



HOWARD STEIN HUDSON

Engineers + Planners

Jefferson at Malden Center

Transportation Study

Prepared for
Jefferson Apartment Group

Prepared by
Howard Stein Hudson

September 9, 2015



Source: Childs Bertman Tseckares, Inc.

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In accordance with Section E.9 of the Rules and Procedures of the Malden Planning Board, I certify that this transportation study has been prepared under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering.

Signed,

Keri Pyke, P.E., PTOE
Howard Stein Hudson
September 9, 2015





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Introduction

In accordance with Section E.9 of the Rules and Procedures of the Malden Planning Board the City of Malden, proponents of major construction projects are required to submit a transportation study to the City that assesses existing and future traffic conditions. This study, prepared by Howard Stein Hudson (HSH) for Jefferson Apartment Group (the Proponent), presents the traffic and parking impacts associated with the proposed Jefferson at Malden Center development (the Project), located at 184-200 Pleasant Street in Malden, Massachusetts. This report has been prepared in conjunction with the Special Permit

Project Description

Most of the Project site is currently occupied by Malden Government Center and includes the Malden Police Station and Malden City Hall. The remaining adjacent portion of the Project site is currently occupied by the First Church in Malden, Congregational Church.

The proposed new Project is a mixed-use, transit-oriented development, which will include residential apartments, retail space, office space, and supporting on-site parking. With the associated demolition of the existing Government Center buildings, Pleasant Street will be rejoined to the Commercial Street/Florence Street intersection, allowing better vehicular and pedestrian circulation in the downtown area and improving the connectivity between the Pleasant Street corridor and the MBTA’s subway/bus station at Malden Center.

Table 1 summarizes the existing and future land uses on the Project site.

Table 1. Project Site Land Uses

Existing Land Uses	Future Land Uses
Malden Police Station Malden City Hall First Church in Malden, Congregational Church Garage Parking for Police and City Hall employees	Residential: 310 - 320 units Retail: 20,000 - 21,730 gsf ¹ Office ² : 44,000 – 46,000 gsf ¹ Garage Parking approx. 320 - 340 spaces

1. Gross square feet
2. The sole office tenant for the Project will be the City of Malden.

The existing land uses include the Malden Police Station, Malden City Hall offices, and the First Church of Malden. The police station will be permanently closed at this location and relocated to



Eastern Avenue. The sole office tenant for the Project will be the City of Malden, which will relocate City Hall into this space after the City converts the shell office space for its use. The church will close at this location and relocate off-site.

With the reintroduction of Pleasant Street to the intersection with Commercial Street, the Project will have two distinct block areas. The “south block” (south of Pleasant Street) will include 75% - 80% of the residential units and about 90% of the retail space. The “north block” (north of Pleasant Street) will include all the office space, 20% - 25% of the residential units, and about 10% of the retail space.

On-site Project parking will be located in two underground garage levels on the south block with one garage driveway on Exchange Street and one on Abbott Street. Internally, the garage levels will be separated, and vehicles will not be able to circulate between the two levels. About 237 parking spaces (0.75 spaces/unit x 315 units) will be allocated to residents, and the remaining spaces will serve the retail space. The residential areas on the north and south blocks will be connected via a pedestrian bridge over Pleasant Street, allowing residents from the north block interior access to the parking garage on the south block.

A site plan is presented later in **Figure 11**.

Study Area

The study area was defined collaboratively with the City and includes the 11 intersections listed below:

- Centre Street (Route 60)/Pearl Street (signalized);
- Pleasant Street/Commercial Street/Florence Street (signalized)
- Commercial Street/Exchange Street/MBTA driveway (signalized);
- Centre Street (Route 60)/Commercial Street (signalized);
- Pleasant Street/Main Street (signalized);
- Exchange Street/Main Street (signalized);
- Centre Street (Route 60)/Pleasant Street (unsignalized);
- Pleasant Street/Pearl Street/Pleasant Street Park (unsignalized);
- Pleasant Street/Abbott Street (unsignalized);
- Exchange Street/Abbott Street (unsignalized); and
- Exchange Street/Jackson Street (unsignalized).



Under the future Build Condition, the Project's site driveways on Exchange Street and Abbott Street are also included as study intersections. Collectively, these 13 intersections define the primary traffic study area for the Project and are the focus of the traffic impact analysis presented in this report.

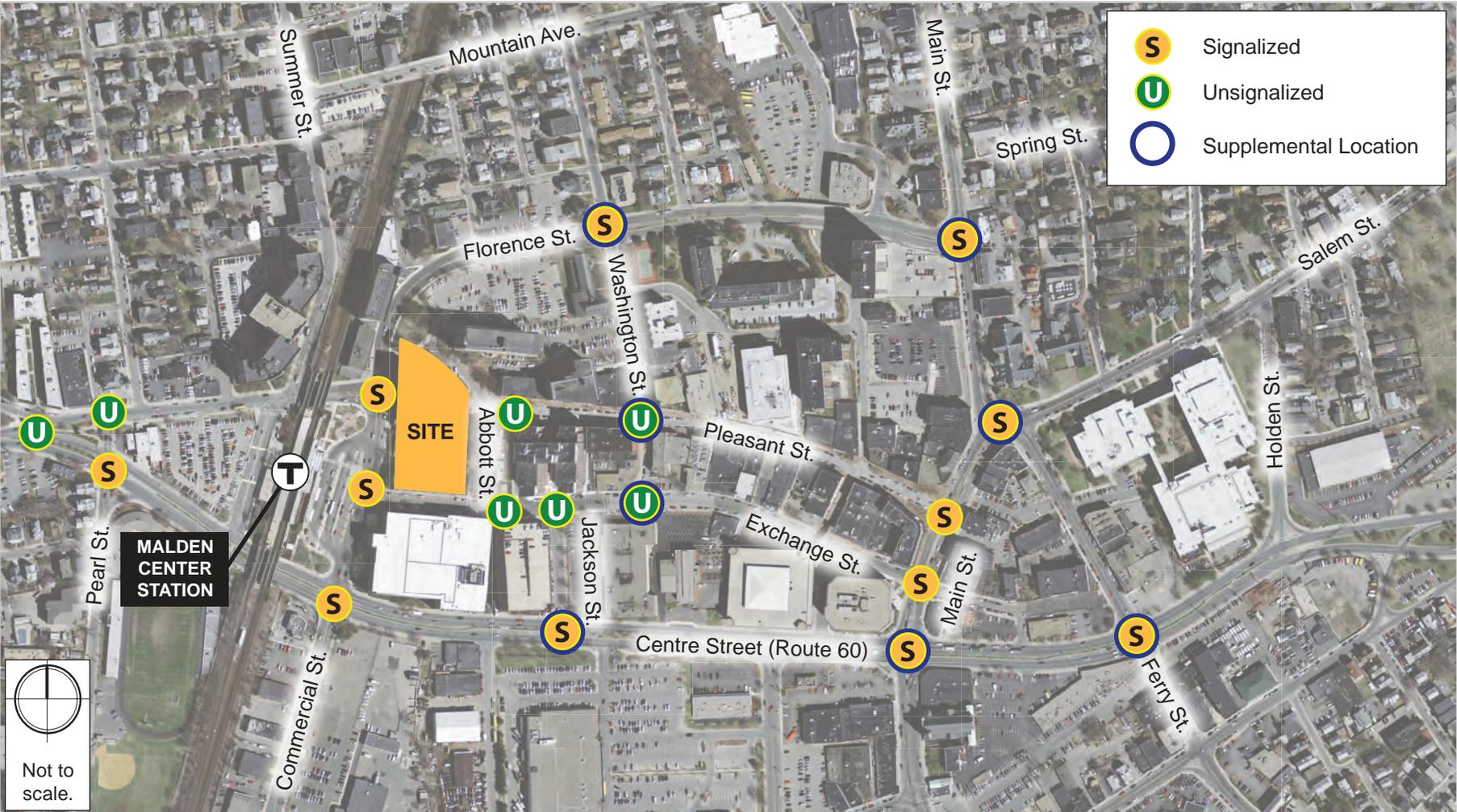
In addition to the study area intersections identified above, the City requested that traffic counts be collected concurrently at the eight supplemental intersections listed below should analysis be required at a later date:

- Centre Street (Route 60)/Jackson Street (signalized);
- Florence Street/Washington Street (signalized);
- Pleasant Street/Washington Street (unsignalized);
- Exchange Street/Washington Street (unsignalized);
- Florence Street/Main Street (signalized);
- Main Street/Salem Street/Ferry Street (signalized);
- Centre Street (Route 60)/Main Street (signalized); and
- Centre Street (Route 60)/Ferry Street (signalized).

Traffic volumes at these additional intersections are shown throughout the report for existing and future conditions, but, as noted, associated analysis has not been conducted. The primary and supplemental study intersections are shown in **Figure 1**.



Figure 1. Study Area





Existing Traffic Condition

Existing Roadway Condition

The study area includes the following roadways described below, categorized according to the Massachusetts Office of Transportation Planning classifications. All roadways are under the jurisdiction of the City of Malden. Roadway geometry descriptions are based on field observations.

Pleasant Street, an urban minor arterial, is one-way westbound with one travel lane, between Main Street and the Government Center complex, where it currently ends. Between Commercial Street/Florence Street and Evelyn Place, Pleasant Street is two-way with one lane in each direction. Between Evelyn Place and Elm Street, Pleasant Street is one-way westbound with one travel lane. West of Elm Street, Pleasant Street joins with Centre Street (Route 60) and continues west as Route 60. At the intersection of Pleasant Street and Commercial/Florence Street, the roadway is divided by a raised 7-foot wide landscaped median. Pleasant Street is discontinued by Malden Government Center between Commercial/Florence Street and Exchange Place. Brick sidewalks are along both sides of the roadway and on-street parking is prohibited within the study area.

Commercial Street, an urban minor arterial, runs north-south from Florence Street to Route 16 and consists of two travel lanes in each direction. Exclusive right and left turn lanes are provided at key locations with on-street parking in general prohibited except along the east side, near the intersection with Florence and Pleasant Street. Sidewalks are provided along both sides of the roadway.

Florence Street, an urban collector approximately 0.4 miles in length, connects Pleasant Street and Main Street and runs primarily east-west. Florence Street consists of two travel lanes in each direction divided by a raised landscaped median ranging from 6 to 11 feet in width with intermittent median breaks. There is a curvilinear alignment on Florence Street between Pleasant Street and Washington Street. Sidewalks are provided along both sides of the roadway and on-street parking is prohibited.

Centre Street (Route 60) is an urban principal arterial that consists of two travel lanes in each direction, separated by an approximately 4-foot raised and landscaped median. Centre Street runs east-west between Eastern Avenue to the east and Pleasant Street to the west. Exclusive right and left turn lanes are provided at key intersections. Parking is not permitted along Centre Street. Sidewalks are provided along both sides of the roadway.



Washington Street is a roadway between Exchange Street to the south and the Melrose City Line to the north, where it becomes Pleasant Street. Within the study area, Washington Street is classified as an urban minor arterial between Exchange Street and Pleasant Street, and is classified as an urban collector north of Pleasant Street. Washington Street runs one-way southbound between Pleasant Street and Exchange Street, and runs one-way northbound between Pleasant Street and Garnet Street. North of Garnet Street, Washington Street consists of two lanes in each direction. Parking is provided on both sides of Washington Street south of Pleasant Street, and is provided on the west side of the roadway between Pleasant Street and Florence Street, where parking is reserved for the Malden Senior Center. Sidewalks are provided on both sides of the roadway.

Exchange Street, an urban collector approximately 0.3 miles in length, runs east-west between Main Street to the east and Commercial Street to the west. Exchange Street runs one-way eastbound and operates as a single travel lane, though the roadway is wide enough for parking and valet activity to take place without interrupting flow. Parking is provided on both sides of the roadway, generally alternating between head-in diagonal parking along the south side of Exchange Street with parallel parking along the north side of the roadway, and parallel parking on the south side with head-in diagonal parking on the north side of the roadway. Sidewalks are provided on both sides of Exchange Street.

Abbott Street is a 250-foot long local roadway that runs north-south between Pleasant Street to the north and Exchange Street to the south. Abbott Street runs one-way southbound, and consists of one travel lane. Parallel parking is provided on both sides of Abbott Street. Sidewalks are provided on both sides of the roadway.

Jackson Street, a 300-foot long local roadway, runs north-south between Exchange Street to the north and Centre Street (Route 60) to the south. Jackson Street consists of one travel lane in each direction. Head-in diagonal parking is provided along the west side of the roadway. Access to the Jackson Street Parking Garage is also located along the west side of Jackson Street. Parking is not permitted along the east side of the roadway. Sidewalks are provided on both sides of the Jackson Street.

Main Street, an urban principal arterial, is oriented north-south with one travel lane in each direction between the City of Melrose line and the Everett Town Line. Exclusive right- and left-turn lanes are provided at key locations. Sidewalks are provided along both sides of the roadway in the project area. South of Florence Street, Main Street widens and is divided by a raised landscaped median on its approach to Salem Street and Ferry Street, with a combination of flush and raised



medians between Salem Street and Centre Street. On-street parking is provided along both sides of Main Street.

Existing Intersection Conditions

The study area intersections are described below.

Centre Street (Route 60)/Pearl Street is a signalized intersection with four approaches. The Centre Street (Route 60) eastbound approach consists of a 12-foot through lane and a 12-foot shared through/right-turn lane. The Centre Street (Route 60) westbound approach consists of a 12-foot through lane and a 12-foot exclusive right-turn lane. Left turns are prohibited on both Centre Street (Route 60) approaches. The Pearl Street northbound approach consists of a 14-foot shared left-turn/through lane and a 20-foot channelized right-turn lane. The Pearl Street southbound approach consists of a single 13-foot travel lane. Crosswalks are provided across the eastern leg of Centre Street (Route 60) and across the northern leg of Pearl Street, but the crosswalk markings have faded to the point where they are hardly visible. Signal phasing at the intersection consists of a Centre Street (Route 60) eastbound/westbound phase, followed by a Pearl Street northbound/southbound phase, followed by an exclusive pedestrian phase, if called. However, pedestrian indications do not work and remain showing a “Don’t Walk” signal, even during the pedestrian phase. Instead, during the pedestrian phase, each vehicle traffic signal shows both a red and yellow light, switching to just the red light during the pedestrian clearance interval. This may be confusing to pedestrians who are not familiar with the intersection, and may result in pedestrians entering the intersection when it is not safe to do so. On-street parking is not provided in the vicinity of the intersection.

Pleasant Street/Florence Street/Commercial Street is a signalized intersection with three approaches. The Pleasant Street eastbound approach consists of an 11-foot left-turn lane and an 11-foot right-turn lane. The Commercial Street northbound approach consists of a 10-foot shared left-turn/through lane and a 16-foot through lane, which is also, used for parking, loading activity, and food trucks. The Florence Street southbound approach consists of an 11-foot shared through/right-turn lane and an 11-foot through lane. Crosswalks are provided across all legs of the intersection, and pedestrians cross all legs of the intersection with an exclusive pedestrian phase. Except for the parking/loading/food truck zone along the Commercial Street northbound approach, on-street parking is not permitted in the vicinity of the intersection. The signal phasing at the intersection consists of a leading left-turn phase and a through phase for the Commercial Street northbound approach, followed by Commercial Street northbound-Florence Street southbound phase during which left turns from Commercial Street northbound are permitted, followed by an exclusive pedestrian phase, followed by the Pleasant Street eastbound phase. The cycle length was recorded at 84 seconds during the a.m. peak hour and 86 seconds during the p.m. peak hour.



Exchange Street/Commercial Street is a signalized intersection with two approaches. The Commercial Street northbound approach consists of a 12-foot shared left-turn/through lane alongside a 14-foot shared through/right-turn lane. The Commercial Street southbound approach consists of a 10-foot shared left-turn/through lane and a 16-foot shared through/right-turn lane. The eastern leg of the intersection is the 20-foot wide Exchange Street, which runs one-way westbound. The western leg of the intersection is the entrance to the pick-up/drop off area for the Malden Center MBTA station. Crosswalks are provided across the northern leg of Commercial Street and across Exchange Street; pedestrians walking along the western side of Commercial Street must walk along the sidewalk adjacent to the MBTA station. Pedestrians cross Commercial Street and Exchange Street using an exclusive pedestrian phase. Parallel parking is provided along the north side of Exchange Street, and head-in diagonal parking is provided along the south side of Exchange Street; parking on both sides of Exchange Street is reserved for police vehicles in the vicinity of the intersection. Live parking is permitted within the MBTA pick-up/drop-off area. On-street parking is not permitted on Commercial Street. The signal phasing at the intersection consists of a Commercial Street north-south phase, during which left turns are permitted, followed by an exclusive pedestrian phase. Field observations indicated that the exclusive pedestrian phase occurs during every cycle due to heavy pedestrian activity; it is unknown as to whether the pedestrian phase is on recall. The cycle length was observed to be 46 seconds in both the a.m. and p.m. peak hour.

Centre Street (Route 60)/Commercial Street is a signalized intersection with four approaches. The Centre Street (Route 60) eastbound approach consists of a 140-foot long, 10-foot wide left-turn lane, a 12-foot through lane, and a 12-foot shared through/right-turn lane. The Centre Street (Route 60) westbound approach consists of a 310-foot long, 10-foot wide left-turn lane, a 12-foot through lane, and a 12-foot shared through/right-turn lane. The Commercial Street northbound approach consists of an 11-foot shared left-turn/through lane and a 12-foot shared through/right-turn lane. The Commercial Street southbound approach consists of an 11-foot shared left-turn/through lane and a 16-foot shared through/right-turn lane. Crosswalks are provided across all approaches of the intersection. Parking is not provided in the vicinity of the intersection. Signal phasing at the intersection begins with a Centre Street (Route 60) eastbound leading left-turn phase, followed by a Centre Street (Route 60) eastbound/westbound phase during which left turns are permitted, followed by a Commercial Street northbound/southbound leading left-turn phase, followed by a Commercial Street northbound/southbound phase during which left turns are permitted. Pedestrians cross concurrently with parallel traffic.

Pleasant Street/Main Street is a signalized intersection with two approaches. The Main Street northbound approach consists of a 12-foot exclusive left-turn lane and a 13-foot through lane. The Main Street southbound approach consists of an unmarked 18-foot travel lane which acts as a through lane and a right-turn lane. Pleasant Street runs one-way westbound. Crosswalks are



provided across all legs of the intersection, and pedestrians are accommodated with an exclusive pedestrian phase. Citizens Bank, which is located on the east side of the intersection, has an entrance driveway along the Main Street northbound departure, approximately 35 feet north of the crosswalk across the northern leg of Main Street, and an exit driveway just north of the crosswalk across the southern leg of Main Street. These driveways were not included in traffic analysis presented in this report because they are not controlled by the traffic signal. The signal has only two phases; a Main Street northbound/southbound phase and an exclusive pedestrian phase.

Exchange Street/Main Street is a signalized intersection with three approaches. The Exchange Street eastbound approach consists of a 26-foot unmarked travel lane which acts as an exclusive left-turn lane and an exclusive right-turn lane. The Main Street northbound approach consists of a 12-foot through lane and a 12-foot through/right-turn lane. The Main Street southbound approach consists of an 11-foot shared left-turn/through lane and an 11-foot through lane. Exchange Street runs one-way eastbound, and turns into Irving Street east of the intersection, which also runs one-way eastbound. Crosswalks are provided across all legs of the intersection, and pedestrians are accommodated with an exclusive pedestrian phase. On-street parking is provided on both sides of the northern leg of Main Street, on both sides of Exchange Street, and on both sides of Irving Street in the vicinity of the intersection. The intersection is located just 200 feet south of Pleasant Street and just 200 feet north of Centre Street (Route 60). The signal phasing at the intersection consists of a Main Street northbound/southbound phase, an Exchange Street eastbound phase, and an exclusive pedestrian phase.

Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street is an unsignalized intersection with three approaches. The Pleasant Street (Route 60) eastbound approach consists of two 12-foot travel lanes which flow freely onto Centre Street (Route 60) without conflict. No other movements are possible from the Pleasant Street (Route 60) eastbound approach. The yield-controlled Pleasant Street eastbound approach consists of a single 15-foot travel lane. The Centre Street (Route 60) northwest-bound approach consists of a single 13-foot travel lane along a 13-foot painted, gored shoulder. Centre Street (Route 60) northwest-bound vehicles may flow freely onto Pleasant Street (Route 60) westbound without conflict. Elm Street, located about 135 feet east of Centre Street, runs one-way northwest-bound from Pleasant Street westbound. Crosswalks are provided across Pleasant Street (Route 60) west of the intersection and across Elm Street. On-street parking is provided on northeast side of Elm Street, but is otherwise prohibited in the vicinity of the intersection.

Pleasant Street/Pearl Street/Pleasant Street Park is an unsignalized intersection with three approaches. The Pleasant Street westbound approach consists of a single 25-foot travel lane, shared with a bus stop on the north side of the roadway. The Pearl Street northbound approach consists of



a single 13-foot travel lane. The Pleasant Street Park southbound approach consists of a single 9-foot travel lane. Because Pleasant Street runs one-way westbound, right turns from Pearl Street northbound and left turns from Pleasant Street Park southbound are prohibited. Crosswalks are not provided across any leg of the intersection, though curb ramps are provided across Pleasant Street Park and across the western leg of Pleasant Street. On-street parking reserved for Fire Department employees is provided along the south side of the Pleasant Street westbound approach to the intersection. Parking is prohibited elsewhere in the vicinity of the intersection.

Pleasant Street/Abbott Street is an unsignalized intersection with one approach. The Pleasant Street westbound approach consists of a 12-foot travel lane alongside a 5-foot bike lane. The western leg of Pleasant Street is an unmarked 28-foot wide roadway that is not open to general traffic. The western leg of Pleasant Street provides access to a small parking area in front of the First Church in Malden, and to a fire access roadway. The southern leg of the intersection, Abbott Street, runs one way southbound and consists of an 18-foot travel lane. A crosswalk is provided across Abbott Street, but none are provided across Pleasant Street. On-street parallel parking is provided on both sides of the eastern leg of Pleasant Street and on both sides of Abbott Street.

Exchange Street/Abbott Street is a three-legged unsignalized intersection with two approaches. The Exchange Street eastbound approach consists of a single 21-foot travel lane. The stop-controlled Abbott Street southbound approach consists of a single 18-foot travel lane. A crosswalk is provided across Abbott Street. Parallel parking is provided along both sides of Exchange Street and Abbott Street.

Exchange Street/Jackson Street is a three-legged unsignalized intersection with two approaches, located about 100 feet east of the intersection of Exchange Street/Abbott Street. The Exchange Street eastbound approach consists of a single 21-foot travel lane. The stop-controlled Jackson Street northbound approach consists of a single 12-foot travel lane. Crosswalks are provided across the western leg of Exchange Street and across Jackson Street. Parallel parking is provided on both sides of Exchange Street; approximately 50 feet east of the intersection, the parking along the north side of Exchange Street becomes head-in diagonal parking. On-street parking is not permitted on Jackson Street in the vicinity of the intersection; however, the entrance to the Jackson Street garage is located on the west side of Jackson Street, about 60 feet south of the intersection. Head-in diagonal permit parking is provided on the west side of Jackson Street south of the garage driveway.

In addition to the intersections described above, the City requested that traffic counts be collected concurrently at several supplemental intersections should analysis be required at a later date. For reference, these supplemental intersections are described below:



Centre Street (Route 60)/Jackson Street is a signalized intersection with three approaches. The Centre Street (Route 60) eastbound approach consists of a 185-foot long, 12-foot wide exclusive left-turn lane, and two 12-foot through lanes. The Centre Street (Route 60) westbound approach consists of a 12-foot through lane and a 12-foot shared through/right-turn lane. The Jackson Street southbound approach consists of a single 14-foot travel lane which was observed operating two separate lanes. Crosswalks are provided across all legs of the intersection, and pedestrians cross with an exclusive pedestrian phase. On-street parking is not provided on Centre Street (Route 60); however, head-in, permit-only parking is provided along the west side of Jackson Street. The signal phasing at the intersection consists of a Jackson Street southbound phase, followed by a Centre Street (Route 60) eastbound leading left-turn phase and through phase, followed by a Centre Street eastbound/westbound phase during which eastbound left turns are permitted, followed by a push-button activated pedestrian signal.

Florence Street/Washington Street is a signalized intersection with four approaches. The Florence Street eastbound approach consists of two 11-foot general purpose travel lanes. The Florence Street westbound approach consists of a 10-foot left-turn pocket of about 100 feet in length, an 11-foot through lane, and a 12-foot shared through/right-turn lane. The Washington Street northbound approach consists of an 11-foot shared left-turn/through lane and an 11-foot right-turn pocket of approximately 100 feet in length. The Washington Street southbound approach consists of a single 12-foot travel lane. Crosswalks are provided across all legs of the intersection. There is no parking on Florence Street or on the northern leg of Washington Street in the vicinity of the intersection. Parallel on-street parking is provided on the west side of the southern leg of Washington Street, and is provided upstream of the right-turn lane on the eastern side of the roadway. The signal phasing consists of a Florence Street eastbound-westbound phase, during which left turns are permitted, followed by a pedestrian phase, followed by a Washington Street southbound split phase, followed by a Washington Street northbound split phase. The pedestrian phase is push-button activated and does not occur during each signal cycle. The cycle length is 140 seconds in both the a.m. and p.m. peak hours.

Pleasant Street/Washington Street is an unsignalized intersection with four legs and two approaches. The Pleasant Street westbound approach consists of a single travel lane. The stop-controlled Washington Street northbound approach consists of a single travel lane. Crosswalks are provided across all legs of the intersection. In the vicinity of the intersection, parallel parking is provided along both sides of Pleasant Street, along both sides of the southern leg of Washington Street, and along the west side of the northern leg of Washington Street.

Exchange Street/Washington Street is an unsignalized intersection with three legs and two approaches. The Exchange Street eastbound approach consists of a single 25-foot travel lane. The



stop-controlled southbound approach consists of a single 16-foot left-turn only lane. A crosswalk is provided across Washington Street, but none are provided across Exchange Street in the vicinity of the intersection. Head-in diagonal parking is provided along the south side of Exchange Street, which persists through the intersection, before converting to parallel parking just east of the intersection. Parallel parking is provided along the north side of Exchange Street and along both sides of Washington Street in the vicinity of the intersection.

Florence Street/Main Street is a signalized intersection with three approaches. The Florence Street eastbound approach consists of a 12-foot exclusive left-turn lane and a 12-foot exclusive right-turn lane. The Main Street northbound and southbound approaches each consist of a single 13-foot travel lane. On-street parking is not provided on Florence Street, but 7-foot, one-hour parking lanes are provided along both sides of Main Street. Crosswalks are provided across all legs of the intersection; a refuge island is provided along the crosswalk across Florence Street. The signal phasing consists of a Main Street northbound leading left-turn/through phase, followed by a Main Street northbound/southbound phase, followed by a push-button activated pedestrian phase, followed by a Florence Street eastbound phase.

