	0	26	61	1	88	187
09:00 AM	4	1	31	36	1	83	2	86	2	0	0	2	20	71	2	93	217
Total Volume	13	4	146	163	1	308	11	320	2	0	0	2	91	249	5	345	830
% App. Total	8	2.5	89.6		0.3	96.2	3.4		100	0	0		26.4	72.2	1.4		
PHF	.813	.500	.793	.784	.250	.895	.688	.889	.250	.000	.000	.250	.875	.877	.625	.927	.956
Cars	11	4	144	159	1	297	9	307	2	0	0	2	89	246	5	340	808
% Cars	84.6	100	98.6	97.5	100	96.4	81.8	95.9	100	0	0	100	97.8	98.8	100	98.6	97.3
Trucks	2	0	2	4	0	11	2	13	0	0	0	0	2	3	0	5	22
% Trucks	15.4	0	1.4	2.5	0	3.6	18.2	4.1	0	0	0	0	2.2	1.2	0	1.4	2.7

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

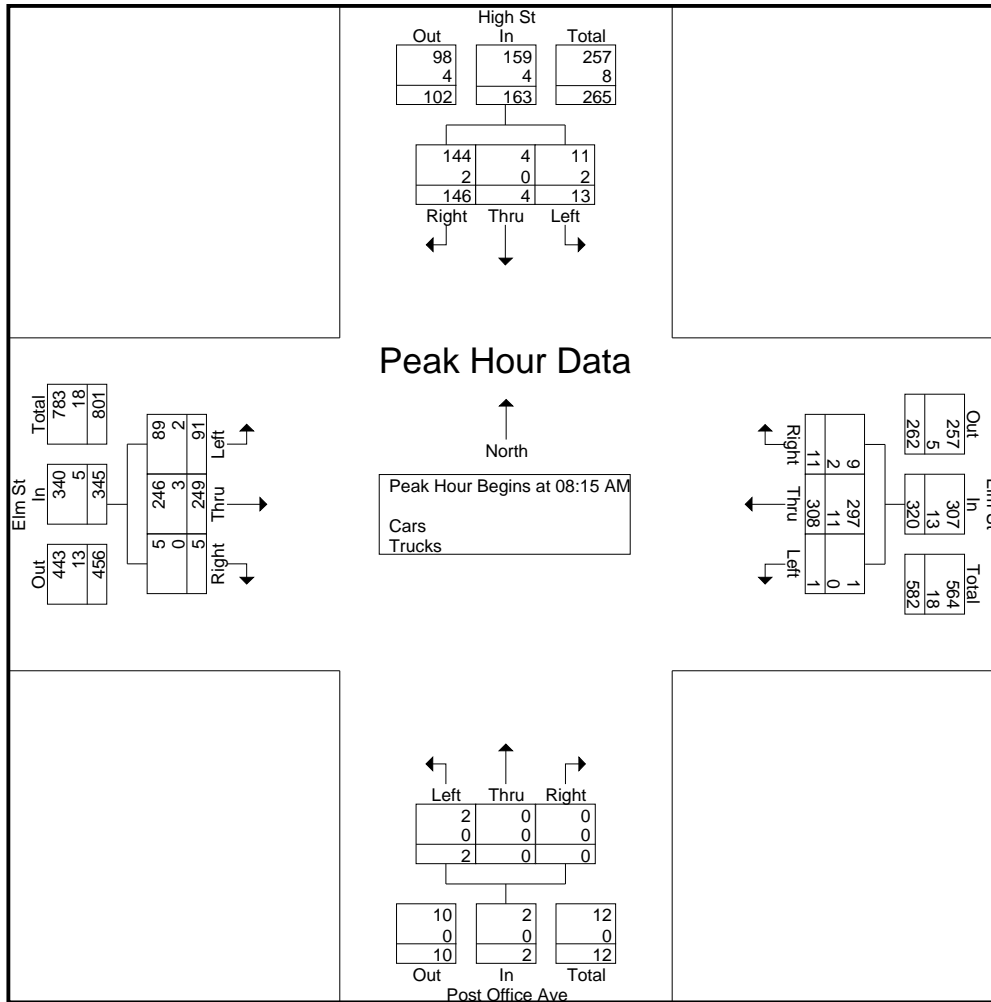
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 3



Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				07:00 AM				08:15 AM							
+0 mins.	3	1	47	51	1	78	4	83	0	0	1	1	23	55	2	80
+15 mins.	0	0	55	55	0	78	1	79	0	0	0	0	22	62	0	84
+30 mins.	4	2	46	52	0	74	3	77	0	0	0	0	26	61	1	88
+45 mins.	2	0	41	43	0	86	4	90	3	0	1	4	20	71	2	93
Total Volume	9	3	189	201	1	316	12	329	3	0	2	5	91	249	5	345
% App. Total	4.5	1.5	94		0.3	96	3.6		60	0	40		26.4	72.2	1.4	
PHF	.563	.375	.859	.914	.250	.919	.750	.914	.250	.000	.500	.313	.875	.877	.625	.927
Cars	8	3	187	198	1	307	10	318	3	0	2	5	89	246	5	340
% Cars	88.9	100	98.9	98.5	100	97.2	83.3	96.7	100	0	100	100	97.8	98.8	100	98.6
Trucks	1	0	2	3	0	9	2	11	0	0	0	0	2	3	0	5
% Trucks	11.1	0	1.1	1.5	0	2.8	16.7	3.3	0	0	0	0	2.2	1.2	0	1.4

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

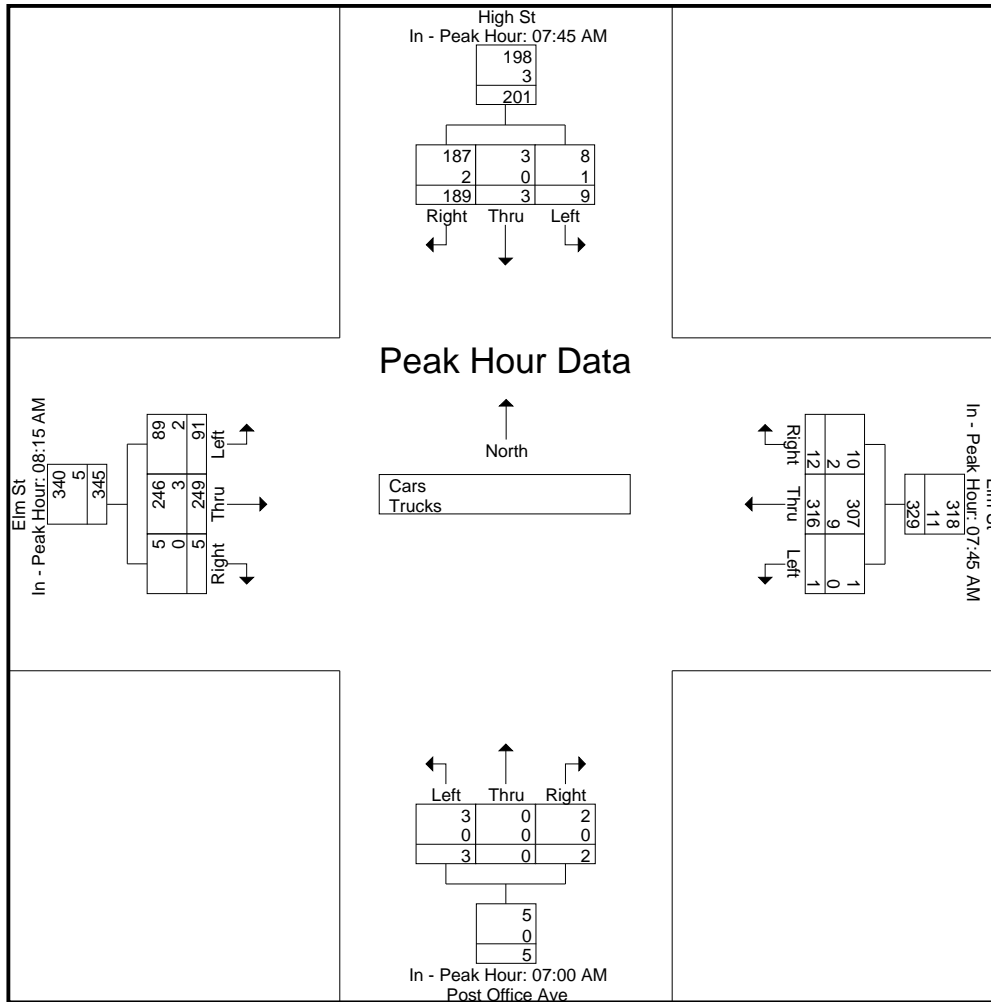
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:45 AM

11:45 AM	7	0	23	30	0	67	5	72	1	0	2	3	16	64	3	83	188
12:00 PM	9	2	41	52	1	73	8	82	1	0	3	4	26	64	6	96	234
12:15 PM	2	0	18	20	0	75	2	77	2	0	1	3	17	66	0	83	183
12:30 PM	2	0	29	31	1	68	3	72	1	0	1	2	27	73	2	102	207
Total Volume	20	2	111	133	2	283	18	303	5	0	7	12	86	267	11	364	812
% App. Total	15	1.5	83.5		0.7	93.4	5.9		41.7	0	58.3		23.6	73.4	3		
PHF	.556	.250	.677	.639	.500	.943	.563	.924	.625	.000	.583	.750	.796	.914	.458	.892	.868
Cars	20	2	110	132	1	276	18	295	5	0	7	12	86	262	11	359	798
% Cars	100	100	99.1	99.2	50.0	97.5	100	97.4	100	0	100	100	100	98.1	100	98.6	98.3
Trucks	0	0	1	1	1	7	0	8	0	0	0	0	0	5	0	5	14
% Trucks	0	0	0.9	0.8	50.0	2.5	0	2.6	0	0	0	0	0	1.9	0	1.4	1.7

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

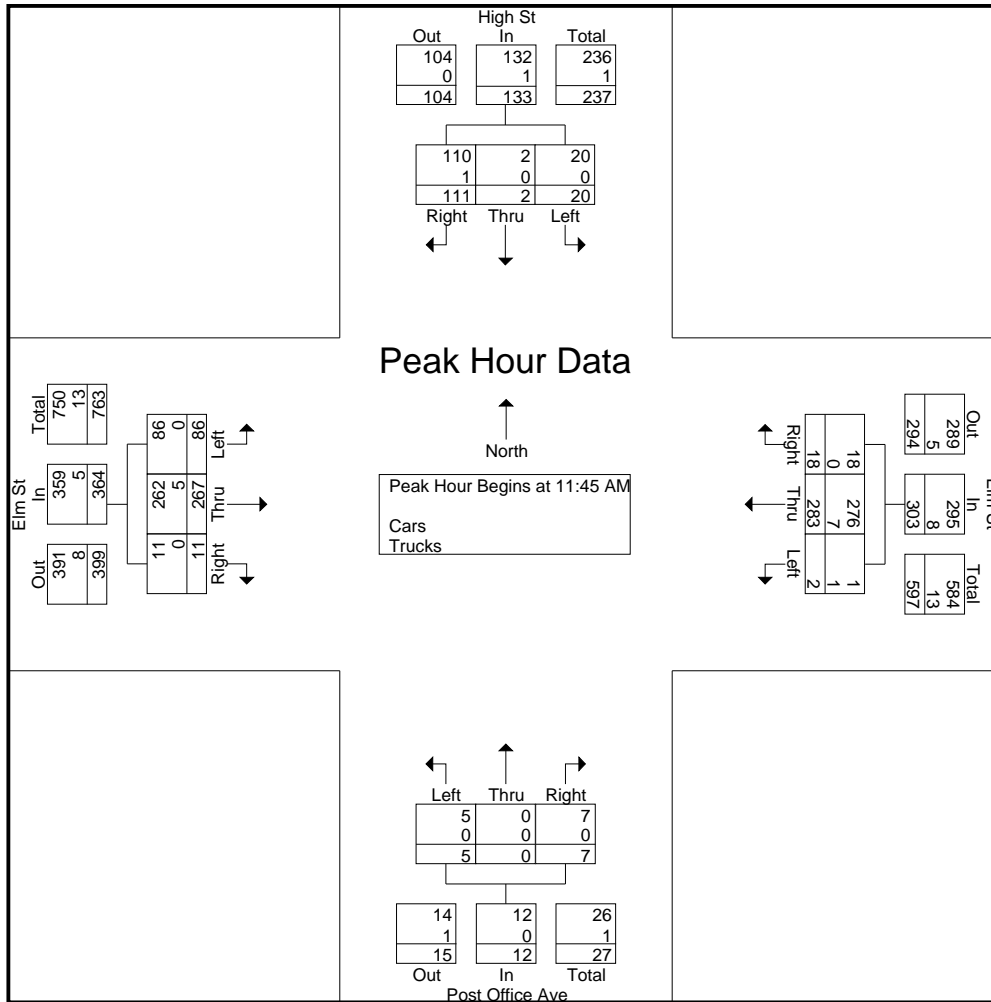
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 5



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:15 AM				11:30 AM				12:30 PM				12:30 PM			
+0 mins.	6	0	23	29	1	74	3	78	1	0	1	2	27	73	2	102
+15 mins.	4	0	20	24	0	67	5	72	1	0	1	2	25	58	1	84
+30 mins.	7	0	23	30	1	73	8	82	2	1	0	3	19	76	1	96
+45 mins.	9	2	41	52	0	75	2	77	3	0	4	7	31	63	4	98
Total Volume	26	2	107	135	2	289	18	309	7	1	6	14	102	270	8	380
% App. Total	19.3	1.5	79.3		0.6	93.5	5.8		50	7.1	42.9		26.8	71.1	2.1	
PHF	.722	.250	.652	.649	.500	.963	.563	.942	.583	.250	.375	.500	.823	.888	.500	.931
Cars	26	2	107	135	1	284	18	303	7	1	6	14	100	268	8	376
% Cars	100	100	100	100	50	98.3	100	98.1	100	100	100	100	98	99.3	100	98.9
Trucks	0	0	0	0	1	5	0	6	0	0	0	0	2	2	0	4
% Trucks	0	0	0	0	50	1.7	0	1.9	0	0	0	0	2	0.7	0	1.1

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

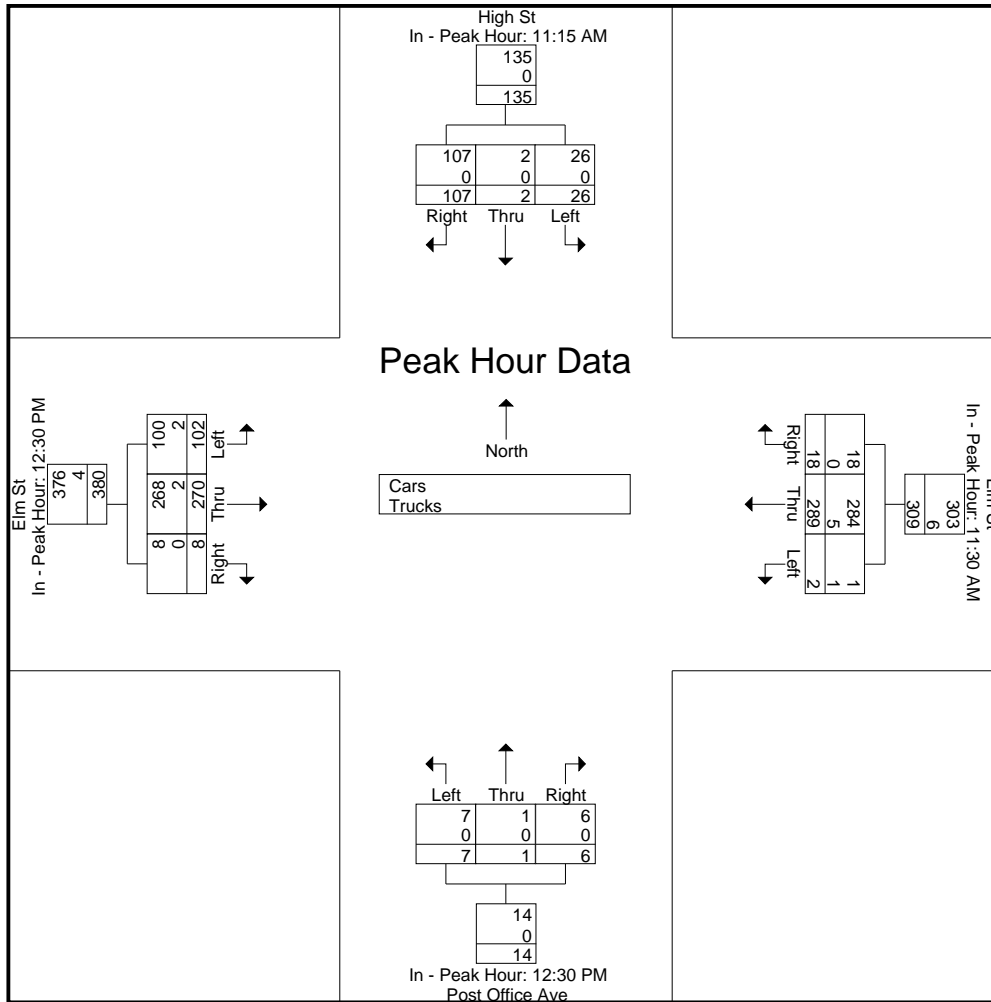
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	1	0	30	31	0	92	3	95	1	0	1	2	38	89	1	128	256
04:45 PM	1	0	29	30	1	80	7	88	1	0	4	5	32	82	3	117	240
05:00 PM	4	1	42	47	3	84	8	95	0	1	2	3	38	88	3	129	274
05:15 PM	7	0	26	33	2	67	4	73	4	1	1	6	42	80	3	125	237
Total Volume	13	1	127	141	6	323	22	351	6	2	8	16	150	339	10	499	1007
% App. Total	9.2	0.7	90.1		1.7	92	6.3		37.5	12.5	50		30.1	67.9	2		
PHF	.464	.250	.756	.750	.500	.878	.688	.924	.375	.500	.500	.667	.893	.952	.833	.967	.919
Cars	13	1	127	141	6	319	22	347	6	2	8	16	150	338	10	498	1002
% Cars	100	100	100	100	100	98.8	100	98.9	100	100	100	100	100	99.7	100	99.8	99.5
Trucks	0	0	0	0	0	4	0	4	0	0	0	0	0	1	0	1	5
% Trucks	0	0	0	0	0	1.2	0	1.1	0	0	0	0	0	0.3	0	0.2	0.5

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

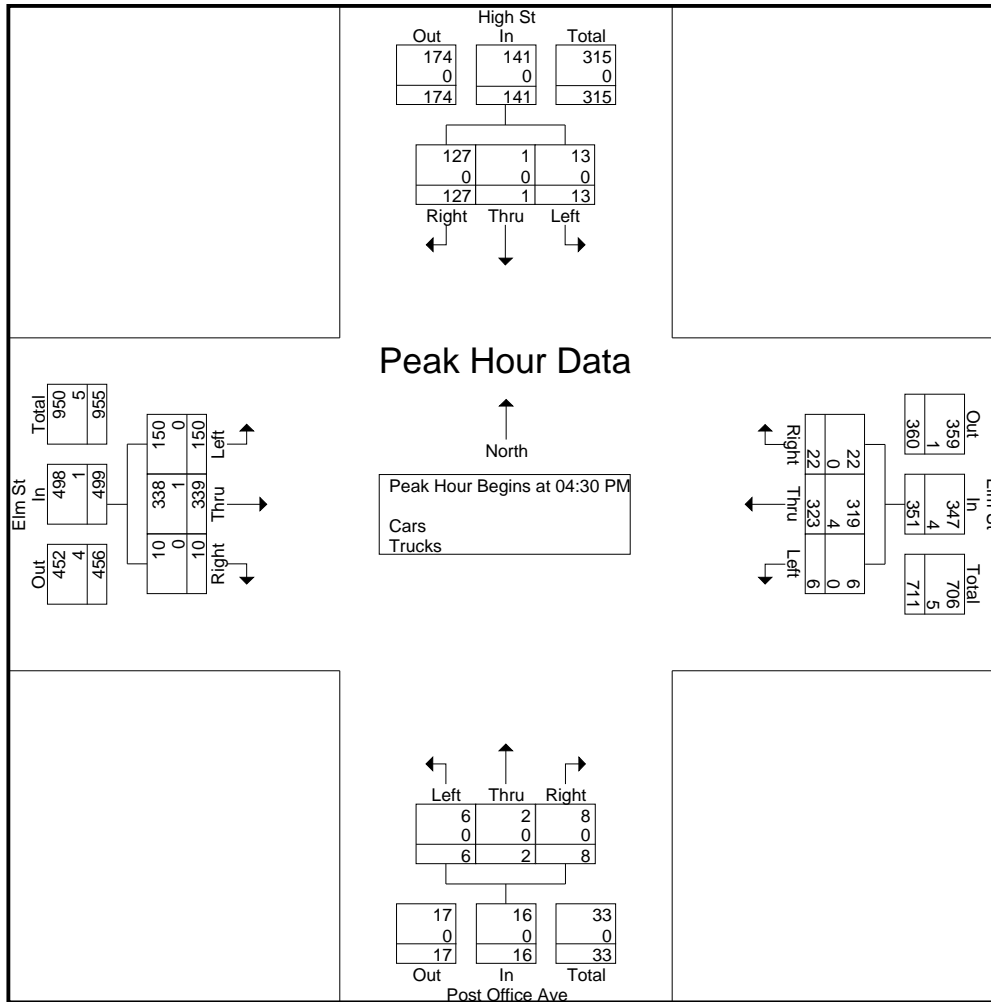
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 7



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:15 PM				04:15 PM				05:15 PM				05:00 PM			
+0 mins.	7	0	26	33	0	72	2	74	4	1	1	6	38	88	3	129
+15 mins.	2	1	29	32	0	92	3	95	3	3	3	9	42	80	3	125
+30 mins.	7	0	35	42	1	80	7	88	1	1	4	6	44	85	7	136
+45 mins.	10	1	42	53	3	84	8	95	4	1	5	10	38	77	3	118
Total Volume	26	2	132	160	4	328	20	352	12	6	13	31	162	330	16	508
% App. Total	16.2	1.2	82.5		1.1	93.2	5.7		38.7	19.4	41.9		31.9	65	3.1	
PHF	.650	.500	.786	.755	.333	.891	.625	.926	.750	.500	.650	.775	.920	.938	.571	.934
Cars	26	2	132	160	4	327	20	351	12	6	13	31	162	326	16	504
% Cars	100	100	100	100	100	99.7	100	99.7	100	100	100	100	100	98.8	100	99.2
Trucks	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4
% Trucks	0	0	0	0	0	0.3	0	0.3	0	0	0	0	0	1.2	0	0.8

Accurate Counts

978-664-2565

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

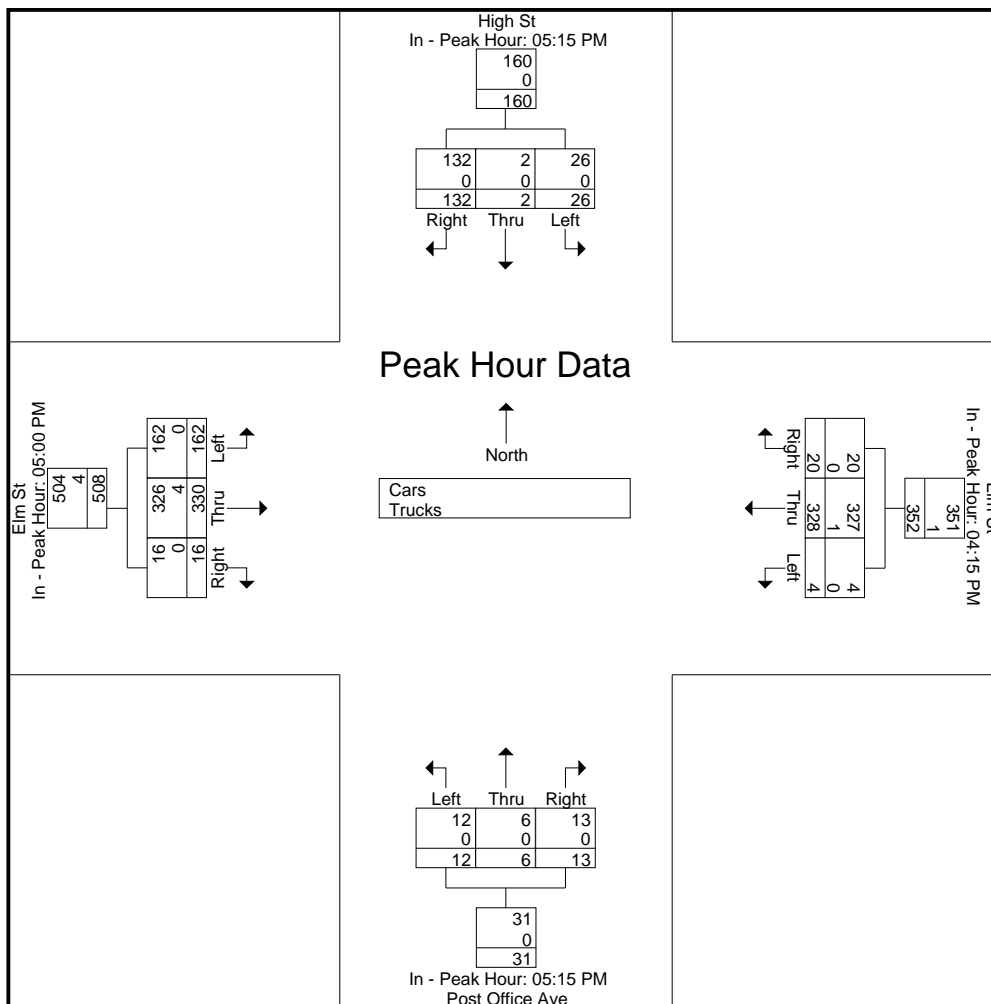
Page No : 8

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 1

Groups Printed- Cars

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	3	0	31	0	41	1	0	0	1	1	23	0	101
07:15 AM	0	0	29	0	54	1	0	0	0	11	46	1	142
07:30 AM	0	0	38	0	77	0	0	0	0	12	53	0	180
07:45 AM	3	1	47	1	78	4	3	0	1	19	40	1	198
Total	6	1	145	1	250	6	3	0	2	43	162	2	621
08:00 AM	0	0	54	0	76	1	1	0	0	16	43	1	192
08:15 AM	3	2	45	0	73	2	0	0	0	21	54	2	202
08:30 AM	2	0	41	0	80	3	0	0	0	22	62	0	210
08:45 AM	2	1	27	0	65	2	0	0	0	26	60	1	184
Total	7	3	167	0	294	8	1	0	0	85	219	4	788
09:00 AM	4	1	31	1	79	2	2	0	0	20	70	2	212
09:15 AM	3	0	19	0	56	2	0	0	0	13	58	0	151
09:30 AM	5	0	15	0	61	6	0	0	1	17	46	2	153
09:45 AM	7	0	20	1	93	4	0	0	0	11	61	4	201
Total	19	1	85	2	289	14	2	0	1	61	235	8	717
10:00 AM	2	0	21	0	62	4	1	1	0	12	50	2	155
10:15 AM	1	0	25	1	56	2	1	0	3	16	42	3	150
10:30 AM	6	0	22	0	59	7	2	0	0	20	38	3	157
10:45 AM	5	0	20	1	57	3	1	0	0	20	60	1	168
Total	14	0	88	2	234	16	5	1	3	68	190	9	630
11:00 AM	1	0	16	0	61	2	3	0	0	17	53	0	153
11:15 AM	6	0	23	0	57	3	0	0	0	12	36	2	139
11:30 AM	4	0	20	1	74	3	0	0	0	13	62	2	179
11:45 AM	7	0	23	0	65	5	1	0	2	16	61	3	183
Total	18	0	82	1	257	13	4	0	2	58	212	7	654
12:00 PM	9	2	41	0	72	8	1	0	3	26	63	6	231
12:15 PM	2	0	18	0	73	2	2	0	1	17	65	0	180
12:30 PM	2	0	28	1	66	3	1	0	1	27	73	2	204
12:45 PM	6	0	19	1	64	6	1	0	1	25	56	1	180
Total	19	2	106	2	275	19	5	0	6	95	257	9	795
01:00 PM	5	0	22	0	52	7	2	1	0	18	76	1	184
01:15 PM	3	0	19	1	39	8	3	0	4	30	63	4	174
01:30 PM	1	0	25	0	77	3	1	0	1	11	58	2	179
01:45 PM	6	1	28	0	70	0	0	0	1	16	61	0	183
Total	15	1	94	1	238	18	6	1	6	75	258	7	720
02:00 PM	4	0	19	1	59	4	0	0	0	22	57	3	169
02:15 PM	6	1	15	1	59	1	1	0	1	16	61	0	162
02:30 PM	3	0	17	0	64	3	1	0	1	14	60	0	163
02:45 PM	2	0	13	0	75	4	2	1	2	18	53	2	172
Total	15	1	64	2	257	12	4	1	4	70	231	5	666
03:00 PM	4	0	22	0	76	7	1	0	0	17	71	4	202
03:15 PM	4	0	25	0	70	10	1	2	2	31	78	3	226
03:30 PM	1	0	18	3	70	3	1	0	0	38	85	1	220
03:45 PM	3	0	25	1	55	2	0	0	3	32	95	2	218
Total	12	0	90	4	271	22	3	2	5	118	329	10	866
04:00 PM	1	0	30	0	67	3	0	0	1	21	72	1	196
04:15 PM	2	1	25	0	72	2	0	0	1	38	75	1	217
04:30 PM	1	0	30	0	91	3	1	0	1	38	89	1	255
04:45 PM	1	0	29	1	80	7	1	0	4	32	82	3	240
Total	5	1	114	1	310	15	2	0	7	129	318	6	908
05:00 PM	4	1	42	3	84	8	0	1	2	38	88	3	274
05:15 PM	7	0	26	2	64	4	4	1	1	42	79	3	233
05:30 PM	2	1	29	1	65	4	3	3	3	44	83	7	245