Main Street/Salem Street/Ferry Street is a signalized intersection with four approaches. The Main Street eastbound approach consists of a 9-foot lane and a 15-foot lane; it is assumed that the 9-foot lane functions as an exclusive left-turn lane. The Salem Street westbound approach consists of one unmarked 20-foot travel lane that functions as two travel lanes. The Ferry Street northbound approach consists of one unmarked 19-foot travel lane that functions as a shared left-turn/through lane and exclusive right-turn lane. The Main Street southbound approach consists of a 17-foot left-turn/through lane and a 19-foot channelized right-turn lane. Crosswalks are provided across all legs of the intersection. One-hour parking is provided along the Ferry Street northbound approach, along the Salem Street eastbound departure, and along the Main Street westbound departure. A bus stop is located along the Main Street southbound approach. The phasing at the intersection consists of a Main Street eastbound leading left-turn/through phase with a Main Street southbound right-turn overlap, followed by a Main Street eastbound/Ferry Street westbound phase during which left turns are permitted, followed by a Ferry Street northbound/Main Street southbound phase. Pedestrians are accommodated with concurrent pedestrian phases.

Centre Street (Route 60)/Main Street is a signalized intersection with four approaches. The Centre Street (Route 60) eastbound approach consists of a 215-foot long, 10-foot wide exclusive left-turn lane, a 12-foot through lane, and a 12-foot shared through/right-turn lane. The Centre Street (Route 60) westbound approach consists of a 300-foot long, 11-foot wide exclusive left-turn lane, a 12-foot through lane, and a 12-foot shared through/right-turn lane. The Main Street northbound approach consists of a 10-foot exclusive left-turn lane, a 12-foot through lane, and a 12-foot shared



through/right-turn lane. The Main Street southbound approach consists of a 60-foot long, 11-foot wide left-turn lane, an 11-foot through lane, and an 11-foot shared through/right-turn lane; the left-turn lane and through lane are separated by a channelizing painted gore island. Crosswalks are provided across all legs of the intersection, and pedestrians are accommodated with concurrent pedestrian phases. On-street parking is not provided in the vicinity of the intersection. The signal phasing at the intersection consists of a Main Street northbound/southbound phase, followed by a Centre Street (Route 60) leading left-turn and through phase, followed by a Centre Street (Route 60) eastbound /westbound phase during which left turns are permitted, followed by an extended all-red phase, during which no vehicles or pedestrians are given the right-of-way. This phase, possibly an exclusive pedestrian phase that was replaced with concurrent phasing but not entirely removed, greatly impacts the efficiency of the traffic signal. Pedestrians were observed crossing the intersection during this phase.

Centre Street (Route 60)/Ferry Street is a signalized intersection with four approaches. The Centre Street (Route 60) eastbound approach consists of a 190-foot long, 10-foot wide left-turn lane, a 12-foot through lane, and a 12-foot shared through/right-turn lane. The Centre Street (Route 60) westbound approach consists of a 100-foot long, 10-foot wide left-turn lane, a 12-foot through lane, and a 12-foot shared through/right-turn lane. The Ferry Street northbound approach is a 21-foot unmarked travel lane which functions as two travel lanes. The Ferry Street southbound approach consists of a 10-foot lane that function as a shared left-turn/through lane and a right-turn lane. Crosswalks are provided across all legs of the intersection. The signal phasing at the intersection consists of just two phases: a Centre Street (Route 60) eastbound/westbound phase and a Ferry Street northbound/southbound phase. Pedestrian phases run concurrently with parallel traffic.

Existing Traffic Condition

EXISTING INTERSECTION VOLUMES

Turning movement counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. and p.m. peak periods (7:00 – 9:00 a.m. and 4:00 – 6:00 p.m., respectively). The TMCs included automobile, truck, pedestrian, and bicycle movements. The traffic volume data for 17 study area intersections were collected on Wednesday, April 29, 2015. The detailed traffic counts are provided in Appendix A (Count Data section). Counts at two intersections were obtained from the 2014 Traffic Impact and Access Study for the proposed CVS Pharmacy on Centre Street at Ferry Street. Signal timing and phasing information for signalized intersections were observed in the field in April 2015

It is standard practice to adjust traffic count data by a seasonal factor to obtain average annual volumes. To account for seasonal variation in Malden traffic, the study team reviewed MassDOT's



weekday seasonal adjustment factor for Group 6 (Urban Arterials, Collectors, and Rural Highways). The seasonal adjustment factor for April is 0.95. Because application of this factor would have yielded volumes 5% lower than the actual counts, the study team conservatively chose not to apply a seasonal adjustment and to use the higher count data for analysis.

Within the two-hour morning data collection period, the one hour with highest overall volumes across all intersections was identified as 7:30 – 8:30 a.m. During the evening peak period, the peak one hour was identified as 5:00 – 6:00 p.m. Figure 2 and Figure 3 present the existing intersection volumes for the weekday a.m. peak hour and weekday p.m. peak hour, respectively.

EXISTING TRAFFIC OPERATIONS

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay incurred by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 9) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2010 Highway Capacity Manual (HCM).

The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during 5% of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only 5% of the time and would typically occur during peak hours.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. **Table 2** displays the intersection level of service criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area, such as downtown Malden. However, LOS E or F is often typical for a stop-controlled minor street that intersects a major roadway



Table 2. Intersection Level of Service Criteria

Level of Service	Average Stopped Delay (seconds/vehicle)	
	Signalized Intersection	Unsignalized Intersection
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50

Table 3 and **Table 4** show the existing a.m. and p.m. intersection capacity analysis results for the study area intersections. Complete Synchro reports are provided in **Appendix A**. (Intersection LOS/Synchro Report section).



Figure 2. Existing (2015) Condition Traffic Volumes, Weekday a.m. Peak Hour

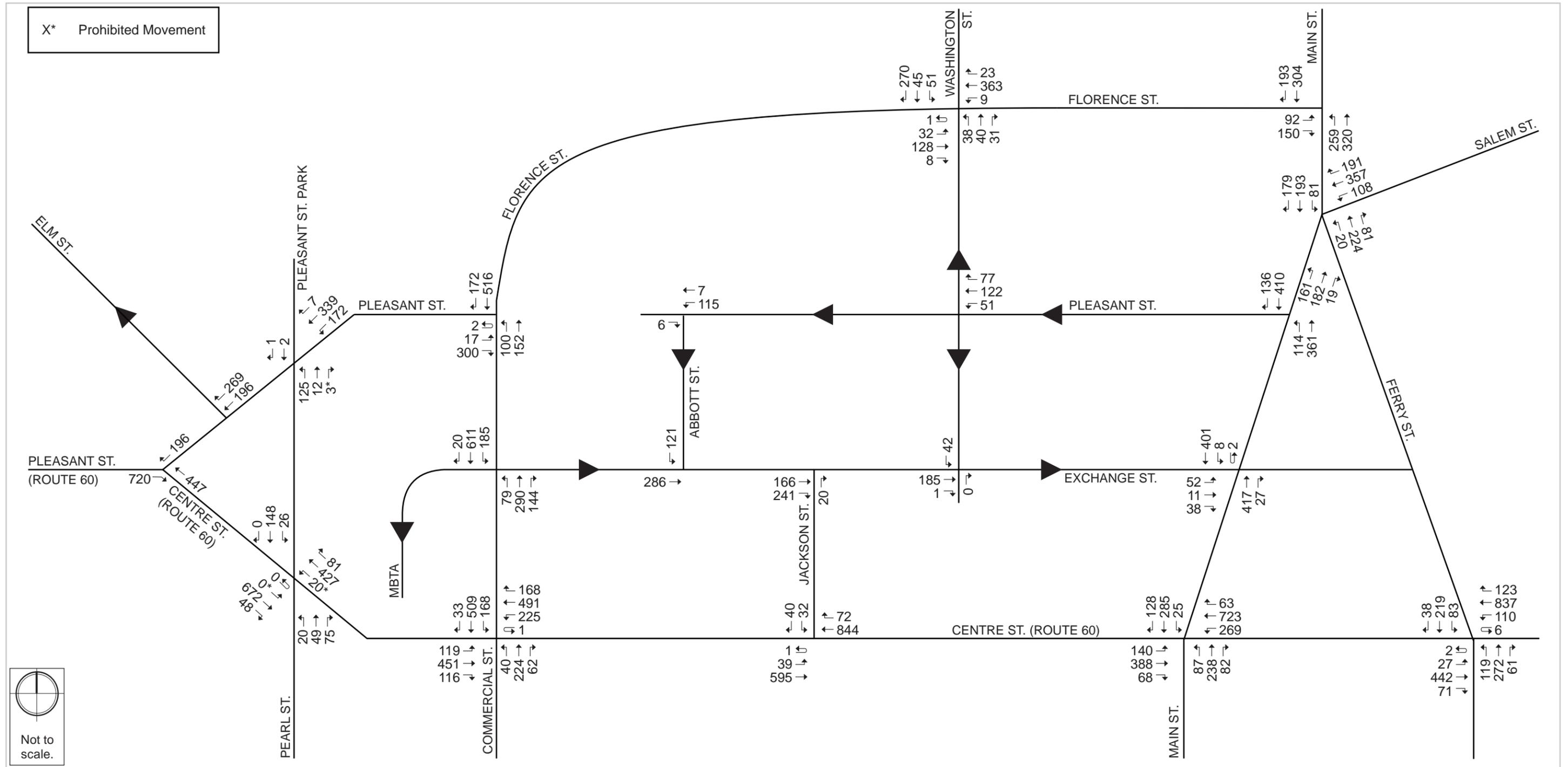




Figure 3. Existing (2015) Condition Traffic Volumes, Weekday p.m. Peak Hour

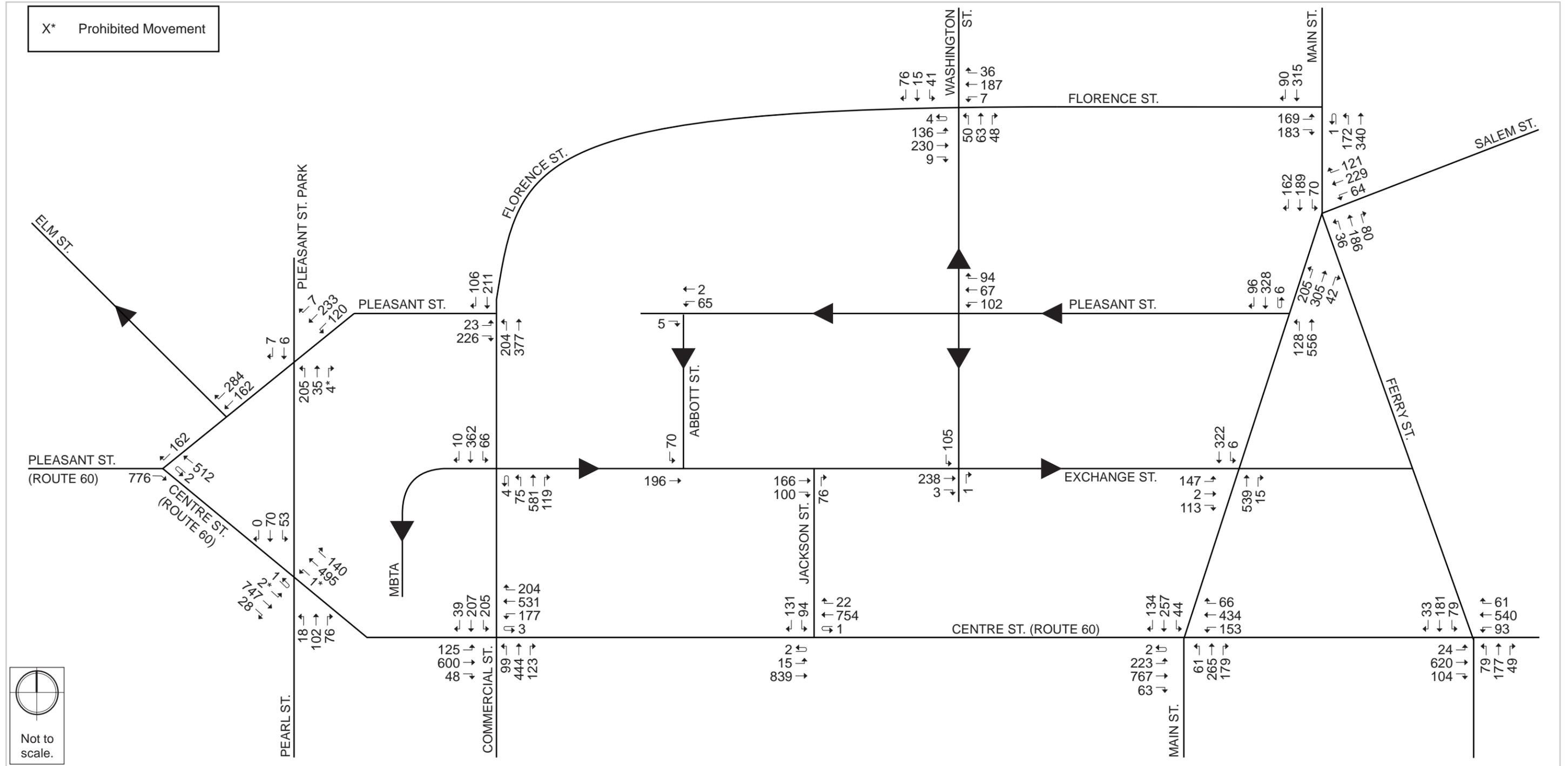




Table 3. Existing (2015) Condition Capacity Analysis Summary, a.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Signalized Intersections				
Centre Street (Route 60)/Pearl Street	B	15.5	0.52	–
Centre EB thru thru/right	B	11.3	0.46	146
Centre WB thru	B	16.4	0.67	227
Centre WB right	A	8.5	0.06	17
Pearl NB left/thru	C	23.9	0.25	60
Pearl NB right	C	21.5	0.05	33
Pearl SB left/thru/right	C	27.1	0.62	#152
Pleasant Street/Florence Street/Commercial Street	C	20.1	0.31	–
Pleasant EB left	C	0.12	0.12	29
Pleasant EB right	D	0.24	0.24	58
Commercial NB left/thru	A	0.20	0.20	47
Commercial SB thru/right	B	0.46	0.46	159
Exchange Street/Commercial Street	B	10.3	0.39	–
Commercial NB left/thru thru/right	A	8.2	0.40	56
Commercial SB left/thru thru/right	B	11.6	0.68	133
Centre Street (Route 60)/Commercial Street	C	22.3	0.84	–
Centre EB left	B	11.5	0.42	71
Centre EB thru thru/right	B	10.3	0.34	140
Centre WB left	E	58.7	0.92	#290
Centre WB thru thru/right	C	20.3	0.57	222
Commercial NB left/thru thru/right	B	19.4	0.42	93
Commercial SB left/thru thru/right	C	25.5	0.75	217
Pleasant Street/Main Street	A	3.5	0.25	–
Main NB left/thru thru	A	3.8	0.30	57
Main SB thru thru/right	A	3.3	0.23	48
Exchange Street/Irving Street/Main Street	B	16.0	0.24	–
Exchange EB left/thru/right	D	38.6	0.27	100
Main NB left/thru/right	B	13.6	0.31	116
Main SB left/thru/right	B	13.1	0.27	113
Unsignalized Intersections				
Pleasant Street/Centre Street (Route 60)	–	–	–	–
Centre EB thru thru	A	0.0	0.23	0
Centre WB thru	A	0.0	0.32	0
Pleasant SB right	B	15.0	0.39	46



Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Pleasant Street/Pearl Street/Pleasant Street Park	–	–	–	–
Pleasant WB left/thru/right	A	3.3	0.13	11
Pearl NB left/thru	E	39.4	0.63	95
Pleasant Street Park SB thru/right	B	13.3	0.02	1
Pleasant Street/Abbott Street	–	–	–	–
Pleasant EB right	A	0.0	0.01	0
Pleasant WB left/thru	A	7.0	0.09	7
Exchange Street/Abbott Street	–	–	–	–
Exchange EB thru	A	0.0	0.20	0
Abbott SB left	B	12.0	0.22	21
Exchange Street/Jackson Street	–	–	–	–
Exchange EB thru/right	A	0.0	0.28	0
Jackson NB right	B	10.3	0.04	3

95th percentile queues do not clear after two cycles. Actual queues may be longer.



Table 4. Existing (2015) Condition Capacity Analysis Summary, p.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Signalized Intersections				
Centre Street (Route 60)/Pearl Street	B	16.0	0.50	–
Centre EB thru thru/right	B	11.9	0.51	165
Centre WB thru	B	14.6	0.61	255
Centre WB right	A	8.8	0.10	26
Pearl NB left/thru	C	28.7	0.51	90
Pearl NB right	C	21.6	0.06	23
Pearl SB left/thru/right	C	32.3	0.70	#105
Pleasant Street/Florence Street/Commercial Street	B	16.7	0.32	–
Pleasant EB left	C	34.5	0.14	35
Pleasant EB right	D	35.5	0.14	66
Commercial NB left/thru	B	10.8	0.43	114
Commercial SB thru/right	B	12.7	0.19	57
Exchange Street/Commercial Street	A	9.2	0.34	–
Commercial NB left/thru thru/right	B	10.1	0.60	113
Commercial SB left/thru thru/right	A	7.7	0.35	59
Centre Street (Route 60)/Commercial Street	D	45.5	1.03	–
Centre EB left	C	22.9	0.61	85
Centre EB thru thru/right	B	18.6	0.44	198
Centre WB left	E	76.9	0.93	#258
Centre WB thru thru/right	C	33.6	0.74	292
Commercial NB left/thru thru/right	E	65.9	0.98	#354
Commercial SB left*	F	122.7	1.12	#256
Commercial SB thru thru/right	C	20.6	0.35	176
Pleasant Street/Main Street	A	3.8	0.31	–
Main NB left/thru thru	A	4.2	0.38	88
Main SB thru thru/right	A	3.2	0.20	36
Exchange Street/Irving Street/Main Street	C	23.4	0.34	–
Exchange EB left/thru/right	E	56.0	0.78	#264
Main NB left/thru/right	B	13.4	0.30	142
Main SB left/thru/right	B	12.9	0.24	87
Unsignalized Intersections				
Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street	–	–	–	–
Centre EB thru thru	A	0.0	0.24	0
Centre WB thru	A	0.0	0.32	0
Pleasant SB right	C	15.7	0.37	43



Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Pleasant Street/Pearl Street/Pleasant Street Park	–	–	–	–
Pleasant WB left/thru/right	A	3.0	0.08	7
Pearl NB left/thru	D	33.6	0.72	138
Pleasant Street Park SB thru/right	B	11.8	0.05	4
Pleasant Street/Abbott Street	–	–	–	–
Pleasant EB right	A	0.0	0.00	0
Pleasant WB left/thru	A	7.2	0.05	4
Exchange Street/Abbott Street	–	–	–	–
Exchange EB thru	A	0.0	0.14	0
Abbott SB left	B	10.5	0.12	11
Exchange Street/Jackson Street	–	–	–	–
Exchange EB thru/right	A	0.0	0.19	0
Jackson NB right	B	10.2	0.11	10

95th percentile queues do not clear after two cycles. Actual queues may be longer.

* Denotes de-facto turning lane.

In the a.m. peak hour, each signalized intersection operates at overall LOS C or better, with all approaches to these intersections operating at LOS D or better, with the exception of the Centre Street (Route 60) westbound left-turn movement at Centre Street (Route 60)/Commercial Street, which operates at LOS E. All approaches to unsignalized study area intersections operate at LOS B or better, with the exception of the Pearl Street northbound approach to the Pleasant Street/Pearl Street intersection, which operates at LOS E.

In the p.m. peak hour, all signalized intersections operate at overall LOS D or better. Several approaches operate at LOS E or LOS F. At the intersection of Centre Street (Route 60)/Commercial Street, the Centre Street westbound left-turn movement operates at LOS E, the Commercial Street northbound approach operates at LOS E, and the Commercial Street southbound approach operates at LOS F. At the intersection of Exchange Street/Main Street, the Exchange Street eastbound approach operates at LOS E. All approaches to the unsignalized intersections operate at LOS A or LOS B, with two exceptions: the Centre Street (Route 60) northwest-bound approach to Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street operates at LOS C, and the Pearl Street northbound approach to the Pleasant Street/Pearl Street intersection operates at LOS D.

Crash History

To better understand safety conditions at the study intersections, the study team obtained the last full three years (2012-2014) of crash data from the Malden Police Department.



In MassDOT District 4, where the Project site is located, the average number of crashes is 0.77 crashes per million entering vehicles (MEV) at signalized intersections and 0.58 crashes per MEV at unsignalized intersections. Typically, intersections with higher than average crash rates should be studied further by the jurisdictional agency. **Table 5** shows the summary information on crashes, including the number per location and the associated crash rates. Crash rate worksheets are provided in Appendix A (Crash Data section).

Table 5. Crash History at Study Area Intersections, 2012-2014

Characteristic	Centre/ Pearl	Pleasant/ Florence/ Commercial	Exchange/ Commercial	Centre/ Commercial	Pleasant/ Main	Exchange/ Main	Pleasant/ Centre/Elm	Pleasant/ Pearl	Pleasant/ Abbott	Exchange/ Abbott	Exchange/ Jackson
Year											
2012	4	0	6	11	2	0	2	1	0	0	0
2013	2	3	5	7	1	1	1	3	0	0	0
2014	5	3	6	10	0	1	1	1	0	2	0
Crash Type											
Angle	3	0	4	15	2	0	1	3	0	1	0
Rear-end	2	2	6	6	0	1	1	0	0	0	0
Single-vehicle	1	2	0	2	0	0	0	0	0	1	0
Sideswipe	1	1	3	0	1	1	1	1	0	0	0
Head-on	0	0	0	0	0	0	0	0	0	0	0
Parked Vehicle	0	0	0	0	0	0	1	0	0	0	0
Pedestrian	1	1	1	3	0	0	0	0	0	0	0
Not Reported	2	0	3	1	0	0	0	1	0	0	0
Weather											
Clear	7	2	10	21	1	2	2	3	0	2	0
Cloudy	3	1	3	2	2	0	1	1	0	0	0
Rain	1	0	2	3	0	0	0	0	0	0	0
Snow	0	0	0	0	0	0	0	0	0	0	0
Not Reported	0	0	2	2	0	0	1	1	0	0	0
Total Crashes	9	6	17	28	3	2	4	5	0	2	0
Crash Rate ¹	0.45	0.42	1.13	0.85	0.23	0.16	0.20	0.64	0.00	0.49	0.00
District Average	0.77 Signalized						0.58 unsignalized				

¹ Crash rate = Crashes per million entering vehicles
 Shading indicates a crash rate higher than district average



Three intersections, as discussed below, exceed the District 4 average crash rate for signalized or unsignalized intersections.

- The signalized intersection of Exchange Street/Commercial Street had a crash rate of 1.13. Of the 17 crashes in the last three years, six were rear-end collisions, four were angle collisions, three were side-swipe collisions, and one involved a pedestrian. The distance between this intersection and the adjacent signalized intersection to the north at Pleasant Street is about 250 feet. The distance to the adjacent intersection to the south at Centre Street (Route 60) is also about 250 feet.
- The signalized intersection of Commercial Street/Centre Street (Route 60) had a crash rate of 0.85. Of the 28 crashes in the last three years, 15 were angle collisions, six were rear end collisions, and three involved pedestrians. In 2014, the signal phasing was revised at this intersection to provide a Centre Street westbound left turn advance phase. This improvement should reduce the number of angle collisions.
- The unsignalized intersection of Pleasant Street/Pearl Street has a crash rate of 0.64. Of the five crashes in the last three years, three were angle collisions, and one was a side-swipe collision. Given that only one crash occurred in 2012 and one in 2014, the three crashes in 2013 may be an anomaly.

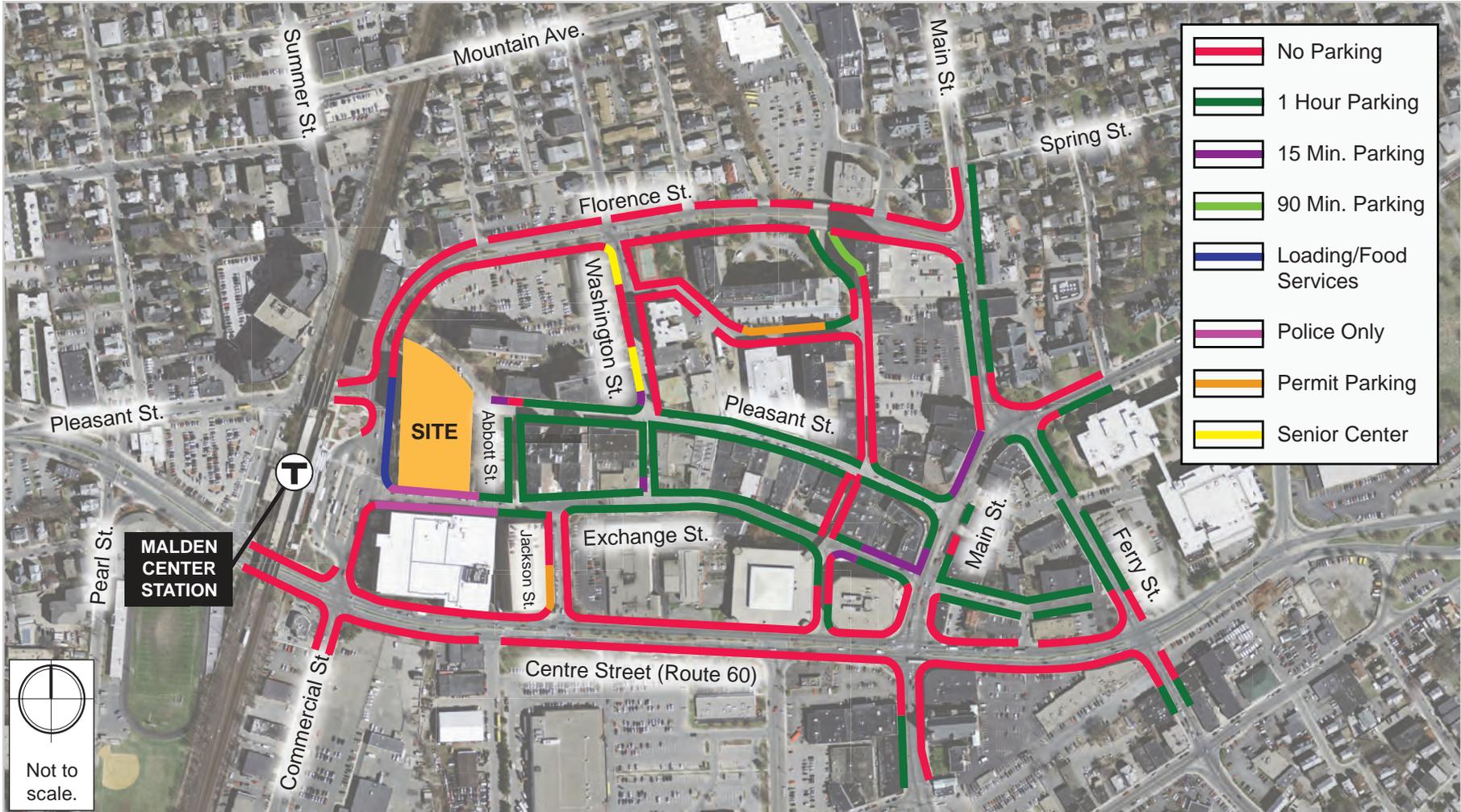
Existing Parking

On the Project site today, underground parking is provided for the Police Station and for City Hall employees. No public parking is provided in this garage.

As shown in **Figure 4**, limited on-street parking is available to the general public adjacent to the Project site. Along Exchange Street between Commercial Street and Abbott Street, most on-street spaces are restricted to police vehicles only. Along Commercial Street, no parking is allowed along the west side of the street. Delivery vehicles and food truck vehicles can park along the east side of Commercial Street between Exchange Street and the Pleasant Street intersection. Directly in front of the City Hall entrance on Pleasant Street, no parking is allowed. One hour parking is available to the public on both sides of Abbott Street.



Figure 4. Existing On-Street Parking





The City of Malden has partnered with the Metropolitan Area Planning Council (MAPC) to prepare a parking study for the downtown business district. The scope of the parking study is to collect and analyze existing parking data in the downtown area, develop recommendations related to operation and regulation of on-street spaces and off-street parking facilities, and develop recommendations for changes to parking standards in the zoning ordinance.

The City released draft findings¹ in June 2015 and a final report is anticipated in September 2015. Draft recommendations from MAPC for on-street parking include: restriping of on-street spaces, simplifying parking regulations, reducing the number of on-street permit parking spaces, and designating loading times. At off-street parking facilities, MAPC's draft recommendations include clearer signage, rationalization of pricing structure, increased advertisement of validation in public garages, and examination of shared-use parking opportunities in private garages.

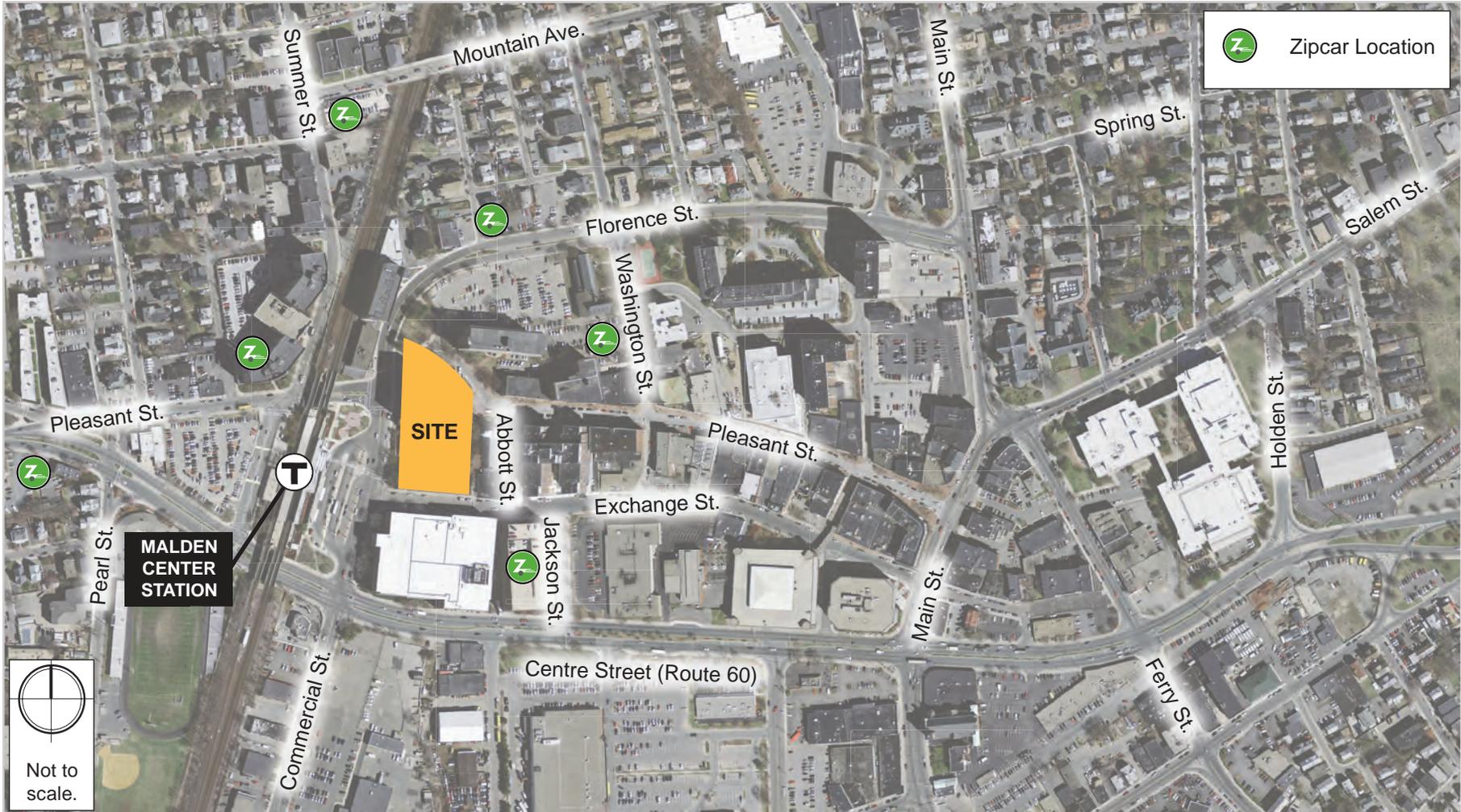
Existing Car Sharing Locations

The increasingly popular car sharing services provide easy access to vehicular transportation for urban residents who do not own cars and employees who commute by transit, but need short-term use of a vehicle. Zipcar, a local car-sharing provider, offers vehicles that are rented on an hourly basis, with vehicle costs (gas, maintenance, insurance, and parking) included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location. Figure 5 shows the nearby Zipcar locations with a total of nine available cars.

¹ "Malden Center Parking Study" (June 15, 2015). Retrieved from <http://www.cityofmalden.org/content/mapc-conducts-downtown-malden-parking-study>. Prepared by Metropolitan Area Planning Council (MAPC) for the City of Malden.



Figure 5. Car Sharing Locations





Existing Public Transportation

Downtown Malden is served by a wide variety of MBTA public transportation options, including the Orange Line, Haverhill commuter rail, and many bus routes. The Project site is located within 1/4-mile (5-minute walk) from the services summarized in **Table 6** and mapped in Figure 6. The transit-oriented nature of the Project site will allow residents to conveniently choose to forego auto ownership and to rely on public transportation for many of their daily trips.

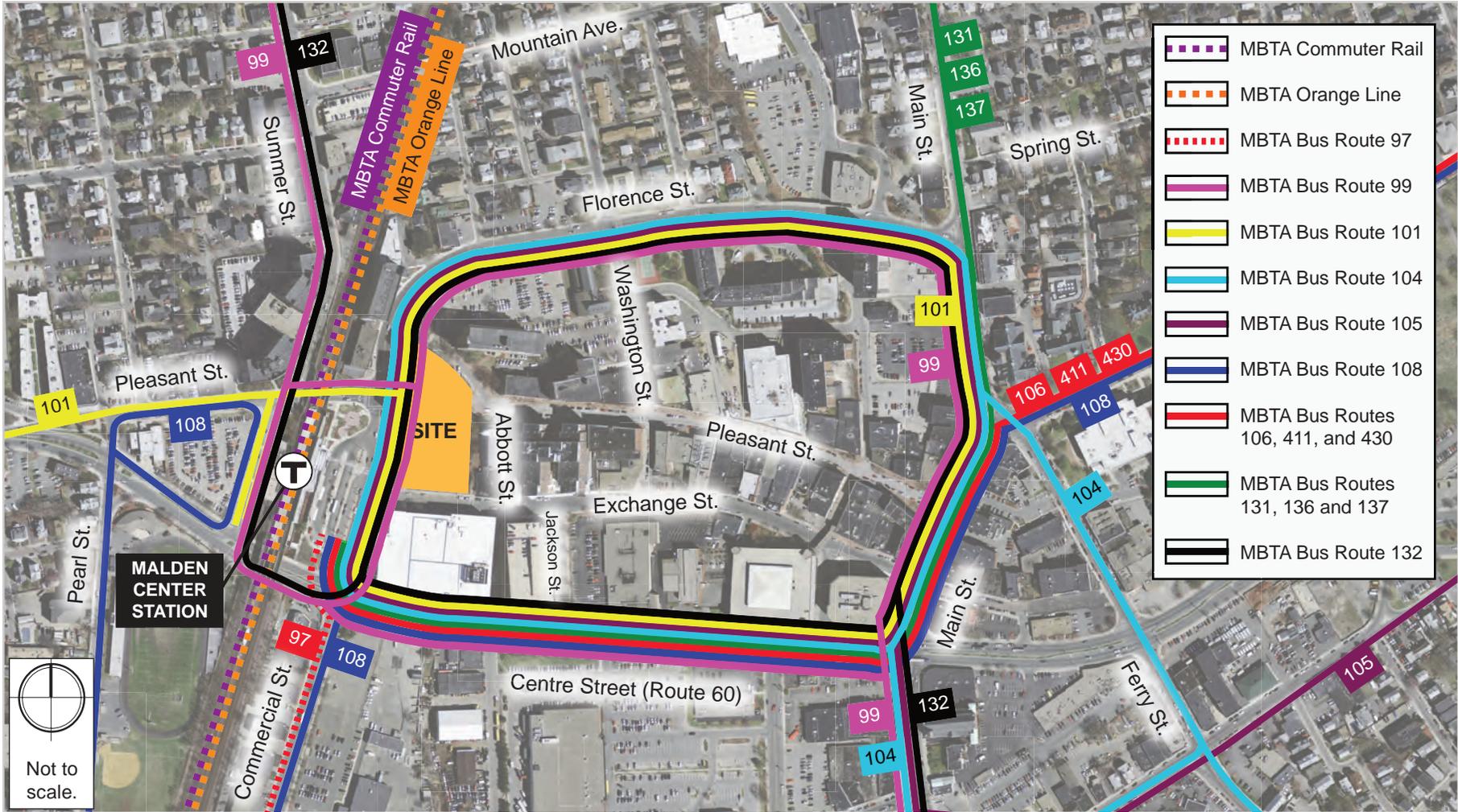
Table 6. MBTA Transit Service in the Study Area

Route	Description	Peak Hour headway (minutes) ¹
MBTA Commuter Rail	Haverhill to North Station	30-73
MBTA Orange Line	Oak Grove–Forest Hills	5
Route 97	Malden Center Station - Wellington Station	30
Route 99	Boston Regional Medical Center- Wellington Station	40
Route 101	Malden Center Station - Sullivan Square Station	6-20
Route 104	Malden Center Station - Sullivan Square Station	14-30
Route 105	Malden Center Station - Sullivan Square Station	30-65
Route 106	Lebanon Street, Malden/Franklin Square-Wellington Station	20-30
Route 108	Linden Square - Wellington Station	10-30
Route 131	Melrose Highlands - Malden Center Station	20
Route 132	Redstone Shopping Center - Malden Station	30
Route 136	Reading Depot - Malden Station	30-45
Route 137	Reading Depot - Malden Station	30-60
Route 411	Malden Center Station - Revere/Jack Satter House	25-60
Route 430	Saugus Center - Malden Center Station	35-40

Headway is the time between vehicles. Source MBTA 2015.



Figure 6. Existing Public Transportation





Existing Pedestrian and Bicycle Conditions

The Project study area is equipped with adequate pedestrian accommodations and some bicycle accommodations. Sidewalks of sufficient width are generally provided along both sides of every study area roadway. Crosswalks are provided across one, usually both, legs of signalized intersections. In December 2013, Malden implemented a pedestrian wayfinding signage program to guide pedestrians and encourage pedestrian activity in Malden Center and throughout Malden. A bike lane is provided on Pleasant Street, but bicycle accommodations are generally not provided in the study area.

For this study, pedestrian crosswalk counts and bicycle turning movement counts were collected or compiled from available data, as shown in **Figure 7** and **Figure 8**, respectively. Note that pedestrian and bicycle data at two of the supplemental intersections were not available.

Pedestrian activity is very high between Malden Center Station and the surrounding roadways. Pedestrians crossing Commercial Street at Exchange Street exceed 400 per hour during both the a.m. and p.m. peak hours. Along Exchange Street, about 150-200 pedestrians per hour cross at Abbott Street, and along Pleasant Street less than 100 pedestrians per hour cross at Abbott Street.

Bicycle traffic volumes are very low; fewer than ten bicycles per hour were observed at study intersections during the a.m. and p.m. peak hours.

Existing Loading and Service Activity

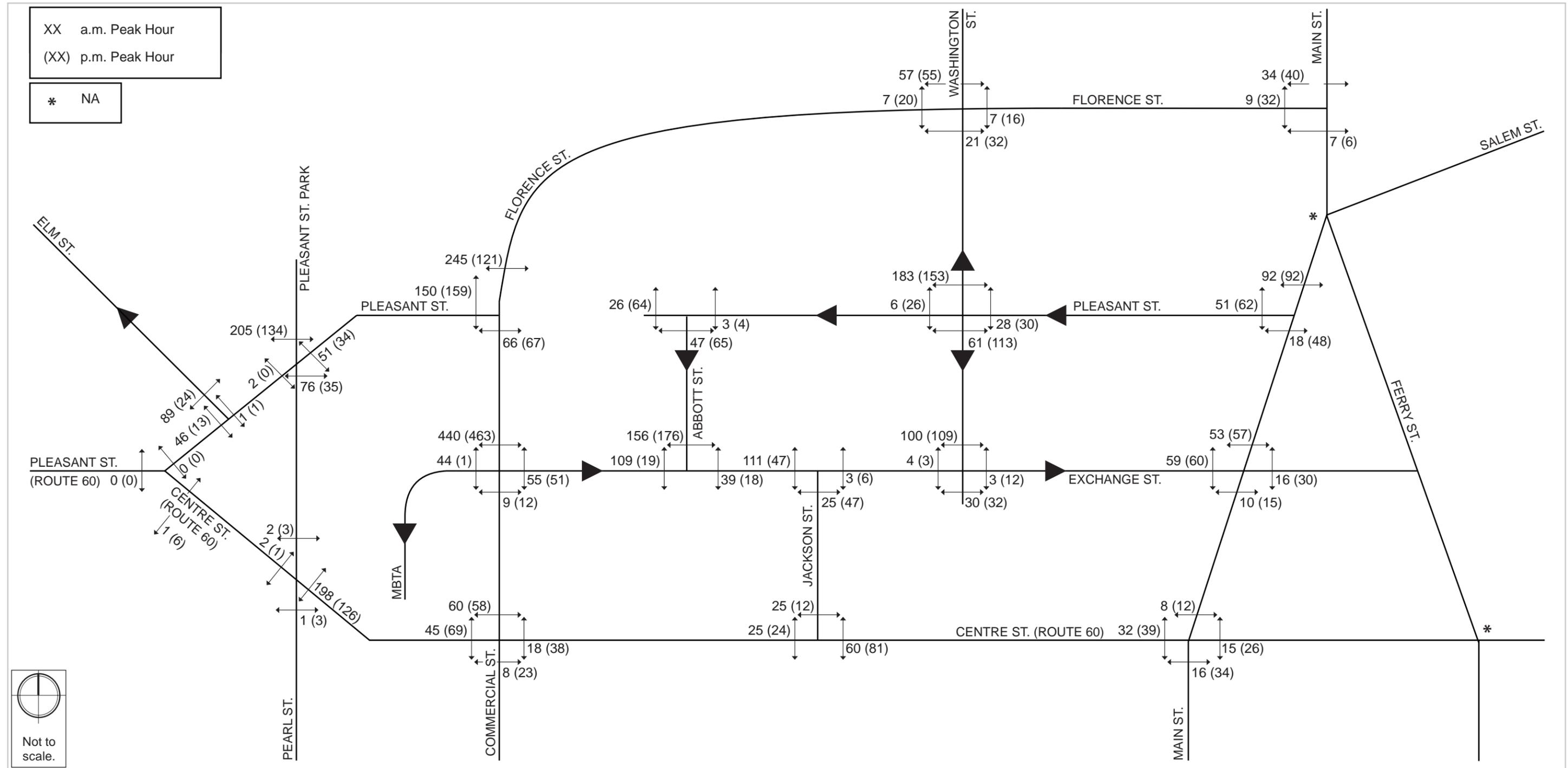
Currently, loading and delivery activity for City Hall and the Police Station occurs along the east side of Commercial Street and at an interior loading dock on Exchange Street. Access to the loading dock is via the garage door near Commercial Street.

Existing Trip Activity at the Project Site

Today, the Malden Government Center complex generates a significant amount of travel activity related to the Police Station and City Hall employees and visitors. With Project completion, both the Police Station and City Hall offices will be relocated. The Police Station will move to Eastern Avenue. The office tenant for the Project will be the City of Malden, which will relocate City Hall into this space once the City converts the shell office space for its use. The First Church of Malden, which will relocate off-site, does not generate significant traffic on weekdays. (The First Church site will be combined into the Project site.)



Figure 7. Existing (2015) Condition Pedestrian Volumes, Weekday a.m. and p.m. Peak Hours





Understanding this existing trip activity is a key factor in estimating the net new peak hour vehicle trips for the Project. The 2020 Build Condition section presents a discussion of future Project trips.

POLICE STATION

Representatives from the study team and the Police Department met to review vehicle activity associated with the Police Station. Based on information made available to the team, a profile of hour by hour vehicle trip generation was developed for the station. The results were used to quantify and reassign the station's traffic volumes (in the Build Condition) to account for the station relocation. The trip data for the police station is presented in **Appendix A**. (Trip Generation section).

CITY HALL

To understand the commuting characteristics of City Hall employees, an on-line transportation survey was developed by the study team and, with support of the Malden Redevelopment Authority, sent to 124 employees, who received an email link to the survey. The survey was available for completion between July 28, 2015, and August 7, 2015. Survey questions were related to travel mode shares, residence zip code, and times of arrival/departure at City Hall. At the end of the survey period, 72 valid responses had been obtained - a response rate of 58%. Based on the valid responses, key commuting characteristics include:

- A majority of City Hall employees, 61%, live in Malden;
- The average commute distance is about 4.8 miles;
- The longest commute is 49.5 miles;
- Employees' travel mode shares are:
 - 92% drive alone;
 - 2% carpool;
 - 3% ride public transit, and
 - 3% walk.
- Of those who drive:
 - 64% park at City Hall garage;
 - 34% park at Jackson Street garage; and
 - 2% park on-street.
- No employee pays for parking.

As part of the Project, the City Hall garage will be eliminated, and on-site parking will no longer be available for City employees. The survey results were used to reassign traffic volumes under the Build Condition (presented later in the report) to account for this change. By understanding the commuting habits revealed in this survey, the City will also be able to better manage future



employee parking activity. The employee survey results are presented in **Appendix A**. (Employee Survey section).

2020 No-Build Condition

For transportation impact analyses, it is standard practice to evaluate two future conditions: a No-Build Condition (without the proposed project) and a Build Condition (if the project is built). Typically, these conditions are projected to a future date five years from the Existing (2015) Condition year. For this study, Year 2020 has been designated as the future year.

The traffic volumes under the No-Build Condition are independent of the proposed Project and include existing traffic plus new traffic resulting from general background growth and identified new projects in the area.

Background Traffic Growth and Other Developments

A general background growth rate accounts for changes in demographics, auto usage, auto ownership, and non-specific, minor changes in land use within the study area. A 1% annual growth rate was applied to the existing intersection volumes over five years to account for background growth by 2020.

As requested by the Malden Planning Department, traffic increases from the following projects have been incorporated into future conditions (in addition to the growth rate):

- **18 Jackson Street (formerly known as 100 & 150 Exchange Street)** – This project includes the demolition of an existing retail building, which was formerly Mal’s Supermarket and Super Fitness Health Club, and construction of new buildings containing 210 residential apartments and 1,950 sf of retail space. This site is bounded by another building to the east, Jackson Street to the west, Exchange Street to the north, and Centre Street to the south. New project trips were obtained from the associated traffic impact study.
- **480 Main at Malden Square** - The project, currently under construction, will include 195 new residential units and about 9,600 sf of ground floor retail along Main Street. The six-story development will replace an existing surface parking lot. The site is bounded by Main Street to the east, Dartmouth Street to the west, Florence Street to the north, and Pleasant Street to the south. New project trips were obtained from the associated traffic impact study.
- **180 Eastern Avenue** – This project includes construction of 86 residential apartment units on an existing surface parking lot, located near the intersection of Centre Street (Route 60)



and Eastern Avenue. New project trips were obtained from the associated traffic impact study.

- **32-54 Ferry Street** – A new CVS Pharmacy is planned for 32-54 Ferry Street, near the intersection with Centre Street (Route 60). The vacant building on the site, formerly Ruderman’s Furniture Store, will be demolished and a new 13,300 sf CVS Pharmacy, with supporting drive-through prescription facility, will be constructed. New project trips were obtained from the associated traffic impact study.
- **46 Pleasant Street** – At the corner of Pleasant Street and Middlesex Street, this former Bank of America branch office, which closed in 2012, will be redeveloped into a new restaurant called Bling. It is expected that this restaurant will have 100 seats in the main section plus 25 private rooms, which can be rented for karaoke, sports television events, and business activities. Because no traffic impact study was available for this redevelopment, new project trips were based on the Institute of Transportation Engineer’s (ITE) Trip Generation Manual, 9th Edition, for the restaurant land use code (LUC 931) with 18,000 sf of space.
- **86 Pleasant Street** – This existing 30,000 sf building is to be redeveloped into a Boda Borg, a reality-gaming entertainment venue where visitors experience a real-world gaming environment called questing. With seven locations in Sweden and one in Ireland, this will be the first Boda Borg in the United States. No traffic impact study was available for this redevelopment. Because this unique land use category does not have a comparable match in the ITE Trip Generation Manual, new trips were based on a recreational community center (LUC 495), a category with a reasonably similar activity profile.
- **126-150 Pleasant Street** – A proposed project consisting of 69 residential units and 6,500 sf of commercial/retail space is located at the existing Masonic Lodge, abutting Pleasant, Exchange, and Washington streets. The existing site’s recent uses also include a tailor shop, three small restaurants, offices, and other retail locations. The proposed project is expected to generate fewer vehicle trips than the site’s existing uses. New project trips were obtained from the associated traffic impact study.

No-Build Condition traffic volumes, which incorporate the background growth rate and additional trips associated with the above projects, are shown in Figure 9 and Figure 10.

No-Build Traffic Operations

The proponents of most of the background projects listed above were required by the City to evaluate traffic mitigation measures, such as traffic signal optimization and coordination. For the No-Build (2020) Condition traffic model, the study team has assumed that signal timing at each signalized study area intersection will be optimized (i.e. signal timing reflecting the least delay for all drivers)



through these mitigation efforts. However, the team did not incorporate traffic signal coordination into the No-Build traffic model because full coordination of signals in the study area would require significant signal equipment upgrades, changes to signal cycle lengths, and phasing changes. The traffic signal timings were optimized individually based on the estimated No-Build (2020) traffic volumes.

Traffic operations analysis results for the No-Build (2020) Condition are shown in **Table 7** and **Table 8**.

In the a.m. peak hour, all signalized intersections will operate at LOS C or better. At the intersection of Centre Street (Route 60)/Exchange Street, the Centre Street eastbound left-turn lane will worsen from LOS E to LOS F. All approaches at the unsignalized intersections will remain at the same level of service as under the Existing (2015) Condition, with the exception of the Pleasant Street southbound approach to the intersection of Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street, which will worsen from LOS B to LOS C.

In the p.m. peak hour, each signalized intersection will operate at LOS C or better, with the exception of the intersection of Centre Street (Route 60)/Commercial Street, which will worsen from LOS D to LOS E. At that intersection, the Centre Street eastbound left-turn lane will worsen from LOS C to LOS F; the Centre Street westbound left-turn lane will worsen from LOS E to LOS F; and the Exchange Street northbound approach will worsen from LOS E to LOS F. Approaches to the other signalized intersections all operate at LOS D or better. Operations at unsignalized intersections will continue at the same LOS as under the Existing (2015) Condition, with the exception of the Pearl Street northbound approach to the intersection of Pleasant Street/Pearl Street, which will worsen from LOS D to LOS E.