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear

File Name : 12650002

Site Code : 12650002

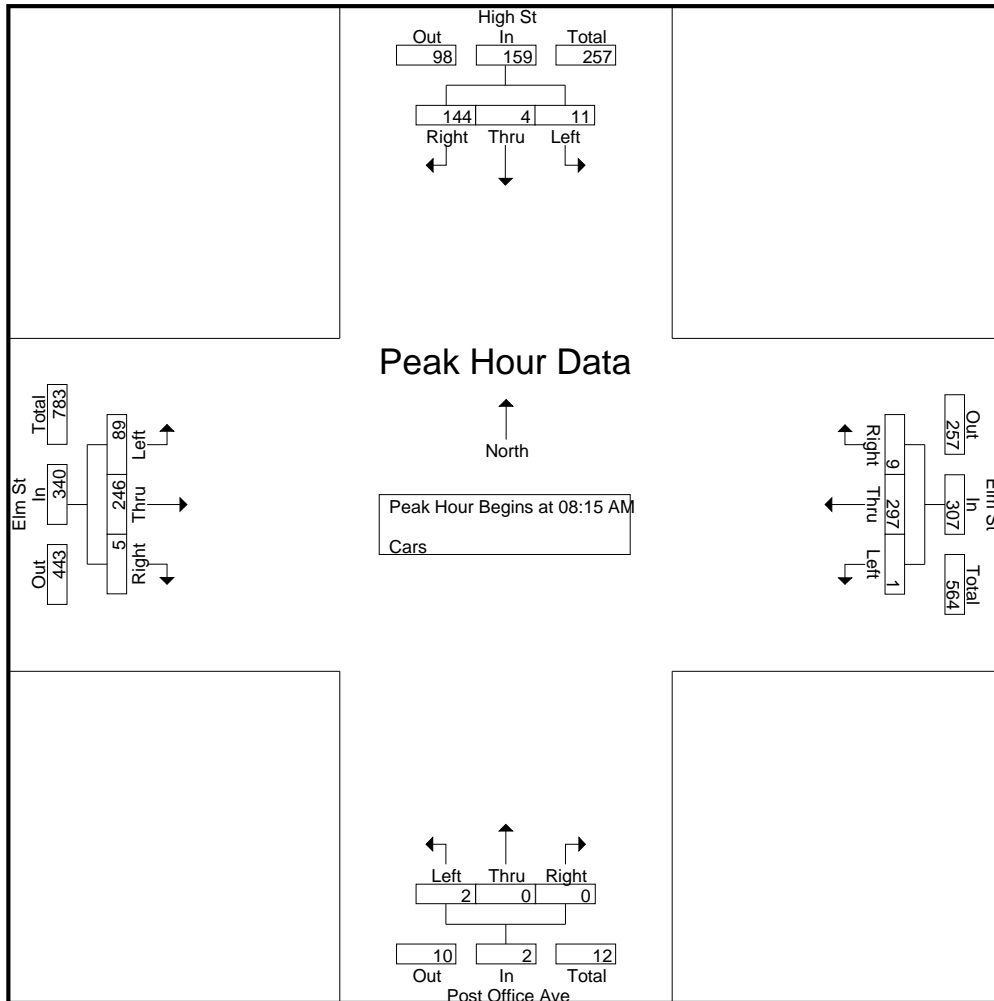
Start Date : 5/24/2023

Page No : 2

Groups Printed- Cars

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
05:45 PM	7	0	35	2	68	7	1	1	4	38	76	3	242
Total	20	2	132	8	281	23	8	6	10	162	326	16	994
06:00 PM	10	1	42	3	70	5	4	1	5	32	83	6	262
06:15 PM	0	0	23	0	68	4	1	0	4	24	88	1	213
06:30 PM	4	0	21	1	53	1	2	0	2	33	93	5	215
06:45 PM	1	0	21	3	55	6	6	0	1	16	79	3	191
Total	15	1	107	7	246	16	13	1	12	105	343	15	881
Grand Total	165	13	1274	31	3202	182	56	12	58	1069	3080	98	9240
Apprch %	11.4	0.9	87.7	0.9	93.8	5.3	44.4	9.5	46	25.2	72.5	2.3	
Total %	1.8	0.1	13.8	0.3	34.7	2	0.6	0.1	0.6	11.6	33.3	1.1	

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	3	2	45	50	0	73	2	75	0	0	0	0	21	54	2	77	202
08:30 AM	2	0	41	43	0	80	3	83	0	0	0	0	22	62	0	84	210
08:45 AM	2	1	27	30	0	65	2	67	0	0	0	0	26	60	1	87	184
09:00 AM	4	1	31	36	1	79	2	82	2	0	0	2	20	70	2	92	212
Total Volume	11	4	144	159	1	297	9	307	2	0	0	2	89	246	5	340	808
% App. Total	6.9	2.5	90.6		0.3	96.7	2.9		100	0	0		26.2	72.4	1.5		
PHF	.688	.500	.800	.795	.250	.928	.750	.925	.250	.000	.000	.250	.856	.879	.625	.924	.953



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Clear

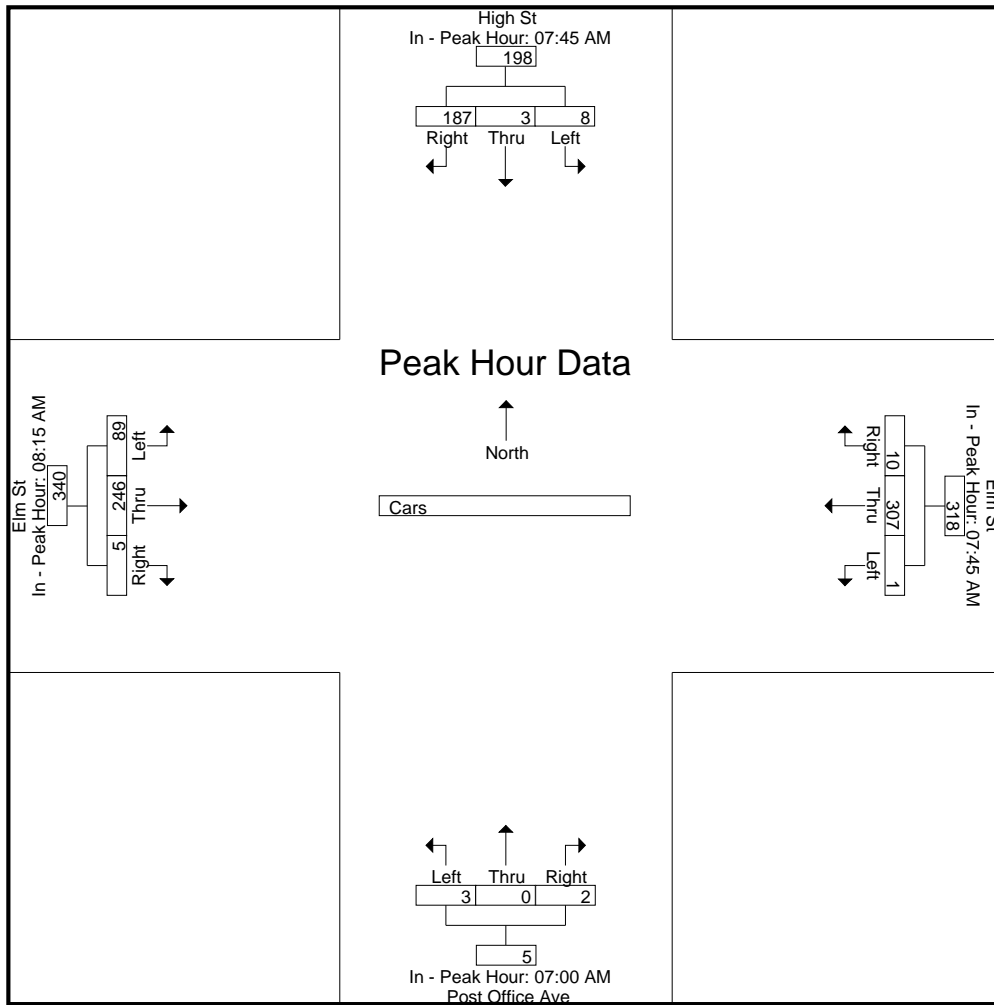
File Name : 12650002
 Site Code : 12650002
 Start Date : 5/24/2023
 Page No : 3

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				07:00 AM				08:15 AM			
+0 mins.	3	1	47	51	1	78	4	83	0	0	1	1	21	54	2	77
+15 mins.	0	0	54	54	0	76	1	77	0	0	0	0	22	62	0	84
+30 mins.	3	2	45	50	0	73	2	75	0	0	0	0	26	60	1	87
+45 mins.	2	0	41	43	0	80	3	83	3	0	1	4	20	70	2	92
Total Volume	8	3	187	198	1	307	10	318	3	0	2	5	89	246	5	340
% App. Total	4	1.5	94.4		0.3	96.5	3.1		60	0	40		26.2	72.4	1.5	
PHF	.667	.375	.866	.917	.250	.959	.625	.958	.250	.000	.500	.313	.856	.879	.625	.924



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:45 AM

11:45 AM	7	0	23	30	0	65	5	70	1	0	2	3	16	61	3	80	183
12:00 PM	9	2	41	52	0	72	8	80	1	0	3	4	26	63	6	95	231
12:15 PM	2	0	18	20	0	73	2	75	2	0	1	3	17	65	0	82	180
12:30 PM	2	0	28	30	1	66	3	70	1	0	1	2	27	73	2	102	204
Total Volume	20	2	110	132	1	276	18	295	5	0	7	12	86	262	11	359	798
% App. Total	15.2	1.5	83.3		0.3	93.6	6.1		41.7	0	58.3		24	73	3.1		
PHF	.556	.250	.671	.635	.250	.945	.563	.922	.625	.000	.583	.750	.796	.897	.458	.880	.864

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

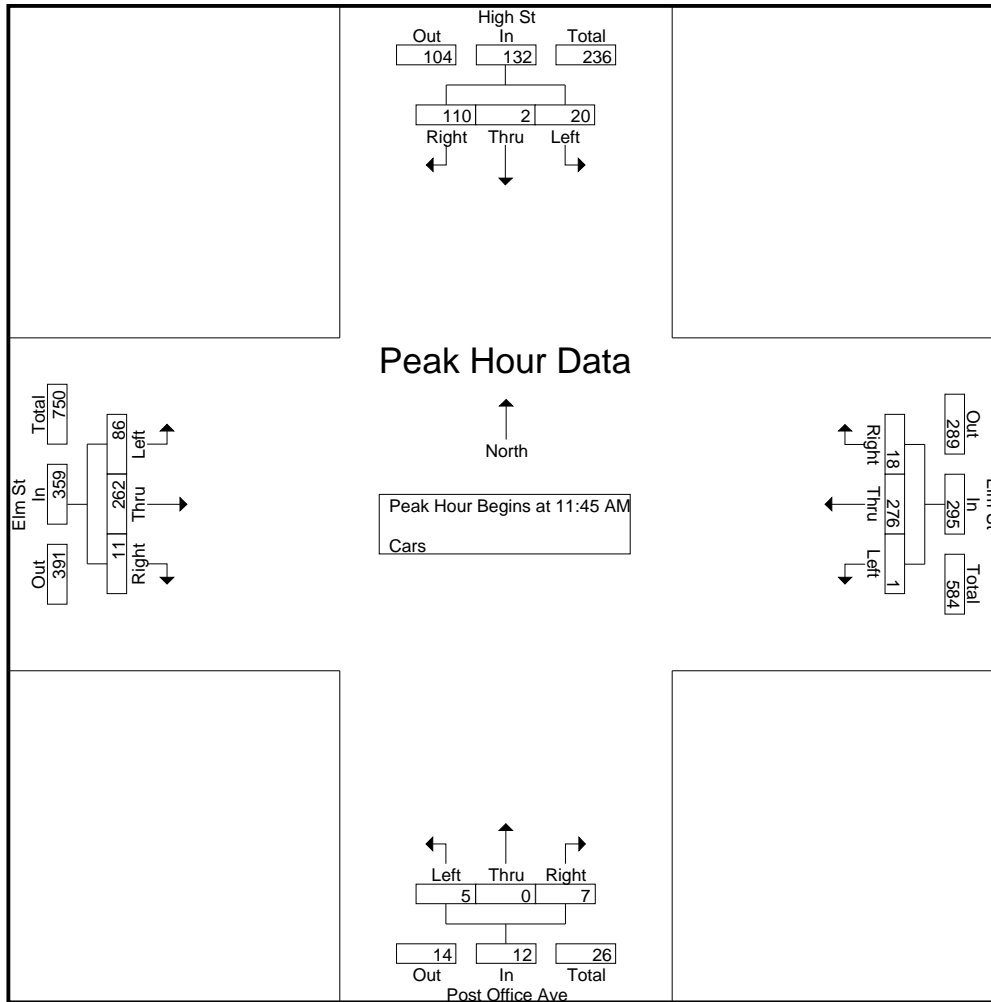
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:15 AM				11:30 AM				12:30 PM				12:30 PM			
+0 mins.	6	0	23	29	1	74	3	78	1	0	1	2	27	73	2	102
+15 mins.	4	0	20	24	0	65	5	70	1	0	1	2	25	56	1	82
+30 mins.	7	0	23	30	0	72	8	80	2	1	0	3	18	76	1	95
+45 mins.	9	2	41	52	0	73	2	75	3	0	4	7	30	63	4	97
Total Volume	26	2	107	135	1	284	18	303	7	1	6	14	100	268	8	376
% App. Total	19.3	1.5	79.3		0.3	93.7	5.9		50	7.1	42.9		26.6	71.3	2.1	
PHF	.722	.250	.652	.649	.250	.959	.563	.947	.583	.250	.375	.500	.833	.882	.500	.922

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

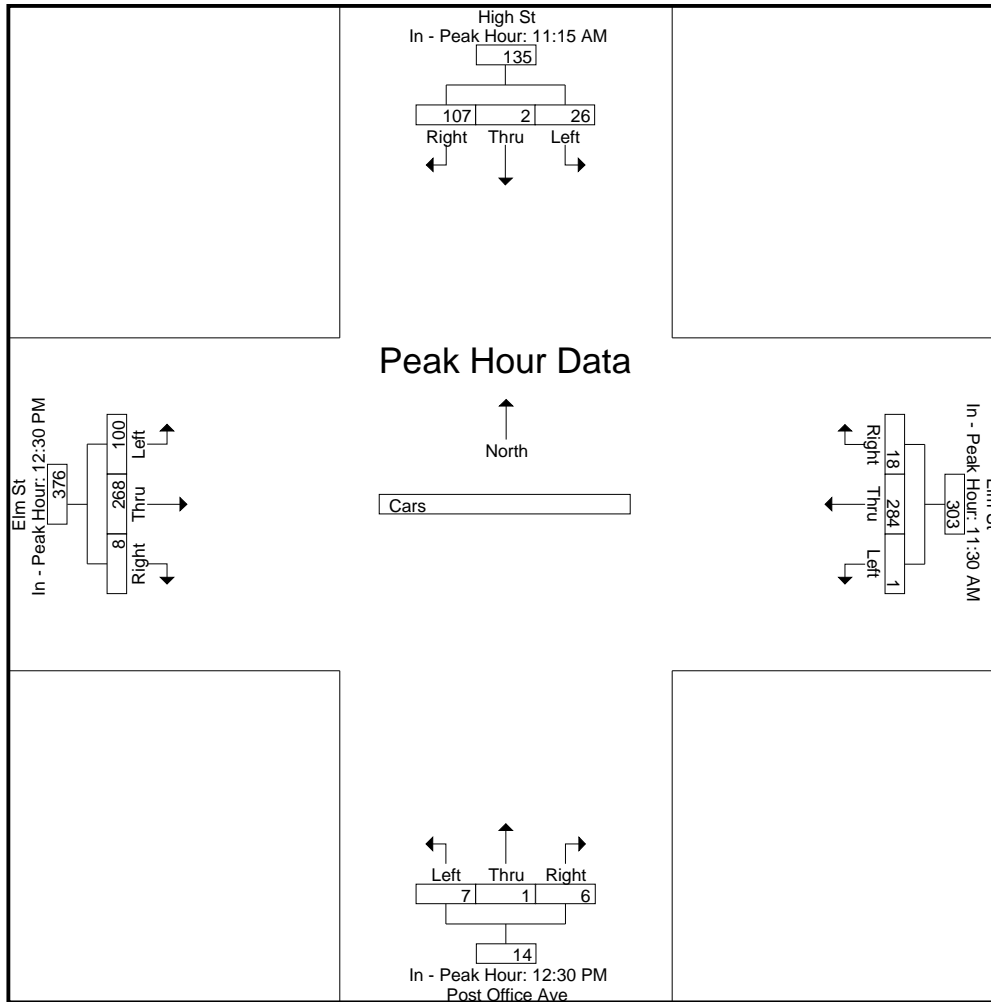
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 5



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:30 PM

04:30 PM	1	0	30	31	0	91	3	94	1	0	1	2	38	89	1	128	255
04:45 PM	1	0	29	30	1	80	7	88	1	0	4	5	32	82	3	117	240
05:00 PM	4	1	42	47	3	84	8	95	0	1	2	3	38	88	3	129	274
05:15 PM	7	0	26	33	2	64	4	70	4	1	1	6	42	79	3	124	233
Total Volume	13	1	127	141	6	319	22	347	6	2	8	16	150	338	10	498	1002
% App. Total	9.2	0.7	90.1		1.7	91.9	6.3		37.5	12.5	50		30.1	67.9	2		
PHF	.464	.250	.756	.750	.500	.876	.688	.913	.375	.500	.500	.667	.893	.949	.833	.965	.914

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

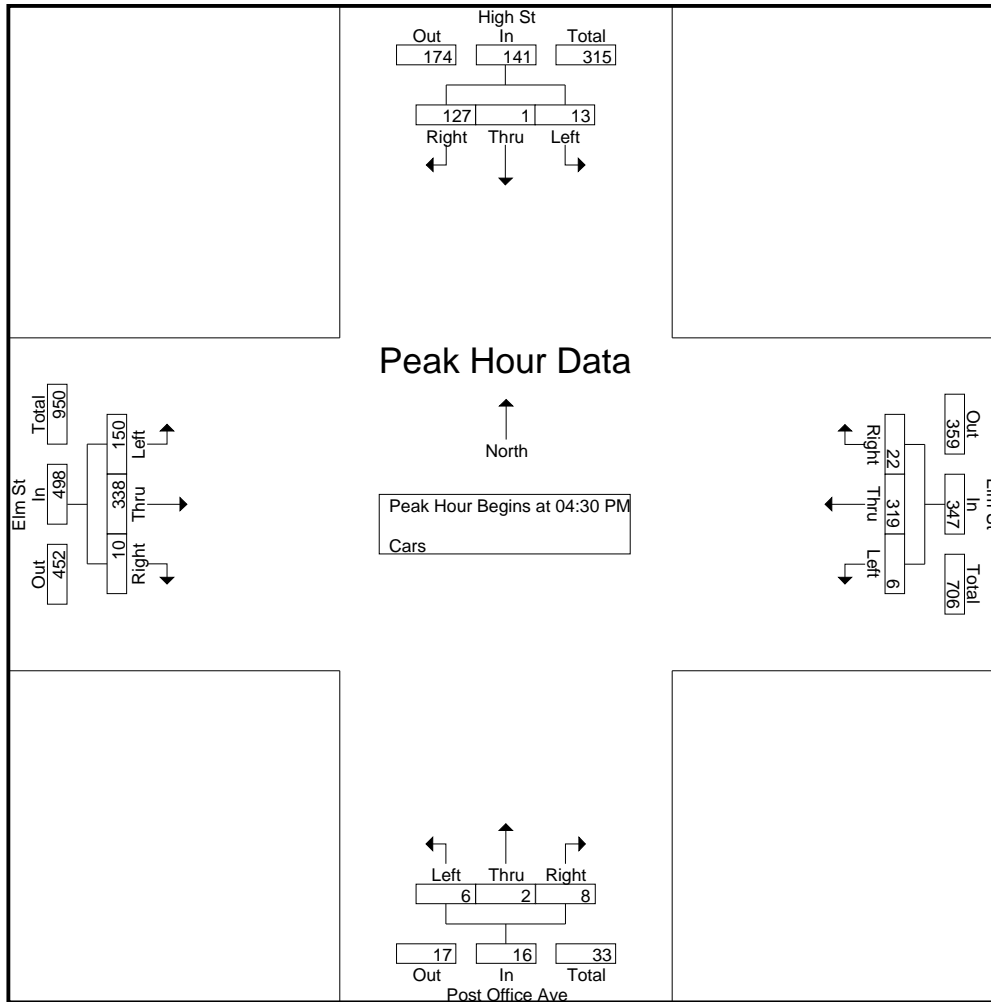
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:15 PM				04:15 PM				05:15 PM				04:45 PM			
+0 mins.	7	0	26	33	0	72	2	74	4	1	1	6	32	82	3	117
+15 mins.	2	1	29	32	0	91	3	94	3	3	3	9	38	88	3	129
+30 mins.	7	0	35	42	1	80	7	88	1	1	4	6	42	79	3	124
+45 mins.	10	1	42	53	3	84	8	95	4	1	5	10	44	83	7	134
Total Volume	26	2	132	160	4	327	20	351	12	6	13	31	156	332	16	504
% App. Total	16.2	1.2	82.5		1.1	93.2	5.7		38.7	19.4	41.9		31	65.9	3.2	
PHF	.650	.500	.786	.755	.333	.898	.625	.924	.750	.500	.650	.775	.886	.943	.571	.940

Accurate Counts

978-664-2565

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

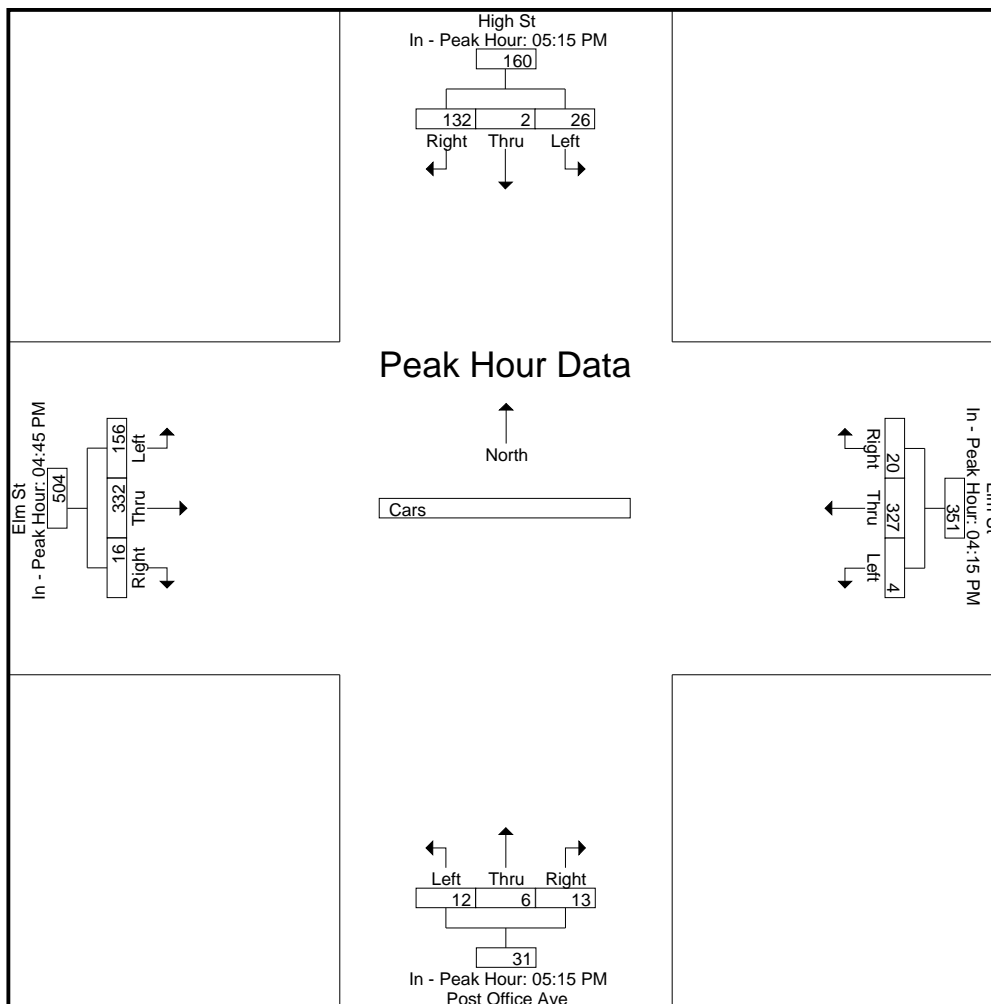
Page No : 7

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 1

Groups Printed- Trucks

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	0	0	0	0	3	0	0	0	0	1	0	0	4
07:15 AM	0	0	2	0	0	0	0	0	0	4	1	0	7
07:30 AM	1	0	0	0	1	0	0	0	0	1	0	0	3
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	2	0	4	0	0	0	0	6	1	0	14
08:00 AM	0	0	1	0	2	0	0	0	0	1	0	0	4
08:15 AM	1	0	1	0	1	1	0	0	0	2	1	0	7
08:30 AM	0	0	0	0	6	1	0	0	0	0	0	0	7
08:45 AM	1	0	1	0	0	0	0	0	0	0	1	0	3
Total	2	0	3	0	9	2	0	0	0	3	2	0	21
09:00 AM	0	0	0	0	4	0	0	0	0	0	1	0	5
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
09:45 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
Total	0	0	0	0	6	0	0	0	0	0	3	0	9
10:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15 AM	0	0	1	0	1	0	0	0	0	1	1	0	4
10:30 AM	0	0	0	0	1	0	0	0	0	2	1	0	4
10:45 AM	0	0	1	0	5	0	0	0	0	1	1	0	8
Total	0	0	2	0	7	0	0	0	0	4	3	0	16
11:00 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
11:15 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	2	0	0	0	0	0	3	0	5
Total	0	0	0	0	3	0	0	0	0	0	5	0	8
12:00 PM	0	0	0	1	1	0	0	0	0	0	1	0	3
12:15 PM	0	0	0	0	2	0	0	0	0	0	1	0	3
12:30 PM	0	0	1	0	2	0	0	0	0	0	0	0	3
12:45 PM	0	0	0	0	1	0	0	0	0	0	2	0	3
Total	0	0	1	1	6	0	0	0	0	0	4	0	12
01:00 PM	0	0	0	0	1	0	0	0	0	1	0	0	2
01:15 PM	0	0	0	0	0	0	0	0	0	1	0	0	1
01:30 PM	0	0	1	0	0	0	0	0	0	0	3	0	4
01:45 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
Total	0	0	1	0	2	0	0	0	0	2	4	0	9
02:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	2
02:15 PM	0	0	1	0	1	0	0	0	0	0	1	0	3
02:30 PM	0	0	2	0	0	0	0	0	1	0	1	0	4
02:45 PM	0	0	1	0	2	0	0	0	0	0	0	0	3
Total	0	0	5	0	4	0	0	0	1	0	2	0	12
03:00 PM	0	0	0	0	2	0	0	0	0	0	2	0	4
03:15 PM	0	0	0	0	2	0	0	0	0	1	0	0	3
03:30 PM	0	0	0	0	1	0	0	0	0	1	2	0	4
03:45 PM	1	0	0	0	3	0	0	0	0	1	2	0	7
Total	1	0	0	0	8	0	0	0	0	3	6	0	18
04:00 PM	0	0	0	0	3	0	0	0	0	2	0	0	5
04:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	4	0	0	0	0	2	1	0	7
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	3	0	0	0	0	0	1	0	4
05:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	2