Figure 9. No-Build (2020) Condition Traffic Volumes, Weekday a.m. Peak Hour

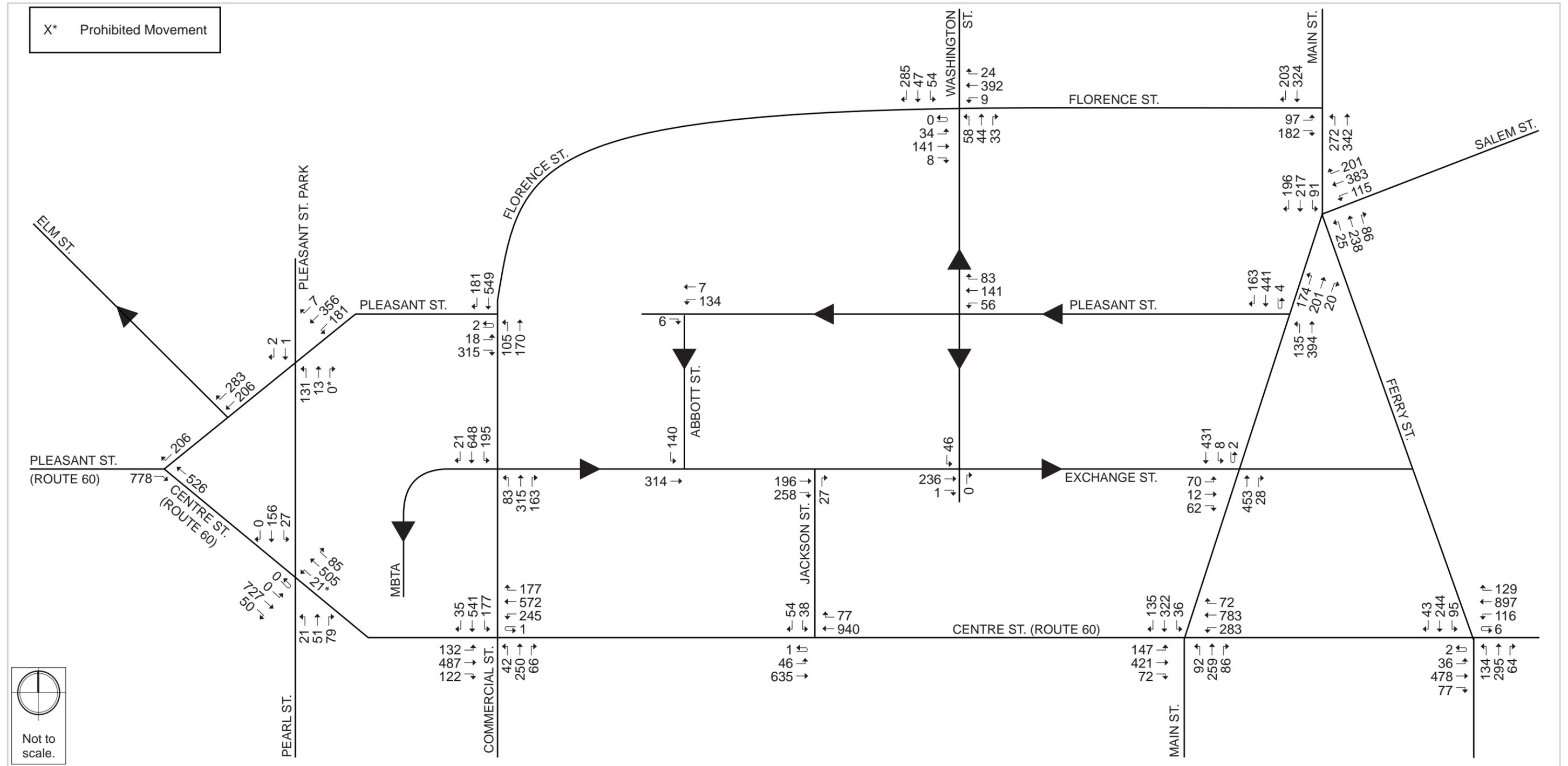




Figure 10. No-Build (2020) Condition Traffic Volumes, Weekday p.m. Peak Hour

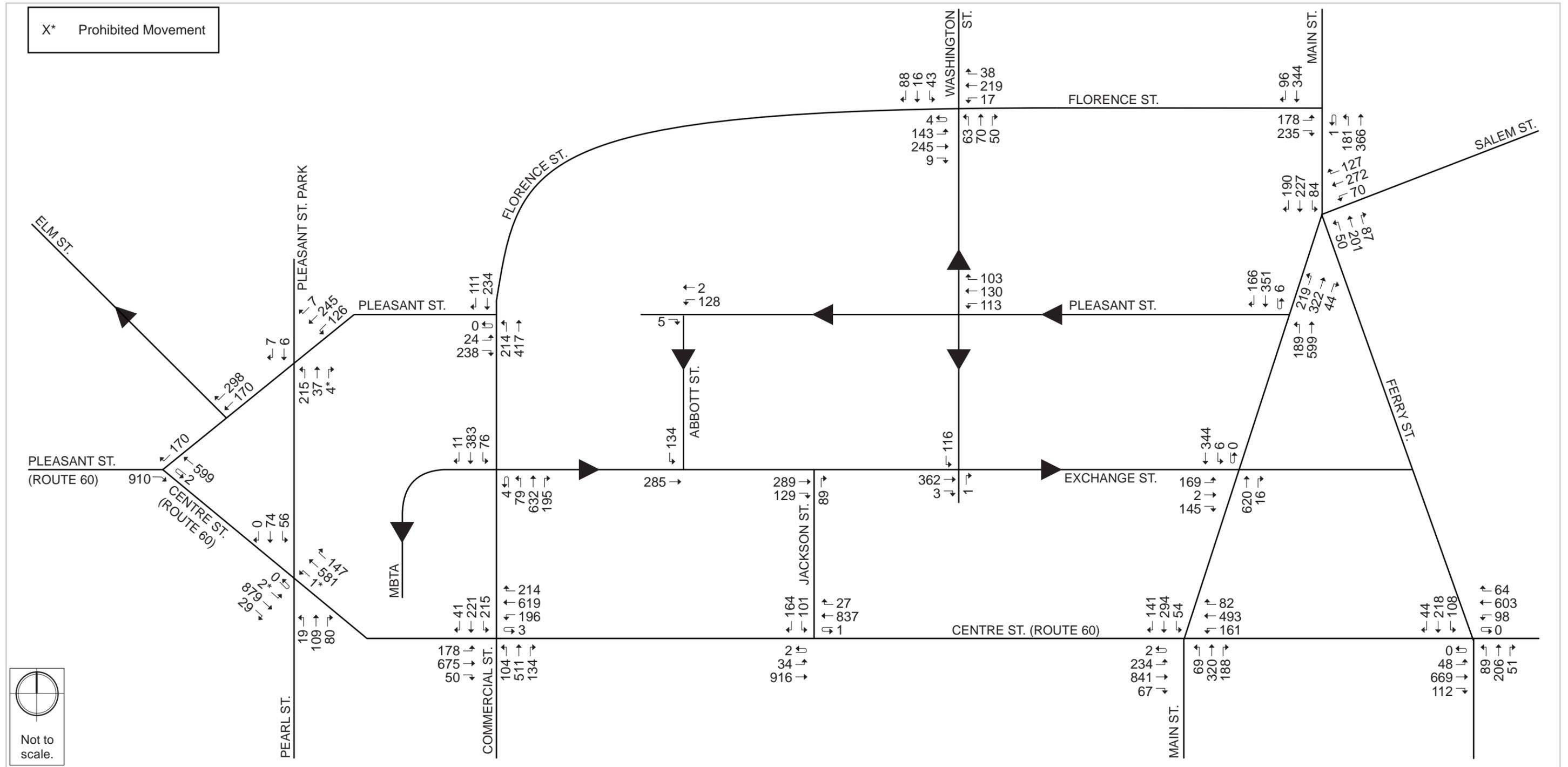




Table 7. No-Build (2020) Condition Capacity Analysis Summary, a.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Signalized Intersections				
Centre Street (Route 60)/Pearl Street	B	17.3	0.60	–
Centre EB thru thru/right	B	11.7	0.49	161
Centre WB thru	C	20.7	0.79	288
Centre WB right	A	8.5	0.07	17
Pearl NB left/thru	C	24.1	0.26	62
Pearl NB right	C	21.5	0.05	33
Pearl SB left/thru/right	C	28.6	0.66	#165
Pleasant Street/Florence Street/Commercial Street	C	25.3	0.38	–
Pleasant EB left	C	23.9	0.06	25
Pleasant EB right	C	26.4	0.25	50
Commercial NB left/thru	B	15.6	0.32	71
Commercial SB thru/right	C	28.5	0.71	227
Exchange Street/Commercial Street	B	11.3	0.43	–
Commercial NB left/thru thru/right	A	8.5	0.44	62
Commercial SB left/thru thru/right	B	13.2	0.74	151
Centre Street (Route 60)/Commercial Street	C	32.1	1.01	–
Centre EB left	B	16.0	0.57	#92
Centre EB thru thru/right	B	12.9	0.40	169
Centre WB left	F	130.3	1.15	#343
Centre WB thru thru/right	C	26.2	0.72	283
Commercial NB left/thru thru/right	C	21.1	0.50	111
Commercial SB left/thru thru/right	C	29.3	0.81	245
Pleasant Street/Main Street	A	3.8	0.29	–
Main NB left/thru thru	A	4.4	0.35	66
Main SB thru thru/right	A	3.4	0.25	52
Exchange Street/Irving Street/Main Street	B	18.7	0.29	–
Exchange EB left/thru/right	D	36.3	0.33	129
Main NB left/thru/right	B	16.3	0.36	140
Main SB left/thru/right	B	15.7	0.31	133
Unsignalized Intersections				
Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street	–	–	–	–
Centre EB thru thru	A	0.0	0.25	0
Centre WB thru	A	0.0	0.36	0
Pleasant SB right	C	17.2	0.45	59



Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Pleasant Street/Pearl Street/Pleasant Street Park	–	–	–	–
Pleasant WB left/thru/right	A	3.4	0.13	11
Pearl NB left/thru	E	48.9	0.71	118
Pleasant Street Park SB thru/right	B	13.7	0.02	1
Pleasant Street/Abbott Street	–	–	–	–
Pleasant EB right	A	0.0	0.01	0
Pleasant WB left/thru	A	7.1	0.10	9
Exchange Street/Abbott Street	–	–	–	–
Exchange EB thru	A	0.0	0.22	0
Abbott SB left	B	12.8	0.27	27
Exchange Street/Jackson Street	–	–	–	–
Exchange EB thru/right	A	0.0	0.31	0
Jackson NB right	B	10.7	0.06	4

95th percentile queues do not clear after two cycles. Actual queues may be longer.
 Grey shading indicates that LOS worsens to LOS E or F, as compared to the Existing Condition.



Table 8. No-Build (2020) Condition Capacity Analysis Summary, p.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Signalized Intersections				
Centre Street (Route 60)/Pearl Street	B	17.7	0.58	–
Centre EB thru thru/right	B	13.1	0.60	204
Centre WB thru	B	17.3	0.72	#325
Centre WB right	A	8.8	0.10	27
Pearl NB left/thru	C	29.6	0.54	95
Pearl NB right	C	21.6	0.07	23
Pearl SB left/thru/right	D	38.9	0.77	#118
Pleasant Street/Florence Street/Commercial Street	C	21.5	0.39	–
Pleasant EB left	C	24.1	0.06	30
Pleasant EB right	C	25.7	0.18	55
Commercial NB left/thru	C	20.4	0.62	172
Commercial SB thru/right	C	20.4	0.28	85
Exchange Street/Commercial Street	B	10.4	0.39	–
Commercial NB left/thru thru/right	B	11.6	0.69	137
Commercial SB left/thru thru/right	A	8.1	0.40	65
Centre Street (Route 60)/Commercial Street	E	61.1	1.06	–
Centre EB left	F	83.3	0.99	#217
Centre EB thru thru/right	B	19.4	0.49	227
Centre WB left	F	133.2	1.12	#302
Centre WB thru thru/right	D	39.5	0.86	349
Commercial NB left/thru thru/right	F	103.5	1.11	#420
Commercial SB left*	F	106.6	1.08	#269
Commercial SB thru thru/right	C	20.9	0.38	188
Pleasant Street/Main Street	A	4.4	0.40	–
Main NB left/thru thru	A	5.1	0.49	118
Main SB thru thru/right	A	3.4	0.24	38
Exchange Street/Irving Street/Main Street	C	26.7	0.34	–
Exchange EB left/thru/right	C	29.2	0.50	239
Main NB left/thru/right	C	26.6	0.50	236
Main SB left/thru/right	C	24.8	0.37	133
Unsignalized Intersections				
Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street	–	–	–	–
Centre EB thru thru	A	0.0	0.24	0
Centre WB thru	A	0.0	0.34	0
Pleasant SB right	C	18.7	0.44	56



Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Pleasant Street/Pearl Street/Pleasant Street Park	–	–	–	–
Pleasant WB left/thru/right	A	3.0	0.09	7
Pearl NB left/thru	E	41.4	0.79	169
Pleasant Street Park SB thru/right	B	12.0	0.05	4
Pleasant Street/Abbott Street	–	–	–	–
Pleasant EB right	A	0.0	0.00	0
Pleasant WB left/thru	A	7.4	0.10	8
Exchange Street/Abbott Street	–	–	–	–
Exchange EB thru	A	0.0	0.20	0
Abbott SB left	B	12.6	0.27	28
Exchange Street/Jackson Street	–	–	–	–
Exchange EB thru/right	A	0.0	0.19	0
Jackson NB right	B	10.2	0.11	10

95th percentile queues do not clear after two cycles. Actual queues may be longer.

* Denotes de-facto turning lane.

Grey shading indicates that LOS worsens to LOS E or F, as compared to the Existing Condition.



2020 Build Condition

Under the Build Condition, intersections volumes are typically the sum of No-Build Condition volumes and new volumes generated by the Project. For this Project, however, several other factors were incorporated into the Build Condition volumes, including a new street, new roadway circulation, and the relocation of the Police Station and City Hall offices.

Site Access and Circulation

The site plan for the proposed Project is shown in **Figure 11**.

Overall, the Project will have 310 – 320 residential units, 20,000 – 21,733 gsf of retail, and 44,000 – 46,000 gsf of office. With the reintroduction of Pleasant Street to the intersection with Commercial Street, the Project will have two distinct block areas. The “south block” (south of Pleasant Street) will include 75% - 80% of the residential units and about 90% of the retail space. The “north block” (north of Pleasant Street) will include the office space, 20% - 25% of the residential units, and about 10% of the retail space. (See Table 1 for a summary of the Project land uses.)

Between 320 and 340 parking spaces will be located in two underground garage levels on the south block with one garage driveway on Exchange Street and one on Abbott Street. About 237 parking spaces (0.75 spaces/unit x 315 units) will be allocated to residents and the remainder will serve the retail space. Internally, the two garage levels will not be connected.

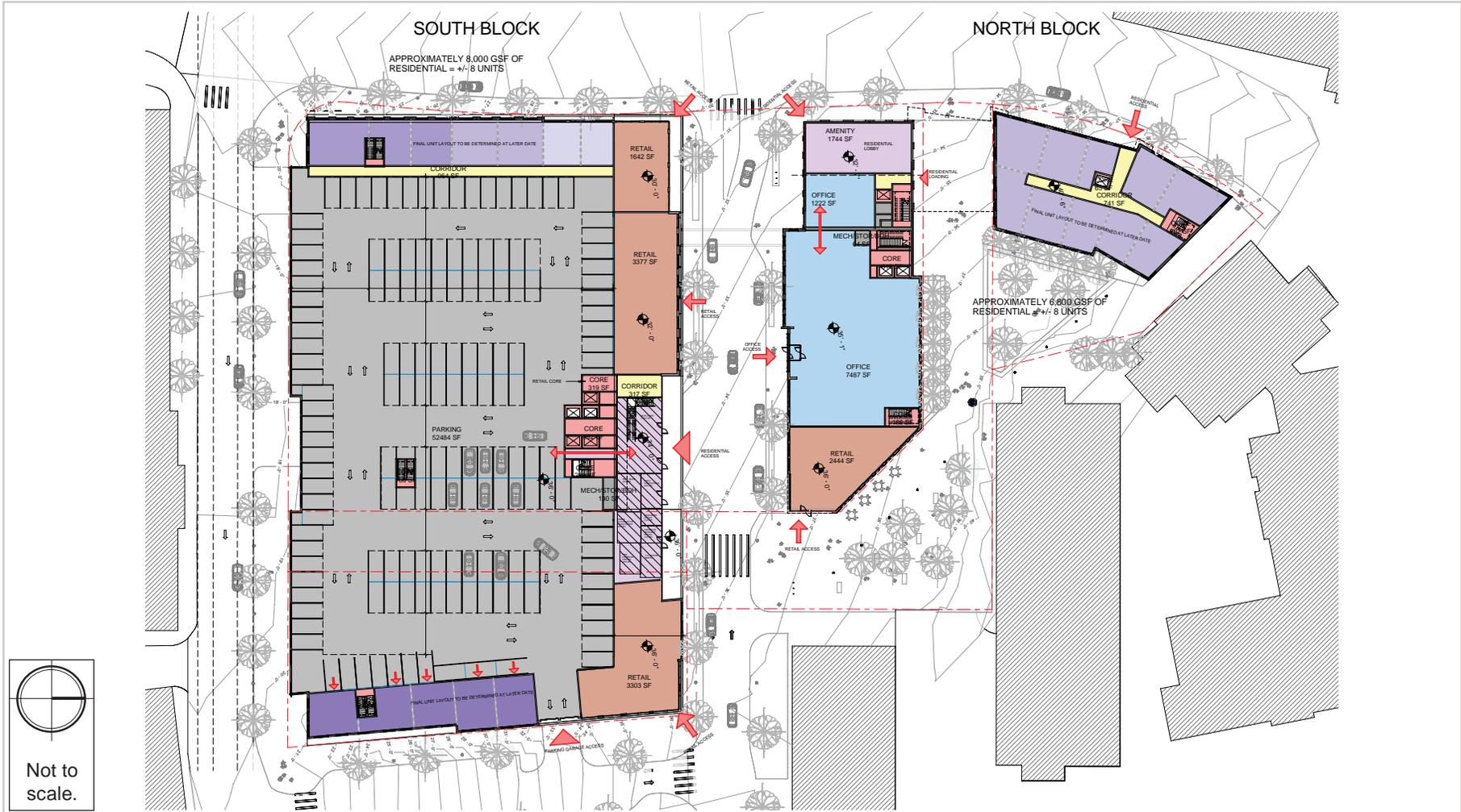
The main pedestrian entrance to the south block residential lobby will be located mid-block on the south side of Pleasant Street. Street level retail on the south block will have individual doorways on Pleasant Street. On the north block, the office lobby will have a main entrance on the north side of Pleasant Street. The residential space on the north block will have two lobbies – one on Pleasant Street and one on Florence Street. The residential areas on the north and south blocks will be connected via a pedestrian bridge over Pleasant Street, allowing residents from the north block interior access to the parking garage on the south block.

New Pleasant Street Roadway Link

As a result of the Project, Pleasant Street east of City Hall will be reconnected to the Commercial Street/Florence Street intersection, allowing better vehicular and pedestrian circulation in the downtown area and improving the connectivity between the eastern and western segments of the Pleasant Street corridor.



Figure 11. *Jefferson at Malden Center Site Plan*





The connection of the eastern segment of Pleasant Street to the intersection of Pleasant Street/Commercial Street/Florence Street will create new routing options for drivers as they travel through downtown Malden. It is anticipated that the new Pleasant Street link will provide travel in both directions between Abbott Street and Commercial Street/Florence Street and that Pleasant Street will remain one-way westbound (current condition) between Main Street and Abbott Street.

It is also anticipated that Abbott Street will remain one-way southbound. Designating Abbott Street as two-way is not recommended because 1) on-street parking would need to be removed to provide an additional travel lane, 2) the curb extensions at both ends of Abbott Street would need to be removed², and, 3) the uphill grade toward Pleasant Street would hinder sight distance for northbound drivers and make turning maneuvers more difficult. The City may want to consider a study of the north/south connecting streets between Exchange Street and Pleasant Street (Abbott Street, Washington Street, and Middlesex Street) to assess if the existing travel patterns are still the most sensible for the area.

Some of the traffic volumes forecasted under the No-Build Condition will change travel paths when Pleasant Street is reconnected. The first step in estimating the Build Condition volumes was to reassign No-Build volumes to reflect the availability of the new two-way Pleasant Street link. The drivers who are most likely to use the new Pleasant Street westbound link are:

- Visitors and employees who today are already in the Pleasant Street area and ultimately want to travel toward points further west on Pleasant Street and Route 60.
- Some Florence Street drivers who today enter the study area from Salem Street westbound and ultimately want to travel toward points further west on Pleasant Street and Route 60. Today, some of these drivers likely turn right from Salem Street onto Main Street northbound, turn left onto Florence Street, and turn right onto Pleasant Street westbound.
- Some Centre Street (Route 60) drivers who today enter the area from Salem Street westbound and ultimately want to travel toward points further west on Pleasant Street and Route 60. Today, some of these drivers likely turn left from Salem Street onto Main Street southbound, and turn right onto Centre Street (Route 60).

The drivers who are most likely to use the new Pleasant Street eastbound link between Commercial Street/Florence Street and Abbott Street are:

² Note that the City recently completed streetscape improvements along the one-way westbound segment Pleasant Street, including new sidewalks, trees, and street furniture, a new bicycle lane, curb extensions for safer pedestrian crossings, and painted parking space lines to clearly designate spaces.



- Some drivers who today travel through the Pleasant Street/Commercial Street/Florence Street intersection (Pleasant Street eastbound right and Florence Street southbound through moves) are destined to the Jackson Street garage and points east along Exchange Street. Today, these drivers ultimately turn left onto Exchange Street to reach the garage or continue east on Exchange Street. Some of these drivers will likely divert onto the new eastbound link on Pleasant Street, turn right onto Abbott Street, and left onto Exchange Street.
- A small number of drivers from Commercial Street northbound will turn right onto the new Pleasant Street eastbound link to access the Project's drop-off/pick-up area and on-street parking along the west side of Abbott Street.

The reassigned No-Build traffic volumes are shown in **Figure 12** and **Figure 13** for the a.m. and p.m. peak hours, respectively. The availability of the new Pleasant Street roadway link will also affect the travel paths of new Project trips, as discussed in following sections.

Project Trip Generation

Trip generation is a complex, multi-step process that produces an estimate of vehicle trips, transit trips, walk trips, and bicycle trips associated with a proposed development and a specific land use program. A project's location and proximity to different travel modes determines how people will travel to and from a project site.

EXISTING SITE

When assessing a site with existing, active land uses, it is standard practice to estimate existing trips and subtract those trips from the projected new future trips. The result of this process yields "net new" trips that become the basis for traffic analysis. As described previously, with the Project, the Malden Police Station will be permanently relocated to Eastern Avenue. The office tenant for the Project will be the City of Malden, which will relocate City Hall into this space once the City converts the shell office space for its use and the First Church of Malden will relocate off-site.

Under the Build Condition, many vehicle trips associated with the current police station will no longer travel through study area intersections. A reassignment of police vehicle trips was conducted to reflect the new station location on Eastern Avenue, outside of the Project study area.

Because the anticipated tenant of the Project office space is the City of Malden, the net change overall in vehicle activity associated with City Hall will be zero, although the distribution of these trips on local streets will change due to the removal of the City Hall employee parking garage. It is anticipated that City Hall employees who currently park at City Hall will, under the Build Condition, park at the Jackson Street garage. (While it is possible that other parking locations will

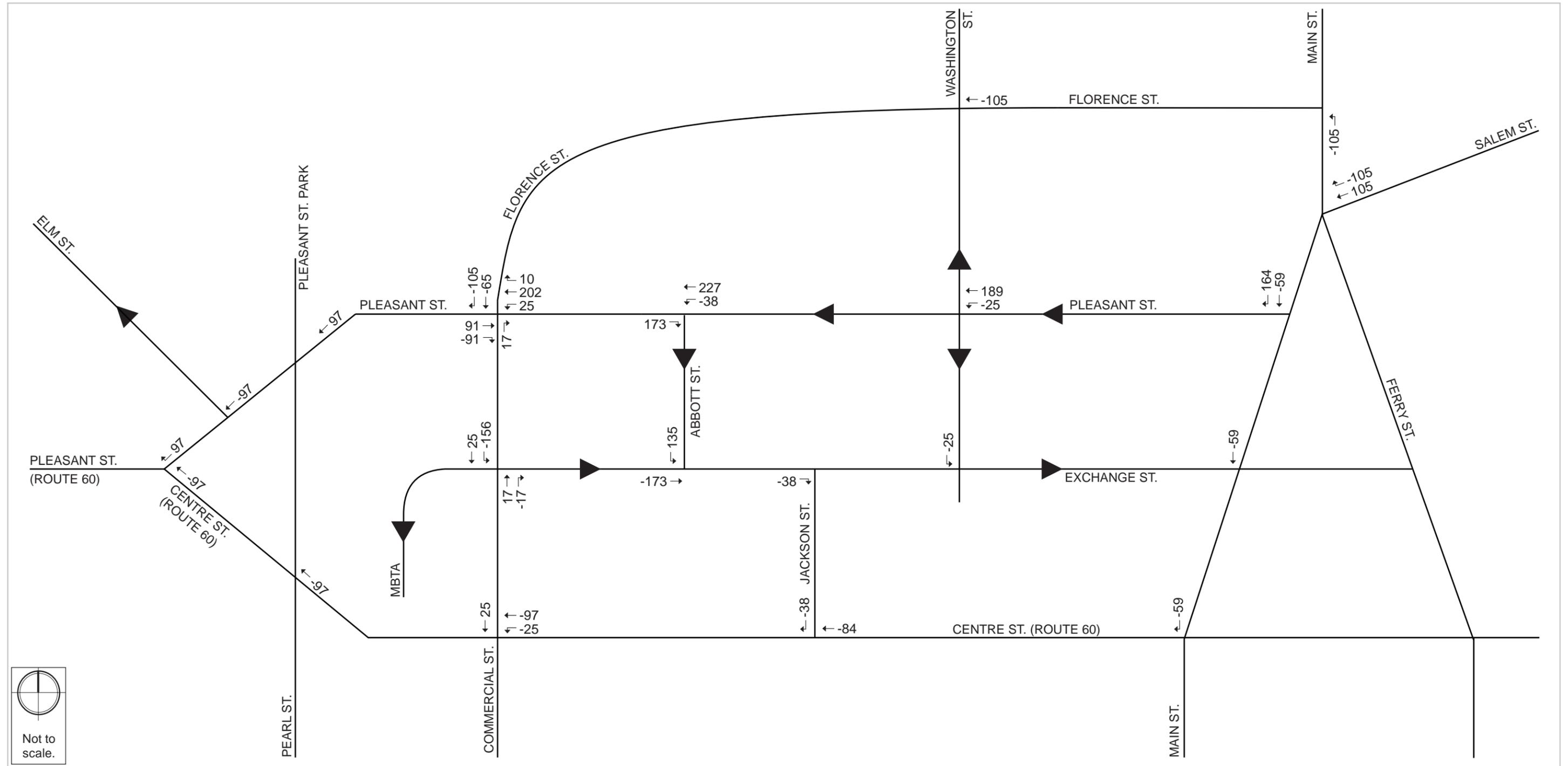


be used by City Hall employees in the future, the reassignment of these trips to the Jackson Street garage is appropriate for traffic analysis purposes.) The associated peak hour trips have been reassigned to reflect this change.

In addition to employee trips, City Hall does generate significant visitor trips throughout the day. The visitor vehicle trips are reflected in the No-Build volumes and have been reassigned as described under the New Pleasant Street Roadway Link section above.



Figure 12. Reassignment of No-Build (2020) Condition Traffic Volumes, Weekday a.m. Peak Hour





In general, City Hall employees and visitors who travel by transit or walking will not be affected by changes with the Project. Their trips will continue to occur as they do today, although they will use new sidewalk connections along Pleasant Street.

No adjustment in vehicle trips is necessary for the relocation of the First Church of Malden because it generates little activity during peak hours.

NEW LAND USES

Aside from the office use, the other new land uses in the Project are residential and retail. As is standard practice, new trip generation is based on rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation* (9th edition, 2012). The ITE rates, available for a variety of land uses, produce "unadjusted" vehicle trip estimates, which are converted to person trips based on vehicle occupancy. Through application of the appropriate travel mode share information for the specific study area, the total person trips are "adjusted" to vehicle, transit, and walk/bicycle trips.

Below is a description of the ITE land use codes (LUC) most appropriate for the residential and retail components of the Project:

LUC 220 – Residential/Apartment: The residential apartment is defined as rental dwelling units located within the same building with at least three other dwelling units. This LUC does not distinguish whether apartments are low-rise, mid-rise, or high-rise; however, this LUC has a much higher sample size than other similar LUC's, providing for a more accurate estimate in trip generation. Trip generation estimates are based on average vehicular rates per dwelling unit.

LUC 820 – Retail/Shopping Center: A shopping center is defined as an integrated group of commercial establishments that is developed, owned, and managed as a unit. It is typically used for general retail establishments. Trip generation estimates are based on average vehicular rates per 1,000 sf of gross floor.

TRAVEL MODE SHARES

Travel mode shares reflect the distribution of person trips among automobiles, transit services, and walking/bicycling. As presented earlier in **Table 6** and **Figure 6**, downtown Malden is served by a wide variety of MBTA public transportation options, including the Orange Line, Haverhill commuter rail, and 13 bus routes. The transit-oriented nature of the Project site will allow some residents to conveniently choose to forego auto ownership and rely on public transportation for many of their daily trips.

The robust transit use in this area is shown through journey-to-work data from the 2013 American Community Survey (ACS) for census tract 3413, where the Project site is located - about 54% of



existing residents in this area use transit to commute to work. Note that most residential trips during the a.m. and p.m. peak hours are work-related and, therefore, journey-to-work mode shares are appropriate for these time periods.

Travel mode shares for the residential land use were adopted from the ACS. Mode shares for the retail uses were adopted from other recent traffic studies in the downtown Malden area. These shares and the associated vehicle occupancy rates are shown in **Table 9**.

Table 9. Peak Hour Travel Mode Shares and Vehicle Occupancy

Land Use	Travel Mode Share			Average Vehicle Occupancy (AVO)
	Vehicle	Transit	Walk/Bicycle	
Residential	42%	54%	4%	1.13
Retail	70%	10%	20%	2.20

Table 10 shows vehicle trip generation for the Project, including new trips from the residential and retail uses and the reduction of trips due to the police station relocation. Detailed trip generation calculation sheets for the existing site and proposed Project are contained in Appendix A (Trip Generation section).



Table 10. Vehicle Trip Generation

Time Period	Direction	New Project Vehicle Trips			Police Station ³ Vehicle Trips (removed)	Net New Vehicle Trips
		Residential ¹	Retail ²	Total		
Daily	In	639	325	964	-260	704
	Out	639	325	964	-260	704
	Total	1,278	650	1,928	-520	1,408
a.m. Peak Hour	In	13	8	21	-9	12
	Out	54	7	61	-31	30
	Total	67	15	82	-40	42
p.m. Peak Hour	In	53	28	81	-7	74
	Out	29	29	58	-12	46
	Total	82	57	139	-19	120

1. Based on 315 apartment units. Since completion of the traffic impact analysis, the maximum number of potential residential units has increased from 315 to 320. With 320 units, the number of vehicle trips shown in this table would increase by 20 for daily conditions, 2 during the a.m. peak hour, and 1 during the p.m. peak hour.
 2. Based on 21,733 sf of retail space.
 3. Based on information provided by Malden Police Department
- Note: The office space is not included as a new use because office trip activity will continue at the same level as today. Therefore, no change in office trip activity between existing and future conditions is anticipated.

Vehicle Trip Distribution

A vehicle trip distribution pattern identifies the various travel paths for vehicles arriving at a destination and the corresponding departure travel paths. New vehicle trips generated to the Project site will include mostly residents and visitors to the retail businesses.

The trip distribution for new Project trips was based on 2010 Census Journey to Work data, previous studies done in the Malden Center area, and knowledge of the roadway system in the area, including the new Pleasant Street roadway link. **Figure 14** shows the trip distribution pattern for Project trips entering the site driveways at Exchange Street and Abbott Street. **Figure 15** shows the distribution for Project trips exiting the site driveways.

Note that the proportion of new Project vehicles assigned to each driveway was based on the estimated available parking capacity in each parking level (the two garage levels will not be connected internally). Based on the conceptual garage plan, it is estimated that about 52% of the



Project spaces will be provided on the lower level, which will have a driveway on Exchange Street. The ground level of parking, with a driveway on Abbott Street, is estimated to have 48% of the Project spaces. Accordingly, 52% of the Project traffic was assigned to the Exchange Street driveway and 48% was assigned to the Abbott Street driveway.

Using the distribution patterns shown in **Figure 14** and **Figure 15**, and the vehicle trips by time of day (shown in **Table 10**), the assignments of the Project's net new vehicle trips were developed and are shown in **Figure 16** and **Figure 17**, for the a.m. peak hour and p.m. hour, respectively. Note that the net volumes shown on these figures include, in addition to the new Project trips, the removal of Police Station trips, and the reassignment of City Hall employees parking from the City Hall garage to the Jackson Street garage. As such, the net new trips do not balance between adjacent intersections along Exchange Street.



Figure 14. *Vehicle Trip Distribution - Entering*

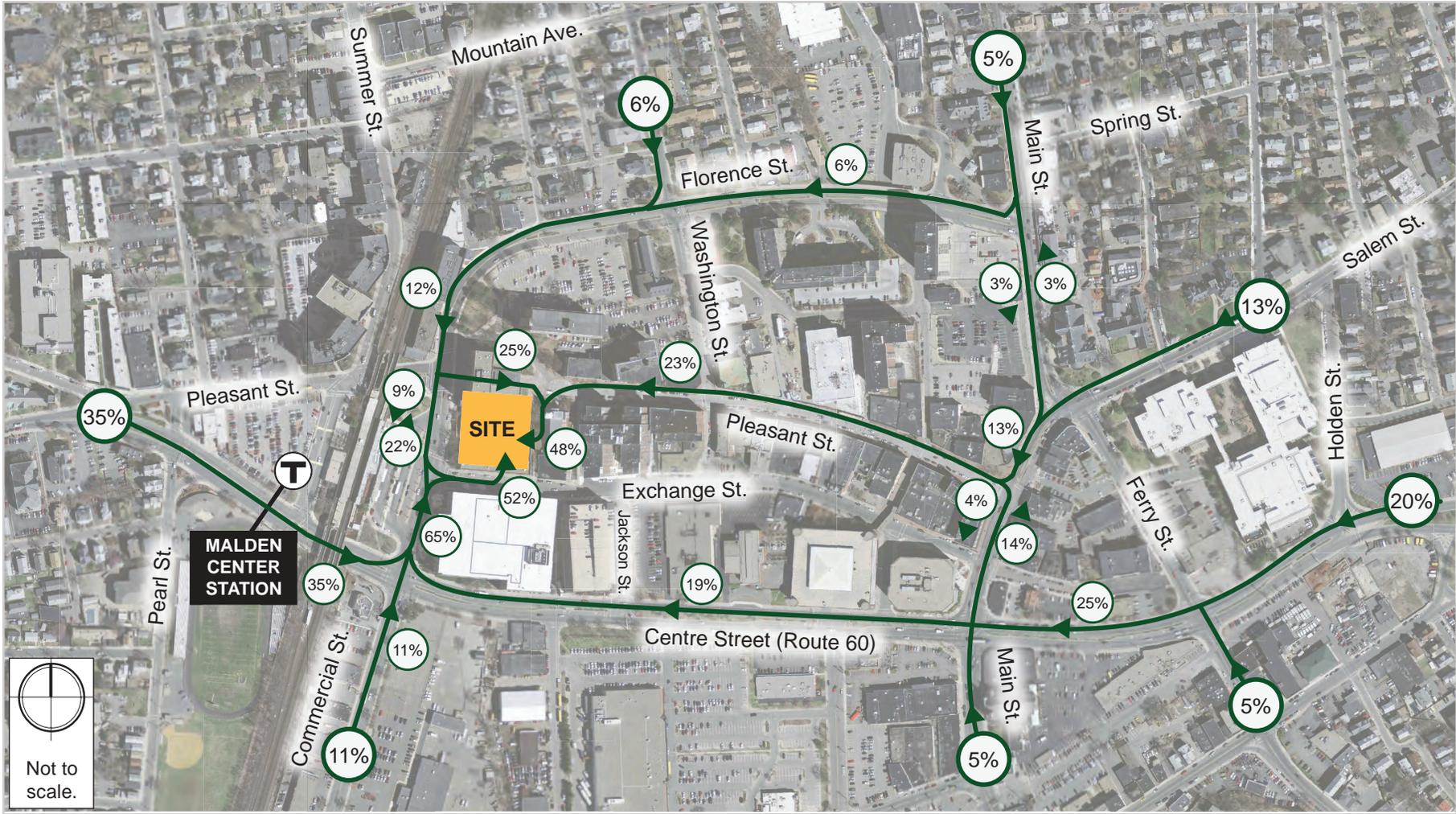
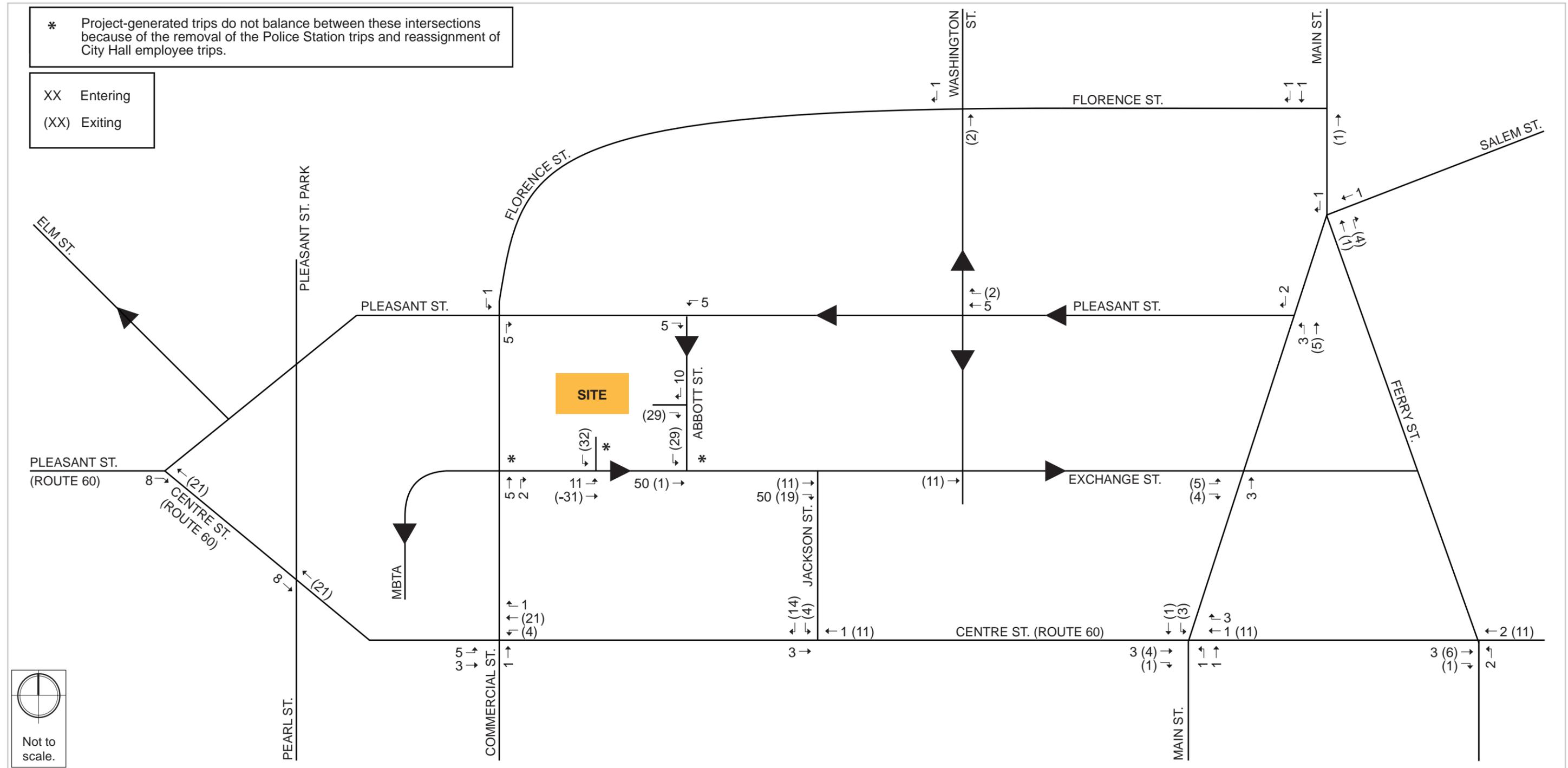




Figure 16. Net New Project-generated Trips, Weekday a.m. Peak Hour





Build Traffic Operations

Build (2020) Condition traffic volumes are shown in **Figure 18** and **Figure 19** for the a.m. and p.m. peak hours, respectively. The resulting intersection capacity analysis results are shown in **Table 11** and **Table 12**. Complete Synchro reports are provided in Appendix A (Intersection LOS/Synchro Report section).

The reconnection of Pleasant Street from the east through to the Pleasant Street/Florence Street/Commercial Street intersection, will create a new roadway segment. For the Synchro traffic model of this intersection, it has been assumed that Pleasant Street will have one westbound travel lane and that the eastbound and westbound Pleasant Street approaches will operate with permitted phasing. At the other signalized intersections, the signal timings and phasings as developed under the No-Build (2020) Condition have been maintained.

In the a.m. peak hour, each signalized intersection will operate at LOS C or better, and individual approaches will all operate at LOS D or better, with the exception of the Centre Street westbound left-turn movement at the intersection of Centre Street (Route 60)/Commercial Street, which will continue to operate at LOS F. At unsignalized intersections, each approach will operate at similar levels of service as under the No-Build (2020) Condition, with the exception of the Pearl Street northbound approach to the Pleasant Street/Pearl Street intersection, which will worsen from LOS E to LOS F.

In the p.m. peak hour, each signalized and unsignalized intersection and individual approaches will operate at the same LOS as under the No-Build (2020) Condition, with the exception of the Pearl Street northbound approach to the Pleasant Street/Pearl Street intersection, which will worsen from LOS E to LOS F.

Based on these results, the net new vehicle trips generated by the Project will not cause a significant change in traffic operations in the study area. Although these results indicate that the future traffic operations in the area will generally continue as under Existing Conditions with completion of the Project, an alternative to the westbound Pleasant Street geometry has been analyzed and is presented in the next section.

Additional improvements to the Pleasant Street/Florence Street/Commercial Street intersection and the Exchange Street/Commercial Street intersection are presented in the Mitigation section.



Figure 18. Build (2020) Condition Traffic Volumes, Weekday a.m. Peak Hour

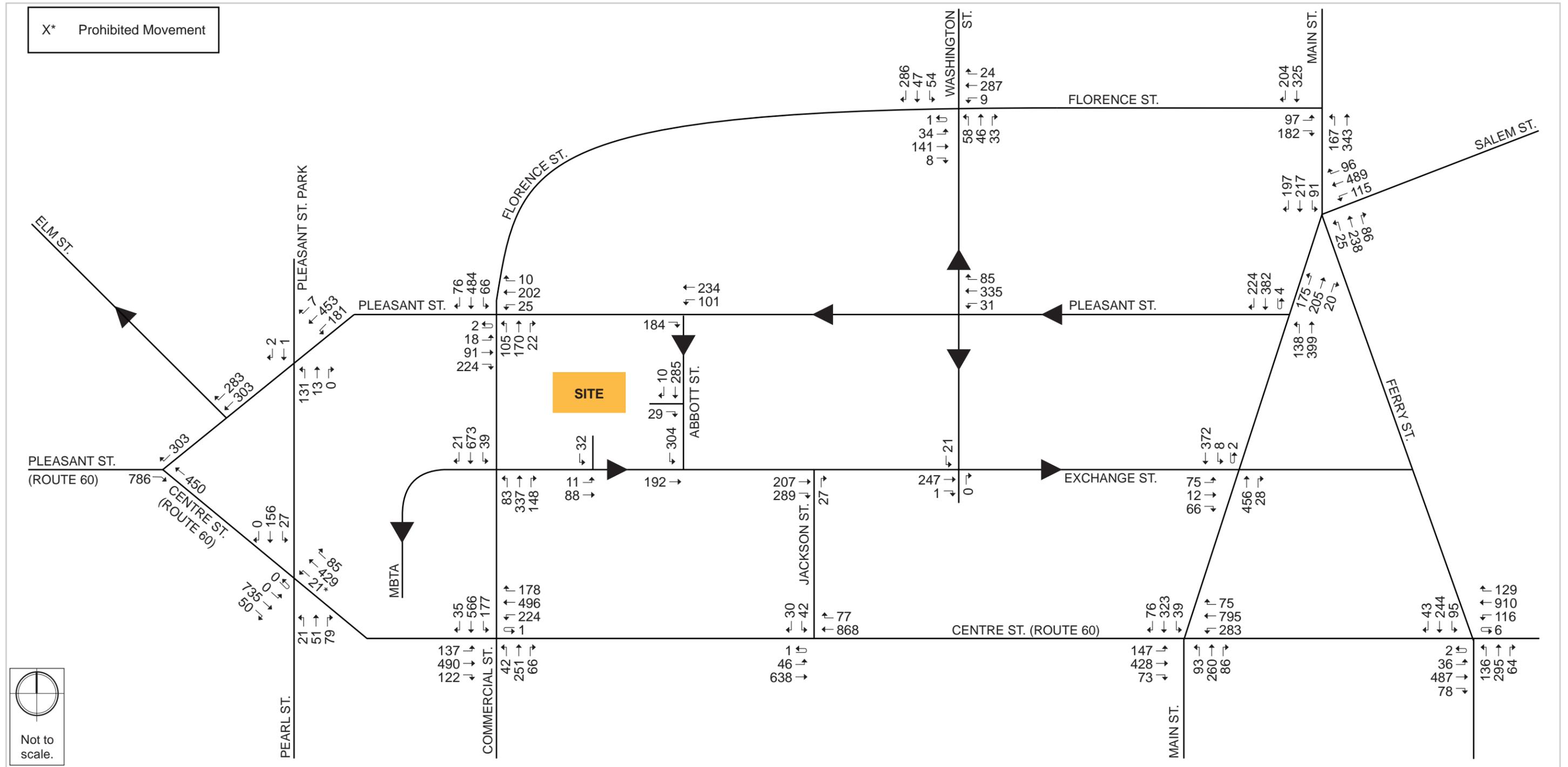




Figure 19. Build (2020) Condition Traffic Volumes, Weekday p.m. Peak Hour

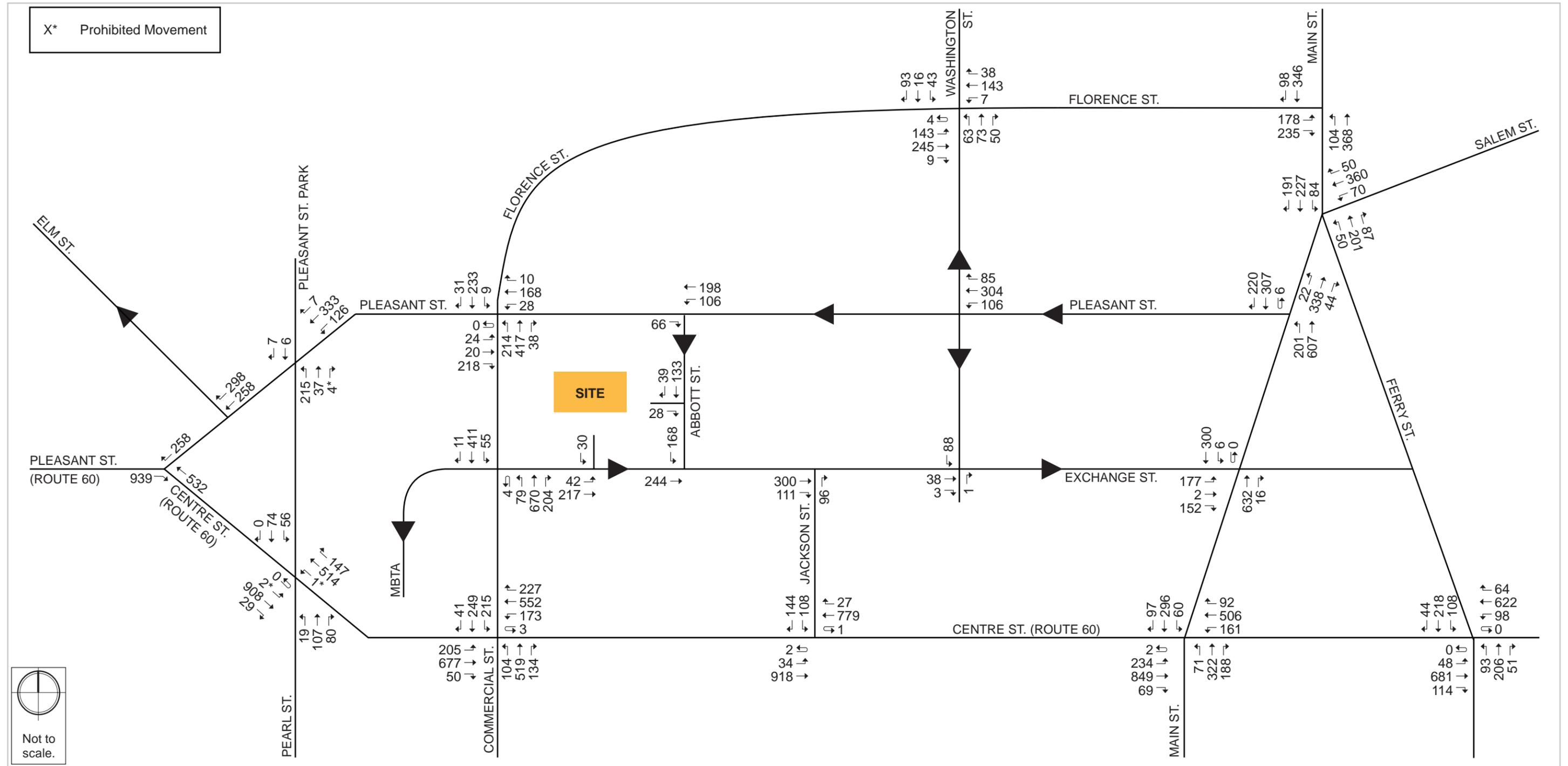




Table 11. Build (2020) Condition Capacity Analysis Summary, a.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Signalized Intersections				
Centre Street (Route 60)/Pearl Street	B	15.9	0.54	–
Centre EB thru thru/right	B	11.8	0.50	163
Centre WB thru	C	16.6	0.68	231
Centre WB right	A	8.5	0.07	17
Pearl NB left/thru	C	24.1	0.26	62
Pearl NB right	C	21.5	0.05	33
Pearl SB left/thru/right	C	28.6	0.66	#165
Pleasant Street/Florence Street/Commercial Street	C	25.8	0.49	–
Pleasant EB left/thru*	C	27.0	0.30	97
Pleasant EB right	C	25.4	0.18	44
Pleasant WB left/thru/right	C	29.6	0.60	190
Commercial NB left/thru	B	15.7	0.33	74
Commercial SB thru/right	C	29.2	0.72	208
Exchange Street/Commercial Street	A	8.6	0.28	–
Commercial NB left/thru thru/right	A	8.5	0.44	66
Commercial SB left/thru thru/right	A	8.6	0.48	98
Centre Street (Route 60)/Commercial Street	C	29.0	0.97	–
Centre EB left	B	14.7	0.54	87
Centre EB thru thru/right	B	13.2	0.40	170
Centre WB left	F	103.4	1.07	#312
Centre WB thru thru/right	C	24.7	0.65	244
Commercial NB left/thru thru/right	C	21.1	0.50	112
Commercial SB left/thru thru/right	C	29.8	0.83	255
Pleasant Street/Main Street	A	3.9	0.31	–
Main NB left/thru thru	A	4.3	0.38	70
Main SB thru thru/right	A	3.6	0.29	45
Exchange Street/Irving Street/Main Street	B	19.0	0.29	–
Exchange EB left/thru/right	D	36.7	0.36	137
Main NB left/thru/right	B	16.3	0.36	140
Main SB left/thru/right	B	15.2	0.27	114
Unsignalized Intersections				
Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street	–	–	–	–
Centre EB thru thru	A	0.0	0.25	0
Centre WB thru	A	0.0	0.30	0
Pleasant SB right	C	20.1	0.61	102



Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Pleasant Street/Pearl Street/Pleasant Street Park	–	–	–	–
Pleasant WB left/thru/right	A	3.2	0.13	11
Pearl NB left/thru	F	77.2	0.85	157
Pleasant Street Park SB thru/right	B	15.2	0.02	2
Pleasant Street/Abbott Street	–	–	–	–
Pleasant EB right	A	0.0	0.22	0
Pleasant WB left/thru	A	3.2	0.10	9
Exchange Street/Abbott Street	–	–	–	–
Exchange EB thru	A	0.0	0.10	0
Abbott SB left	B	12.9	0.45	59
Exchange Street/Jackson Street	–	–	–	–
Exchange EB thru/right	A	0.0	0.31	0
Jackson NB right	B	10.7	0.06	4
Exchange Street/Site Driveway	–	–	–	–
Exchange EB left/thru	A	0.9	0.01	1
Site Drive SB left	A	9.3	0.04	3
Abbott Street/Site Driveway	–	–	–	–
Site Drive WB right	B	10.2	0.04	3
Abbott SB thru/right	A	0.0	0.19	0

95th percentile queues do not clear after two cycles. Actual queues may be longer.
 Grey shading indicates that LOS worsens to LOS E or F, as compared to the No-Build Condition.



Table 12. Build (2020) Condition Capacity Analysis Summary, p.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Signalized Intersections				
Centre Street (Route 60)/Pearl Street	B	17.4	0.55	–
Centre EB thru thru/right	B	13.4	0.62	213
Centre WB thru	B	15.9	0.67	290
Centre WB right	A	8.8	0.10	27
Pearl NB left/thru	C	29.6	0.54	95
Pearl NB right	C	21.6	0.07	23
Pearl SB left/thru/right	D	38.9	0.77	#118
Pleasant Street/Florence Street/ Commercial Street	C	22.3	0.48	–
Pleasant EB left/thru	C	25.3	0.12	32
Pleasant EB right	C	25.5	0.17	53
Pleasant WB left/thru/right	C	27.8	0.51	167
Commercial NB left/thru	C	20.3	0.63	182
Commercial SB thru/right	C	20.3	0.28	85
Exchange Street/Commercial Street	B	10.8	0.41	–
Commercial NB left/thru thru/right	B	12.3	0.72	150
Commercial SB left/thru thru/right	A	7.9	0.38	65
Centre Street (Route 60)/Commercial Street	E	61.0	1.17	–
Centre EB left	F	98.9	1.06	#243
Centre EB thru thru/right	B	19.4	0.50	227
Centre WB left	F	96.3	1.00	#262
Centre WB thru thru/right	D	36.1	0.80	314
Commercial NB left/thru thru/right	F	111.2	1.13	#429
Commercial SB left*	F	110.4	1.09	#272
Commercial SB thru thru/right	C	21.3	0.41	209
Pleasant Street/Main Street	A	4.7	0.42	–
Main NB left/thru thru	A	5.6	0.53	129
Main SB thru thru/right	A	3.6	0.28	34
Exchange Street/Irving Street/Main Street	C	26.9	0.42	–
Exchange EB left/thru/right	C	29.7	0.53	252
Main NB left/thru/right	C	26.8	0.51	242
Main SB left/thru/right	C	24.2		117



Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Unsignalized Intersections				
Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street	–	–	–	–
Centre EB thru thru	A	0.0	0.29	0
Centre WB thru	A	0.0	0.35	0
Pleasant SB right	C	21.7	0.60	98
Pleasant Street/Pearl Street/Pleasant Street Park	–	–	–	–
Pleasant WB left/thru/right	A	2.6	0.11	7
Pearl NB left/thru	F	64.6	0.91	224
Pleasant Street Park SB thru/right	B	13.0	0.06	4
Pleasant Street/Abbott Street	–	–	–	–
Pleasant EB right	A	0.0	0.06	0
Pleasant WB left/thru	A	3.2	0.09	7
Exchange Street/Abbott Street	–	–	–	–
Exchange EB thru	A	0.0	0.18	0
Abbott SB left	B	12.8	0.33	36
Exchange Street/Jackson Street	–	–	–	–
Exchange EB thru/right	A	0.0	0.31	0
Jackson NB right	B	12.1	0.17	16
Exchange Street/Site Driveway	–	–	–	–
Exchange EB left/thru	A	1.4	0.03	2
Site Drive SB left	B	10.8	0.05	4
Abbott Street/Site Driveway	–	–	–	–
Site Drive WB right	A	9.2	0.04	3
Abbott SB thru/right	A	0.0	0.11	0

95th percentile queues do not clear after two cycles. Actual queues may be longer.