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear

File Name : 12650002

Site Code : 12650002

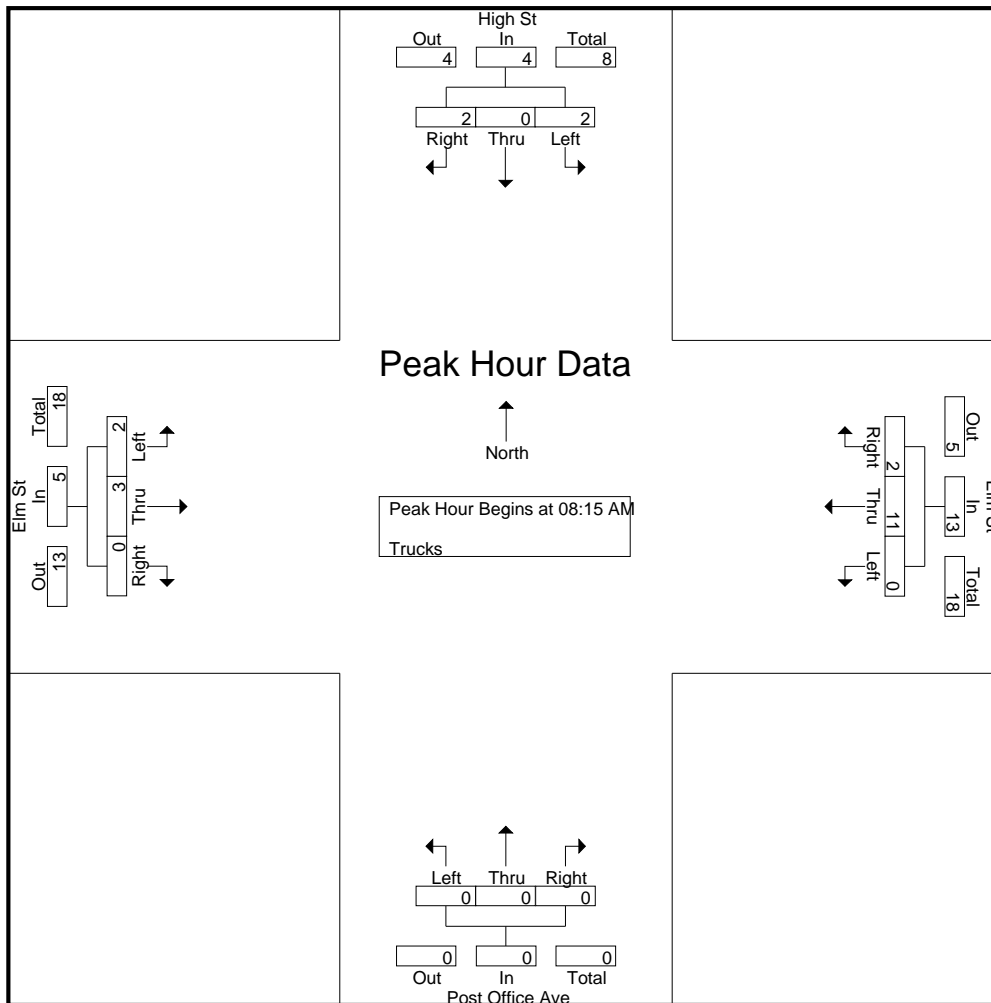
Start Date : 5/24/2023

Page No : 2

Groups Printed- Trucks

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
05:45 PM	0	0	0	0	2	0	0	0	0	0	1	0	3
Total	0	0	0	0	5	0	0	0	0	0	4	0	9
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	1	0	0	0	0	0	0	0	1
Grand Total	4	0	14	1	59	2	0	0	1	20	35	0	136
Apprch %	22.2	0	77.8	1.6	95.2	3.2	0	0	100	36.4	63.6	0	
Total %	2.9	0	10.3	0.7	43.4	1.5	0	0	0.7	14.7	25.7	0	

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	1	0	1	2	0	1	1	2	0	0	0	0	2	1	0	3	7
08:30 AM	0	0	0	0	0	6	1	7	0	0	0	0	0	0	0	0	7
08:45 AM	1	0	1	2	0	0	0	0	0	0	0	0	0	1	0	1	3
09:00 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	1	0	1	5
Total Volume	2	0	2	4	0	11	2	13	0	0	0	0	2	3	0	5	22
% App. Total	50	0	50		0	84.6	15.4		0	0	0		40	60	0		
PHF	.500	.000	.500	.500	.000	.458	.500	.464	.000	.000	.000	.000	.250	.750	.000	.417	.786



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Clear

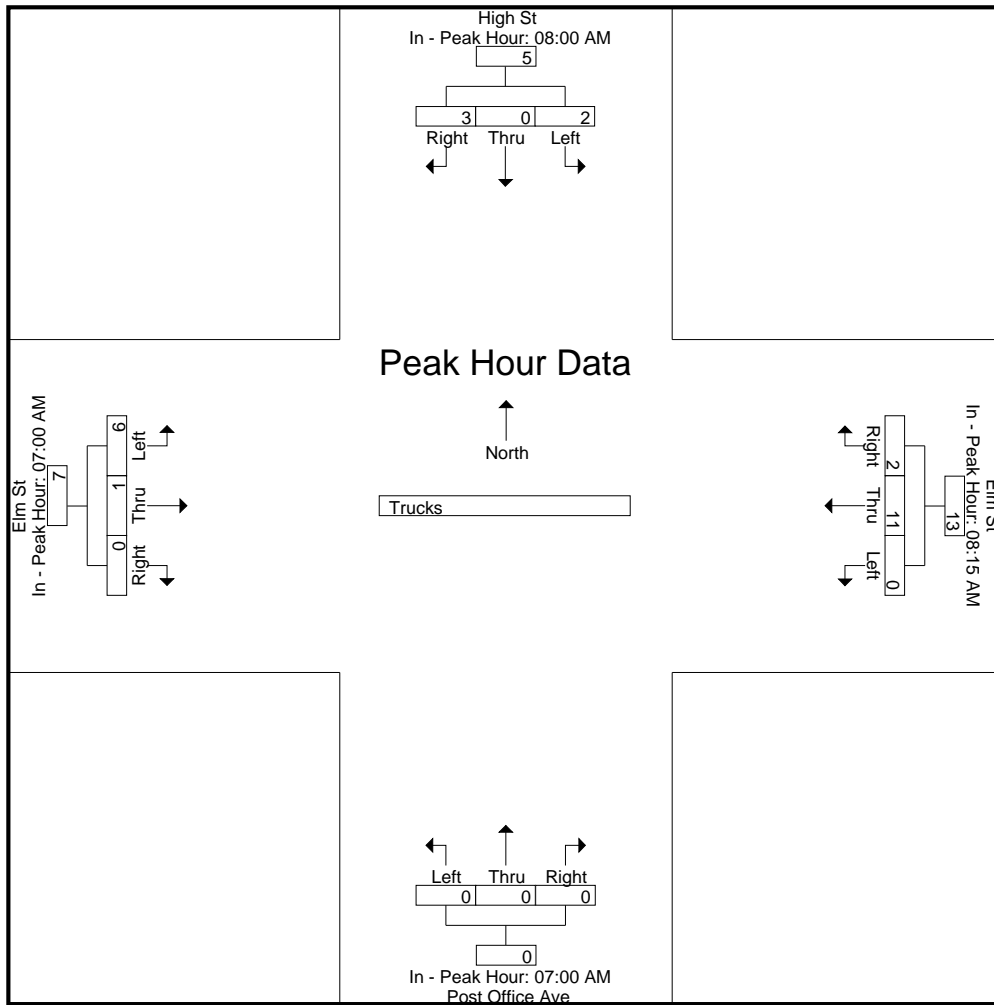
File Name : 12650002
 Site Code : 12650002
 Start Date : 5/24/2023
 Page No : 3

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:00 AM				08:15 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	1	1	0	1	1	2	0	0	0	0	1	0	0	1
+15 mins.	1	0	1	2	0	6	1	7	0	0	0	0	4	1	0	5
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
+45 mins.	1	0	1	2	0	4	0	4	0	0	0	0	0	0	0	0
Total Volume	2	0	3	5	0	11	2	13	0	0	0	0	6	1	0	7
% App. Total	40	0	60		0	84.6	15.4		0	0	0		85.7	14.3	0	
PHF	.500	.000	.750	.625	.000	.458	.500	.464	.000	.000	.000	.000	.375	.250	.000	.350



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 10:15 AM

10:15 AM	0	0	1	1	0	1	0	1	0	0	0	0	1	1	0	2	4
10:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	2	1	0	3	4
10:45 AM	0	0	1	1	0	5	0	5	0	0	0	0	1	1	0	2	8
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	2	2	0	7	0	7	0	0	0	0	4	4	0	8	17
% App. Total	0	0	100		0	100	0		0	0	0		50	50	0		
PHF	.000	.000	.500	.500	.000	.350	.000	.350	.000	.000	.000	.000	.500	1.00	.000	.667	.531

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

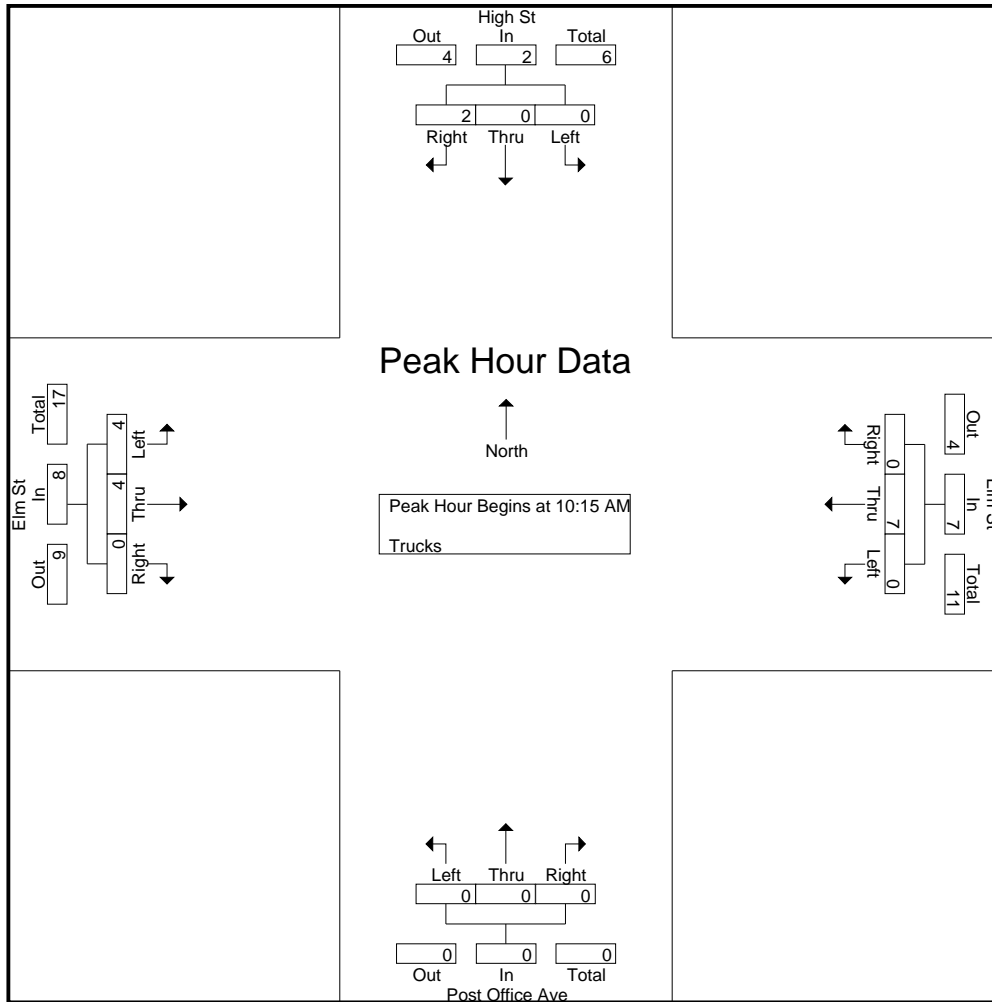
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	10:00 AM				11:45 AM				10:00 AM				10:15 AM			
+0 mins.	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	2
+15 mins.	0	0	1	1	1	1	0	2	0	0	0	0	2	1	0	3
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	1	1	0	2
+45 mins.	0	0	1	1	0	2	0	2	0	0	0	0	0	1	0	1
Total Volume	0	0	2	2	1	7	0	8	0	0	0	0	4	4	0	8
% App. Total	0	0	100	100	12.5	87.5	0	100	0	0	0	0	50	50	0	100
PHF	.000	.000	.500	.500	.250	.875	.000	1.000	.000	.000	.000	.000	.500	1.000	.000	.667

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

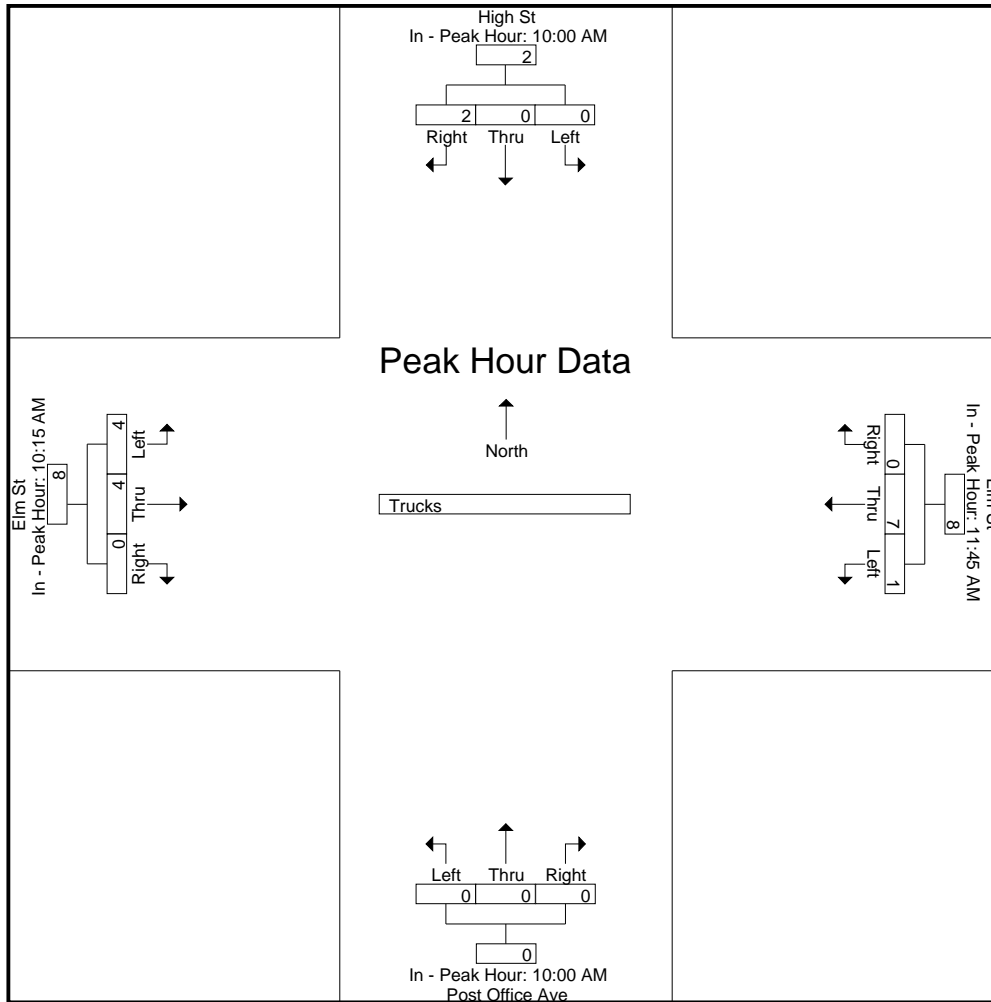
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 5



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:15 PM

03:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	1	0	0	1	3
03:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1	2	0	3	4
03:45 PM	1	0	0	1	0	3	0	3	0	0	0	0	1	2	0	3	7
04:00 PM	0	0	0	0	0	3	0	3	0	0	0	0	2	0	0	2	5
Total Volume	1	0	0	1	0	9	0	9	0	0	0	0	5	4	0	9	19
% App. Total	100	0	0	0	0	100	0	0	0	0	0	0	55.6	44.4	0	0	0
PHF	.250	.000	.000	.250	.000	.750	.000	.750	.000	.000	.000	.000	.625	.500	.000	.750	.679

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

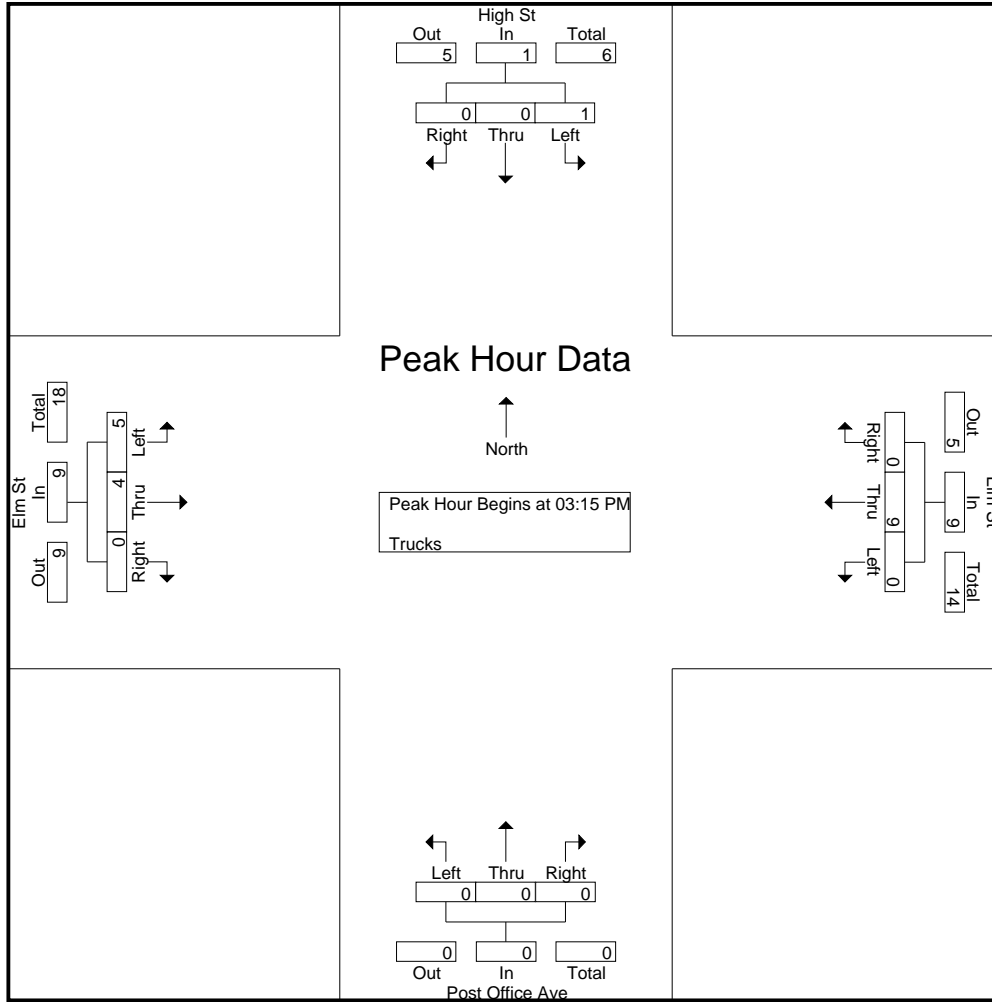
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:00 PM				03:15 PM				02:00 PM				03:00 PM			
+0 mins.	0	0	1	1	0	2	0	2	0	0	0	0	0	2	0	2
+15 mins.	0	0	1	1	0	1	0	1	0	0	0	0	1	0	0	1
+30 mins.	0	0	2	2	0	3	0	3	0	0	1	1	1	2	0	3
+45 mins.	0	0	1	1	0	3	0	3	0	0	0	0	1	2	0	3
Total Volume	0	0	5	5	0	9	0	9	0	0	1	1	3	6	0	9
% App. Total	0	0	100		0	100	0		0	0	100		33.3	66.7	0	
PHF	.000	.000	.625	.625	.000	.750	.000	.750	.000	.000	.250	.250	.750	.750	.000	.750

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

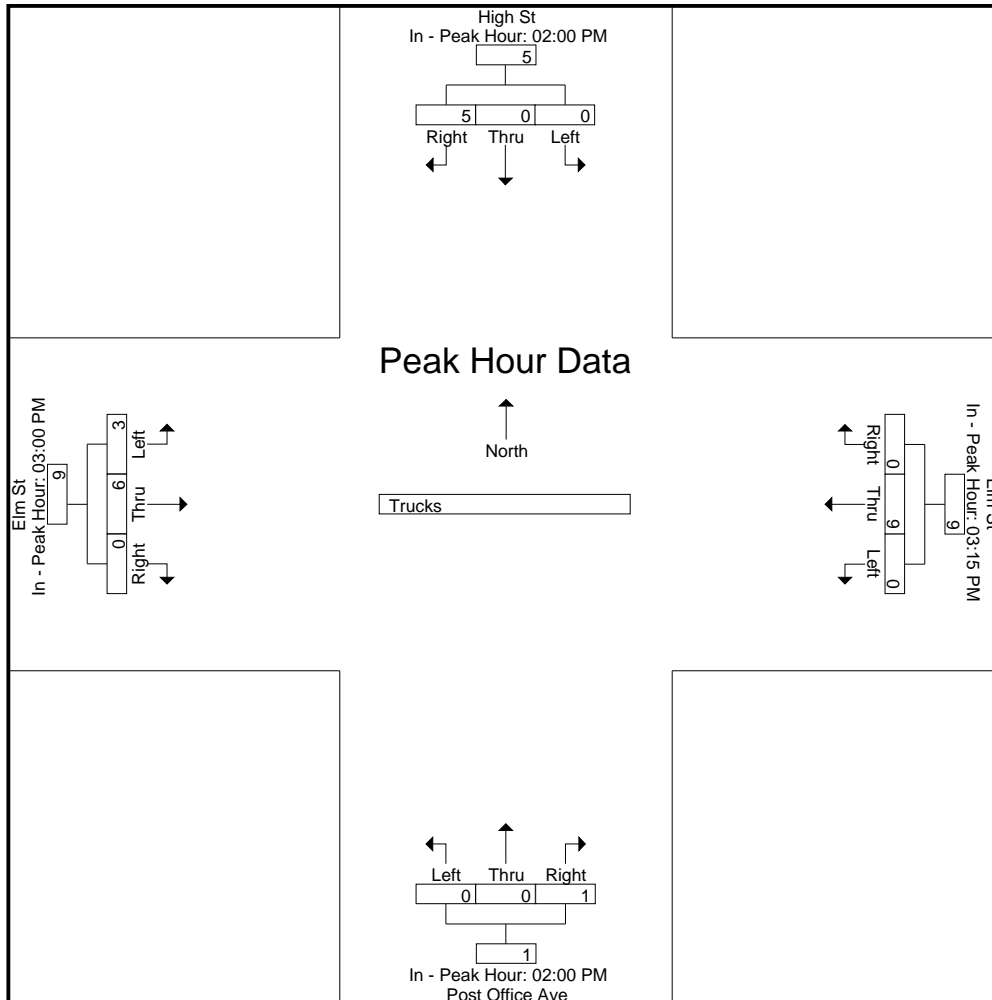
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 7



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear

File Name : 12650002

Site Code : 12650002

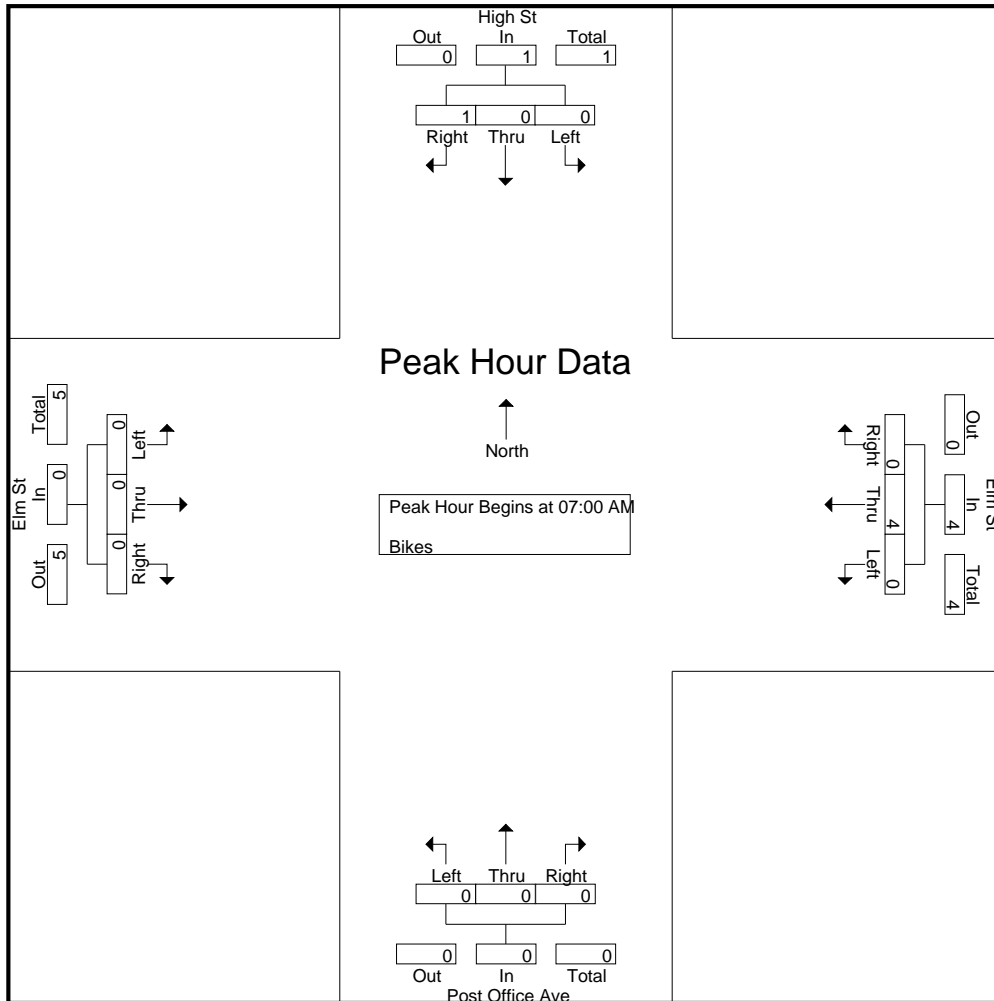
Start Date : 5/24/2023

Page No : 2

Groups Printed- Bikes

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	1	0	3	0	0	5	0	0	0	1	0	0	0	3	0	0	0	13	13
Apprch %	25	0	75		0	100	0		0	100	0		0	100	0				
Total %	7.7	0	23.1		0	38.5	0		0	7.7	0		0	23.1	0		0	100	

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	2
07:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
07:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	1	1	0	4	0	4	0	0	0	0	0	0	0	0	5
% App. Total	0	0	100		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.250	.250	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.625