* Denotes de-facto turning lane.

Grey shading indicates that LOS worsens to LOS E or F, as compared to the No-Build Condition.

ALTERNATIVE – ADDITIONAL WESTBOUND LEFT TURNS ON NEW PLEASANT STREET LINK

In the analysis presented above at the intersection of Pleasant Street/Commercial Street/Florence Street, the new Pleasant Street link was modeled as one travel lane in each direction. The Pleasant Street westbound approach to Commercial Street/Florence Street consisted of a single travel lane in order to provide a conservative (highest impact) analysis.

A single-lane approach is desirable for low-volume approaches where turning volumes are low, as pedestrian crossing distance is minimized. The study team has estimated that a high percentage of vehicles using the new Pleasant Street westbound link would continue straight through the



intersection at Commercial Street/Florence Street to reach points west, as opposed to turning left or right to reach points north or south. Drivers on the new westbound Pleasant Street link will have other routing choices to reach points north or south, such as Washington Street, Abbott Street, and Middlesex Street.

However, should the new westbound Pleasant Street link attract more left-turning vehicles than estimated under the Build Condition, it is possible that a single-lane approach may not be the preferred configuration. To understand the potential impacts of additional left turn volume, an alternative analysis was conducted.

To test such a possibility, 100 additional westbound left-turns were added to the Synchro model at the Pleasant Street/Commercial Street/Florence Street intersection. **Table 13** below shows operations at the intersection results without and with an exclusive left-turn lane, with signals optimized for each alternative. Because the a.m. peak hour volumes are higher than the p.m. peak hour, only the a.m. conditions are presented.

Table 13. Pleasant Street Westbound - Additional Left Turns at Commercial Street

Intersection/Movement	Without Left-turn Lane		With Left-turn Lane	
	LOS	Delay	LOS	Delay
a.m. Peak Hour				
Pleasant Street/Florence Street/ Commercial Street	C	32.0	C	25.2
Pleasant EB left/thru	C	23.1	C	29.3
Pleasant EB right	C	22.3	C	27.0
Pleasant WB left	–	–	C	29.8
Pleasant WB thru/right	–	–	C	30.5
Pleasant WB left/thru/right	D	39.2	–	–
Commercial NB left/thru/right*	B	18.9	B	14.2
Florence SB left/thru/right	D	40.0	C	26.1

As compared to the results shown in **Table 11** (single lane Pleasant Street westbound approach), the addition of 100 more westbound left-turn vehicles on Pleasant Street would add approximately six seconds of average delay at the intersection and ten seconds of additional delay along the Pleasant Street westbound approach. Additionally, due to signal optimization necessary to mitigate the additional turning volume, vehicles on the Commercial Street northbound and Florence Street southbound approaches would experience additional delay.



If the Pleasant Street westbound lane configuration is changed to one left-turn lane and one shared through/right-turn lane, the westbound lanes would operate at LOS C and operations along Commercial Street northbound and Florence Street southbound would be unaffected by the additional volume.

This analysis shows that a single lane approach will be sufficient to accommodate the anticipated future traffic volumes. The Proponent is willing to work with the City on the Pleasant Street design elements.

QUEUING ANALYSIS

In order to determine whether the existing roadway network can accommodate vehicle queues in the Existing (2015), No-Build (2020), and Build (2020) conditions, 95th percentile queue lengths under each condition were compared to the existing storage length. Calculated 95th percentile queues that exceed the available storage length may spill into upstream intersections, causing interruptions outside of the intersection generating the queue. The 95th percentile queue length represents the longest observed queue out of 20 observations; at a signalized intersection with a 60-second cycle length, queues meeting or exceeding the 95th percentile queue length would occur approximately three times (out of a total of 60 cycles). Existing storage length was typically measured from the stop line to the edge of the nearest intersection (signalized or unsignalized); however, it should be noted that queues blocking unsignalized intersections typically do not negatively impact the transportation network as severely as a queue that blocks a signalized intersection.

Queue length comparison tables are shown in **Table 14** and **Table 15**.

In the a.m. peak hour in the Existing (2015) Condition, 95th percentile queues exceed the available storage length at four approaches. At the intersection of Centre Street (Route 60)/Pearl Street, the 95th percentile queues along the Pearl Street southbound approach exceed the 60-foot storage length on Pearl Street by about 90 feet.

These queues increase slightly in the No-Build (2020) Condition, and remain unchanged in the Build (2020) Condition. At the intersection of Centre Street (Route 60)/Commercial Street, queues on the Commercial Street southbound approach slightly exceed the storage capacity of 200 feet, resulting in about one car length spilling back into the intersection of Exchange Street/Commercial Street. This queue increases by about 10 feet in the No-Build (2020) Condition, and an additional 10 feet in the Build (2020) Condition. Finally, at the unsignalized intersection of Pleasant Street/Pearl Street/Pleasant Street Park, the Pearl Street northbound queues extend about 35 feet beyond the 60-foot storage length. This increases to about 120 feet in the No-Build (2020) Condition and to about 160 feet in the Build (2020) Condition. When they occur, these queues may impact the upstream intersection of Centre Street (Route 60)/Pearl Street.



Table 14. Queue Storage/Queue Length Comparison, a.m. Peak Hour

Intersection/Movement	Storage Length (ft)	Existing Condition 95 th percentile queue (ft)	No-Build Condition 95 th percentile queue (ft)	Build Condition 95 th percentile queue (ft)
Signalized Intersections				
Centre Street (Route 60)/Pearl Street	–	–	–	–
Centre EB thru thru/right	750	146	161	163
Centre WB thru	400	227	288	231
Centre WB right	400	17	17	17
Pearl NB left/thru	180	60	62	62
Pearl NB right	195	33	33	33
Pearl SB left/thru/right	60	#152	#165	#165
Pleasant Street/Florence Street/Commercial Street	–	–	–	–
Pleasant EB left/thru*	175	29	25	97
Pleasant EB right	175	58	50	44
Pleasant WB* left/thru/right	350	N/A	N/A	190
Commercial NB left/thru/right*	170	47	71	74
Commercial SB left*/thru/right	810	159	227	208
Exchange Street/Commercial Street	–	–	–	–
Commercial NB left/thru thru/right	200	56	62	66
Commercial SB left/thru thru/right	170	133	151	98
Centre Street (Route 60)/Commercial Street	–	–	–	–
Centre EB left	150	71	#92	87
Centre EB thru thru/right	700	140	169	170
Centre WB left	310	#290	#343	#312
Centre WB thru thru/right	540	222	283	244
Commercial NB left/thru thru/right	800	93	111	111
Commercial SB left/thru thru/right	200	217	244	254
Pleasant Street/Main Street	–	–	–	–
Main NB left/thru thru	115	57	66	67
Main SB thru thru/right	600	48	52	44
Exchange Street/Irving Street/Main Street	–	–	–	–
Exchange EB left/thru/right	200	100	129	137
Main NB left/thru/right	90	116	140	140
Main SB left/thru/right	115	113	133	114



Intersection/Movement	Storage Length (ft)	Existing Condition 95 th percentile queue (ft)	No-Build Condition 95 th percentile queue (ft)	Build Condition 95 th percentile queue (ft)
Unsignalized Intersections				
Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street	–	–	–	–
Centre EB thru thru	275	0	0	0
Centre WB thru	250	0	0	0
Pleasant SB right	250	46	59	102
Pleasant Street/Pearl Street/Pleasant Street Park	–	–	–	–
Pleasant WB left/thru/right	430	11	11	11
Pearl NB left/thru	60	95	118	157
Pleasant Street Park SB thru/right	375	1	1	2
Pleasant Street/Abbott Street	–	–	–	–
Pleasant EB right	90	0	0	0
Pleasant WB left/thru	325	7	9	9
Exchange Street/Abbott Street	–	–	–	–
Exchange EB thru	375	0	0	0
Abbott SB left	220	21	27	59
Exchange Street/Jackson Street	–	–	–	–
Exchange EB thru/right	50	0	0	0
Jackson NB right	280	3	4	4
Exchange Street/Site Driveway	–	–	–	–
Exchange EB left/thru	150	–	–	1
Site Drive SB left	N/A	–	–	3
Abbott Street/Site Driveway	–	–	–	–
Site Drive WB right	N/A	–	–	3
Abbott SB thru/right	100	–	–	0

95th percentile queues do not clear after two cycles. Actual queues may be longer.
 Grey shading indicates queue storage is less than 95th percentile queue length.



Table 15. Queue Storage/Queue Length Comparison, p.m. Peak Hour

Intersection/Movement	Storage Length (ft)	Existing Condition 95 th percentile queue (ft)	No-Build Condition 95 th percentile queue (ft)	Build Condition 95 th percentile queue (ft)
Signalized Intersections				
Centre Street (Route 60)/Pearl Street	–	–	–	–
Centre EB thru thru/right	750	165	204	213
Centre WB thru	400	255	#325	290
Centre WB right	400	26	27	27
Pearl NB left/thru	180	90	95	95
Pearl NB right	195	23	23	23
Pearl SB left/thru/right	60	#105	#118	#118
Pleasant Street/Florence Street/Commercial Street	–	–	–	–
Pleasant EB left/thru*	175	35	30	32
Pleasant EB right	175	66	55	53
Pleasant WB* left/thru/right	350	N/A	N/A	167
Commercial NB left/thru/right*	170	114	172	182
Commercial SB left*/thru/right	810	57	85	85
Exchange Street/Commercial Street	–	–	–	–
Commercial NB left/thru thru/right	200	113	137	150
Commercial SB left/thru thru/right	170	59	65	65
Centre Street (Route 60)/Commercial Street	–	–	–	–
Centre EB left	150	85	#217	#243
Centre EB thru thru/right	700	198	227	227
Centre WB left	310	#258	#302	#262
Centre WB thru thru/right	540	292	349	314
Commercial NB left/thru thru/right	800	#354	#420	#429
Commercial SB left	200	#256	#269	#272
Commercial SB thru thru/right	200	176	188	209
Pleasant Street/Main Street	–	–	–	–
Main NB left/thru thru	115	88	118	124
Main SB thru thru/right	600	36	38	34
Exchange Street/Irving Street/Main Street	–	–	–	–
Exchange EB left/thru/right	200	#264	239	252
Main NB left/thru/right	90	142	236	242
Main SB left/thru/right	115	87	133	117



Intersection/Movement	Storage Length (ft)	Existing Condition 95 th percentile queue (ft)	No-Build Condition 95 th percentile queue (ft)	Build Condition 95 th percentile queue (ft)
Unsignalized Intersections				
Pleasant Street (Route 60)/Centre Street (Route 60)/Elm Street	–	–	–	–
Centre EB thru thru	275	0	0	0
Centre WB thru	250	0	0	0
Pleasant SB right	250	43	56	98
Pleasant Street/Pearl Street/Pleasant Street Park	–	–	–	–
Pleasant WB left/thru/right	430	7	7	7
Pearl NB left/thru	60	138	169	224
Pleasant Street Park SB thru/right	375	4	4	4
Pleasant Street/Abbott Street	–	–	–	–
Pleasant EB right	90	0	0	0
Pleasant WB left/thru	325	4	8	7
Exchange Street/Abbott Street	–	–	–	–
Exchange EB thru	375	0	0	0
Abbott SB left	220	11	28	36
Exchange Street/Jackson Street	–	–	–	–
Exchange EB thru/right	50	0	0	0
Jackson NB right	280	10	10	16
Exchange Street/Site Driveway	–	–	–	–
Exchange EB left/thru	150	–	–	2
Site Drive SB left	N/A	–	–	4
Abbott Street/Site Driveway	–	–	–	–
Site Drive WB right	N/A	–	–	3
Abbott SB thru/right	100	–	–	0

95th percentile queues do not clear after two cycles. Actual queues may be longer.

* Denotes de-facto turning lane.

Grey shading indicates queue storage is less than 95th percentile queue length.

Two intersections have 95th percentile queues that begin to exceed storage capacity in the No-Build Condition. At the intersection of Centre Street (Route 60)/Commercial Street, queues in the Centre Street westbound left-turn lane exceed the 310-foot capacity by about 30 feet in the No-Build (2020) Condition. In the Build (2020) Condition, queues are only slightly higher than the storage length. At the intersection of Exchange Street/Irving Street/Main Street, the Main Street southbound queues exceed the 115 feet of storage capacity in the No-Build (2020) Condition, but revert back to Existing (2015) levels during the Build (2020) Condition.



In the a.m. peak hour, there are no approaches where the 95th percentile queues exceed storage capacity under the Build (2020) Condition where they are not also exceeded under No-Build (2020) Condition.

In the p.m. peak hour in the Existing (2015) Condition, 95th percentile queues exceed the available storage length at five approaches. At the intersection of Centre Street (Route 60)/Pearl Street, the 95th percentile queues along the Pearl Street southbound approach exceed the 60-foot storage length on Pearl Street by about 45 feet. These queues would most likely spill back onto Pleasant Street westbound. In both the No-Build (2020) and the Build (2020) Condition, queues increase to about 120 feet. At the intersection of Centre Street (Route 60)/Commercial Street, the de-facto left-turn lane on Commercial Street southbound exceeds storage capacity by about 50 feet in the Existing (2015) Condition, increasing to about 70 feet in the No-Build (2020) and Build (2020) Condition.

At the intersection of Exchange Street/Irving Street/Main Street, 95th percentile queue lengths for the Exchange Street eastbound approach exceed the 200-foot storage length by about 65 feet in the Existing (2015) Condition, and slightly less in the No-Build (2020) and Build (2020) Condition. These queues would block Middlesex Street, but would not block any signalized intersections. At the same intersection, queues in the Main Street northbound approach would exceed the 90-foot storage length by about 50 feet in the Existing (2020) Condition, and extending to 95 and 100 feet in the No-Build (2020) and Build (2020) conditions, respectively.

At the intersection of Pleasant Street/Pearl Street/Pleasant Street Park, queues on the Pearl Street northbound approach exceed the 60-foot storage length by about 80 feet in the Existing (2015) Condition, 110 feet in the No-Build (2020) Condition, and about 165 feet in the Build (2020) Condition.

Four additional approaches to intersections have 95th percentile queues that exceed storage lengths in the future conditions but not under the Existing (2015) Condition. At the intersection of Pleasant Street/Florence Street/Commercial Street, the Commercial Street northbound approach has queues that slightly exceed the 170-foot storage area in the No-Build (2020) Condition and Build (2020) Condition. At the intersection of Exchange Street/Irving Street/Main Street, the Main Street southbound approach queues exceed the 115-foot storage length by about 20 feet in the No-Build (2020) Condition and by just two feet in the Build (2020) Condition. At the intersection of Pleasant Street/Main Street, queues on the Main Street northbound approach slightly exceed the storage length in the Build (2020) Condition only, by about 10 feet. Similarly, at the intersection of Centre Street (Route 60)/Commercial Street, the Commercial Street southbound through/right-turn lane has 95th percentile queues that exceed the 200-foot storage length by nine feet.



Build Parking Condition

OFF-STREET PARKING

Overall, the Project will provide between 320 and 340 parking spaces in two garage levels as described below:

- Residential parking will be provided at 0.75 spaces/unit, or about 237 spaces (0.75 spaces/unit x 315 units). These spaces will be reserved for residential use. Because of the robust transit services available in the area (see Table 5, Figure 5, and travel mode shares in Table 8), it is anticipated that many residents will forego auto ownership and rely on public transportation and nearby Zipcar service for many of their daily trips
- The remaining parking in the garage will serve the retail spaces. At 4 spaces/1,000 sf, it is anticipated that between 80 and 87 spaces will be designated for retail use.
- Based on Malden zoning code, the Project should provide one car-sharing parking space per 50 dwelling units (or portion therefore) on-site. The Proponent will designate up to seven of the garage spaces described above for car-sharing use.

No on-site parking will be provided for the office (City Hall) space. In the future, City Hall employees who drive will no longer have an on-site garage parking available and it is anticipated that employees will park in nearby public garages. As today, City Hall visitors who drive will park on-street or at public parking facilities in the downtown area.

As presented earlier in the site plan in **Figure 11**, two access/egress driveways will be provided to the parking areas, including one driveway on Exchange Street and one driveway on Abbott Street.

ON-STREET PARKING

As described below, it is anticipated that up to 15 new on-street public parking spaces could potentially be created in the study area as result of the Project.

EXCHANGE STREET

Today, on the north side of Exchange Street, between Commercial Street and Abbott Street, there are five police-only parking spaces and three public parking spaces. These are all parallel spaces. The three garage doors and associated curb-cuts along the existing Government Center building (one each for the loading dock, the police parking garage, and the City Hall garage) constrain the number of parking spaces that can be placed along this north curb. On the south side of Exchange Street between Commercial Street and the alleyway behind the Jackson Street garage, there are 18 angle police-only parking spaces.



With the relocation of the Police Station to Eastern Avenue, the curb capacity now occupied by the 23 police-only spaces can be reclaimed for public, on-street parking.

The new Project building façade along the north side of Exchange Street will only have one garage door, compared to three today, increasing the potential for on-street parking capacity. While the curb would have capacity for about eight to nine parking spaces, providing maximum driver sight distance for vehicles exiting the garage requires that on-street parking be restricted immediately west of the driveway. With this restriction, it is estimated that about five parallel spaces can be placed along the north curb of Exchange Street.

The south side of Exchange Street is not adjacent to the Project site. It is recommended, however, that the City, in conjunction with adjacent property owners, consider replacing the police-only angle parking spaces with public, parallel spaces. It is estimated that about 12 parallel spaces can be placed along the south curb of Exchange Street.

ABBOTT STREET

The east side of Abbott Street currently has public parking for seven spaces. These will not be affected by the Project.

Along the west side of Abbott Street, there are currently eight public spaces. As a result of the Project and a new garage driveway on Abbott Street, it is anticipated that three spaces will be eliminated.

NEW PLEASANT STREET LINK

Today, the turnaround area at the end of Pleasant Street (at City Hall doorways) is signed as no parking. With the reconnection of Pleasant Street, there is an opportunity to incorporate on-street public parking spaces along the new curbs. The number and precise location of these spaces will be determined through the continuing design process with the City, but it is anticipated that up to six parking spaces (including one loading space) could be located along the north curb. These parking spaces will likely serve visitors to the office tenant. Under the current Project design plan, no on-street parking is envisioned along the south curb, although the plan does include a drop-off/pick-up area in front of the main residential lobby and up to one loading space. The drop-off/pick-up area would have capacity for about three vehicles.

COMMERCIAL STREET

The east side of Commercial Street adjacent to the Project site is today signed for loading activity, municipal parking (7:00 a.m. – 3:00 p.m.), and food trucks (3:00 – 7:00 p.m.). No public parking is permitted.



When the Project is built, on-street municipal parking will no longer be necessary at this location. Retaining a few spaces along this segment for loading would support the street-level retail businesses that will be part of the new Project. It is likely that the food truck parking regulations will be maintained on Commercial Street after the Project is complete, but with the new Pleasant Street link, the City may want to consider alternative locations for food truck activity. The study team has assumed that four spaces along this curb segment will be signed for loading and food truck activity.

SUMMARY

Table 16 summarizes the existing on-street parking and curbside uses adjacent to the Project site and shows the estimated changes when the Project is complete. As the Project design and constructions progresses, the Proponent will continue to work with the City to designate the final location and number of on-street parking spaces. However, it is estimated that 26 restricted on-street spaces will be eliminated and up to 15 new public parking spaces will be created. This change supports the recommendation made by MAPC³ that the number of on-street permit-only spaces should be reduced so that the public has access to more spaces in the downtown area.

³ “Malden Center Parking Study” (June 15, 2015). Retrieved from <http://www.cityofmalden.org/content/mapc-conducts-downtown-malden-parking-study>. Prepared by Metropolitan Area Planning Council (MAPC) for the City of Malden.



Table 16. On-Street Parking Adjacent to Project Site

Location	Existing Condition	Build Condition (Estimated)
Exchange Street		
north curb <i>between Commercial Street and Abbott Street</i>	4 police 3 public	1 loading 4 public
south curb <i>between Commercial Street and alleyway</i>	18 police (angle)	12 (parallel) public
Abbott Street		
west curb <i>between Pleasant Street and Exchange Street</i>	8 public	5 public
east curb <i>between Pleasant Street and Exchange Street</i>	7 public	7 public
New Pleasant Street Link		
north curb <i>between Commercial Street and Abbott Street</i>	na	1 loading 5 public
south curb <i>between Commercial Street and Abbott Street</i>	na	1 loading
Commercial Street		
east curb <i>adjacent to Project site</i>	11 municipal/loading/ food truck	4 loading/ food truck
Restricted	33	7
Public	18	33
Total	51	40

Garage Driveway Sight Distance

Two access/egress driveways will be provided to the Project’s parking garage, including one driveway on Exchange Street and one driveway on Abbott Street.

EXCHANGE STREET DRIVEWAY

The Project’s driveway on Exchange Street will be located approximately 180 feet east of Commercial Street, near where the existing City Hall garage driveway is located today. **Table 17** shows the stopping sight distance data for vehicles travelling eastbound on Exchange Street.

All vehicles travelling eastbound on Exchange Street approaching the Project driveway have turned from Commercial Street. Turns are typically made at a speed of 5 -15 mph and, once on Exchange Street, vehicles straighten their travel path and accelerate as they continue east on Exchange Street. Observations indicate that drivers on Exchange Street will be able to see exiting vehicles from the



Project driveway at about 140 feet west of the driveway. As vehicles straighten out from their turn, most drivers are still travelling at a relatively low speed of about 15 – 20 mph. At these speeds, the 140 feet distance is sufficient to stop (if necessary) for vehicles exiting the Project’s driveway. Note that with the current City Hall garage driveway location on Exchange Street, these sight distance conditions exists today.

Table 17. Stopping Sight Distance Data

Direction of Travel	Minimum Required ¹ (feet)	Measured (feet)
Eastbound on Exchange Street	80' at 15 mph 115' at 20 mph 155' at 25 mph	140'

¹ “A Policy on Geometric Design of Highways and Streets”, American Association of State Highway and Transportation Officials (AASHTO) 6th Edition, 2011

To maintain the maximum sight line for drivers exiting the Exchange Street driveway (looking right and turning left onto Exchange Street), it is recommended that on-street parking be restricted along the north curb for a distance of about 125 feet to the west of the driveway. With this restriction, exiting drivers will have an unobstructed view back to Commercial Street, about 190 feet.

The garage driveway on Abbott Street will be located approximately 80 feet south of Pleasant Street. On-street parking will be removed on the west side of Abbott Street, north of the Project driveway, allowing drivers exiting the Project garage to have an unobstructed view of vehicles turning onto Abbott Street from Pleasant Street.

To increase driver awareness of exiting garage vehicles, the Proponent is committed to installing warning lights on the building near each driveway that are activated when vehicles exit the garage.

Build Pedestrian and Bicycle Conditions

PEDESTRIANS

Trips and travel shares are defined for three modes: vehicle, transit, and walk. Because transit trips to/from the site also include a walking segment, the number of pedestrian trips is a combination of both transit and walk trips. **Table 18** presents the estimated daily and peak hour pedestrian trips associated with the new uses (residential and retail) on the Project site.



Table 18. Project Pedestrian Trips

Time Period	Direction	New Pedestrian Trips ¹
Daily	In	1,070
	Out	1,070
	Total	2,140
a.m. Peak Hour	In	42
	Out	146
	Total	188
p.m. Peak Hour	In	163
	Out	101
	Total	264

1. Based on 21,733 sf of retail space and 315 apartment units. Since completion of the traffic impact analysis, the maximum number of potential residential units has increased from 315 to 320. With 320 units, the number of pedestrian trips shown in this table would increase by 26 for daily conditions, 3 during the a.m. peak hour, and 4 during the p.m. peak hour.

Pedestrian trips associated with City Hall will likely remain unchanged between Existing and Build conditions. No decrease in pedestrian activity related to the Police Station was applied to the volumes shown in **Table 18**, although some minor reduction may occur.

To help safeguard pedestrians as they cross the Project's driveways, the Proponent is committed to installing warning lights on the building near each driveway that are activated when vehicles exit the garage. As discussed in the Mitigation section below, the Proponent will implement many other pedestrian environment improvements in the area.

BICYCLES

Per City of Malden zoning, accommodation for one bicycle rack (capacity for two bicycles) should be provided for every 20 residential dwelling units, or part thereof, above the first 20 units. Therefore, 15 bicycle racks (for 30 bicycles) will be provided for residents.

For commercial space, accommodation should be provided for two bicycles for every 10,000 sf above the first 10,000 sf. For the retail and office space, four bicycle racks (for eight bicycles) will be provided.



Build Loading and Service Activity

All Project residential move-in/move-out activity will be managed by an on-site transportation coordinator. For the south block, move-in/move-out activity will occur on Exchange Street through the garage driveway. For the north block, move-in/move-out activity will occur at a temporary loading zone along Florence Street and under the residential bridge.

A loading zone on Exchange Street, near the corner of Commercial Street, will serve the retail spaces fronting along Commercial Street. For retail spaces fronting along Pleasant Street, loading activity will occur on-street. For the office space, loading will occur along Pleasant Street. The allowable time periods, number, and precise location of on-street loading spaces will be determined through the continuing design review process with the City.

Transportation Demand Management and Mitigation

Transportation Demand Management

While the Project will not significantly impact traffic operations in the study area, the Proponent is committed to implementing a Transportation Demand Management (TDM) program for Project residents in an effort to minimize the Project's vehicular impacts on the adjacent transportation network. TDM measures will promote the use of public transportation (including the MBTA rapid transit, bus, and commuter rail), walking, and bicycling, and other options to reduce single occupant vehicle trips. TDM measures may include, but are not limited to, the following:

- **Transportation Coordinator** – The Project will designate a transportation coordinator to manage all transportation issues associated with the Project. The transportation coordinator will oversee transportation issues, including parking, service, loading, and move-in/move-out activity. The transportation coordinator will work with residents as they move in and to raise awareness of public transportation.
- **Tenant and Resident Orientation Packets** – These packets will provide all new tenants and residents with information about available transportation demand management programs and public transportation options (such as the MBTA rapid transit, bus and commuter rail service in Malden, as well as the local car-sharing services) including program information, route schedules, maps, and fare information. While residents may need to drive, bike, or be dropped off, to take advantage of some of these options, their use can reduce the overall impact on the local and regional transportation network.