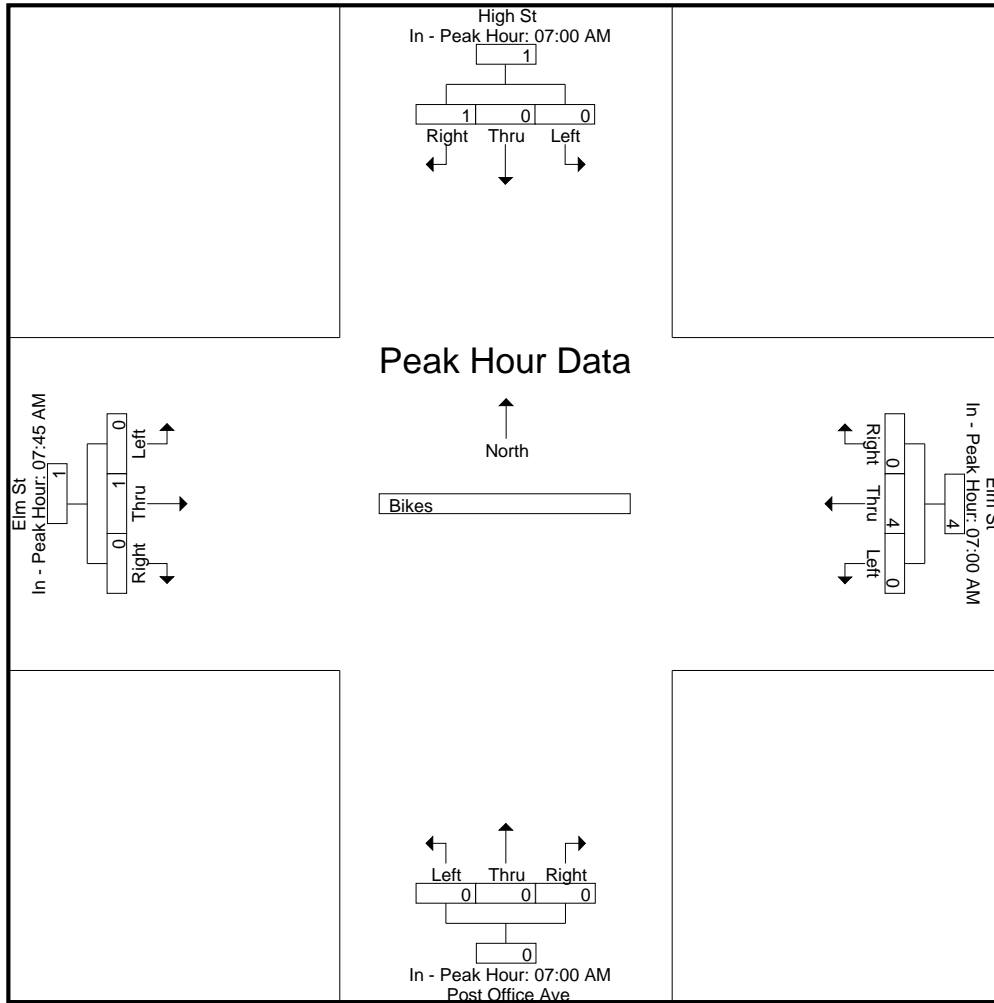
Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Clear

File Name : 12650002
 Site Code : 12650002
 Start Date : 5/24/2023
 Page No : 3

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:00 AM				07:00 AM				07:00 AM				07:45 AM				
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	1
Total Volume	0	0	1	1	0	4	0	4	0	0	0	0	0	1	0	1	1
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.250	.250	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.000	.250	



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1
 Peak Hour for Entire Intersection Begins at 11:15 AM

11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	2	2	0	0	0	0	0	0	0	0	0	1	0	1	3
% App. Total	0	0	100		0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.500	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.750

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

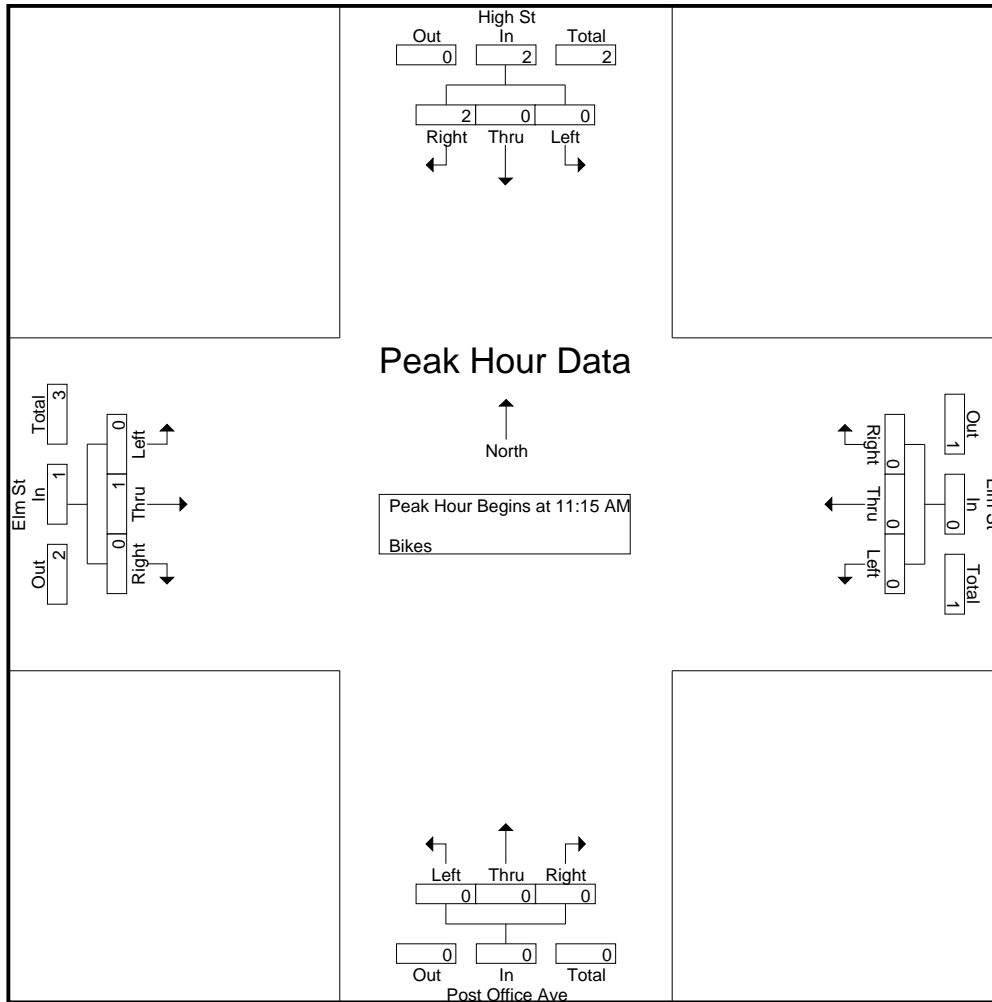
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:15 AM				10:00 AM				10:00 AM				10:30 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1
Total Volume	0	0	2	2	0	1	0	1	0	0	0	0	0	1	0	1
% App. Total	0	0	100	100	0	100	0	100	0	0	0	0	0	100	0	100
PHF	.000	.000	.500	.500	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

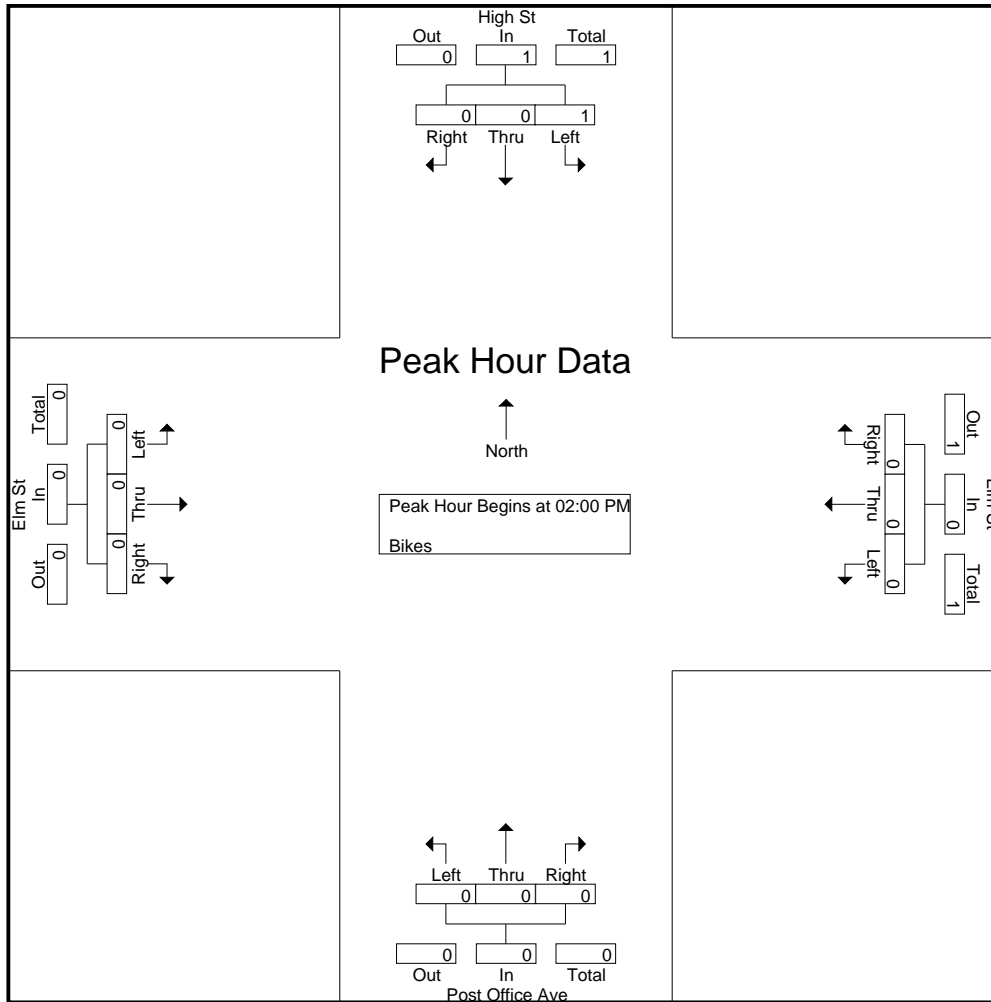
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:00 PM				02:00 PM				03:15 PM				02:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	1	0	0	1	0	0	0	0	0	1	0	1	0	0	0	0
% App. Total	100	0	0		0	0	0		0	100	0		0	0	0	
PHF	.250	.000	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

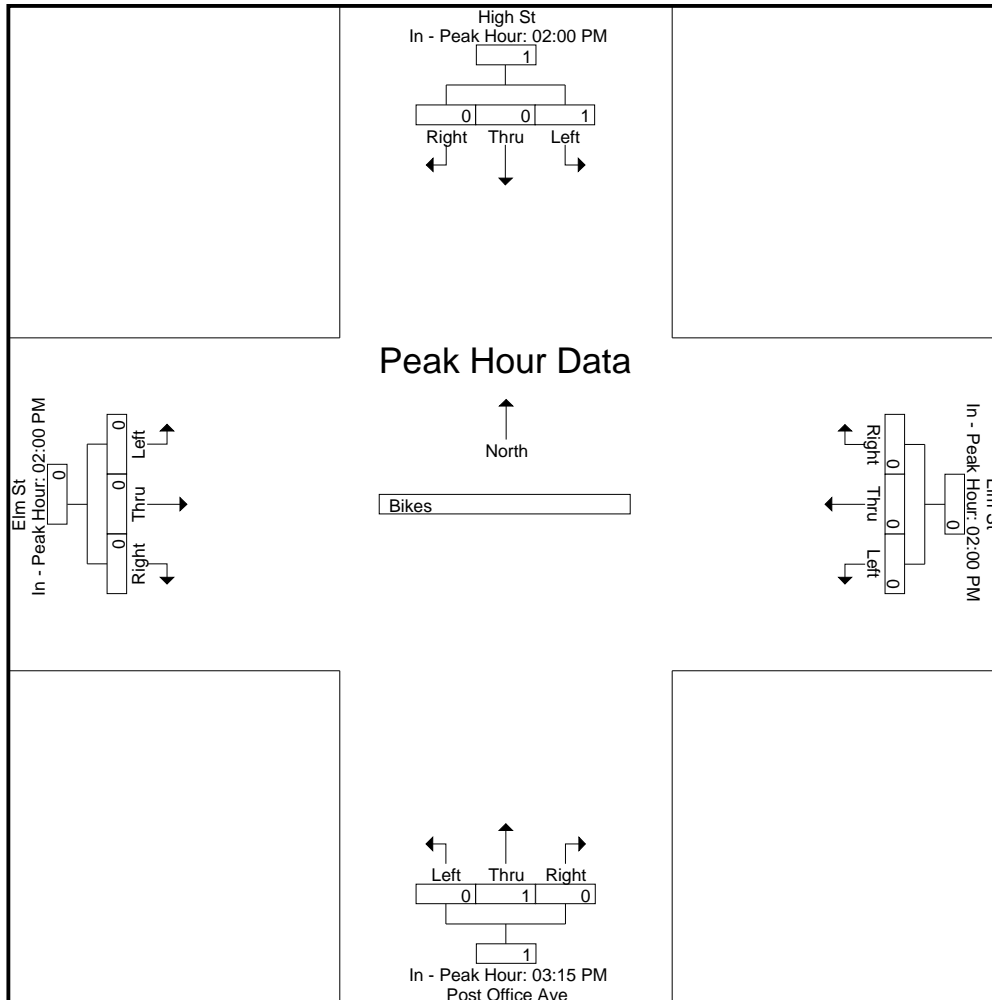
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 7



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 1

Groups Printed- Peds

Start Time	High St From North		Elm St From East		Post Office Ave From South		Elm St From West		Exclu. Total	Inclu. Total	Int. Total
	EB	WB	NB	SB	EB	WB	NB	SB			
07:00 AM	1	1	0	0	8	3	0	0	4	9	13
07:15 AM	0	0	0	1	0	1	0	0	2	0	2
07:30 AM	0	1	0	0	3	0	0	0	1	3	4
07:45 AM	0	0	2	0	5	1	0	0	1	7	8
Total	1	2	2	1	16	5	0	0	8	19	27
08:00 AM	4	0	0	1	4	0	0	0	1	8	9
08:15 AM	2	2	1	0	2	1	0	0	3	5	8
08:30 AM	2	0	0	0	2	0	0	0	0	4	4
08:45 AM	0	0	0	0	3	2	0	0	2	3	5
Total	8	2	1	1	11	3	0	0	6	20	26
09:00 AM	2	0	0	0	4	7	0	0	7	6	13
09:15 AM	0	3	0	2	1	5	0	0	10	1	11
09:30 AM	1	1	0	0	2	0	0	0	1	3	4
09:45 AM	2	2	1	3	3	1	0	1	7	6	13
Total	5	6	1	5	10	13	0	1	25	16	41
10:00 AM	2	2	0	0	2	4	0	0	6	4	10
10:15 AM	1	0	0	0	1	3	0	0	3	2	5
10:30 AM	2	0	1	2	4	1	2	2	5	9	14
10:45 AM	0	0	1	1	6	3	0	1	5	7	12
Total	5	2	2	3	13	11	2	3	19	22	41
11:00 AM	1	4	0	0	2	3	1	0	7	4	11
11:15 AM	0	0	0	2	5	4	0	1	7	5	12
11:30 AM	1	0	1	1	5	1	0	0	2	7	9
11:45 AM	1	0	1	0	7	3	0	0	3	9	12
Total	3	4	2	3	19	11	1	1	19	25	44
12:00 PM	1	1	2	0	5	3	0	0	4	8	12
12:15 PM	1	0	0	1	5	5	0	0	6	6	12
12:30 PM	0	0	0	2	7	4	0	0	6	7	13
12:45 PM	0	4	0	2	0	6	0	0	12	0	12
Total	2	5	2	5	17	18	0	0	28	21	49
01:00 PM	2	1	0	2	3	2	0	1	6	5	11
01:15 PM	0	1	0	2	6	5	0	0	8	6	14
01:30 PM	0	2	1	0	2	3	0	0	5	3	8
01:45 PM	1	4	0	0	3	2	0	0	6	4	10
Total	3	8	1	4	14	12	0	1	25	18	43
02:00 PM	0	1	1	1	8	2	0	0	4	9	13
02:15 PM	0	0	2	1	4	2	0	0	3	6	9
02:30 PM	0	0	0	0	7	3	0	0	3	7	10
02:45 PM	1	0	0	0	2	1	0	0	1	3	4
Total	1	1	3	2	21	8	0	0	11	25	36
03:00 PM	0	0	0	1	2	10	3	1	12	5	17
03:15 PM	2	2	0	3	6	6	4	0	11	12	23
03:30 PM	1	2	0	0	3	3	2	2	7	6	13
03:45 PM	0	0	1	6	0	7	2	5	18	3	21
Total	3	4	1	10	11	26	11	8	48	26	74
04:00 PM	0	1	2	1	6	1	2	1	4	10	14
04:15 PM	0	1	3	1	5	8	0	1	11	8	19
04:30 PM	0	1	1	0	2	9	0	0	10	3	13
04:45 PM	0	2	1	0	2	4	1	0	6	4	10
Total	0	5	7	2	15	22	3	2	31	25	56
05:00 PM	0	0	1	0	4	7	0	0	7	5	12
05:15 PM	1	3	0	2	5	5	3	0	10	9	19
05:30 PM	0	0	0	1	1	0	0	0	1	1	2

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear

File Name : 12650002

Site Code : 12650002

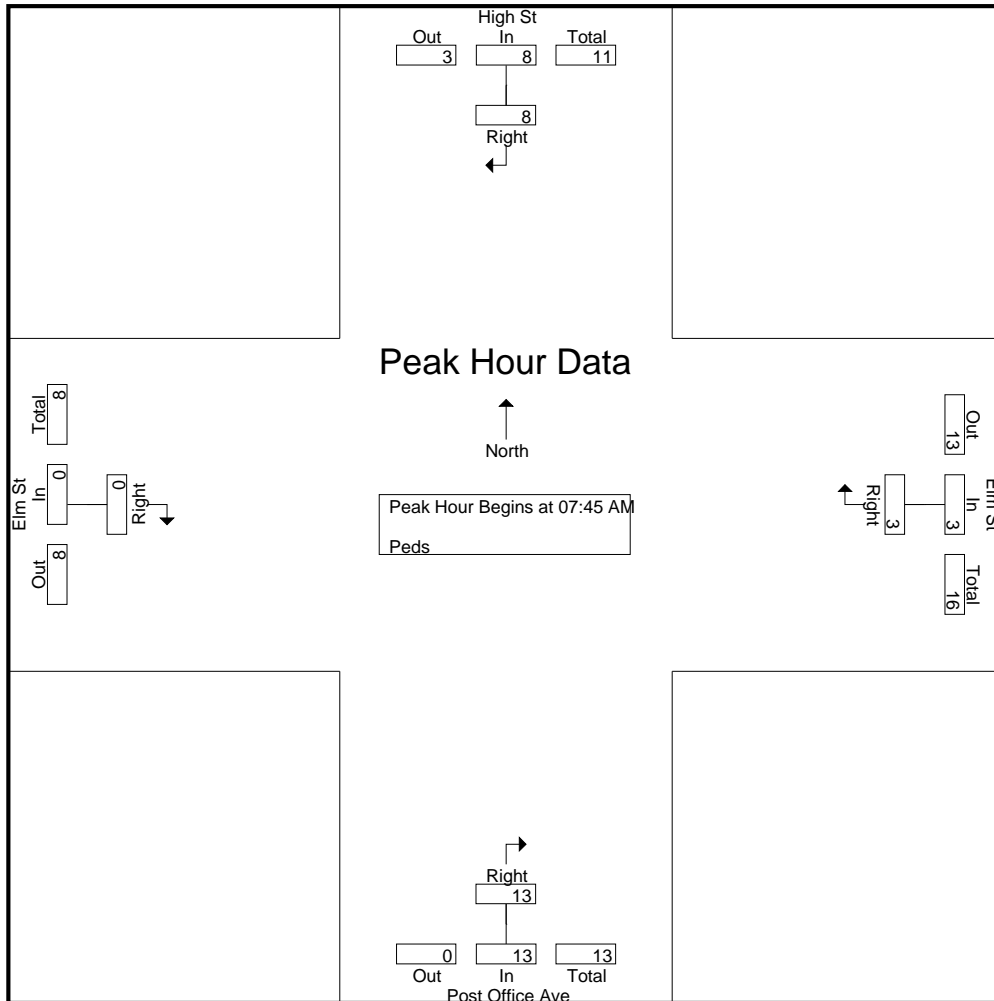
Start Date : 5/24/2023

Page No : 2

Groups Printed- Peds

Start Time	High St From North		Elm St From East		Post Office Ave From South		Elm St From West		Exclu. Total	Inclu. Total	Int. Total
	EB	WB	NB	SB	EB	WB	NB	SB			
05:45 PM	0	0	0	0	0	1	0	0	1	0	1
Total	1	3	1	3	10	13	3	0	19	15	34
06:00 PM	1	0	1	1	4	0	0	1	2	6	8
06:15 PM	2	0	0	1	4	0	0	0	1	6	7
06:30 PM	1	0	0	0	0	0	0	0	0	1	1
06:45 PM	0	0	1	0	4	2	0	0	2	5	7
Total	4	0	2	2	12	2	0	1	5	18	23
Grand Total	36	42	25	41	169	144	20	17	244	250	494
Apprch %	100		100		100		100				
Total %	14.4		10		67.6		8		49.4	50.6	

Start Time	High St From North		Elm St From East		Post Office Ave From South		Elm St From West		Int. Total	
	EB	App. Total	NB	App. Total	EB	App. Total	NB	App. Total		
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	2	2	5	5	0	0	7	
08:00 AM	4	4	0	0	4	4	0	0	8	
08:15 AM	2	2	1	1	2	2	0	0	5	
08:30 AM	2	2	0	0	2	2	0	0	4	
Total Volume	8	8	3	3	13	13	0	0	24	
% App. Total	100		100		100		0			
PHF	.500	.500	.375	.375	.650	.650	.000	.000	.750	



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Clear

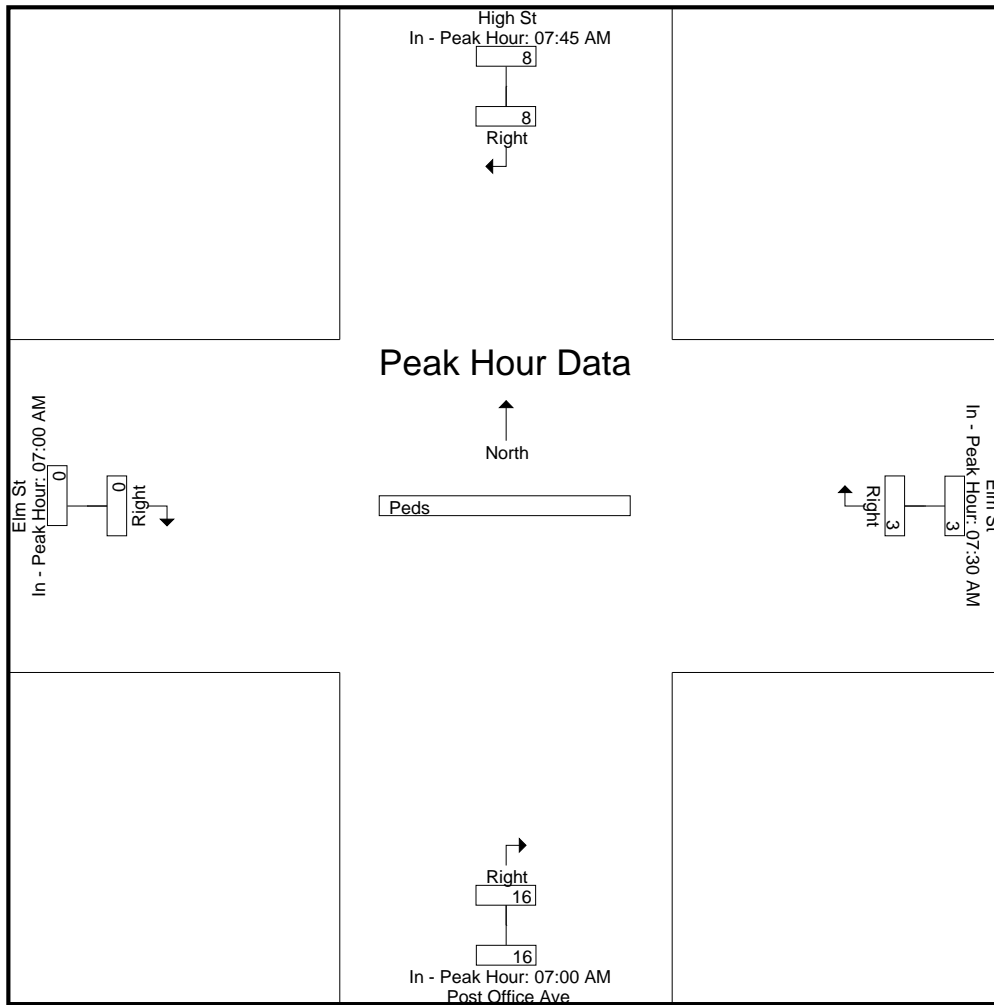
File Name : 12650002
 Site Code : 12650002
 Start Date : 5/24/2023
 Page No : 3

Start Time	High St From North		Elm St From East		Post Office Ave From South		Elm St From West		Int. Total
	EB	App. Total	NB	App. Total	EB	App. Total	NB	App. Total	

Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM		07:30 AM		07:00 AM		07:00 AM		
+0 mins.	0	0	0	0	8	8	0	0	
+15 mins.	4	4	2	2	0	0	0	0	
+30 mins.	2	2	0	0	3	3	0	0	
+45 mins.	2	2	1	1	5	5	0	0	
Total Volume	8	8	3	3	16	16	0	0	
% App. Total	100		100		100		0		
PHF	.500	.500	.375	.375	.500	.500	.000	.000	



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 11:30 AM

11:30 AM	1	1	1	1	5	5	0	0	7
11:45 AM	1	1	1	1	7	7	0	0	9
12:00 PM	1	1	2	2	5	5	0	0	8
12:15 PM	1	1	0	0	5	5	0	0	6
Total Volume	4	4	4	4	22	22	0	0	30
% App. Total	100		100		100		0		
PHF	1.00	1.00	.500	.500	.786	.786	.000	.000	.833

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

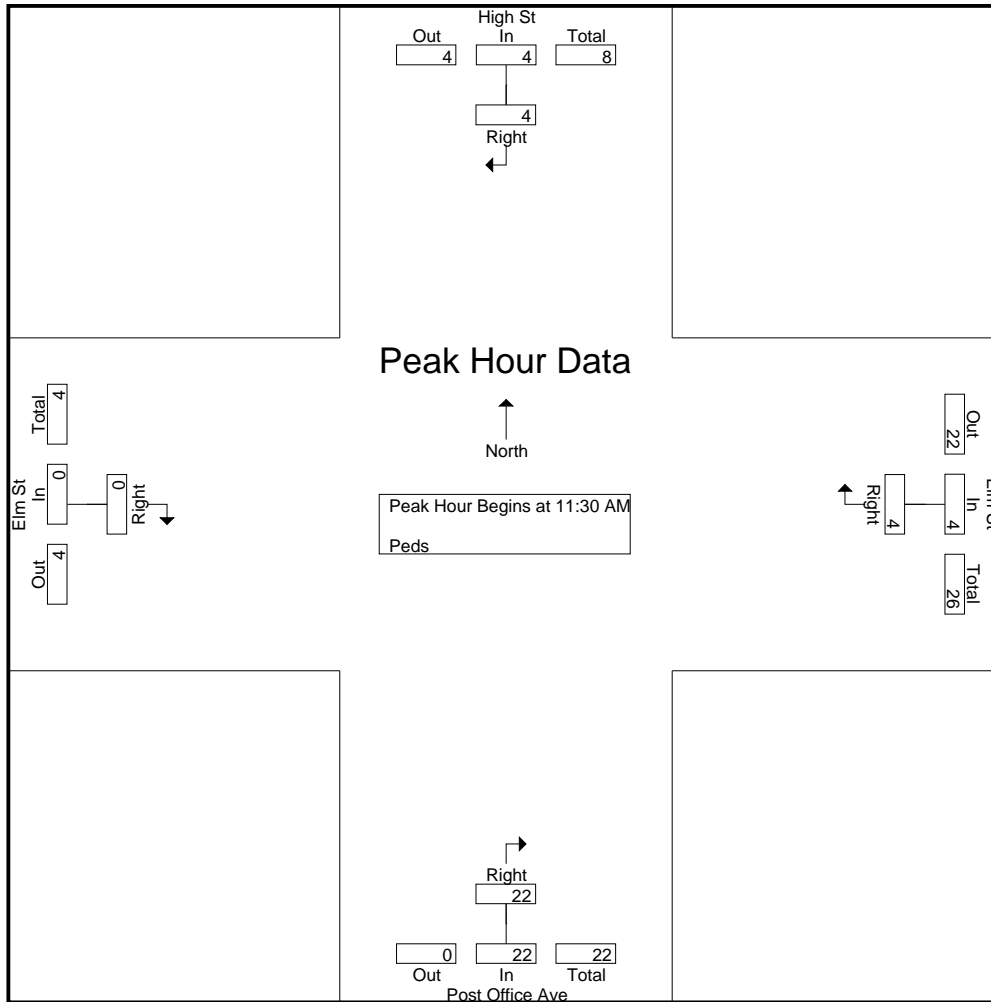
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 4



Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	10:00 AM		11:15 AM		11:45 AM		10:15 AM	
+0 mins.	2	2	0	0	7	7	0	0
+15 mins.	1	1	1	1	5	5	2	2
+30 mins.	2	2	1	1	5	5	0	0
+45 mins.	0	0	2	2	7	7	1	1
Total Volume	5	5	4	4	24	24	3	3
% App. Total	100		100		100		100	
PHF	.625	.625	.500	.500	.857	.857	.375	.375

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

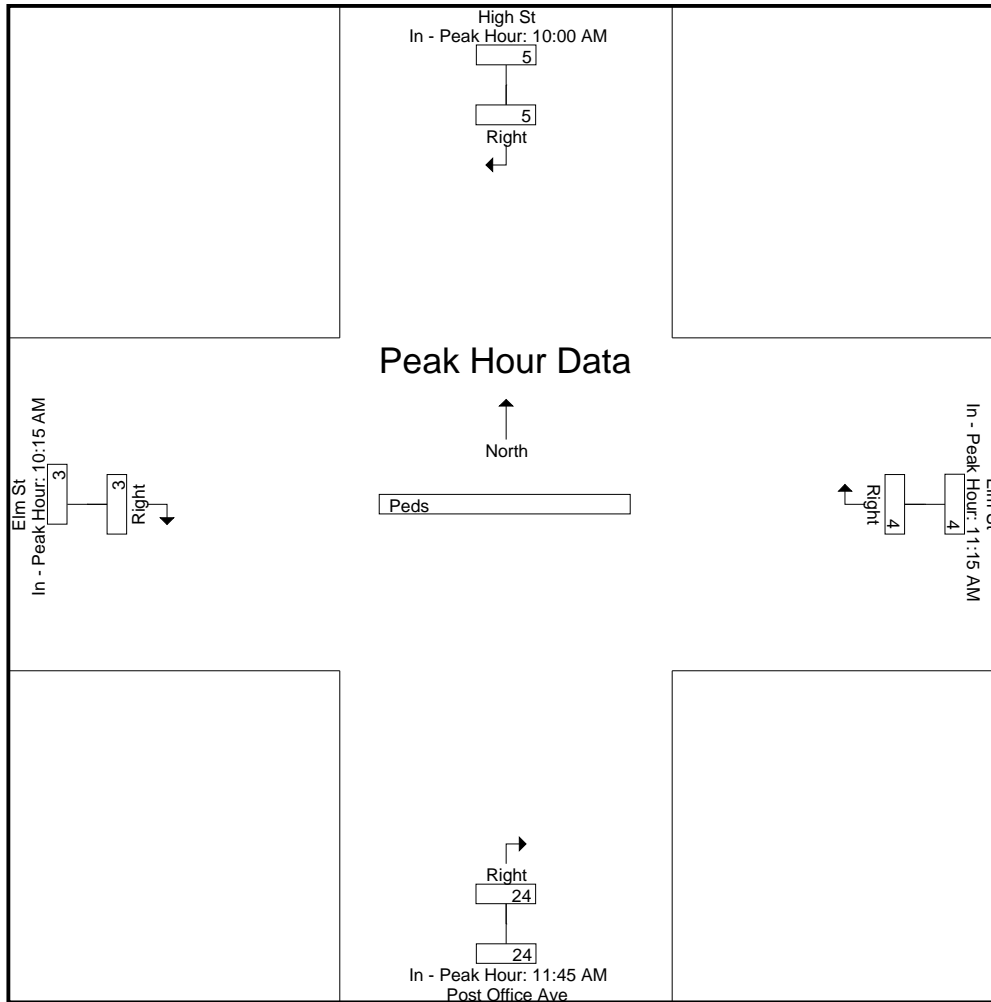
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 5



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:15 PM

03:15 PM	2	2	0	0	6	6	4	4	12
03:30 PM	1	1	0	0	3	3	2	2	6
03:45 PM	0	0	1	1	0	0	2	2	3
04:00 PM	0	0	2	2	6	6	2	2	10
Total Volume	3	3	3	3	15	15	10	10	31
% App. Total	100	100	100	100	100	100	100	100	100
PHF	.375	.375	.375	.375	.625	.625	.625	.625	.646

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

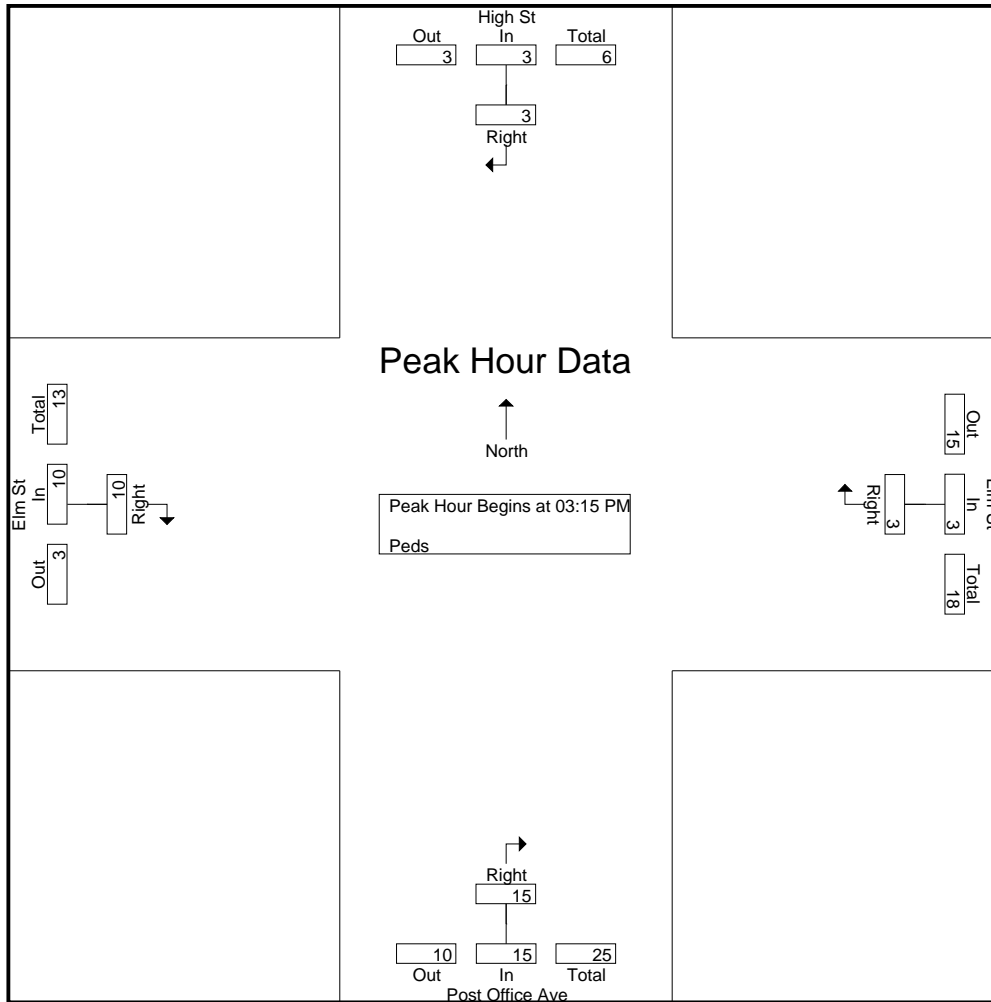
Weather : Clear

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

Page No : 6



Peak Hour Analysis From 02:00 PM to 06:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	02:45 PM		03:45 PM		02:00 PM		03:00 PM	
+0 mins.	1	1	1	1	8	8	3	3
+15 mins.	0	0	2	2	4	4	4	4
+30 mins.	2	2	3	3	7	7	2	2
+45 mins.	1	1	1	1	2	2	2	2
Total Volume	4	4	7	7	21	21	11	11
% App. Total	100		100		100		100	
PHF	.500	.500	.583	.583	.656	.656	.688	.688

Accurate Counts

978-664-2565

File Name : 12650002

Site Code : 12650002

Start Date : 5/24/2023

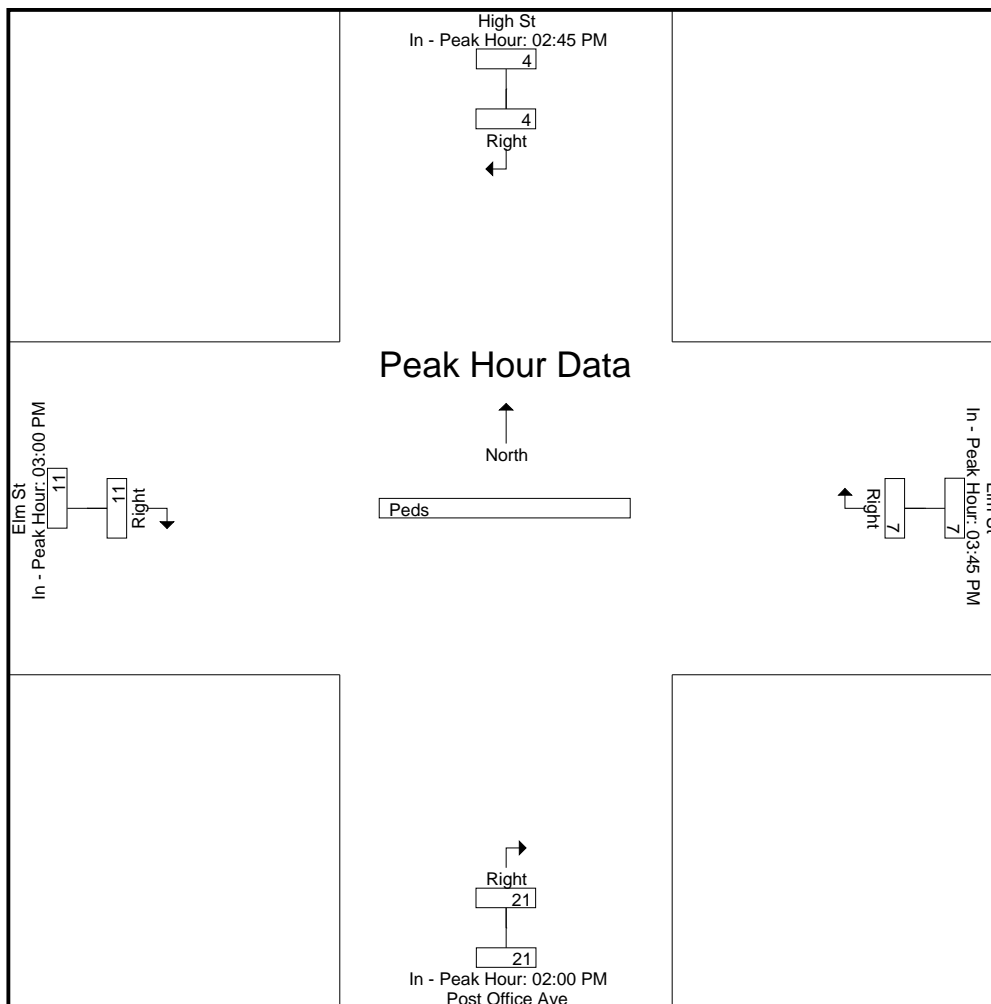
Page No : 7

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S1
 Site Code : 12650001
 Start Date : 6/3/2023
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	21	81	27	25	51	26	17	75	29	34	50	12	448
11:15 AM	27	91	30	36	58	16	8	61	26	29	50	6	438
11:30 AM	19	94	33	27	38	25	9	77	42	29	50	9	452
11:45 AM	20	85	33	32	65	32	11	59	29	39	49	20	474
Total	87	351	123	120	212	99	45	272	126	131	199	47	1812
12:00 PM	20	80	38	29	43	23	13	80	27	24	45	8	430
12:15 PM	10	106	32	24	44	22	11	60	18	28	52	13	420
12:30 PM	15	68	31	19	58	18	20	75	28	25	56	14	427
12:45 PM	12	67	26	23	61	26	15	84	33	25	49	14	435
Total	57	321	127	95	206	89	59	299	106	102	202	49	1712
Grand Total	144	672	250	215	418	188	104	571	232	233	401	96	3524
Apprch %	13.5	63	23.5	26.2	50.9	22.9	11.5	63	25.6	31.9	54.9	13.2	
Total %	4.1	19.1	7.1	6.1	11.9	5.3	3	16.2	6.6	6.6	11.4	2.7	
Cars	143	667	248	210	415	188	102	564	231	232	397	96	3493
% Cars	99.3	99.3	99.2	97.7	99.3	100	98.1	98.8	99.6	99.6	99	100	99.1
Trucks	1	5	2	5	3	0	2	7	1	1	4	0	31
% Trucks	0.7	0.7	0.8	2.3	0.7	0	1.9	1.2	0.4	0.4	1	0	0.9

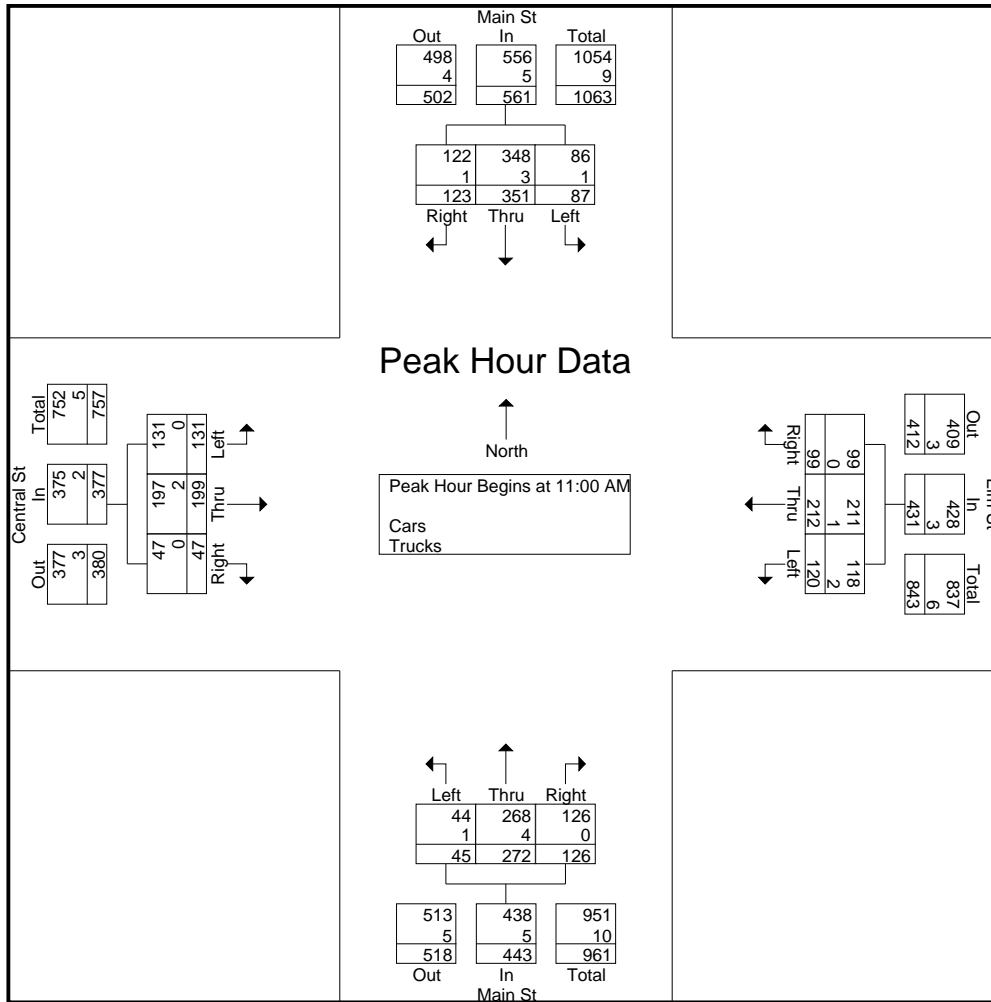
Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	21	81	27	129	25	51	26	102	17	75	29	121	34	50	12	96	448
11:15 AM	27	91	30	148	36	58	16	110	8	61	26	95	29	50	6	85	438
11:30 AM	19	94	33	146	27	38	25	90	9	77	42	128	29	50	9	88	452
11:45 AM	20	85	33	138	32	65	32	129	11	59	29	99	39	49	20	108	474
Total Volume	87	351	123	561	120	212	99	431	45	272	126	443	131	199	47	377	1812
% App. Total	15.5	62.6	21.9		27.8	49.2	23		10.2	61.4	28.4		34.7	52.8	12.5		
PHF	.806	.934	.932	.948	.833	.815	.773	.835	.662	.883	.750	.865	.840	.995	.588	.873	.956
Cars	86	348	122	556	118	211	99	428	44	268	126	438	131	197	47	375	1797
% Cars	98.9	99.1	99.2	99.1	98.3	99.5	100	99.3	97.8	98.5	100	98.9	100	99.0	100	99.5	99.2
Trucks	1	3	1	5	2	1	0	3	1	4	0	5	0	2	0	2	15
% Trucks	1.1	0.9	0.8	0.9	1.7	0.5	0	0.7	2.2	1.5	0	1.1	0	1.0	0	0.5	0.8

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S1
 Site Code : 12650001
 Start Date : 6/3/2023
 Page No : 2



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:15 AM				11:00 AM				12:00 PM				11:00 AM			
+0 mins.	27	91	30	148	25	51	26	102	13	80	27	120	34	50	12	96
+15 mins.	19	94	33	146	36	58	16	110	11	60	18	89	29	50	6	85
+30 mins.	20	85	33	138	27	38	25	90	20	75	28	123	29	50	9	88
+45 mins.	20	80	38	138	32	65	32	129	15	84	33	132	39	49	20	108
Total Volume	86	350	134	570	120	212	99	431	59	299	106	464	131	199	47	377
% App. Total	15.1	61.4	23.5		27.8	49.2	23		12.7	64.4	22.8		34.7	52.8	12.5	
PHF	.796	.931	.882	.963	.833	.815	.773	.835	.738	.890	.803	.879	.840	.995	.588	.873
Cars	85	346	133	564	118	211	99	428	58	296	105	459	131	197	47	375
% Cars	98.8	98.9	99.3	98.9	98.3	99.5	100	99.3	98.3	99	99.1	98.9	100	99	100	99.5
Trucks	1	4	1	6	2	1	0	3	1	3	1	5	0	2	0	2
% Trucks	1.2	1.1	0.7	1.1	1.7	0.5	0	0.7	1.7	1	0.9	1.1	0	1	0	0.5

Accurate Counts

978-664-2565

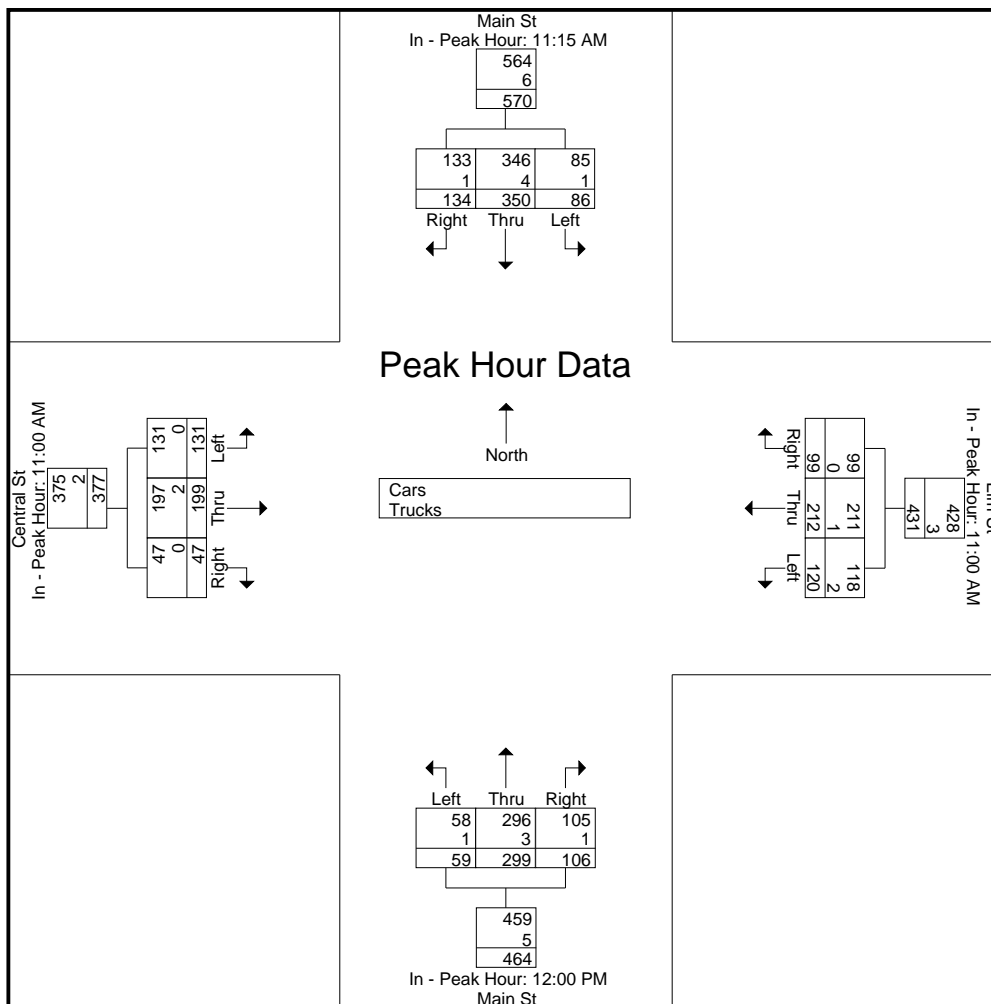
File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 3

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S1
 Site Code : 12650001
 Start Date : 6/3/2023
 Page No : 1

Groups Printed- Cars

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	21	81	27	24	51	26	17	75	29	34	48	12	445
11:15 AM	27	90	29	35	57	16	7	60	26	29	50	6	432
11:30 AM	19	92	33	27	38	25	9	74	42	29	50	9	447
11:45 AM	19	85	33	32	65	32	11	59	29	39	49	20	473
Total	86	348	122	118	211	99	44	268	126	131	197	47	1797
12:00 PM	20	79	38	28	42	23	13	79	26	24	45	8	425
12:15 PM	10	106	31	24	44	22	10	59	18	28	52	13	417
12:30 PM	15	67	31	19	58	18	20	74	28	25	54	14	423
12:45 PM	12	67	26	21	60	26	15	84	33	24	49	14	431
Total	57	319	126	92	204	89	58	296	105	101	200	49	1696
Grand Total	143	667	248	210	415	188	102	564	231	232	397	96	3493
Apprch %	13.5	63	23.4	25.8	51	23.1	11.4	62.9	25.8	32	54.8	13.2	
Total %	4.1	19.1	7.1	6	11.9	5.4	2.9	16.1	6.6	6.6	11.4	2.7	

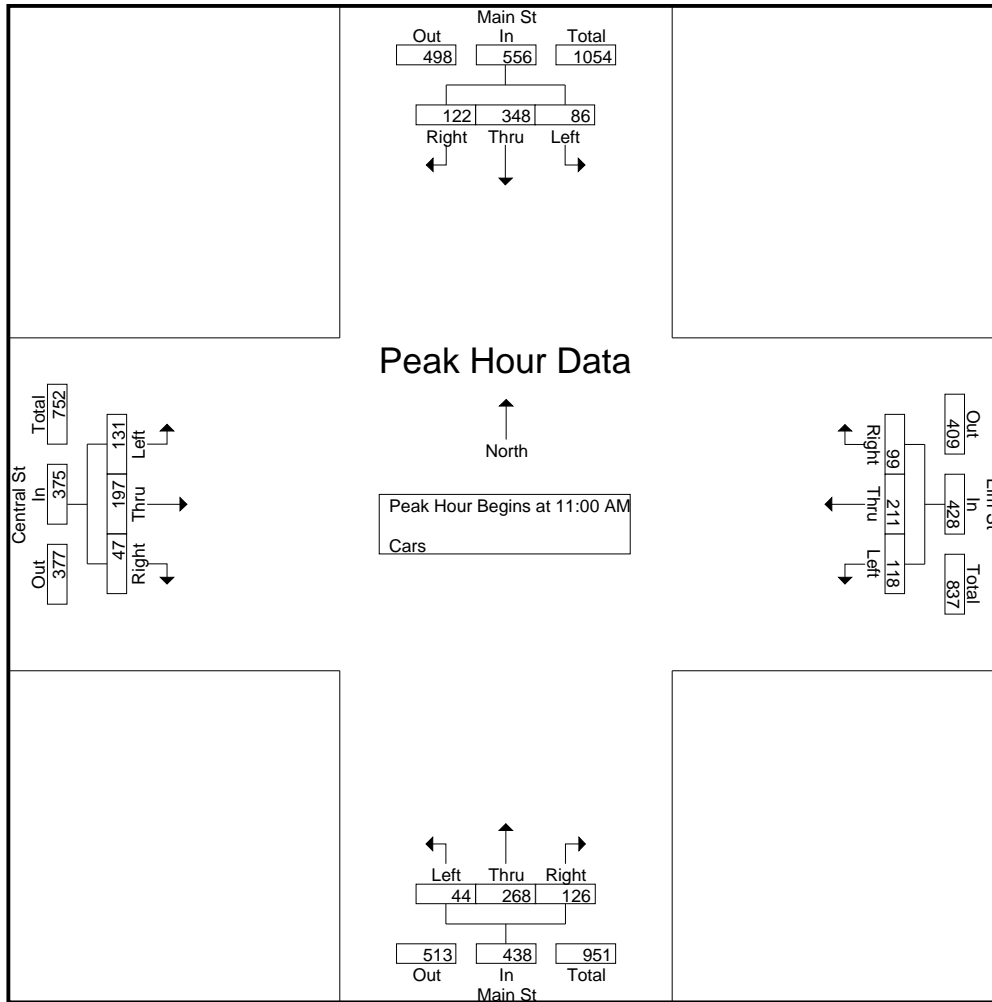
Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	21	81	27	129	24	51	26	101	17	75	29	121	34	48	12	94	445
11:15 AM	27	90	29	146	35	57	16	108	7	60	26	93	29	50	6	85	432
11:30 AM	19	92	33	144	27	38	25	90	9	74	42	125	29	50	9	88	447
11:45 AM	19	85	33	137	32	65	32	129	11	59	29	99	39	49	20	108	473
Total Volume	86	348	122	556	118	211	99	428	44	268	126	438	131	197	47	375	1797
% App. Total	15.5	62.6	21.9		27.6	49.3	23.1		10	61.2	28.8		34.9	52.5	12.5		
PHF	.796	.946	.924	.952	.843	.812	.773	.829	.647	.893	.750	.876	.840	.985	.588	.868	.950

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S1
 Site Code : 12650001
 Start Date : 6/3/2023
 Page No : 2



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:30 AM				11:00 AM				12:00 PM				11:00 AM			
+0 mins.	19	92	33	144	24	51	26	101	13	79	26	118	34	48	12	94
+15 mins.	19	85	33	137	35	57	16	108	10	59	18	87	29	50	6	85
+30 mins.	20	79	38	137	27	38	25	90	20	74	28	122	29	50	9	88
+45 mins.	10	106	31	147	32	65	32	129	15	84	33	132	39	49	20	108
Total Volume	68	362	135	565	118	211	99	428	58	296	105	459	131	197	47	375
% App. Total	12	64.1	23.9		27.6	49.3	23.1		12.6	64.5	22.9		34.9	52.5	12.5	
PHF	.850	.854	.888	.961	.843	.812	.773	.829	.725	.881	.795	.869	.840	.985	.588	.868

Accurate Counts

978-664-2565

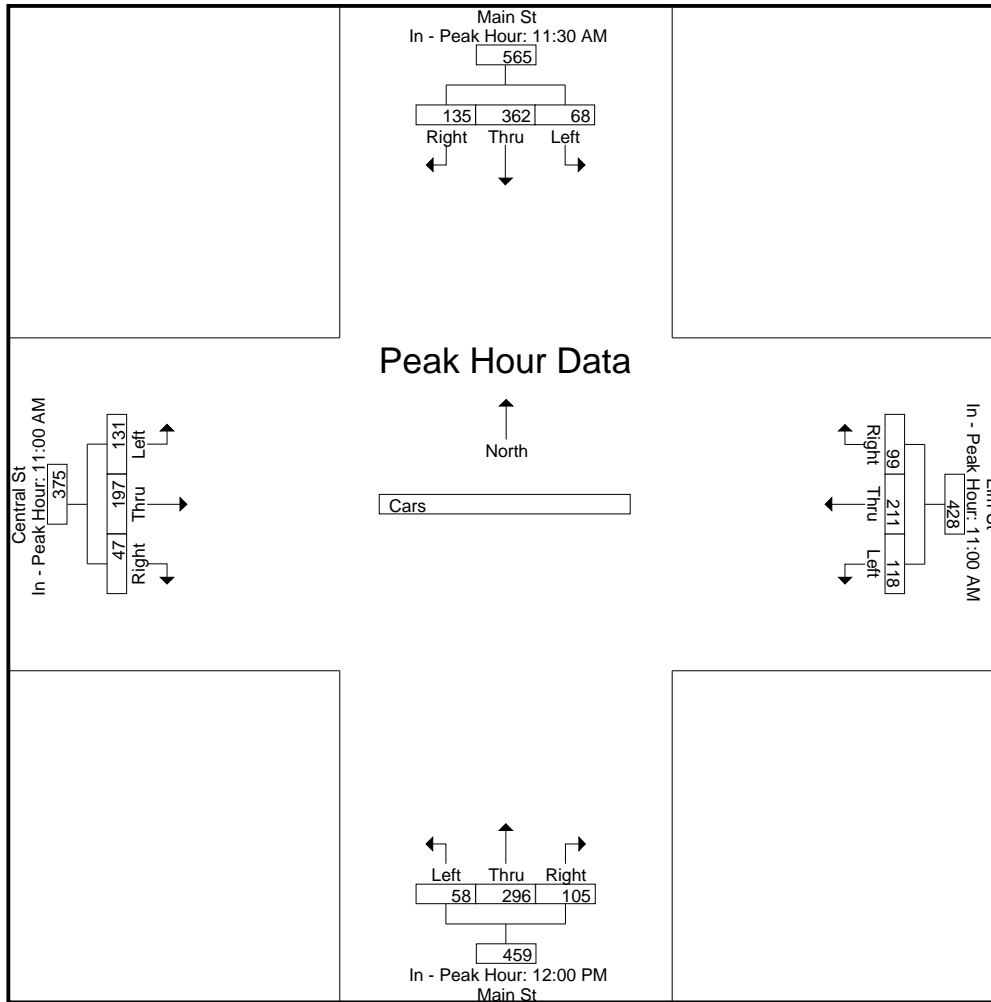
File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 3

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S1
 Site Code : 12650001
 Start Date : 6/3/2023
 Page No : 1

Groups Printed- Trucks

Start Time	Main St From North			Elm St From East			Main St From South			Central St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	1	0	0	0	0	0	0	2	0	3
11:15 AM	0	1	1	1	1	0	1	1	0	0	0	0	6
11:30 AM	0	2	0	0	0	0	0	3	0	0	0	0	5
11:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	3	1	2	1	0	1	4	0	0	2	0	15
12:00 PM	0	1	0	1	1	0	0	1	1	0	0	0	5
12:15 PM	0	0	1	0	0	0	1	1	0	0	0	0	3
12:30 PM	0	1	0	0	0	0	0	1	0	0	2	0	4
12:45 PM	0	0	0	2	1	0	0	0	0	1	0	0	4
Total	0	2	1	3	2	0	1	3	1	1	2	0	16
Grand Total	1	5	2	5	3	0	2	7	1	1	4	0	31
Apprch %	12.5	62.5	25	62.5	37.5	0	20	70	10	20	80	0	
Total %	3.2	16.1	6.5	16.1	9.7	0	6.5	22.6	3.2	3.2	12.9	0	

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	0	1	1	2	1	1	0	2	1	1	0	2	0	0	0	0	6
11:30 AM	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0	5
11:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	1	0	1	1	1	0	2	0	1	1	2	0	0	0	0	5
Total Volume	1	4	1	6	2	2	0	4	1	5	1	7	0	0	0	0	17
% App. Total	16.7	66.7	16.7		50	50	0		14.3	71.4	14.3		0	0	0		
PHF	.250	.500	.250	.750	.500	.500	.000	.500	.250	.417	.250	.583	.000	.000	.000	.000	.708

Accurate Counts

978-664-2565

File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

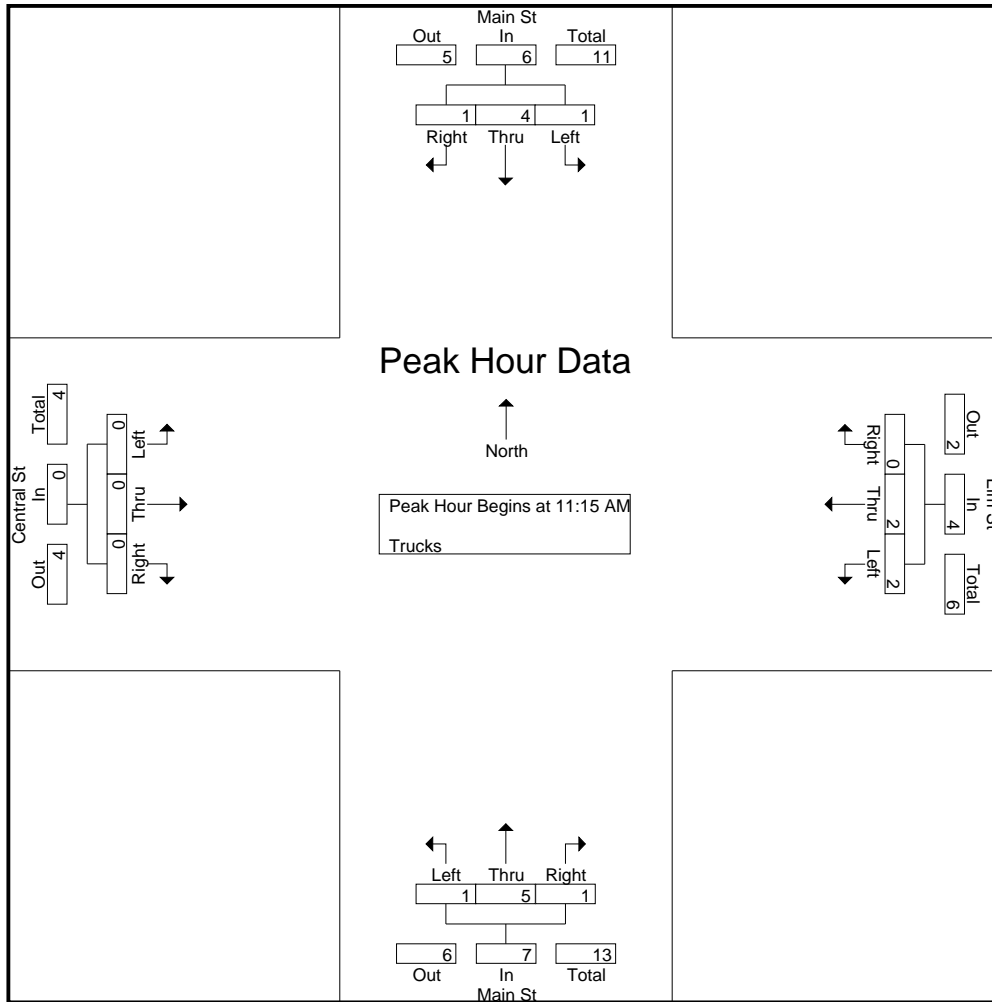
Page No : 2

N/S Street : Main Street

E/W Street : Elm St / Central St

City/State : Andover, MA

Weather : Cloudy



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:15 AM				12:00 PM				11:15 AM				12:00 PM			
+0 mins.	0	1	1	2	1	1	0	2	1	1	0	2	0	0	0	0
+15 mins.	0	2	0	2	0	0	0	0	0	3	0	3	0	0	0	0
+30 mins.	1	0	0	1	0	0	0	0	0	0	0	0	0	2	0	2
+45 mins.	0	1	0	1	2	1	0	3	0	1	1	2	1	0	0	1
Total Volume	1	4	1	6	3	2	0	5	1	5	1	7	1	2	0	3
% App. Total	16.7	66.7	16.7		60	40	0		14.3	71.4	14.3		33.3	66.7	0	
PHF	.250	.500	.250	.750	.375	.500	.000	.417	.250	.417	.250	.583	.250	.250	.000	.375

Accurate Counts

978-664-2565

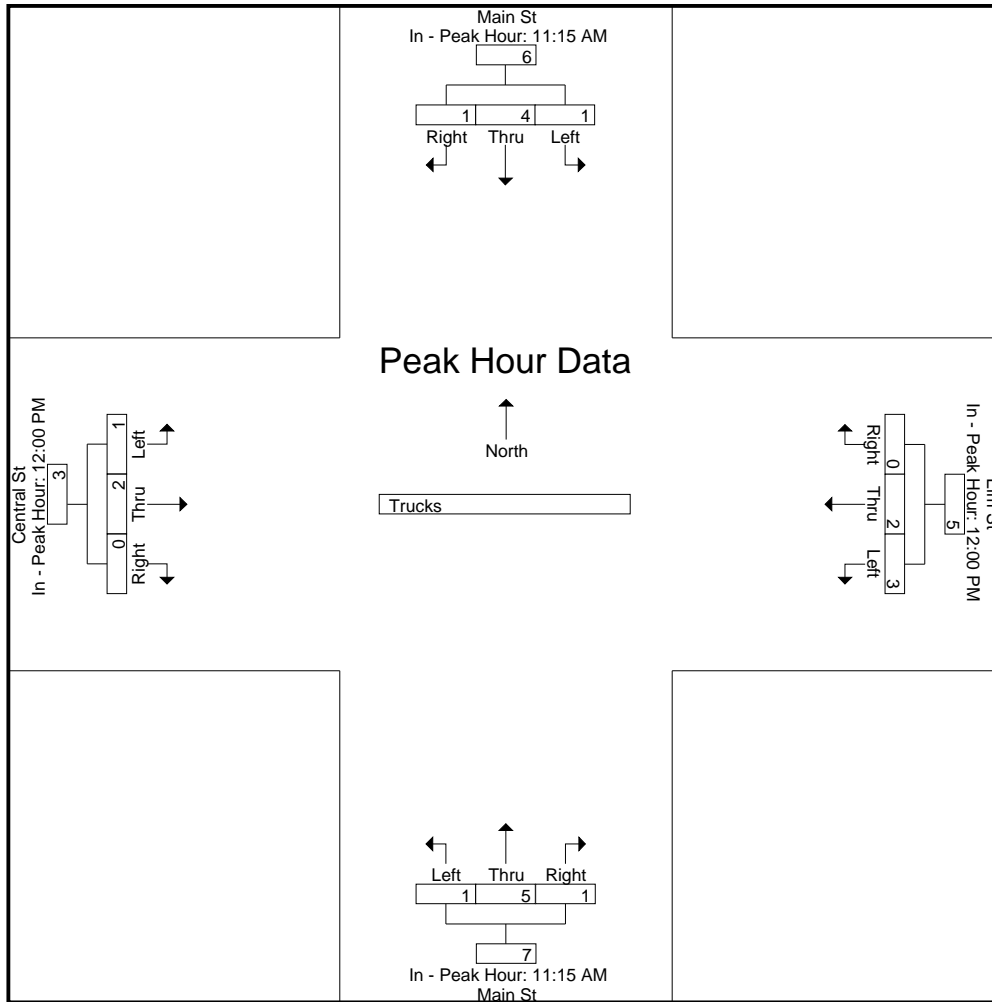
File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 3

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S1
 Site Code : 12650001
 Start Date : 6/3/2023
 Page No : 1

Groups Printed- Bikes

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	2
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	1
Total	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	2	2
Grand Total	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1	0	0	4	4
Apprch %	0	0	0		0	100	0		0	100	0		0	50	50				
Total %	0	0	0		0	25	0		0	25	0		0	25	25		0	100	

Start Time	Main St From North				Elm St From East				Main St From South				Central St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.250

Accurate Counts

978-664-2565

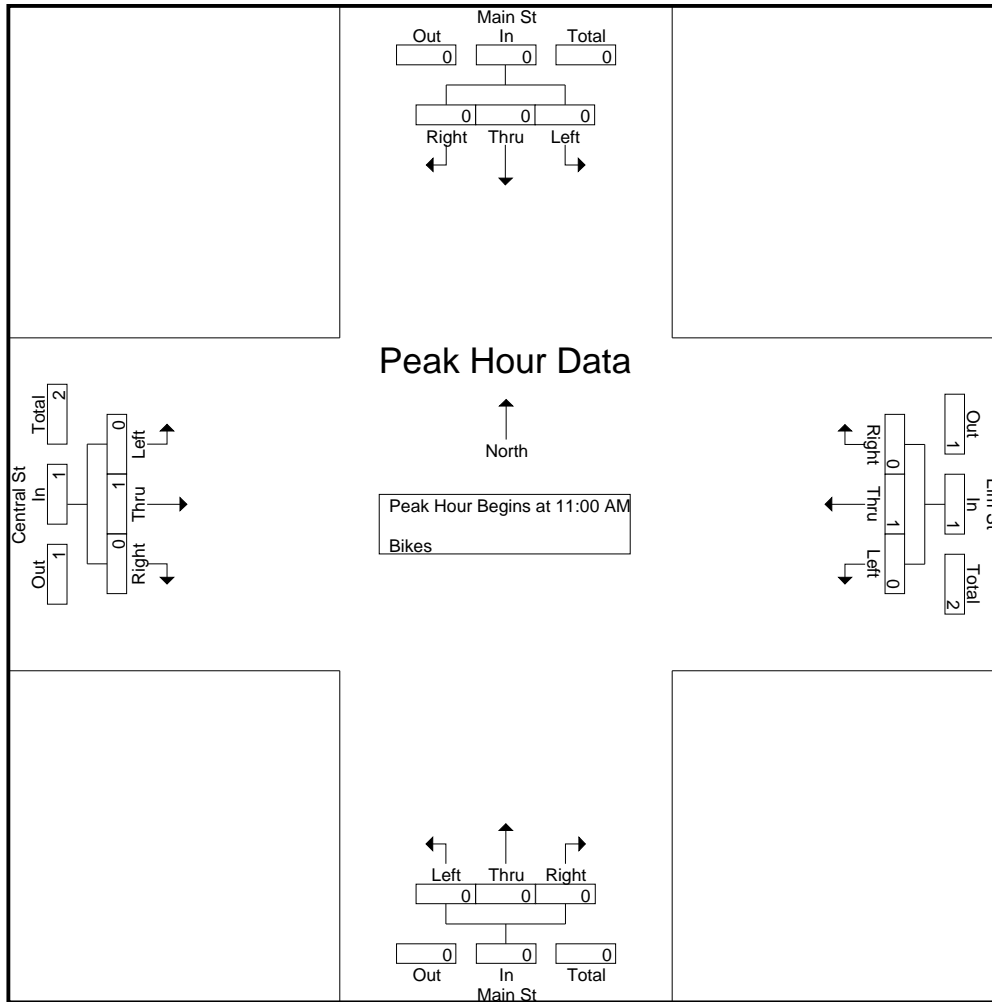
File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 2

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:00 AM				11:00 AM				12:00 PM				11:00 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	1	0	1	0	1	0	1
% App. Total	0	0	0	0	0	100	0	0	0	100	0	0	0	100	0	0
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250	.000	.250

Accurate Counts

978-664-2565

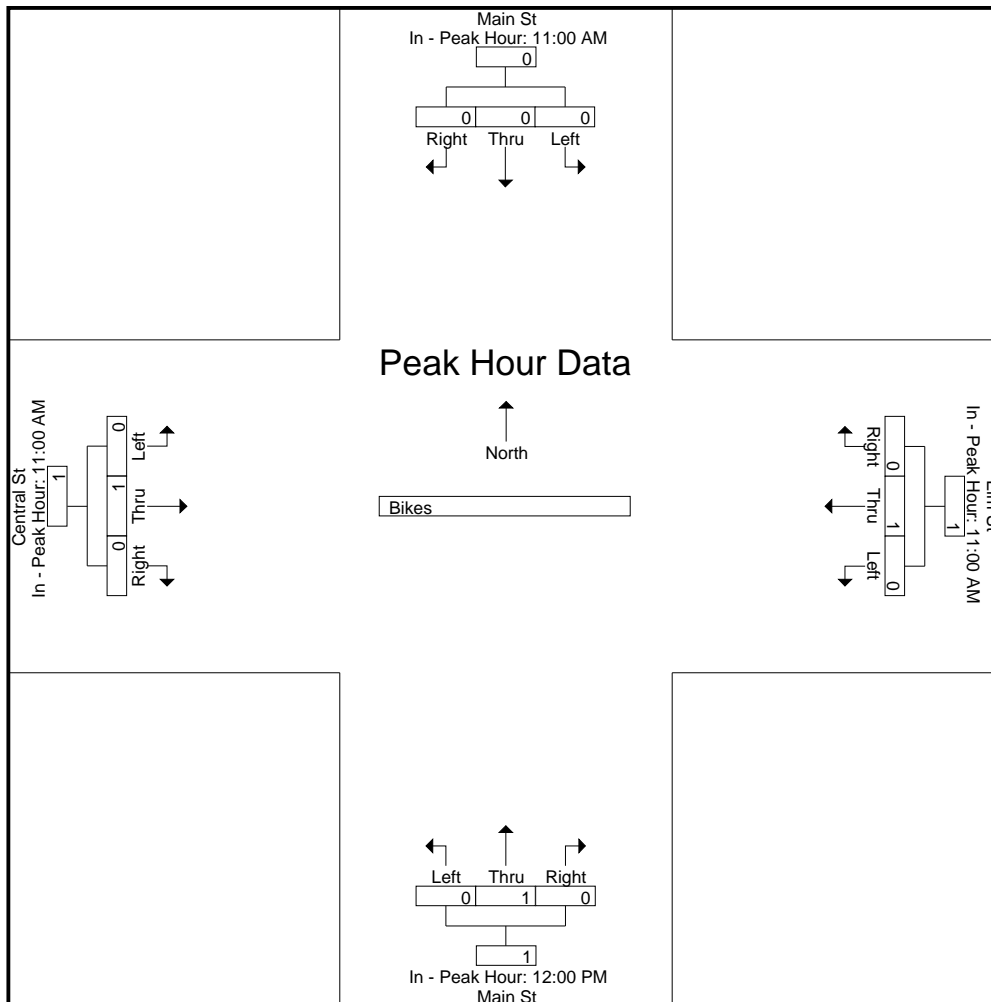
File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 3

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S1
 Site Code : 12650001
 Start Date : 6/3/2023
 Page No : 1

Groups Printed- Peds

Start Time	Main St From North		Elm St From East		Main St From South		Central St From West		Exclu. Total	Inclu. Total	Int. Total
	EB	WB	NB	SB	EB	WB	NB	SB			
11:00 AM	2	0	0	0	2	0	0	3	3	4	7
11:15 AM	2	4	1	0	1	0	1	2	6	5	11
11:30 AM	1	1	1	1	0	0	0	2	4	2	6
11:45 AM	2	4	2	1	4	0	1	3	8	9	17
Total	7	9	4	2	7	0	2	10	21	20	41
12:00 PM	1	0	0	0	0	0	1	1	1	2	3
12:15 PM	0	0	2	2	1	0	3	1	3	6	9
12:30 PM	0	9	10	0	3	0	3	4	13	16	29
12:45 PM	1	0	1	2	2	2	3	1	5	7	12
Total	2	9	13	4	6	2	10	7	22	31	53
Grand Total	9	18	17	6	13	2	12	17	43	51	94
Apprch %	100		100		100		100				
Total %	17.6		33.3		25.5		23.5		45.7	54.3	

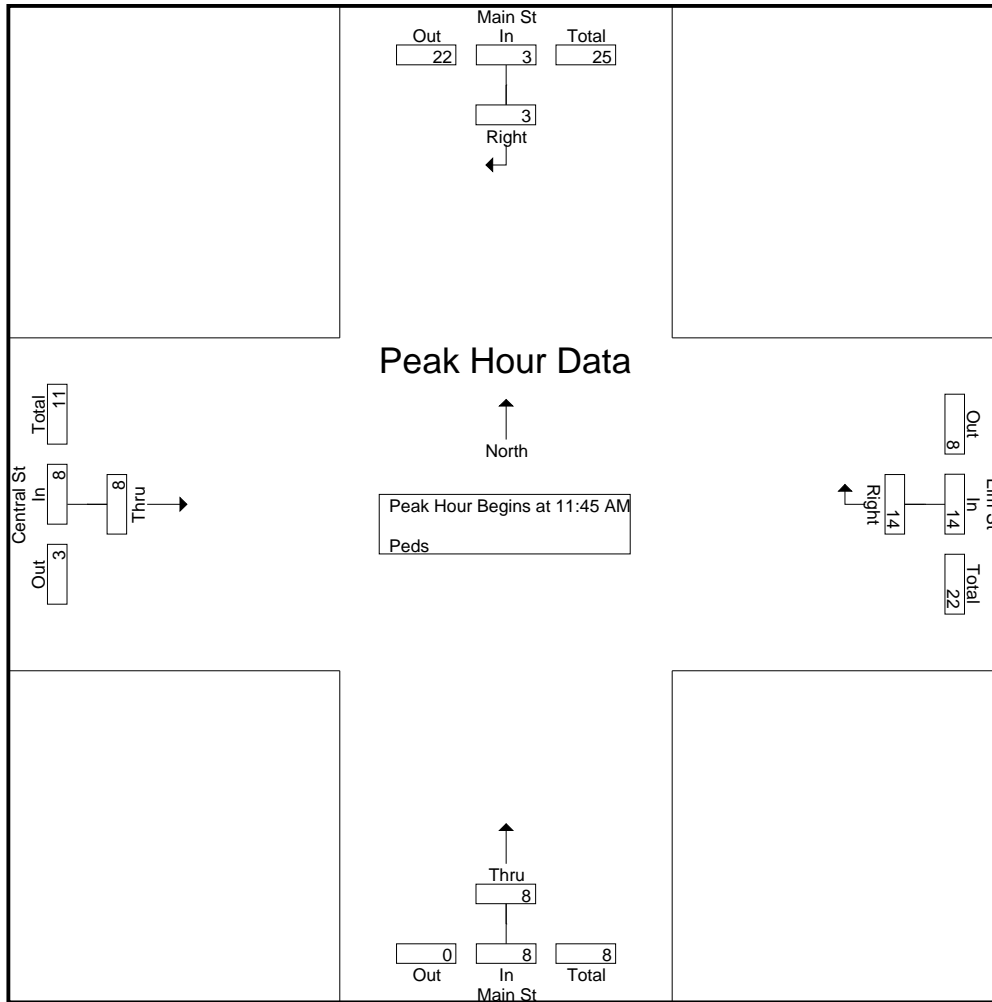
Start Time	Main St From North		Elm St From East		Main St From South		Central St From West		Int. Total
	EB	App. Total	NB	App. Total	EB	App. Total	NB	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1									
Peak Hour for Entire Intersection Begins at 11:45 AM									
11:45 AM	2	2	2	2	4	4	1	1	9
12:00 PM	1	1	0	0	0	0	1	1	2
12:15 PM	0	0	2	2	1	1	3	3	6
12:30 PM	0	0	10	10	3	3	3	3	16
Total Volume	3	3	14	14	8	8	8	8	33
% App. Total	100		100		100		100		
PHF	.375	.375	.350	.350	.500	.500	.667	.667	.516

Accurate Counts

978-664-2565

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S1
 Site Code : 12650001
 Start Date : 6/3/2023
 Page No : 2



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:00 AM		11:45 AM		11:45 AM		12:00 PM	
+0 mins.	2	2	2	2	4	4	1	1
+15 mins.	2	2	0	0	0	0	3	3
+30 mins.	1	1	2	2	1	1	3	3
+45 mins.	2	2	10	10	3	3	3	3
Total Volume	7	7	14	14	8	8	10	10
% App. Total	100		100		100		100	
PHF	.875	.875	.350	.350	.500	.500	.833	.833

Accurate Counts

978-664-2565

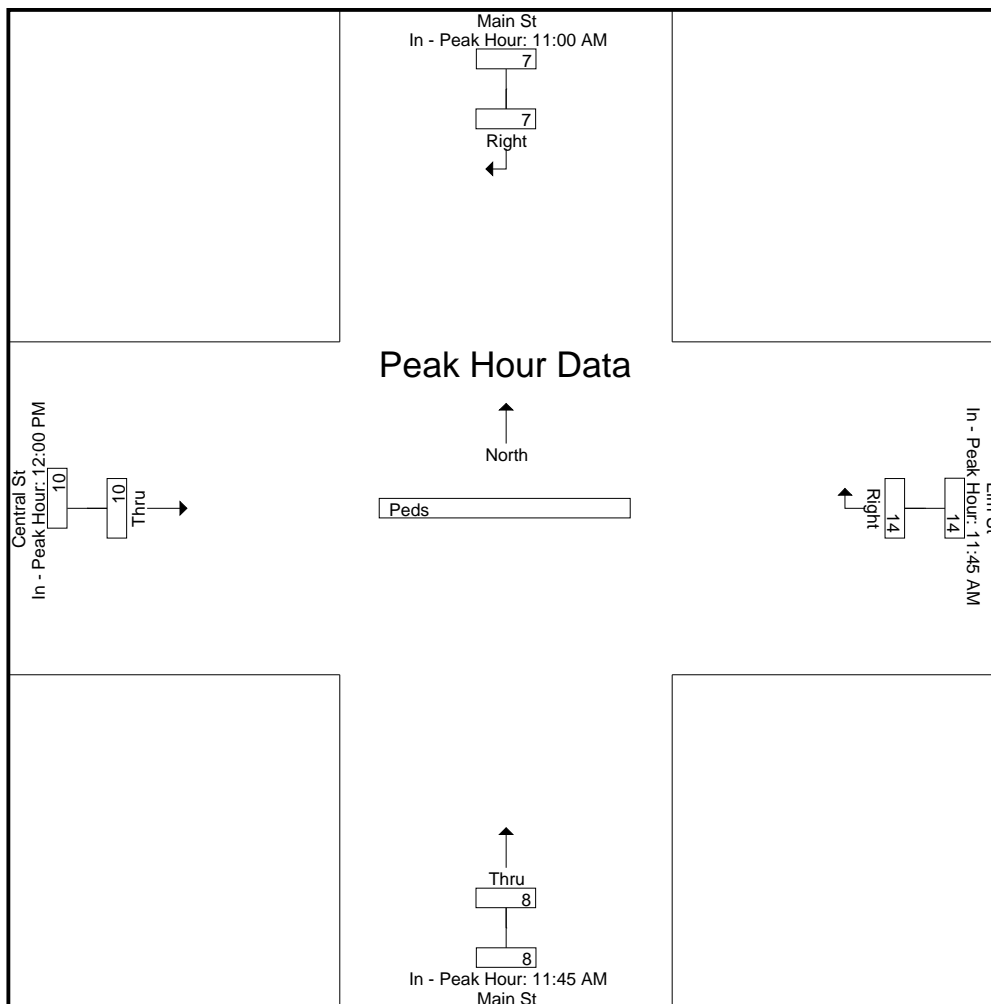
File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 3

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Cloudy



Accurate Counts

978-664-2565

File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 1

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy

Groups Printed- Wide Right Peds

Start Time	Elm St From East		Central St From West		Exclu. Total	Inclu. Total	Int. Total
	NB	SB	NB	SB			
11:00 AM	0	2	2	1	3	2	5
11:15 AM	1	1	1	1	2	2	4
11:30 AM	1	3	1	1	4	2	6
11:45 AM	3	2	2	1	3	5	8
Total	5	8	6	4	12	11	23
12:00 PM	0	1	0	1	2	0	2
12:15 PM	2	3	0	3	6	2	8
12:30 PM	5	10	4	1	11	9	20
12:45 PM	2	2	1	3	5	3	8
Total	9	16	5	8	24	14	38
Grand Total	14	24	11	12	36	25	61
Apprch %	100		100				
Total %	56		44		59	41	

Start Time	Elm St From East		Central St From West		Int. Total
	NB	App. Total	NB	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 11:45 AM					
11:45 AM	3	3	2	2	5
12:00 PM	0	0	0	0	0
12:15 PM	2	2	0	0	2
12:30 PM	5	5	4	4	9
Total Volume	10	10	6	6	16
% App. Total	100		100		
PHF	.500	.500	.375	.375	.444