- **Bicycle Storage** – The Proponent will provide 38 on-site secure bicycle storage spaces for Project residents and employees within the parking garage.
- **Car-Sharing** – The Proponent will provide up to seven car-sharing spaces in the on-site garage.

Mitigation

While the associated traffic impacts related to the new Project trips are minimal, the Proponent is committed to implementing TDM measures and the improvements described below to enhance both pedestrian and vehicular safety and flow. Improvements will include:

- Install warning lights on the building near each driveway, which are activated when vehicles exit the garage.
- Install pedestrian tactile warning panels at each crosswalk at the intersections of
 - Pleasant Street/Commercial Street/Florence Street,
 - Exchange Street/Commercial Street,
 - Exchange Street/Abbott Street, and
 - Pleasant Street/Abbott Street.
- Restripe existing crosswalks with thermoplastic (ladder pattern) at the intersections⁴ of
 - Pleasant Street/Commercial Street/Florence Street;
 - Exchange Street/Abbott Street, and
 - Pleasant Street/Abbott Street.
- Provide new sidewalks abutting the Project site on the
 - north and south sides of Pleasant Street, between Commercial Street and Abbott Street;
 - east side of Commercial Street, between Exchange Street and Pleasant Street;
 - west side of Abbott Street, and
 - north side of Exchange Street, between Commercial Street and Abbott Street.
- Upgrade the traffic signal equipment to provide signal coordination at the intersections of
 - Pleasant Street/Commercial Street/Florence Street and
 - Exchange Street/Commercial Street.
- Extend pedestrian clearance times at the intersections of
 - Pleasant Street/Commercial Street/Florence Street and
 - Exchange Street/Commercial Street.

⁴ Note that thermoplastic crosswalks at Exchange Street/Commercial Street are being installed by others.



- Provide pedestrian countdown signal heads at the intersections of:
 - Pleasant Street/Commercial Street/Florence Street and
 - Exchange Street/Commercial Street.

These improvements will be made by the Proponent during or after Project construction, as appropriate.

In 2011, the City of Malden conducted a study of traffic operations in the downtown district⁵. The purpose of the study was to assess existing traffic conditions and recommend operational and safety improvements. The improvements outlined above for Pleasant Street/Commercial Street/Florence Street and Exchange Street/Commercial Street reflect recommendations from the 2011 study. The cycle length at the intersection of Pleasant Street/Commercial Street/Florence Street will be increased from 80 seconds to 100 seconds, and the cycle length at the intersection of Exchange Street/Commercial Street will be increased from 46 seconds to 50 seconds. These changes to cycle lengths allow for the signals to be properly coordinated and also allow for the necessary increases to pedestrian clearance intervals.

Table 19 and **Table 20** show the operations at the intersections of Pleasant Street/Commercial Street/Florence Street and Exchange Street/Commercial Street after these mitigation measures are implemented. In general, vehicle delay at the intersection of Pleasant Street/Commercial Street/Florence Street will increase, although the intersection continues to operate at an overall LOS C in both the a.m. and p.m. peak hours. In both the a.m. and p.m. peak hours, the single-lane Pleasant Street westbound approach worsens from LOS C to LOS D. The Pleasant Street eastbound left-turn/through lane and the Commercial Street northbound approach worsen from LOS C to LOS D in the a.m. peak hour only.

It should be noted that the mitigation's primary goal is to improve pedestrian access and circulation, which is not reflected in vehicle level of service analysis. In addition to similar improvements to pedestrian operations, vehicle operations improve slightly at the intersection of Exchange Street/Commercial Street as a result of coordination and increased green time due to the increased cycle length.

⁵ "Traffic Operations Assessment, Malden Central Business District, Malden, Massachusetts," prepared for the City of Malden by BETA Group Inc. July 11, 2011.



Table 19. Build Condition with Mitigation at Select Intersections, a.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Pleasant Street/Florence Street/Commercial Street	C	33.9	0.47	–
Pleasant EB left/thru	D	36.7	0.36	121
Pleasant EB right	C	33.7	0.18	50
Pleasant WB left/thru/right	D	41.7	0.69	239
Commercial NB left/thru	B	18.9	0.38	99
Commercial SB thru/right	D	37.7	0.75	262
Exchange Street/Commercial Street	A	7.0	0.27	–
Commercial NB left/thru thru/right	A	9.2	0.45	74
Commercial SB left/thru thru/right	A	5.2	0.48	96

Table 20. Build Condition with Mitigation at Select Intersections, p.m. Peak Hour

Intersection/Movement	LOS	Delay (seconds)	V/C ratio	95 th percentile queue (feet)
Pleasant Street/Florence Street/Commercial Street	C	26.0	0.47	–
Pleasant EB left/thru	C	34.5	0.17	39
Pleasant EB right	C	33.5	0.17	60
Pleasant WB left/thru/right	D	38.2	0.60	208
Commercial NB left/thru	B	19.3	0.70	171
Commercial SB thru/right	C	26.4	0.30	70
Exchange Street/Commercial Street	B	10.6	0.41	–
Commercial NB left/thru thru/right	B	13.2	0.73	166
Commercial SB left/thru thru/right	A	5.7	0.38	47



Conclusions

The Jefferson at Malden Center project is a mixed-use, transit-oriented development, which will include residential apartments, retail space, office space, and supporting on-site parking. With the associated demolition of the existing Government Center buildings, Pleasant Street will be rejoined to the Commercial Street/Florence Street intersection, allowing better vehicular and pedestrian circulation in the downtown area and improving the connectivity between the Pleasant Street corridor and the MBTA's subway/bus station at Malden Center.

With the relocation of the Police Station and the associated removal of restricted on-street police parking, the Project will result in a net increase of public, on-street parking spaces – a stated goal for the City.

While the net new vehicle trips generated by the Project will not cause significant changes in traffic operations, the Proponent is committed to improving the pedestrian environment and vehicular circulation in the study area. Mitigation measures to be implemented by the Proponent include new sidewalks and crosswalks adjacent to the site. At the intersections of Pleasant Street/Commercial Street/Florence Street and Exchange Street/Commercial Street, traffic signal equipment will be upgraded for coordination to improve traffic flow and new countdown pedestrian signal heads will be installed to enhance pedestrian safety. While clearance times will be lengthened for pedestrians at these locations, the resulting LOS for vehicle traffic will still be acceptable.



HOWARD STEIN HUDSON

Engineers + Planners

Appendix

Jefferson at Malden Center



Appendix A

- Count Data
- Intersection LOS/Synchro Reports
- Crash Data
- Trip Generation
- Malden City Hall Employee Survey



Count Data



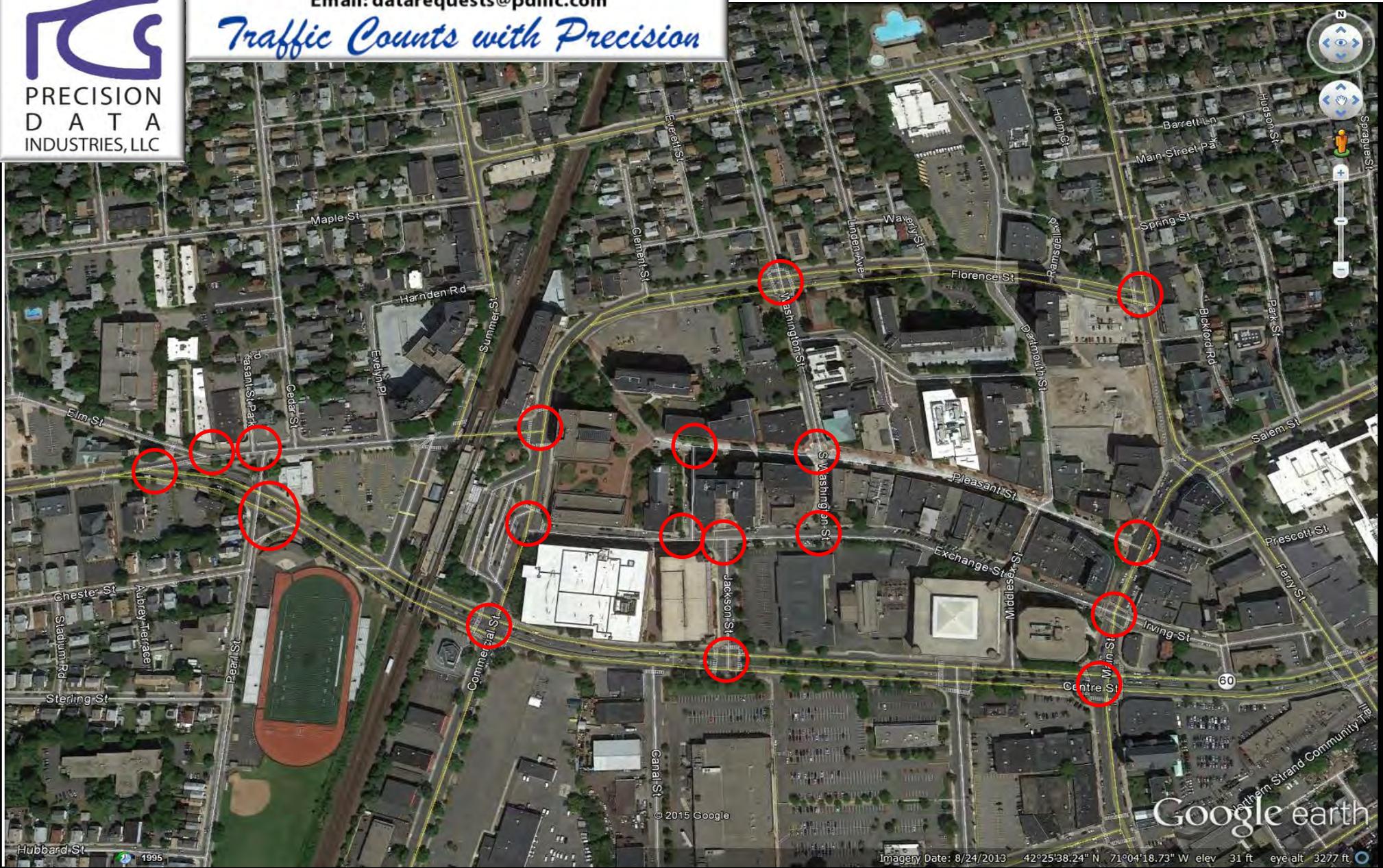
PRECISION
DATA
INDUSTRIES, LLC

PRECISION DATA INDUSTRIES, LLC

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Traffic Counts with Precision



Client:

Howard/ Stein-Hudson

Engineer:

M. Tremblay

Site Code:

2015041

Date:

Wed 4/29/2015

PDI Job Number:

154396

City, State:

Malden, MA



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File Name : 154396 A
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Florence Street From North			Florence Street From South			Pleasant Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	38	78	0	22	20	0	47	5	1	211
07:15 AM	32	99	0	26	15	0	74	2	1	249
07:30 AM	39	128	0	43	23	0	75	3	0	311
07:45 AM	41	130	0	37	31	0	90	4	1	334
Total	150	435	0	128	89	0	286	14	3	1105
08:00 AM	52	126	0	31	20	0	70	5	1	305
08:15 AM	38	126	0	41	26	0	65	5	0	301
08:30 AM	46	101	0	41	26	0	77	5	1	297
08:45 AM	23	77	0	34	38	0	51	4	0	227
Total	159	430	0	147	110	0	263	19	2	1130
09:00 AM	27	68	0	47	21	0	36	4	0	203
09:15 AM	35	60	0	31	24	0	36	6	1	193
09:30 AM	29	63	0	42	25	0	44	5	0	208
09:45 AM	15	57	0	54	18	0	36	3	2	185
Total	106	248	0	174	88	0	152	18	3	789
10:00 AM	25	49	1	34	29	0	41	6	0	185
10:15 AM	23	52	0	51	36	0	36	3	0	201
10:30 AM	22	58	0	43	30	0	45	7	0	205
10:45 AM	21	53	0	38	34	0	24	3	0	173
Total	91	212	1	166	129	0	146	19	0	764
11:00 AM	26	34	1	32	22	0	34	2	0	151
11:15 AM	21	41	0	40	38	1	46	4	0	191
11:30 AM	17	48	1	44	33	0	35	7	0	185
11:45 AM	23	64	0	52	23	0	41	3	0	206
Total	87	187	2	168	116	1	156	16	0	733
12:00 PM	31	54	0	59	28	0	33	0	0	205
12:15 PM	32	52	0	40	24	0	43	5	0	196
12:30 PM	19	38	0	46	19	0	39	7	1	169
12:45 PM	23	52	0	52	39	0	46	2	0	214
Total	105	196	0	197	110	0	161	14	1	784
01:00 PM	26	58	0	57	34	0	40	3	0	218
01:15 PM	28	56	0	59	26	0	43	3	1	216
01:30 PM	27	46	0	40	29	0	47	3	0	192
01:45 PM	31	43	0	54	36	0	35	11	0	210
Total	112	203	0	210	125	0	165	20	1	836
02:00 PM	29	40	0	58	25	0	36	5	0	193
02:15 PM	19	52	0	59	38	0	63	8	0	239
02:30 PM	26	54	0	58	52	0	78	9	0	277
02:45 PM	27	50	0	56	39	0	46	4	0	222
Total	101	196	0	231	154	0	223	26	0	931
03:00 PM	36	55	0	64	32	0	50	5	0	242
03:15 PM	26	56	0	65	20	0	37	3	1	208
03:30 PM	23	57	0	60	34	1	51	5	0	231
03:45 PM	35	45	0	77	35	0	32	2	0	226
Total	120	213	0	266	121	1	170	15	1	907
04:00 PM	32	46	0	63	45	0	45	5	0	236
04:15 PM	30	39	0	67	48	0	50	8	0	242
04:30 PM	32	56	0	66	41	0	51	6	0	252
04:45 PM	29	41	0	86	45	0	52	7	0	260
Total	123	182	0	282	179	0	198	26	0	990



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File Name : 154396 A
Site Code : 2015041
Start Date : 4/29/2015
Page No : 2

N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Florence Street From North			Florence Street From South			Pleasant Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
05:00 PM	29	44	0	97	57	0	55	5	0	287
05:15 PM	19	57	0	81	41	0	57	7	0	262
05:30 PM	28	58	0	92	42	0	65	5	0	290
05:45 PM	30	52	0	90	55	0	49	6	0	282
Total	106	211	0	360	195	0	226	23	0	1121
Grand Total	1260	2713	3	2329	1416	2	2146	210	11	10090
Apprch %	31.7	68.2	0.1	62.2	37.8	0.1	90.7	8.9	0.5	
Total %	12.5	26.9	0	23.1	14	0	21.3	2.1	0.1	
Cars	1219	2553	3	2233	1370	2	2040	198	10	9628
% Cars	96.7	94.1	100	95.9	96.8	100	95.1	94.3	90.9	95.4
Heavy Vehicles	41	160	0	96	46	0	106	12	1	462
% Heavy Vehicles	3.3	5.9	0	4.1	3.2	0	4.9	5.7	9.1	4.6

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	39	128	0	167	43	23	0	66	75	3	0	78	311
07:45 AM	41	130	0	171	37	31	0	68	90	4	1	95	334
08:00 AM	52	126	0	178	31	20	0	51	70	5	1	76	305
08:15 AM	38	126	0	164	41	26	0	67	65	5	0	70	301
Total Volume	170	510	0	680	152	100	0	252	300	17	2	319	1251
% App. Total	25	75	0		60.3	39.7	0		94	5.3	0.6		
PHF	.817	.981	.000	.955	.884	.806	.000	.926	.833	.850	.500	.839	.936
Cars	167	493	0	660	138	97	0	235	287	16	2	305	1200
% Cars	98.2	96.7	0	97.1	90.8	97.0	0	93.3	95.7	94.1	100	95.6	95.9
Heavy Vehicles	3	17	0	20	14	3	0	17	13	1	0	14	51
% Heavy Vehicles	1.8	3.3	0	2.9	9.2	3.0	0	6.7	4.3	5.9	0	4.4	4.1

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:45 PM													
12:45 PM	23	52	0	75	52	39	0	91	46	2	0	48	214
01:00 PM	26	58	0	84	57	34	0	91	40	3	0	43	218
01:15 PM	28	56	0	84	59	26	0	85	43	3	1	47	216
01:30 PM	27	46	0	73	40	29	0	69	47	3	0	50	192
Total Volume	104	212	0	316	208	128	0	336	176	11	1	188	840
% App. Total	32.9	67.1	0		61.9	38.1	0		93.6	5.9	0.5		
PHF	.929	.914	.000	.940	.881	.821	.000	.923	.936	.917	.250	.940	.963
Cars	99	195	0	294	197	122	0	319	170	11	1	182	795
% Cars	95.2	92.0	0	93.0	94.7	95.3	0	94.9	96.6	100	100	96.8	94.6
Heavy Vehicles	5	17	0	22	11	6	0	17	6	0	0	6	45
% Heavy Vehicles	4.8	8.0	0	7.0	5.3	4.7	0	5.1	3.4	0	0	3.2	5.4

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	29	44	0	73	97	57	0	154	55	5	0	60	287
05:15 PM	19	57	0	76	81	41	0	122	57	7	0	64	262
05:30 PM	28	58	0	86	92	42	0	134	65	5	0	70	290
05:45 PM	30	52	0	82	90	55	0	145	49	6	0	55	282
Total Volume	106	211	0	317	360	195	0	555	226	23	0	249	1121
% App. Total	33.4	66.6	0		64.9	35.1	0		90.8	9.2	0		
PHF	.883	.909	.000	.922	.928	.855	.000	.901	.869	.821	.000	.889	.966
Cars	104	199	0	303	356	195	0	551	219	23	0	242	1096
% Cars	98.1	94.3	0	95.6	98.9	100	0	99.3	96.9	100	0	97.2	97.8
Heavy Vehicles	2	12	0	14	4	0	0	4	7	0	0	7	25
% Heavy Vehicles	1.9	5.7	0	4.4	1.1	0	0	0.7	3.1	0	0	2.8	2.2



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Start Time	Florence Street From North			Florence Street From South			Pleasant Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	38	76	0	21	20	0	44	4	1	204
07:15 AM	31	97	0	22	15	0	70	2	1	238
07:30 AM	39	122	0	38	23	0	74	2	0	298
07:45 AM	40	126	0	33	29	0	87	4	1	320
Total	148	421	0	114	87	0	275	12	3	1060
08:00 AM	51	124	0	30	20	0	64	5	1	295
08:15 AM	37	121	0	37	25	0	62	5	0	287
08:30 AM	44	94	0	36	25	0	73	5	1	278
08:45 AM	23	73	0	30	37	0	47	4	0	214
Total	155	412	0	133	107	0	246	19	2	1074
09:00 AM	26	66	0	42	20	0	35	4	0	193
09:15 AM	35	57	0	31	22	0	33	6	1	185
09:30 AM	27	55	0	39	22	0	42	5	0	190
09:45 AM	15	56	0	52	17	0	34	3	1	178
Total	103	234	0	164	81	0	144	18	2	746
10:00 AM	21	48	1	33	27	0	39	6	0	175
10:15 AM	23	48	0	48	35	0	32	2	0	188
10:30 AM	22	54	0	41	28	0	44	7	0	196
10:45 AM	21	50	0	36	32	0	22	3	0	164
Total	87	200	1	158	122	0	137	18	0	723
11:00 AM	25	29	1	32	21	0	34	1	0	143
11:15 AM	20	39	0	37	36	1	45	2	0	180
11:30 AM	15	44	1	40	32	0	32	7	0	171
11:45 AM	22	59	0	49	22	0	38	3	0	193
Total	82	171	2	158	111	1	149	13	0	687
12:00 PM	27	51	0	59	26	0	32	0	0	195
12:15 PM	31	47	0	36	21	0	39	5	0	179
12:30 PM	18	35	0	42	18	0	37	7	1	158
12:45 PM	22	49	0	52	37	0	46	2	0	208
Total	98	182	0	189	102	0	154	14	1	740
01:00 PM	26	53	0	53	32	0	36	3	0	203
01:15 PM	25	52	0	55	26	0	41	3	1	203
01:30 PM	26	41	0	37	27	0	47	3	0	181
01:45 PM	30	37	0	53	33	0	33	11	0	197
Total	107	183	0	198	118	0	157	20	1	784
02:00 PM	29	35	0	54	25	0	33	4	0	180
02:15 PM	17	50	0	56	37	0	59	7	0	226
02:30 PM	26	52	0	57	51	0	74	9	0	269
02:45 PM	26	49	0	54	36	0	43	4	0	212
Total	98	186	0	221	149	0	209	24	0	887
03:00 PM	36	50	0	61	32	0	49	2	0	230
03:15 PM	26	51	0	65	20	0	34	3	1	200
03:30 PM	23	51	0	60	33	1	48	5	0	221
03:45 PM	33	42	0	76	35	0	31	2	0	219
Total	118	194	0	262	120	1	162	12	1	870
04:00 PM	32	44	0	61	45	0	40	5	0	227
04:15 PM	29	35	0	67	48	0	48	7	0	234
04:30 PM	32	55	0	66	40	0	51	6	0	250
04:45 PM	26	37	0	86	45	0	49	7	0	250
Total	119	171	0	280	178	0	188	25	0	961



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File Name : 154396 A
Site Code : 2015041
Start Date : 4/29/2015
Page No : 2

N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Florence Street From North			Florence Street From South			Pleasant Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
05:00 PM	28	40	0	96	57	0	54	5	0	280
05:15 PM	19	54	0	78	41	0	55	7	0	254
05:30 PM	27	55	0	92	42	0	63	5	0	284
05:45 PM	30	50	0	90	55	0	47	6	0	278
Total	104	199	0	356	195	0	219	23	0	1096
Grand Total	1219	2553	3	2233	1370	2	2040	198	10	9628
Apprch %	32.3	67.6	0.1	61.9	38	0.1	90.7	8.8	0.4	
Total %	12.7	26.5	0	23.2	14.2	0	21.2	2.1	0.1	

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	39	122	0	161	38	23	0	61	74	2	0	76	298
07:45 AM	40	126	0	166	33	29	0	62	87	4	1	92	320
08:00 AM	51	124	0	175	30	20	0	50	64	5	1	70	295
08:15 AM	37	121	0	158	37	25	0	62	62	5	0	67	287
Total Volume	167	493	0	660	138	97	0	235	287	16	2	305	1200
% App. Total	25.3	74.7	0		58.7	41.3	0		94.1	5.2	0.7		
PHF	.819	.978	.000	.943	.908	.836	.000	.948	.825	.800	.500	.829	.938

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:45 PM													
12:45 PM	22	49	0	71	52	37	0	89	46	2	0	48	208
01:00 PM	26	53	0	79	53	32	0	85	36	3	0	39	203
01:15 PM	25	52	0	77	55	26	0	81	41	3	1	45	203
01:30 PM	26	41	0	67	37	27	0	64	47	3	0	50	181
Total Volume	99	195	0	294	197	122	0	319	170	11	1	182	795
% App. Total	33.7	66.3	0		61.8	38.2	0		93.4	6	0.5		
PHF	.952	.920	.000	.930	.895	.824	.000	.896	.904	.917	.250	.910	.956

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	28	40	0	68	96	57	0	153	54	5	0	59	280
05:15 PM	19	54	0	73	78	41	0	119	55	7	0	62	254
05:30 PM	27	55	0	82	92	42	0	134	63	5	0	68	284
05:45 PM	30	50	0	80	90	55	0	145	47	6	0	53	278
Total Volume	104	199	0	303	356	195	0	551	219	23	0	242	1096
% App. Total	34.3	65.7	0		64.6	35.4	0		90.5	9.5	0		
PHF	.867	.905	.000	.924	.927	.855	.000	.900	.869	.821	.000	.890	.965



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File Name : 154396 A
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Florence Street From North			Florence Street From South			Pleasant Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	0	2	0	1	0	0	3	1	0	7
07:15 AM	1	2	0	4	0	0	4	0	0	11
07:30 AM	0	6	0	5	0	0	1	1	0	13
07:45 AM	1	4	0	4	2	0	3	0	0	14
Total	2	14	0	14	2	0	11	2	0	45
08:00 AM	1	2	0	1	0	0	6	0	0	10
08:15 AM	1	5	0	4	1	0	3	0	0	14
08:30 AM	2	7	0	5	1	0	4	0	0	19
08:45 AM	0	4	0	4	1	0	4	0	0	13
Total	4	18	0	14	3	0	17	0	0	56
09:00 AM	1	2	0	5	1	0	1	0	0	10
09:15 AM	0	3	0	0	2	0	3	0	0	8
09:30 AM	2	8	0	3	3	0	2	0	0	18
09:45 AM	0	1	0	2	1	0	2	0	1	7
Total	3	14	0	10	7	0	8	0	1	43
10:00 AM	4	1	0	1	2	0	2	0	0	10
10:15 AM	0	4	0	3	1	0	4	1	0	13
10:30 AM	0	4	0	2	2	0	1	0	0	9
10:45 AM	0	3	0	2	2	0	2	0	0	9
Total	4	12	0	8	7	0	9	1	0	41
11:00 AM	1	5	0	0	1	0	0	1	0	8
11:15 AM	1	2	0	3	2	0	1	2	0	11
11:30 AM	2	4	0	4	1	0	3	0	0	14
11:45 AM	1	5	0	3	1	0	3	0	0	13
Total	5	16	0	10	5	0	7	3	0	46
12:00 PM	4	3	0	0	2	0	1	0	0	10
12:15 PM	1	5	0	4	3	0	4	0	0	17
12:30 PM	1	3	0	4	1	0	2	0	0	11
12:45 PM	1	3	0	0	2	0	0	0	0	6
Total	7	14	0	8	8	0	7	0	0	44
01:00 PM	0	5	0	4	2	0	4	0	0	15
01:15 PM	3	4	0	4	0	0	2	0	0	13
01:30 PM	1	5	0	3	2	0	0	0	0	11
01:45 PM	1	6	0	1	3	0	2	0	0	13
Total	5	20	0	12	7	0	8	0	0	52
02:00 PM	0	5	0	4	0	0	3	1	0	13
02:15 PM	2	2	0	3	1	0	4	1	0	13
02:30 PM	0	2	0	1	1	0	4	0	0	8
02:45 PM	1	1	0	2	3	0	3	0	0	10
Total	3	10	0	10	5	0	14	2	0	44
03:00 PM	0	5	0	3	0	0	1	3	0	12
03:15 PM	0	5	0	0	0	0	3	0	0	8
03:30 PM	0	6	0	0	1	0	3	0	0	10
03:45 PM	2	3	0	1	0	0	1	0	0	7
Total	2	19	0	4	1	0	8	3	0	37
04:00 PM	0	2	0	2	0	0	5	0	0	9
04:15 PM	1	4	0	0	0	0	2	1	0	8
04:30 PM	0	1	0	0	1	0	0	0	0	2
04:45 PM	3	4	0	0	0	0	3	0	0	10
Total	4	11	0	2	1	0	10	1	0	29