Accurate Counts

978-664-2565

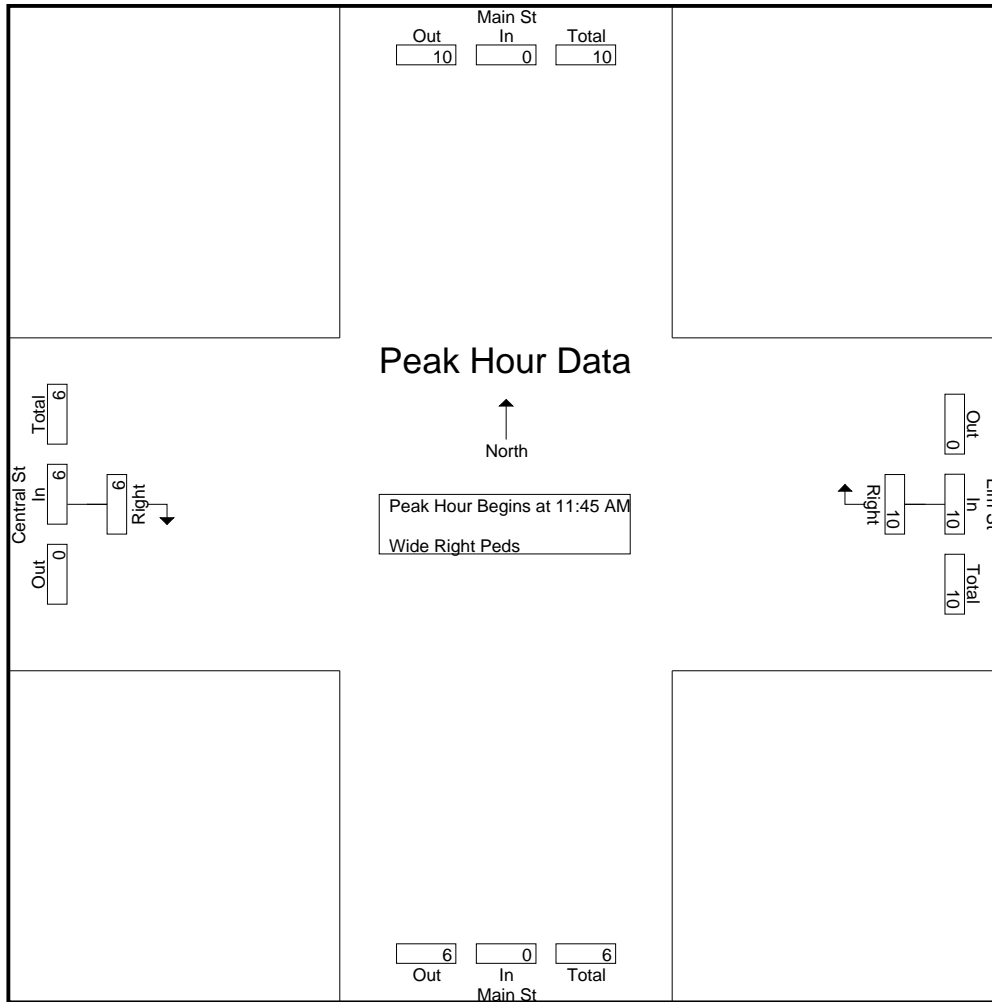
File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 2

N/S Street : Main Street
 E/W Street : Elm St / Central St
 City/State : Andover, MA
 Weather : Cloudy



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:45 AM		11:00 AM	
+0 mins.	3	3	2	2
+15 mins.	0	0	1	1
+30 mins.	2	2	1	1
+45 mins.	5	5	2	2
Total Volume	10	10	6	6
% App. Total	100	100	100	100
PHF	.500	.500	.750	.750

Accurate Counts

978-664-2565

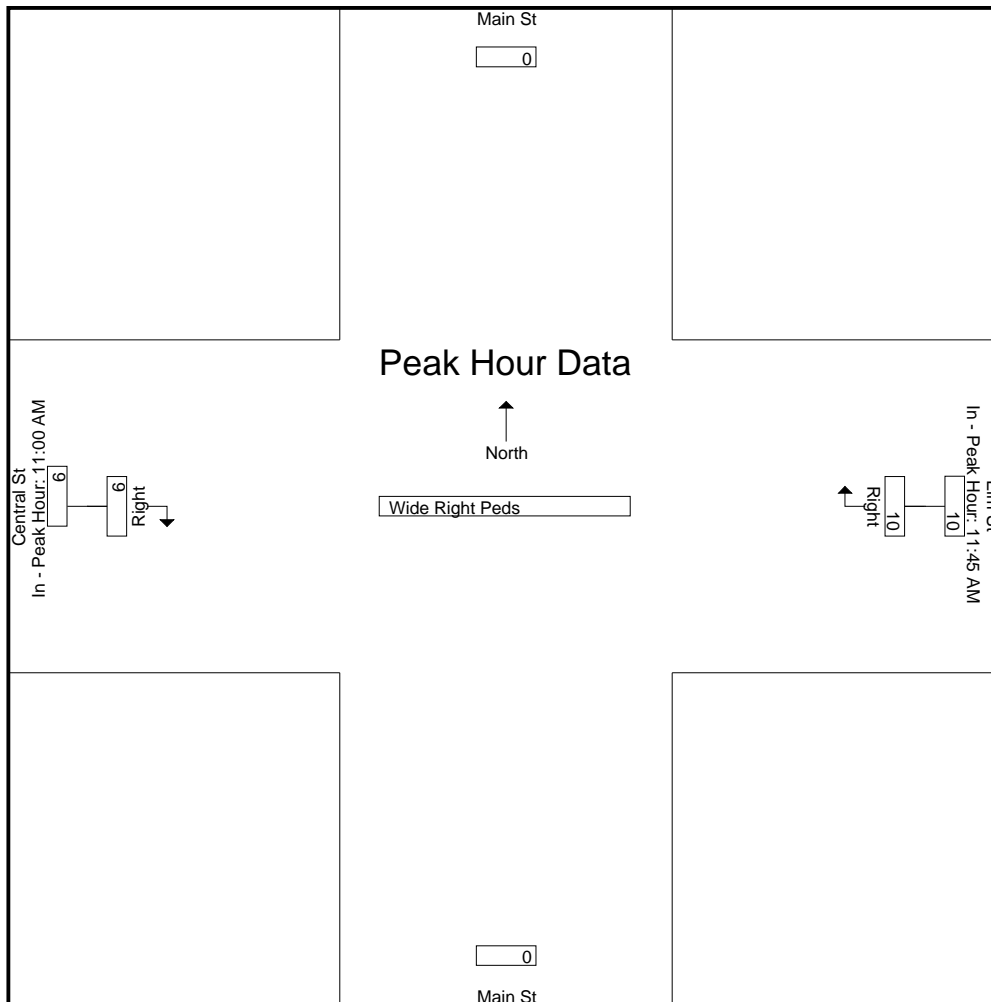
File Name : 126500S1

Site Code : 12650001

Start Date : 6/3/2023

Page No : 3

N/S Street : Main Street
E/W Street : Elm St / Central St
City/State : Andover, MA
Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S2
 Site Code : 12650002
 Start Date : 6/3/2023
 Page No : 1

Groups Printed- Cars - Trucks

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	5	0	26	1	77	3	0	1	0	24	77	2	216
11:15 AM	3	0	26	0	83	4	1	0	1	23	77	1	219
11:30 AM	4	1	27	1	64	4	0	1	2	28	79	4	215
11:45 AM	0	1	39	2	82	4	2	1	2	18	76	3	230
Total	12	2	118	4	306	15	3	3	5	93	309	10	880
12:00 PM	3	0	30	1	67	3	0	1	0	22	63	5	195
12:15 PM	5	0	25	0	64	3	2	0	0	20	58	1	178
12:30 PM	0	0	36	0	58	6	0	0	1	25	71	1	198
12:45 PM	5	0	15	0	89	6	4	0	1	20	65	4	209
Total	13	0	106	1	278	18	6	1	2	87	257	11	780
Grand Total	25	2	224	5	584	33	9	4	7	180	566	21	1660
Apprch %	10	0.8	89.2	0.8	93.9	5.3	45	20	35	23.5	73.8	2.7	
Total %	1.5	0.1	13.5	0.3	35.2	2	0.5	0.2	0.4	10.8	34.1	1.3	
Cars	25	2	223	5	578	33	8	4	7	180	561	20	1646
% Cars	100	100	99.6	100	99	100	88.9	100	100	100	99.1	95.2	99.2
Trucks	0	0	1	0	6	0	1	0	0	0	5	1	14
% Trucks	0	0	0.4	0	1	0	11.1	0	0	0	0.9	4.8	0.8

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	5	0	26	31	1	77	3	81	0	1	0	1	24	77	2	103	216
11:15 AM	3	0	26	29	0	83	4	87	1	0	1	2	23	77	1	101	219
11:30 AM	4	1	27	32	1	64	4	69	0	1	2	3	28	79	4	111	215
11:45 AM	0	1	39	40	2	82	4	88	2	1	2	5	18	76	3	97	230
Total Volume	12	2	118	132	4	306	15	325	3	3	5	11	93	309	10	412	880
% App. Total	9.1	1.5	89.4		1.2	94.2	4.6		27.3	27.3	45.5		22.6	75	2.4		
PHF	.600	.500	.756	.825	.500	.922	.938	.923	.375	.750	.625	.550	.830	.978	.625	.928	.957
Cars	12	2	117	131	4	304	15	323	3	3	5	11	93	306	10	409	874
% Cars	100	100	99.2	99.2	100	99.3	100	99.4	100	100	100	100	100	99.0	100	99.3	99.3
Trucks	0	0	1	1	0	2	0	2	0	0	0	0	0	3	0	3	6
% Trucks	0	0	0.8	0.8	0	0.7	0	0.6	0	0	0	0	0	1.0	0	0.7	0.7

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

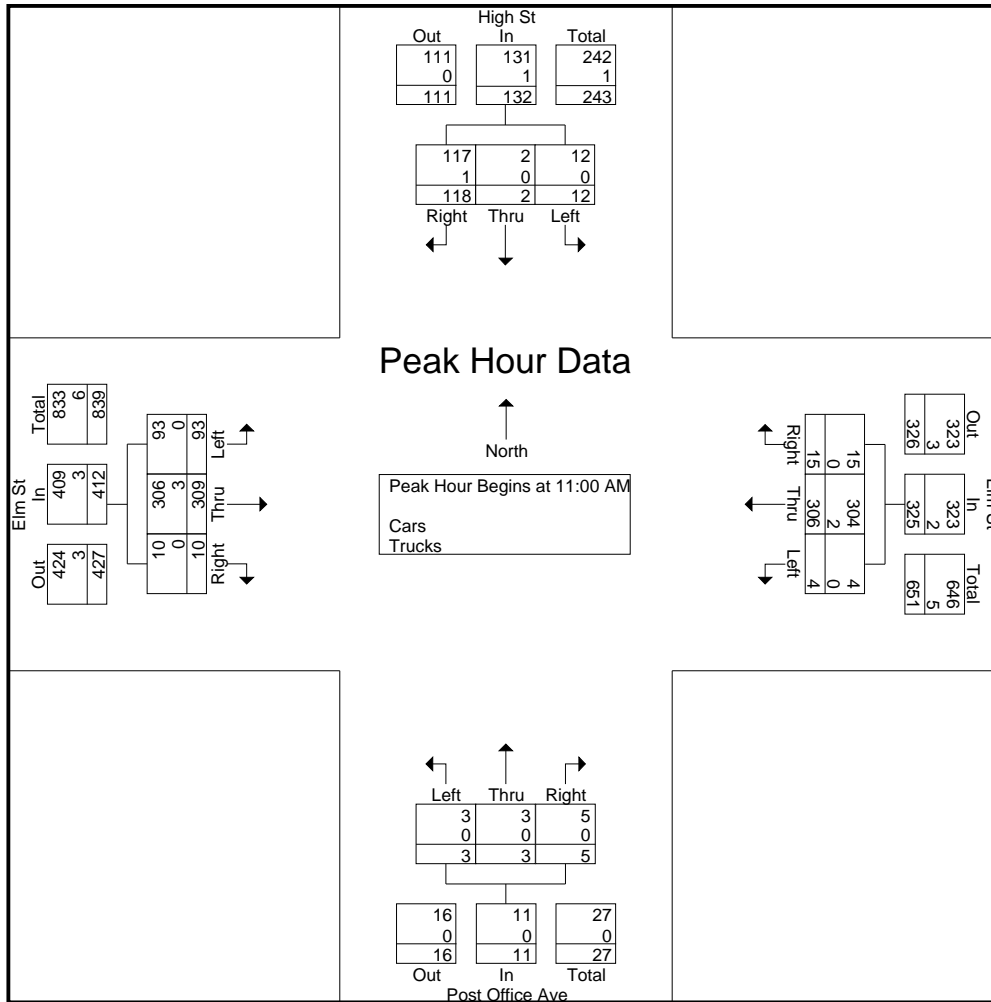
Weather : Cloudy

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

Page No : 2



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:45 AM				11:00 AM				11:00 AM				11:00 AM			
+0 mins.	0	1	39	40	1	77	3	81	0	1	0	1	24	77	2	103
+15 mins.	3	0	30	33	0	83	4	87	1	0	1	2	23	77	1	101
+30 mins.	5	0	25	30	1	64	4	69	0	1	2	3	28	79	4	111
+45 mins.	0	0	36	36	2	82	4	88	2	1	2	5	18	76	3	97
Total Volume	8	1	130	139	4	306	15	325	3	3	5	11	93	309	10	412
% App. Total	5.8	0.7	93.5		1.2	94.2	4.6		27.3	27.3	45.5		22.6	75	2.4	
PHF	.400	.250	.833	.869	.500	.922	.938	.923	.375	.750	.625	.550	.830	.978	.625	.928
Cars	8	1	130	139	4	304	15	323	3	3	5	11	93	306	10	409
% Cars	100	100	100	100	100	99.3	100	99.4	100	100	100	100	100	99	100	99.3
Trucks	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3
% Trucks	0	0	0	0	0	0.7	0	0.6	0	0	0	0	0	1	0	0.7

Accurate Counts

978-664-2565

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

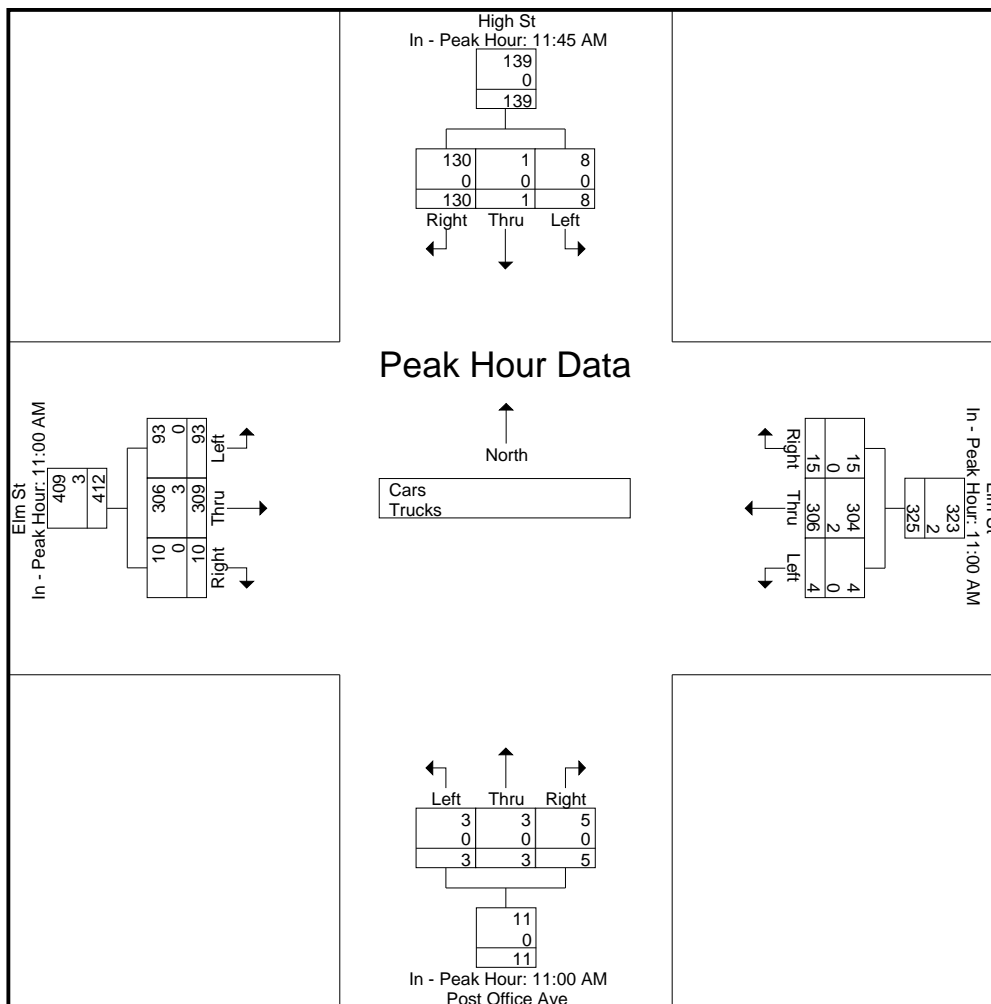
Page No : 3

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S2
 Site Code : 12650002
 Start Date : 6/3/2023
 Page No : 1

Groups Printed- Cars

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	5	0	25	1	77	3	0	1	0	24	75	2	213
11:15 AM	3	0	26	0	81	4	1	0	1	23	77	1	217
11:30 AM	4	1	27	1	64	4	0	1	2	28	79	4	215
11:45 AM	0	1	39	2	82	4	2	1	2	18	75	3	229
Total	12	2	117	4	304	15	3	3	5	93	306	10	874
12:00 PM	3	0	30	1	65	3	0	1	0	22	63	4	192
12:15 PM	5	0	25	0	64	3	2	0	0	20	58	1	178
12:30 PM	0	0	36	0	58	6	0	0	1	25	69	1	196
12:45 PM	5	0	15	0	87	6	3	0	1	20	65	4	206
Total	13	0	106	1	274	18	5	1	2	87	255	10	772
Grand Total	25	2	223	5	578	33	8	4	7	180	561	20	1646
Apprch %	10	0.8	89.2	0.8	93.8	5.4	42.1	21.1	36.8	23.7	73.7	2.6	
Total %	1.5	0.1	13.5	0.3	35.1	2	0.5	0.2	0.4	10.9	34.1	1.2	

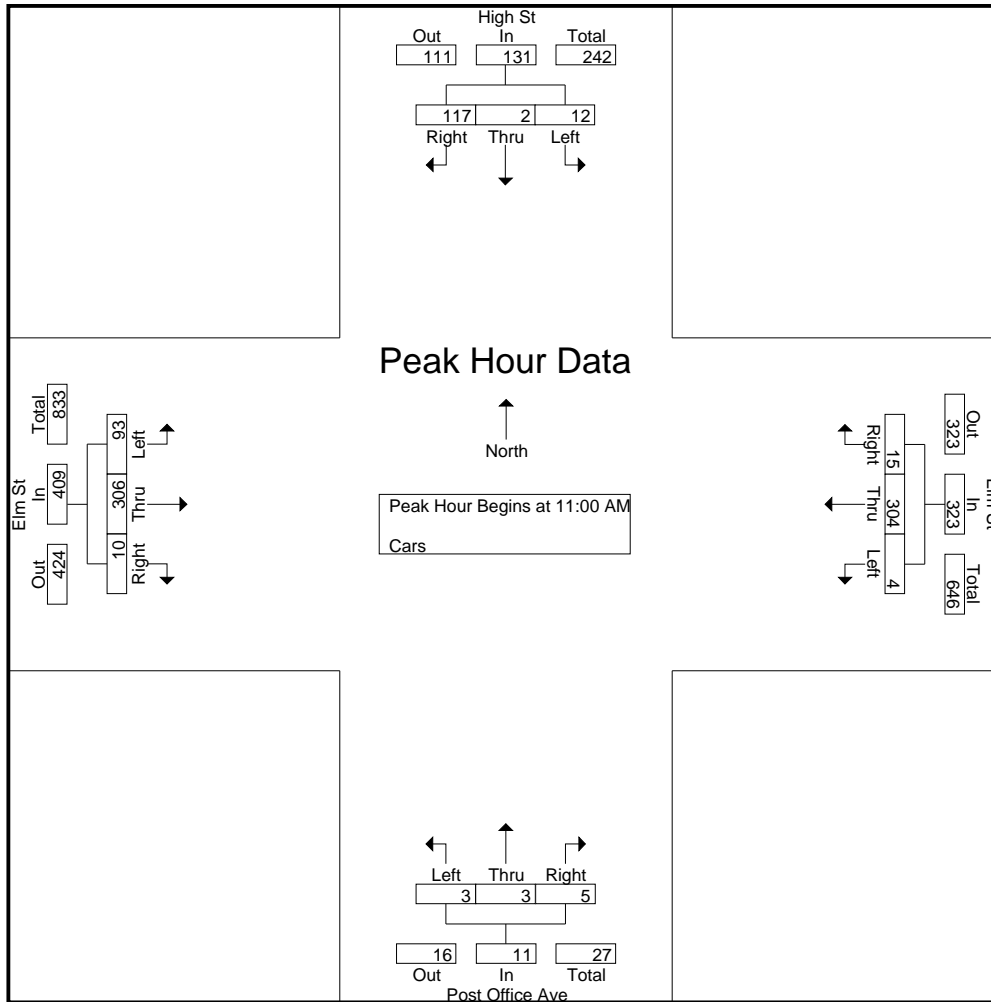
Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	5	0	25	30	1	77	3	81	0	1	0	1	24	75	2	101	213
11:15 AM	3	0	26	29	0	81	4	85	1	0	1	2	23	77	1	101	217
11:30 AM	4	1	27	32	1	64	4	69	0	1	2	3	28	79	4	111	215
11:45 AM	0	1	39	40	2	82	4	88	2	1	2	5	18	75	3	96	229
Total Volume	12	2	117	131	4	304	15	323	3	3	5	11	93	306	10	409	874
% App. Total	9.2	1.5	89.3		1.2	94.1	4.6		27.3	27.3	45.5		22.7	74.8	2.4		
PHF	.600	.500	.750	.819	.500	.927	.938	.918	.375	.750	.625	.550	.830	.968	.625	.921	.954

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S2
 Site Code : 12650002
 Start Date : 6/3/2023
 Page No : 2



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:45 AM				11:00 AM				11:00 AM				11:00 AM			
+0 mins.	0	1	39	40	1	77	3	81	0	1	0	1	24	75	2	101
+15 mins.	3	0	30	33	0	81	4	85	1	0	1	2	23	77	1	101
+30 mins.	5	0	25	30	1	64	4	69	0	1	2	3	28	79	4	111
+45 mins.	0	0	36	36	2	82	4	88	2	1	2	5	18	75	3	96
Total Volume	8	1	130	139	4	304	15	323	3	3	5	11	93	306	10	409
% App. Total	5.8	0.7	93.5		1.2	94.1	4.6		27.3	27.3	45.5		22.7	74.8	2.4	
PHF	.400	.250	.833	.869	.500	.927	.938	.918	.375	.750	.625	.550	.830	.968	.625	.921

Accurate Counts

978-664-2565

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

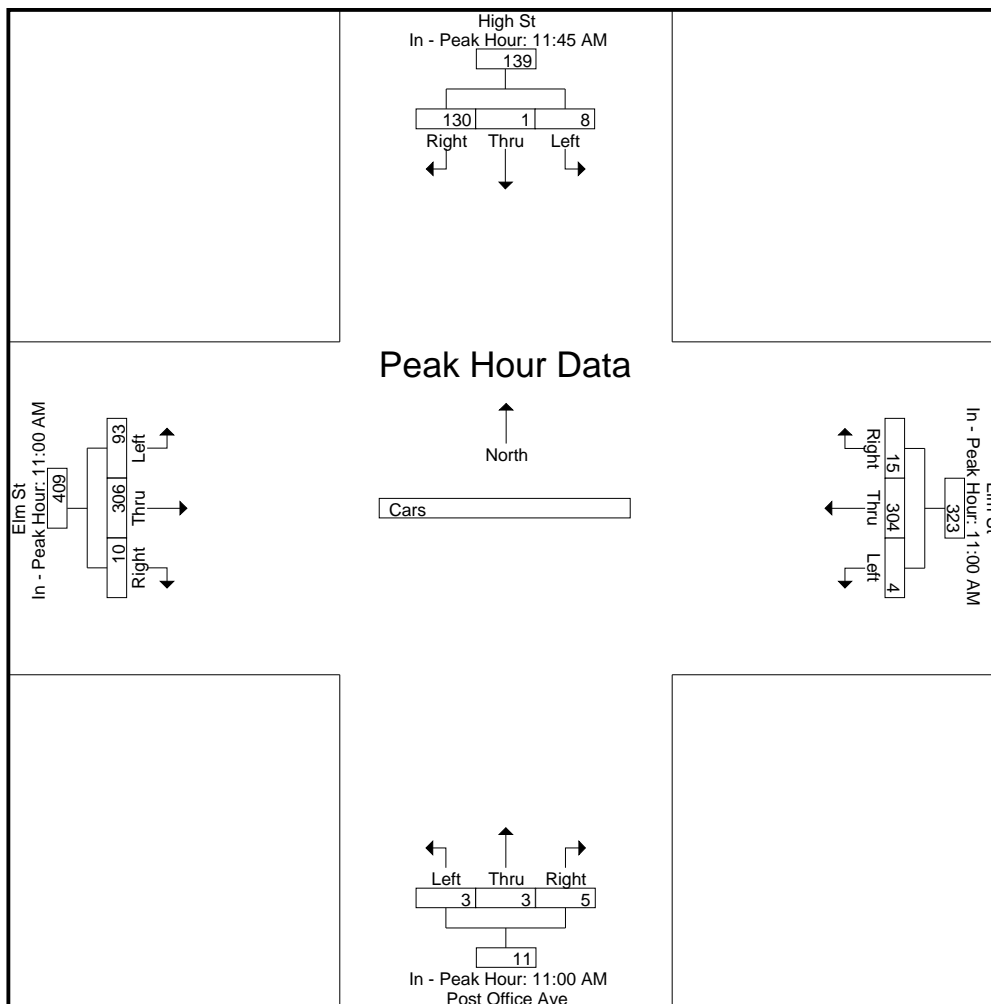
Page No : 3

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Cloudy



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Cloudy

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

Page No : 1

Groups Printed- Trucks

Start Time	High St From North			Elm St From East			Post Office Ave From South			Elm St From West			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	1	0	0	0	0	0	0	0	2	0	3
11:15 AM	0	0	0	0	2	0	0	0	0	0	0	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	1	0	2	0	0	0	0	0	3	0	6
12:00 PM	0	0	0	0	2	0	0	0	0	0	0	1	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
12:45 PM	0	0	0	0	2	0	1	0	0	0	0	0	3
Total	0	0	0	0	4	0	1	0	0	0	2	1	8
Grand Total	0	0	1	0	6	0	1	0	0	0	5	1	14
Apprch %	0	0	100	0	100	0	100	0	0	0	83.3	16.7	
Total %	0	0	7.1	0	42.9	0	7.1	0	0	0	35.7	7.1	

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	1	3
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
12:45 PM	0	0	0	0	0	2	0	2	1	0	0	1	0	0	0	0	3
Total Volume	0	0	0	0	0	4	0	4	1	0	0	1	0	2	1	3	8
% App. Total	0	0	0	0	0	100	0	100	100	0	0	100	0	66.7	33.3		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.250	.000	.000	.250	.000	.250	.250	.375	.667

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

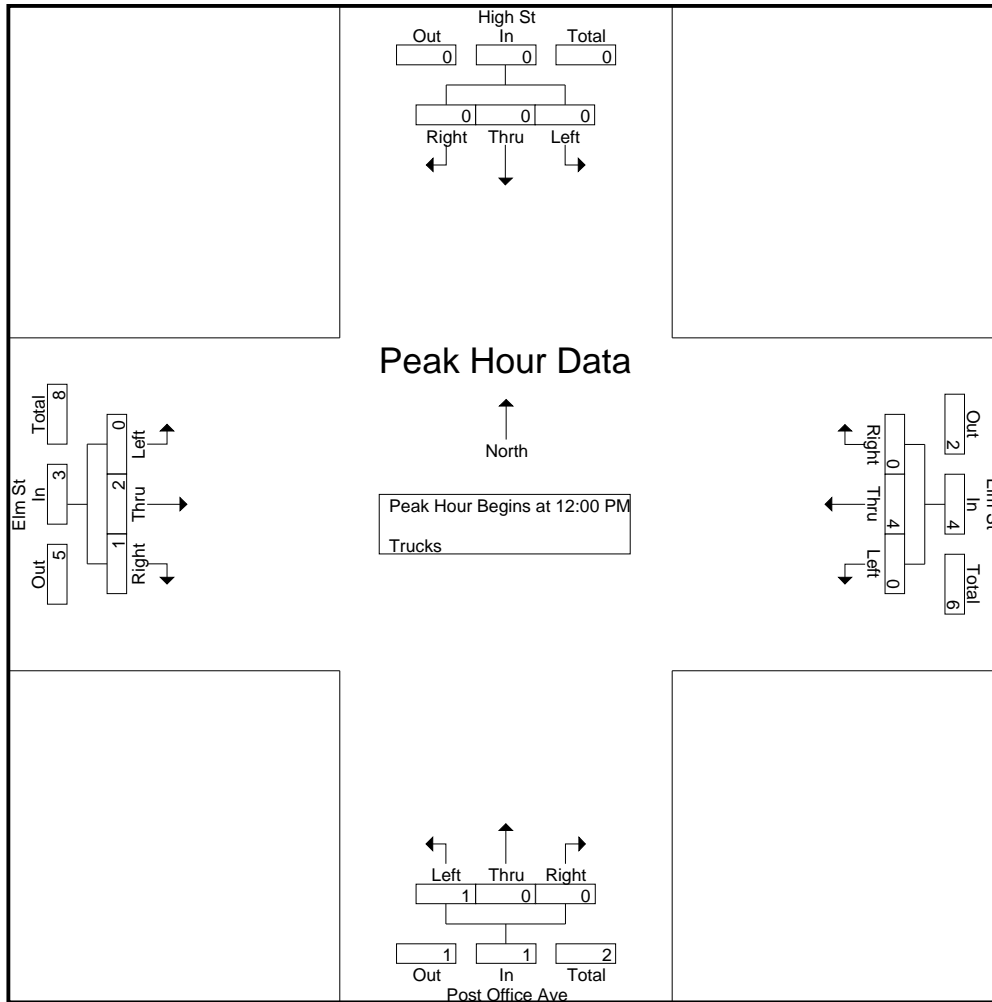
Weather : Cloudy

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

Page No : 2



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:00 AM				11:15 AM				12:00 PM				11:45 AM			
+0 mins.	0	0	1	1	0	2	0	2	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	2	0	2	1	0	0	1	0	2	0	2
Total Volume	0	0	1	1	0	4	0	4	1	0	0	1	0	3	1	4
% App. Total	0	0	100		0	100	0		100	0	0		0	75	25	
PHF	.000	.000	.250	.250	.000	.500	.000	.500	.250	.000	.000	.250	.000	.375	.250	.500

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

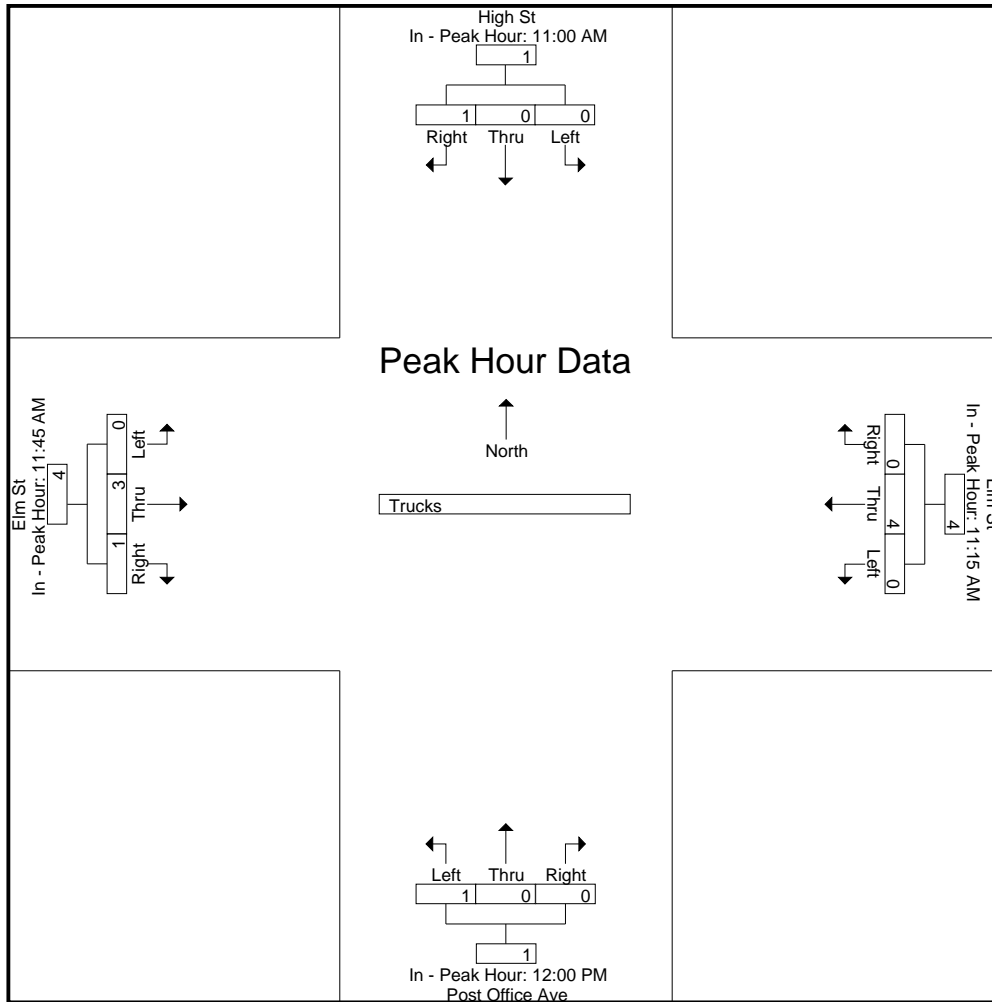
Weather : Cloudy

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

Page No : 3



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Cloudy

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

Page No : 1

Groups Printed- Bikes

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Exclu. Total	Inclu. Total	Int. Total
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Apprch %	0	0	0		0	100	0		0	0	0		0	0	0				
Total %	0	0	0		0	100	0		0	0	0		0	0	0		0	100	

Start Time	High St From North				Elm St From East				Post Office Ave From South				Elm St From West				Int. Total
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

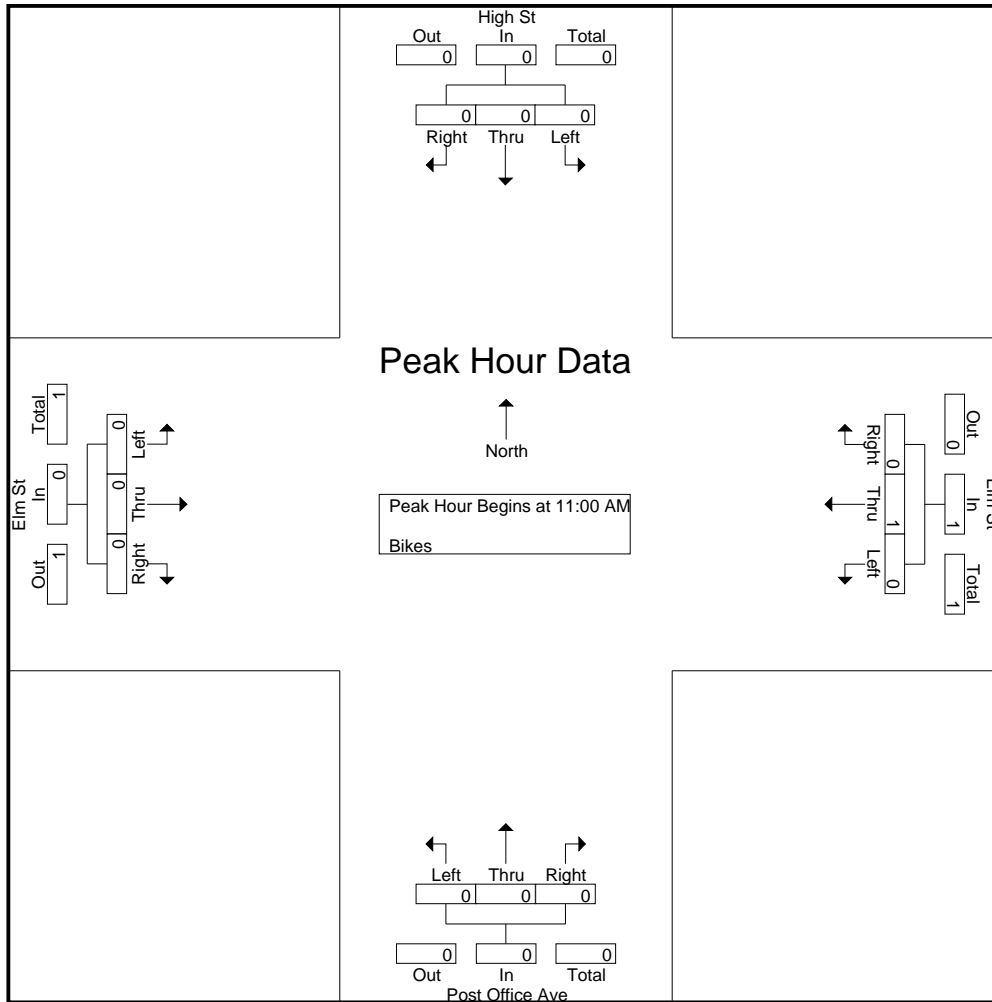
Weather : Cloudy

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

Page No : 2



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:00 AM				11:00 AM				11:00 AM				11:00 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

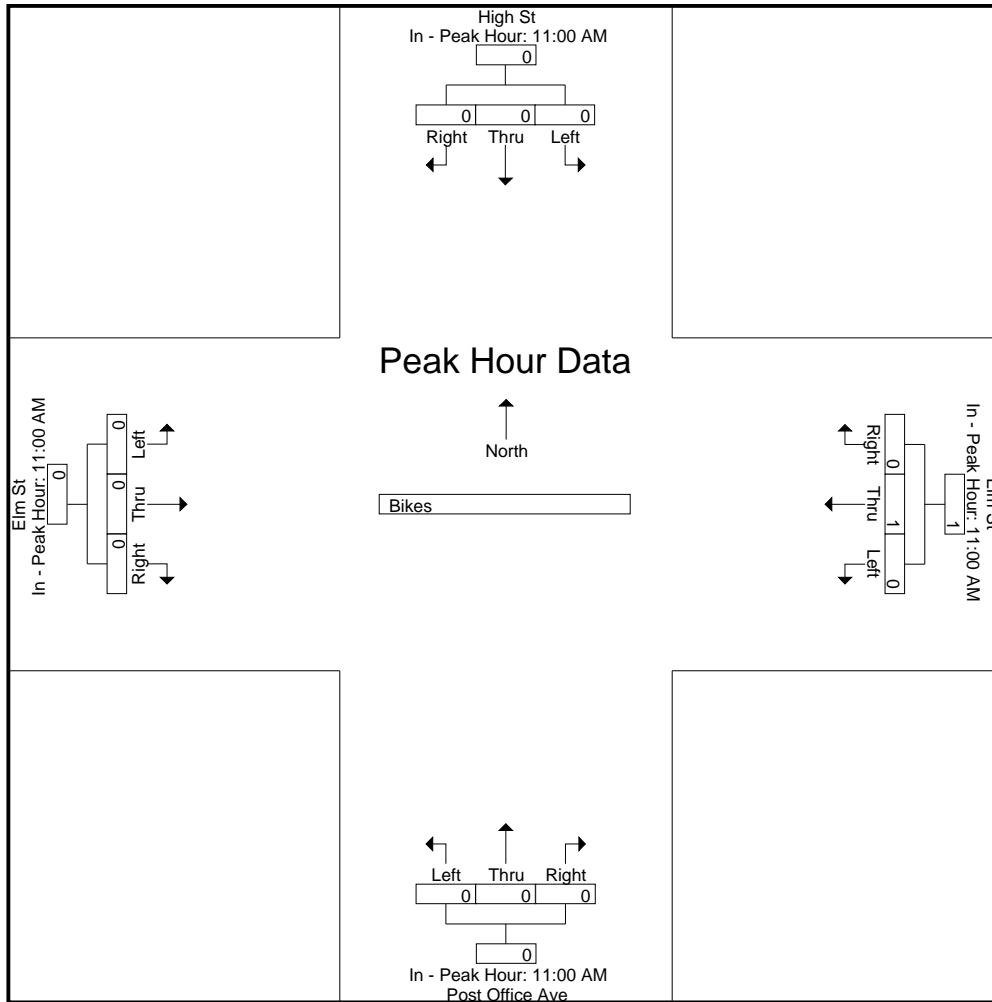
Weather : Cloudy

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

Page No : 3



Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S2
 Site Code : 12650002
 Start Date : 6/3/2023
 Page No : 1

Groups Printed- Peds

Start Time	High St From North		Elm St From East		Post Office Ave From South		Elm St From West		Exclu. Total	Inclu. Total	Int. Total
	EB	WB	NB	SB	EB	WB	NB	SB			
11:00 AM	3	0	1	2	1	2	2	0	4	7	11
11:15 AM	1	4	0	2	1	3	1	0	9	3	12
11:30 AM	1	1	0	1	3	2	4	0	4	8	12
11:45 AM	1	4	2	0	4	1	3	0	5	10	15
Total	6	9	3	5	9	8	10	0	22	28	50
12:00 PM	1	1	1	2	4	5	4	0	8	10	18
12:15 PM	1	0	2	0	0	2	1	0	2	4	6
12:30 PM	11	10	0	1	1	1	1	0	12	13	25
12:45 PM	0	0	0	1	2	3	4	0	4	6	10
Total	13	11	3	4	7	11	10	0	26	33	59
Grand Total	19	20	6	9	16	19	20	0	48	61	109
Apprch %	100		100		100		100				
Total %	31.1		9.8		26.2		32.8		44	56	

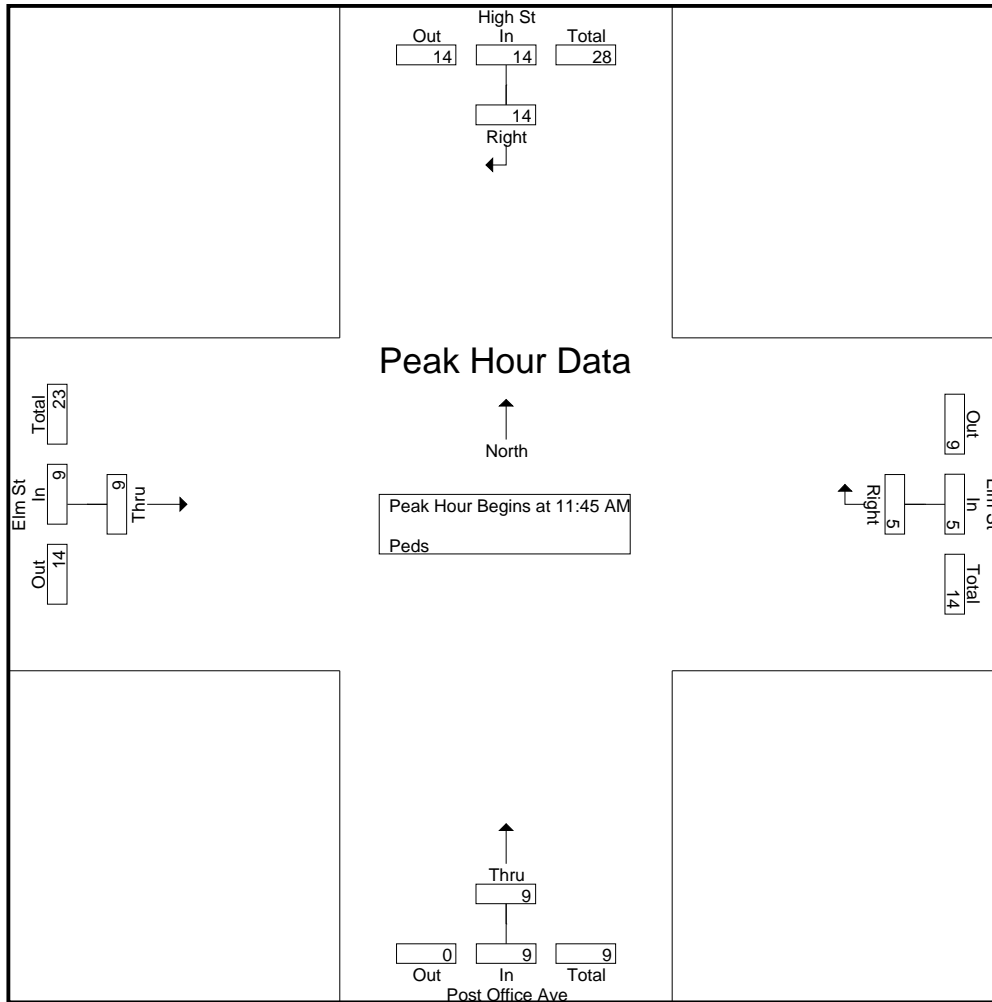
Start Time	High St From North		Elm St From East		Post Office Ave From South		Elm St From West		Int. Total	
	EB	App. Total	NB	App. Total	EB	App. Total	NB	App. Total		
Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:45 AM										
11:45 AM	1	1	2	2	4	4	3	3	10	
12:00 PM	1	1	1	1	4	4	4	4	10	
12:15 PM	1	1	2	2	0	0	1	1	4	
12:30 PM	11	11	0	0	1	1	1	1	13	
Total Volume	14	14	5	5	9	9	9	9	37	
% App. Total	100		100		100		100			
PHF	.318	.318	.625	.625	.563	.563	.563	.563	.712	

Accurate Counts

978-664-2565

N/S Street : High St / Post Office Ave
 E/W Street : Elm Street
 City/State : Andover, MA
 Weather : Cloudy

File Name : 126500S2
 Site Code : 12650002
 Start Date : 6/3/2023
 Page No : 2



Peak Hour Analysis From 11:00 AM to 12:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	11:45 AM		11:30 AM		11:15 AM		11:15 AM	
+0 mins.	1	1	0	0	1	1	1	1
+15 mins.	1	1	2	2	3	3	4	4
+30 mins.	1	1	1	1	4	4	3	3
+45 mins.	11	11	2	2	4	4	4	4
Total Volume	14	14	5	5	12	12	12	12
% App. Total	100		100		100		100	
PHF	.318	.318	.625	.625	.750	.750	.750	.750

Accurate Counts

978-664-2565

File Name : 126500S2

Site Code : 12650002

Start Date : 6/3/2023

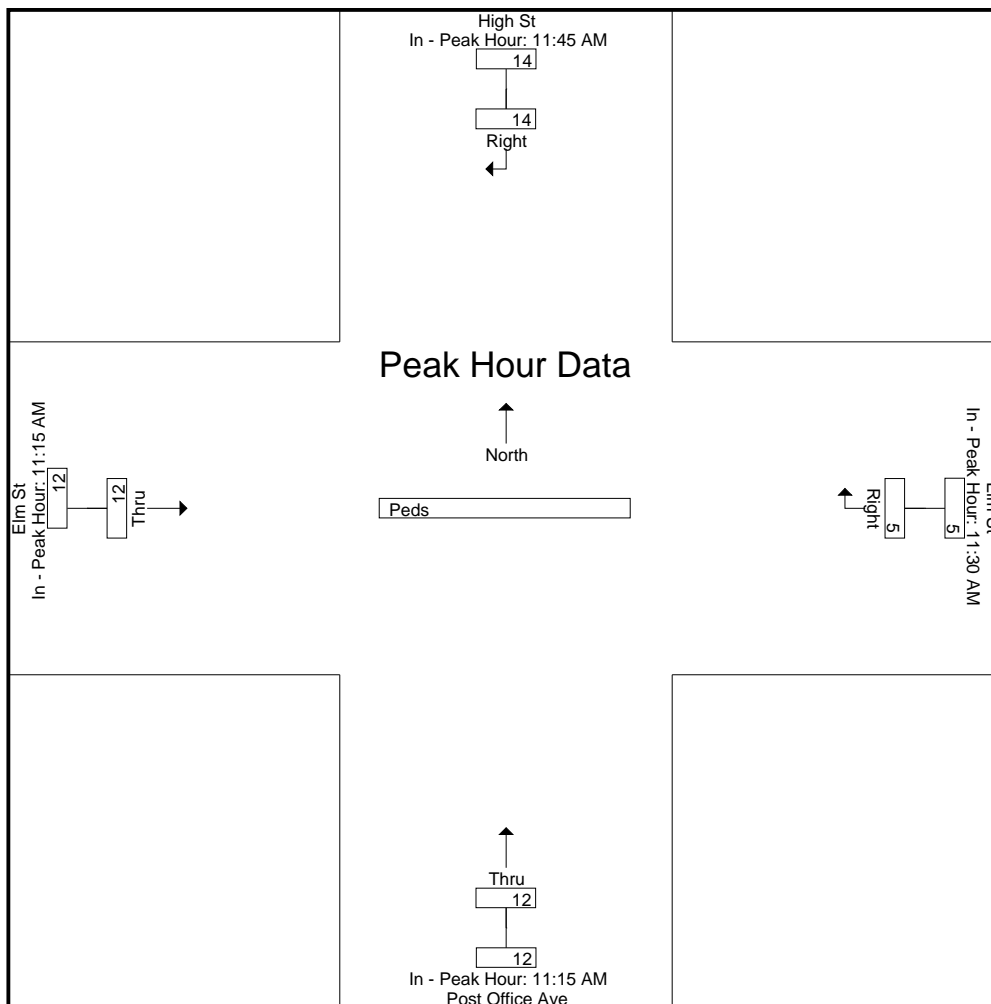
Page No : 3

N/S Street : High St / Post Office Ave

E/W Street : Elm Street

City/State : Andover, MA

Weather : Cloudy



Appendix E. MassDOT Speed Regulations

THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

SPECIAL SPEED REGULATION NO. 358-A

Highway Location: WILMINGTON-HAVERHILL

Authority in Control: COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

Name of Highway: Wilmington-State Highway-Route 125
 No. Reading " " " "
 Andover " " " "
 No. Andover-Andover Cutoff, Route 125
 Andover Street, Chickering
 Road & Osgood Street
 Haverhill-Boston Road-State Highway-
 Route 125
 Andover-Elm Street, Misc. State Highway
 No. Andover-Andover Street Misc. State
 Highway

In accordance with the provisions of Section 18 of Chapter 90 of the General Laws (Ter. Ed.) the following Special Speed Regulation is hereby promulgated:

Special Speed Regulation number 358 dated October 24, 1966 is hereby amended by striking out the Regulation in its entirety and inserting in place thereof the following revision and addenda.

The following designated speed limits are established at which motor vehicles may be operated in the areas described.

NORTHBOUND

Beginning in Wilmington on Route 125 at the beginning of State Highway,
 thence northerly
 0.89 miles at 45 miles per hour
 0.89 " " 55 " " " to the North Reading
 line,
 thence northerly in North Reading
 0.10 miles at 55 miles per hour to the Andover line,
 thence northerly in Andover
 0.55 miles at 55 miles per hour
 0.62 " " 45 " " "
 1.45 " " 55 " " "
 0.59 " " 50 " " "
 1.23 " " 55 " " " to the North Andover line,

thence northerly in North Andover

0.57 miles at 50 miles per hour

0.17 " " 25 " " " ending south at the

Junction of Routes 125 & 114.

And beginning again in North Andover 260 feet north of the junction of Routes 114 & 125,

thence northerly

0.25 miles at 35 miles per hour

4.42 " " 40 " " " to the Haverhill line,

thence northerly in Haverhill

0.09 miles at 40 miles per hour

0.19 " " 35 " " "

1.09 " " 45 " " " to the end of state

highway; the total distance being 13.10 miles.

SOUTHBOUND

Beginning in Haverhill at the beginning of State Highway, thence southerly

0.40 miles at 45 miles per hour

0.40 " " 35 " " "

0.29 " " 45 " " "

0.19 " " 35 " " "

0.09 " " 40 " " " to the North Andover

line,

thence southerly in North Andover

4.42 miles at 40 miles per hour

0.30 " " 35 " " " ending north of the

junction of Routes 114 & 125.

And beginning again in North Andover 1,056 feet south of the junction of Route 114 & 125,

thence southerly on Route 125

0.58 miles at 50 miles per hour to the Andover line,

thence southerly in Andover

1.23 miles at 55 miles per hour

0.59 " " 50 " " "

1.45 " " 55 " " "

0.65 " " 45 " " "

0.52 " " 55 " " " to the North Reading

line,

thence southerly in North Reading

0.10 miles at 55 miles per hour to the Wilmington

line,

thence southerly in Wilmington

0.89 miles at 55 miles per hour

0.89 " " 45 " " " to the end of State

Highway; the total distance being 12.99 miles.

NORTHBOUND -MISC. STATE HIGHWAY

Beginning in Andover on Elm Street at Station 40+25,
thence northerly

0.77 miles at 35 miles per hour to the North Andover
line,

thence northerly in North Andover

0.11 miles at 35 miles per hour ending north of
the junction of Routes 114 & 125 ; the total distance being 0.88
miles.

SOUTHBOUND -MISC. STATE HIGHWAY

Beginning in North Andover on Andover Street south of the
junction of Routes 114 & 125, at Station 5+75,
thence southerly

0.11 miles at 35 miles per hour to the Andover line
Thence southerly in Andover

0.77 miles at 35 miles per hour ending at the end
of State Highway; the total distance being 0.88 miles.

Operation of a motor vehicle at a rate of speed in excess of
these limits shall be prima facie evidence that such speed is
greater than is reasonable and proper.

The provisions of this regulation shall not, however, abro-
gate in any sense, Section 14 of Chapter 90.

The Department of Public Works and the Registrar of Motor
Vehicles, acting jointly do hereby certify in writing, that this
regulation is consistent with the public interest.

Standard signs must be erected at the beginning of each zone.

FOR THE DEPARTMENT

DATE: September 1, 1971

BY: Bruce Campbell *yc*
BRUCE CAMPBELL
COMMISSIONER

for Highway Engineering

David J. Lucey
Registrar of Motor Vehicles

July 22, 1974

Mr. Sullivan

TOWN OF ANDOVER
SPECIAL SPEED REGULATION NO. 938

Highway Location: ANDOVER
Authority In Control: TOWN OF ANDOVER
Name of Highway: MAIN STREET-SOUTH MAIN STREET *(over)*

In accordance with the provisions of Chapter 90, Section 18, of the General Laws (Ter. Ed.) as amended, the following Special Speed Regulation is

hereby Adopted
by the Board of Selectmen
of the Town of Andover

That the following speed limits are established at which motor vehicles may be operated in the areas described:

SOUTH MAIN STREET-MAIN STREET-NORTHBOUND

Beginning at the end of State Highway, thence northerly
thence 0.31 miles at 30 miles per hour
" 0.27 " " 25 " " "
" 0.53 " " 30 " " " , ending at the
beginning of State Highway; the total distance being 1.11 miles.

MAIN STREET-SOUTH MAIN STREET-SOUTHBOUND

Beginning at the end of State Highway,
thence southerly 0.53 miles at 30 miles per hour
" 0.27 " " 25 " " "
" 0.31 " " 30 " " " , ending at the
beginning of State Highway; the total distance being 1.11 miles.

Operation of a motor vehicle at a rate of speed in excess of these limits shall be prima facie evidence that such speed is greater than is reasonable and proper.

The provisions of this regulation shall not, however, abrogate in any sense Chapter 90, Section 14, of the General Laws (Ter. Ed).

JUN 3 1974

Date of Passage

Alvan Fitzmaurice

George E. [unclear]

Edmund Sullivan Jr

Board of Selectmen

Attest

Edward J. Satter
Town Clerk

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF PUBLIC WORKS

SPECIAL SPEED REGULATION NO. 938

The Department of Public Works and the Registrar of Motor Vehicles, acting jointly, do hereby certify that this regulation is consistent with the public interests.

Standard signs must be erected at the beginning of each zone.

DATE: July 22, 1974

FOR THE DEPARTMENT OF PUBLIC WORKS

BY:

L. T. Rubin
Traffic Engineer

David J. Lucey
Registrar of Motor Vehicles

Appendix F. Road Safety Audit References

Road Safety Audit References

FHWA Office of Safety - Proven Safety Countermeasures, U.S. Department of Transportation, Federal Highway Administration <https://safety.fhwa.dot.gov/provencountermeasures/>.

Road Safety Audits, A Synthesis of Highway Practice. NCHRP Synthesis 336. Transportation Research Board, National Cooperative Highway Research Program, 2004.

Road Safety Audits. U.S. Department of Transportation, Federal Highway Administration, <https://safety.fhwa.dot.gov/rsa/>

FHWA Road Safety Audit Guidelines. U.S. Department of Transportation, Federal Highway Administration, 2006.

Road Safety Audit, 2nd edition. Austroads, 2000.

Road Safety Audits. ITE Technical Council Committee 4S-7. Institute of Transportation Engineers, February 1995.