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File Name : 154396 A
Site Code : 2015041
Start Date : 4/29/2015
Page No : 2

N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Florence Street From North			Florence Street From South			Pleasant Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
05:00 PM	1	4	0	1	0	0	1	0	0	7
05:15 PM	0	3	0	3	0	0	2	0	0	8
05:30 PM	1	3	0	0	0	0	2	0	0	6
05:45 PM	0	2	0	0	0	0	2	0	0	4
Total	2	12	0	4	0	0	7	0	0	25
Grand Total	41	160	0	96	46	0	106	12	1	462
Apprch %	20.4	79.6	0	67.6	32.4	0	89.1	10.1	0.8	
Total %	8.9	34.6	0	20.8	10	0	22.9	2.6	0.2	

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	1	4	0	5	4	2	0	6	3	0	0	3	14
08:00 AM	1	2	0	3	1	0	0	1	6	0	0	6	10
08:15 AM	1	5	0	6	4	1	0	5	3	0	0	3	14
08:30 AM	2	7	0	9	5	1	0	6	4	0	0	4	19
Total Volume	5	18	0	23	14	4	0	18	16	0	0	16	57
% App. Total	21.7	78.3	0		77.8	22.2	0		100	0	0		
PHF	.625	.643	.000	.639	.700	.500	.000	.750	.667	.000	.000	.667	.750

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
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	2	4	0	6	4	1	0	5	3	0	0	3	14
11:45 AM	1	5	0	6	3	1	0	4	3	0	0	3	13
12:00 PM	4	3	0	7	0	2	0	2	1	0	0	1	10
12:15 PM	1	5	0	6	4	3	0	7	4	0	0	4	17
Total Volume	8	17	0	25	11	7	0	18	11	0	0	11	54
% App. Total	32	68	0		61.1	38.9	0		100	0	0		
PHF	.500	.850	.000	.893	.688	.583	.000	.643	.688	.000	.000	.688	.794

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 02:00 PM													
02:00 PM	0	5	0	5	4	0	0	4	3	1	0	4	13
02:15 PM	2	2	0	4	3	1	0	4	4	1	0	5	13
02:30 PM	0	2	0	2	1	1	0	2	4	0	0	4	8
02:45 PM	1	1	0	2	2	3	0	5	3	0	0	3	10
Total Volume	3	10	0	13	10	5	0	15	14	2	0	16	44
% App. Total	23.1	76.9	0		66.7	33.3	0		87.5	12.5	0		
PHF	.375	.500	.000	.650	.625	.417	.000	.750	.875	.500	.000	.800	.846



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Page No : 1

N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	
07:00 AM	0	0	2	9	0	0	3	1	0	0	4	32	51
07:15 AM	0	0	11	12	0	0	1	5	1	0	12	43	85
07:30 AM	1	0	19	17	0	0	9	7	0	0	16	41	110
07:45 AM	0	0	13	21	0	0	10	2	0	0	5	54	105
Total	1	0	45	59	0	0	23	15	1	0	37	170	351
08:00 AM	0	0	7	24	0	0	12	2	0	0	3	54	102
08:15 AM	0	0	20	29	0	0	19	5	0	0	13	59	145
08:30 AM	0	0	15	34	0	0	16	8	0	0	10	55	138
08:45 AM	0	0	22	24	0	0	9	5	0	0	9	42	111
Total	0	0	64	111	0	0	56	20	0	0	35	210	496
09:00 AM	0	0	5	28	0	0	28	3	0	0	4	44	112
09:15 AM	0	0	16	12	0	0	11	7	0	0	8	41	95
09:30 AM	0	0	77	21	0	0	14	2	0	0	7	39	160
09:45 AM	0	0	15	23	0	0	8	2	0	0	5	35	88
Total	0	0	113	84	0	0	61	14	0	0	24	159	455
10:00 AM	0	0	11	11	0	0	14	3	0	0	17	29	85
10:15 AM	0	0	8	17	0	0	13	4	0	0	8	27	77
10:30 AM	0	0	12	16	0	0	13	2	0	0	11	23	77
10:45 AM	0	0	9	12	0	0	14	2	0	0	4	24	65
Total	0	0	40	56	0	0	54	11	0	0	40	103	304
11:00 AM	0	0	15	6	0	0	3	2	0	0	13	26	65
11:15 AM	0	0	27	12	0	0	12	5	0	0	8	16	80
11:30 AM	0	0	26	10	0	0	9	4	0	0	10	24	83
11:45 AM	0	0	9	65	0	0	14	7	0	0	13	30	138
Total	0	0	77	93	0	0	38	18	0	0	44	96	366
12:00 PM	0	0	11	17	0	0	21	3	0	1	8	25	86
12:15 PM	0	1	12	18	0	0	10	6	0	0	6	28	81
12:30 PM	0	0	10	18	0	0	7	8	0	0	10	33	86
12:45 PM	0	0	9	11	0	1	13	2	0	0	2	15	53
Total	0	1	42	64	0	1	51	19	0	1	26	101	306
01:00 PM	0	0	12	20	0	0	9	7	0	0	11	17	76
01:15 PM	0	0	10	17	0	0	8	7	0	0	10	14	66
01:30 PM	0	0	7	17	0	0	6	4	0	0	8	19	61
01:45 PM	0	0	17	17	0	1	4	1	0	0	5	14	59
Total	0	0	46	71	0	1	27	19	0	0	34	64	262
02:00 PM	0	0	22	17	0	0	5	5	0	0	10	68	127
02:15 PM	0	0	20	14	0	0	8	10	0	0	7	35	94
02:30 PM	0	0	12	18	0	0	12	3	0	0	6	24	75
02:45 PM	0	0	21	14	0	0	13	3	0	0	12	20	83
Total	0	0	75	63	0	0	38	21	0	0	35	147	379
03:00 PM	0	0	16	19	0	0	18	6	0	0	8	25	92
03:15 PM	0	0	10	11	0	0	12	1	0	0	8	17	59
03:30 PM	2	0	15	18	0	0	7	6	0	0	20	15	83
03:45 PM	0	0	8	12	0	0	10	7	0	0	6	13	56
Total	2	0	49	60	0	0	47	20	0	0	42	70	290
04:00 PM	0	0	17	23	0	0	9	8	0	0	6	23	86
04:15 PM	0	0	13	9	0	0	4	9	0	0	8	19	62
04:30 PM	0	0	10	13	0	0	9	9	0	0	12	24	77
04:45 PM	0	0	22	8	1	0	10	6	0	0	14	21	82
Total	0	0	62	53	1	0	32	32	0	0	40	87	307



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N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	
05:00 PM	0	0	11	11	0	0	8	6	0	0	14	17	67
05:15 PM	0	0	25	27	0	0	5	15	0	0	11	21	104
05:30 PM	0	0	16	12	0	0	10	11	1	0	12	17	79
05:45 PM	0	1	34	23	0	0	3	9	0	0	14	15	99
Total	0	1	86	73	0	0	26	41	1	0	51	70	349
Grand Total	3	2	699	787	1	2	453	230	2	1	408	1277	3865
Apprch %	0.2	0.1	46.9	52.8	0.1	0.3	66	33.5	0.1	0.1	24.2	75.7	
Total %	0.1	0.1	18.1	20.4	0	0.1	11.7	6	0.1	0	10.6	33	

Start Time	Florence Street From North					Florence Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	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	0	0	20	29	49	0	0	19	5	24	0	0	13	59	72	145
08:30 AM	0	0	15	34	49	0	0	16	8	24	0	0	10	55	65	138
08:45 AM	0	0	22	24	46	0	0	9	5	14	0	0	9	42	51	111
09:00 AM	0	0	5	28	33	0	0	28	3	31	0	0	4	44	48	112
Total Volume	0	0	62	115	177	0	0	72	21	93	0	0	36	200	236	506
% App. Total	0	0	35	65		0	0	77.4	22.6		0	0	15.3	84.7		
PHF	.000	.000	.705	.846	.903	.000	.000	.643	.656	.750	.000	.000	.692	.847	.819	.872

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																
Start Time	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	Int. Total
11:45 AM	0	0	9	65	74	0	0	14	7	21	0	0	13	30	43	138
12:00 PM	0	0	11	17	28	0	0	21	3	24	0	1	8	25	34	86
12:15 PM	0	1	12	18	31	0	0	10	6	16	0	0	6	28	34	81
12:30 PM	0	0	10	18	28	0	0	7	8	15	0	0	10	33	43	86
Total Volume	0	1	42	118	161	0	0	52	24	76	0	1	37	116	154	391
% App. Total	0	0.6	26.1	73.3		0	0	68.4	31.6		0	0.6	24	75.3		
PHF	.000	.250	.875	.454	.544	.000	.000	.619	.750	.792	.000	.250	.712	.879	.895	.708

Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 02:00 PM																
Start Time	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	Int. Total
02:00 PM	0	0	22	17	39	0	0	5	5	10	0	0	10	68	78	127
02:15 PM	0	0	20	14	34	0	0	8	10	18	0	0	7	35	42	94
02:30 PM	0	0	12	18	30	0	0	12	3	15	0	0	6	24	30	75
02:45 PM	0	0	21	14	35	0	0	13	3	16	0	0	12	20	32	83
Total Volume	0	0	75	63	138	0	0	38	21	59	0	0	35	147	182	379
% App. Total	0	0	54.3	45.7		0	0	64.4	35.6		0	0	19.2	80.8		
PHF	.000	.000	.852	.875	.885	.000	.000	.731	.525	.819	.000	.000	.729	.540	.583	.746



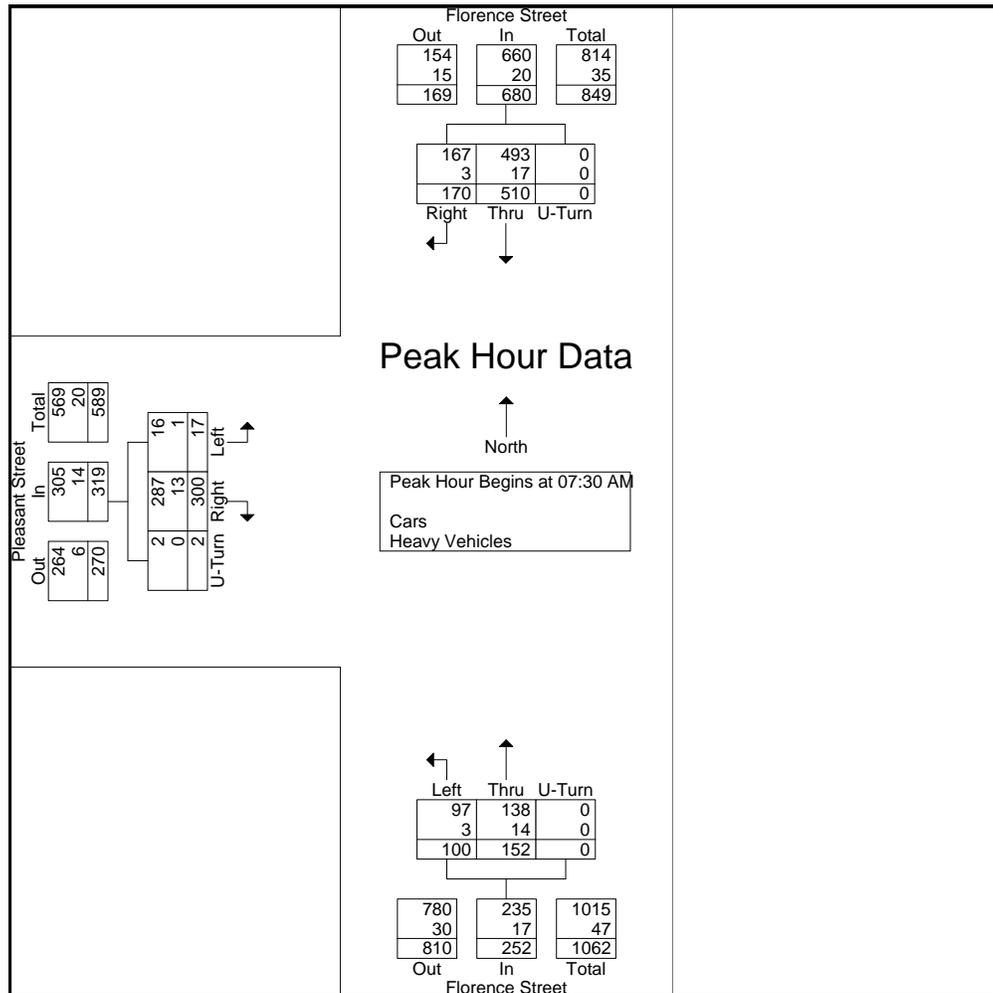
PRECISION
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P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
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N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 A
Site Code : 2015041
Start Date : 4/29/2015
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Start Time	Florence Street From North				Florence Street From South				Pleasant Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	39	128	0	167	43	23	0	66	75	3	0	78	311
07:45 AM	41	130	0	171	37	31	0	68	90	4	1	95	334
08:00 AM	52	126	0	178	31	20	0	51	70	5	1	76	305
08:15 AM	38	126	0	164	41	26	0	67	65	5	0	70	301
Total Volume	170	510	0	680	152	100	0	252	300	17	2	319	1251
% App. Total	25	75	0		60.3	39.7	0		94	5.3	0.6		
PHF	.817	.981	.000	.955	.884	.806	.000	.926	.833	.850	.500	.839	.936
Cars	167	493	0	660	138	97	0	235	287	16	2	305	1200
% Cars	98.2	96.7	0	97.1	90.8	97.0	0	93.3	95.7	94.1	100	95.6	95.9
Heavy Vehicles	3	17	0	20	14	3	0	17	13	1	0	14	51
% Heavy Vehicles	1.8	3.3	0	2.9	9.2	3.0	0	6.7	4.3	5.9	0	4.4	4.1





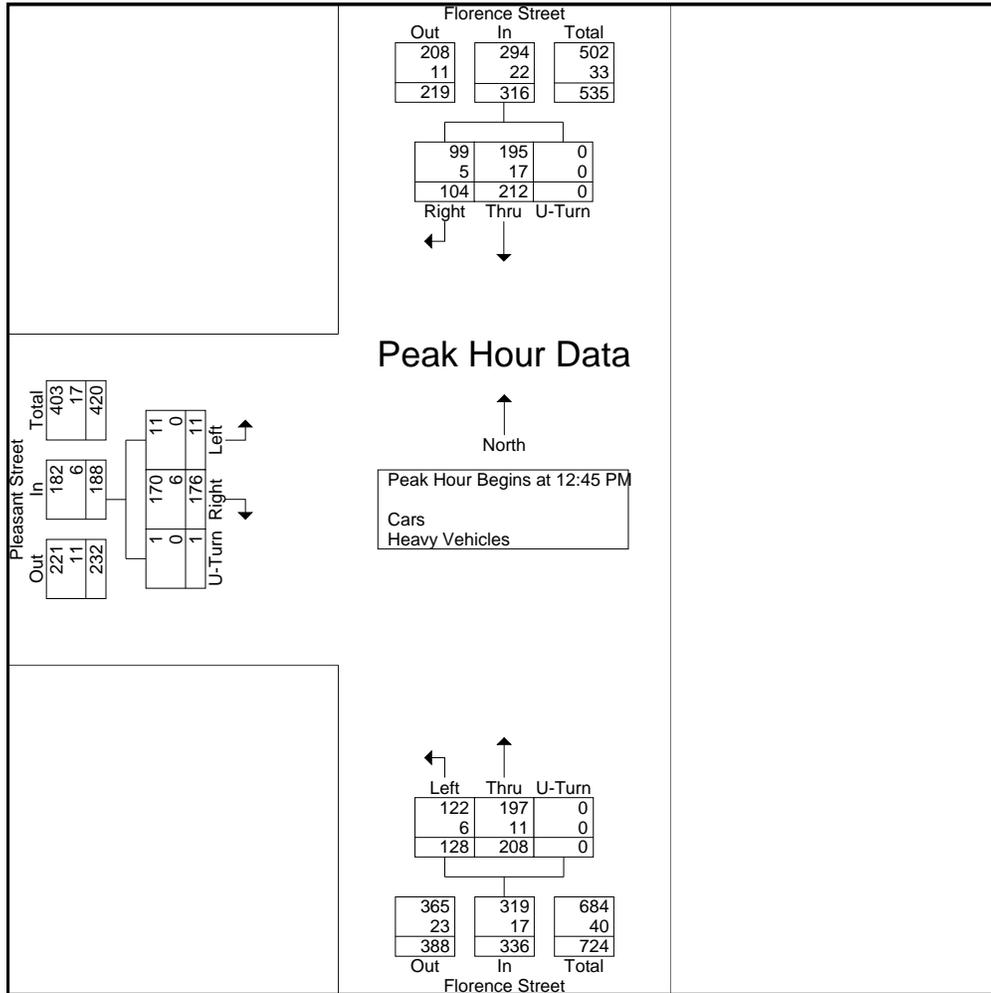
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File Name : 154396 A
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Page No : 2

N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Florence Street From North			App. Total	Florence Street From South			App. Total	Pleasant Street From West			App. Total	Int. Total
	Right	Thru	U-Turn		Thru	Left	U-Turn		Right	Left	U-Turn		
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 12:45 PM													
12:45 PM	23	52	0	75	52	39	0	91	46	2	0	48	214
01:00 PM	26	58	0	84	57	34	0	91	40	3	0	43	218
01:15 PM	28	56	0	84	59	26	0	85	43	3	1	47	216
01:30 PM	27	46	0	73	40	29	0	69	47	3	0	50	192
Total Volume	104	212	0	316	208	128	0	336	176	11	1	188	840
% App. Total	32.9	67.1	0		61.9	38.1	0		93.6	5.9	0.5		
PHF	.929	.914	.000	.940	.881	.821	.000	.923	.936	.917	.250	.940	.963
Cars	99	195	0	294	197	122	0	319	170	11	1	182	795
% Cars	95.2	92.0	0	93.0	94.7	95.3	0	94.9	96.6	100	100	96.8	94.6
Heavy Vehicles	5	17	0	22	11	6	0	17	6	0	0	6	45
% Heavy Vehicles	4.8	8.0	0	7.0	5.3	4.7	0	5.1	3.4	0	0	3.2	5.4





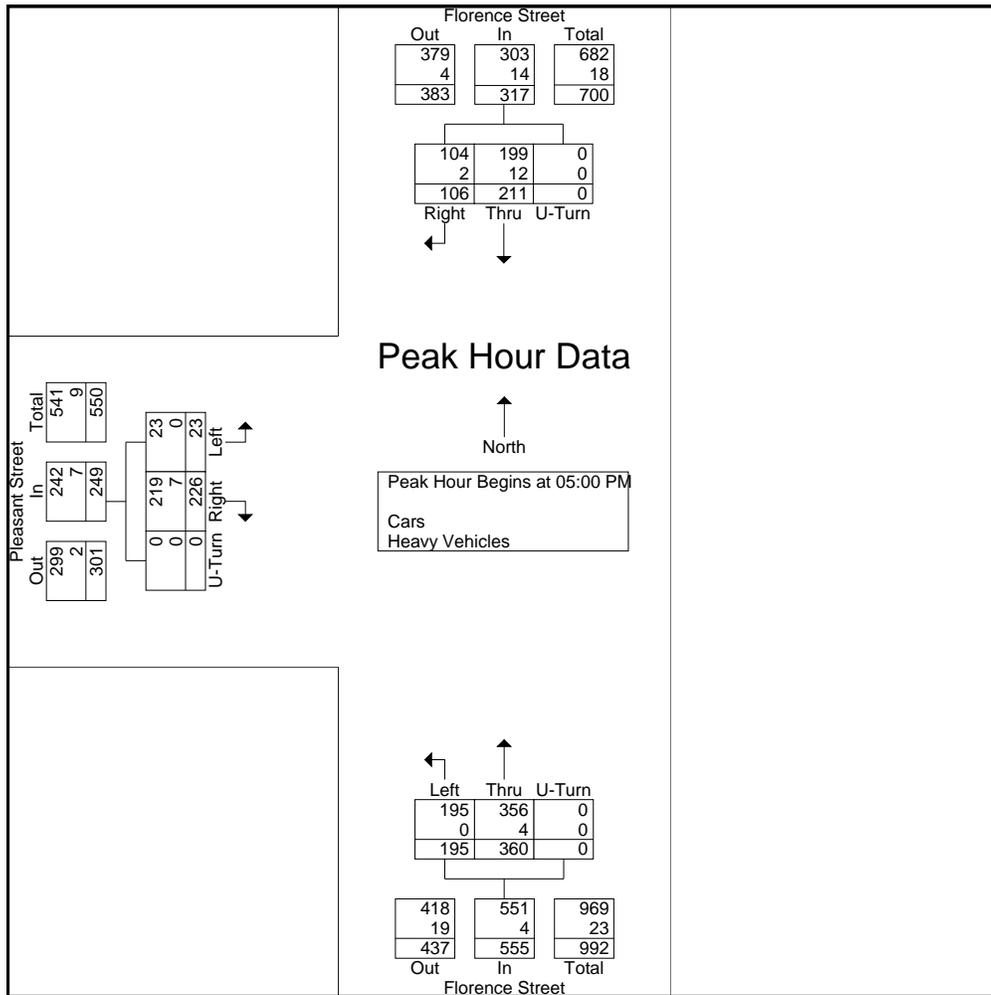
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File Name : 154396 A
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Page No : 3

N/S: Florence Street
W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Florence Street From North			App. Total	Florence Street From South			App. Total	Pleasant Street From West			App. Total	Int. Total
	Right	Thru	U-Turn		Thru	Left	U-Turn		Right	Left	U-Turn		
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	29	44	0	73	97	57	0	154	55	5	0	60	287
05:15 PM	19	57	0	76	81	41	0	122	57	7	0	64	262
05:30 PM	28	58	0	86	92	42	0	134	65	5	0	70	290
05:45 PM	30	52	0	82	90	55	0	145	49	6	0	55	282
Total Volume	106	211	0	317	360	195	0	555	226	23	0	249	1121
% App. Total	33.4	66.6	0		64.9	35.1	0		90.8	9.2	0		
PHF	.883	.909	.000	.922	.928	.855	.000	.901	.869	.821	.000	.889	.966
Cars	104	199	0	303	356	195	0	551	219	23	0	242	1096
% Cars	98.1	94.3	0	95.6	98.9	100	0	99.3	96.9	100	0	97.2	97.8
Heavy Vehicles	2	12	0	14	4	0	0	4	7	0	0	7	25
% Heavy Vehicles	1.9	5.7	0	4.4	1.1	0	0	0.7	3.1	0	0	2.8	2.2





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Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street Park/ Pearl Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Pleasant Street Park From North				Pleasant Street From East				Pearl Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	2	63	28	0	2	2	10	0	0	0	0	0	107
07:15 AM	0	0	0	0	1	68	29	0	0	0	16	0	0	0	0	0	114
07:30 AM	0	0	0	0	1	69	35	0	0	1	30	0	0	0	0	0	136
07:45 AM	1	1	0	0	2	96	49	0	0	0	25	0	1	0	0	0	175
Total	1	1	0	0	6	296	141	0	2	3	81	0	1	0	0	0	532
08:00 AM	1	0	0	0	0	108	44	0	1	4	33	0	0	0	0	0	191
08:15 AM	0	0	0	0	4	66	39	0	2	6	25	0	0	0	0	0	142
08:30 AM	0	0	0	0	1	71	33	0	1	2	12	0	0	0	0	0	120
08:45 AM	0	0	0	0	3	46	11	0	0	4	10	0	0	0	0	0	74
Total	1	0	0	0	8	291	127	0	4	16	80	0	0	0	0	0	527
Grand Total	2	1	0	0	14	587	268	0	6	19	161	0	1	0	0	0	1059
Apprch %	66.7	33.3	0	0	1.6	67.5	30.8	0	3.2	10.2	86.6	0	100	0	0	0	
Total %	0.2	0.1	0	0	1.3	55.4	25.3	0	0.6	1.8	15.2	0	0.1	0	0	0	
Cars	1	1	0	0	14	560	264	0	5	18	157	0	1	0	0	0	1021
% Cars	50	100	0	0	100	95.4	98.5	0	83.3	94.7	97.5	0	100	0	0	0	96.4
Heavy Vehicles	1	0	0	0	0	27	4	0	1	1	4	0	0	0	0	0	38
% Heavy Vehicles	50	0	0	0	0	4.6	1.5	0	16.7	5.3	2.5	0	0	0	0	0	3.6

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	1	69	35	0	105	0	1	30	0	31	0	0	0	0	0	136
07:45 AM	1	1	0	0	2	2	96	49	0	147	0	0	25	0	25	1	0	0	0	1	175
08:00 AM	1	0	0	0	1	0	108	44	0	152	1	4	33	0	38	0	0	0	0	0	191
08:15 AM	0	0	0	0	0	4	66	39	0	109	2	6	25	0	33	0	0	0	0	0	142
Total Volume	2	1	0	0	3	7	339	167	0	513	3	11	113	0	127	1	0	0	0	1	644
% App. Total	66.7	33.3	0	0		1.4	66.1	32.6	0		2.4	8.7	89	0		100	0	0	0		
PHF	.500	.250	.000	.000	.375	.438	.785	.852	.000	.844	.375	.458	.856	.000	.836	.250	.000	.000	.000	.250	.843
Cars	1	1	0	0	2	7	325	166	0	498	3	11	111	0	125	1	0	0	0	1	626
% Cars	50.0	100	0	0	66.7	100	95.9	99.4	0	97.1	100	100	98.2	0	98.4	100	0	0	0	100	97.2
Heavy Vehicles	1	0	0	0	1	0	14	1	0	15	0	0	2	0	2	0	0	0	0	0	18
% Heavy Vehicles	50.0	0	0	0	33.3	0	4.1	0.6	0	2.9	0	0	1.8	0	1.6	0	0	0	0	0	2.8



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File Name : 154396 B
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street Park/ Pearl Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Pleasant Street Park From North				Pleasant Street From East				Pearl Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	2	60	28	0	2	1	10	0	0	0	0	0	103
07:15 AM	0	0	0	0	1	65	28	0	0	0	16	0	0	0	0	0	110
07:30 AM	0	0	0	0	1	67	35	0	0	1	30	0	0	0	0	0	134
07:45 AM	1	1	0	0	2	93	49	0	0	0	25	0	1	0	0	0	172
Total	1	1	0	0	6	285	140	0	2	2	81	0	1	0	0	0	519
08:00 AM	0	0	0	0	0	104	43	0	1	4	31	0	0	0	0	0	183
08:15 AM	0	0	0	0	4	61	39	0	2	6	25	0	0	0	0	0	137
08:30 AM	0	0	0	0	1	67	33	0	0	2	10	0	0	0	0	0	113
08:45 AM	0	0	0	0	3	43	9	0	0	4	10	0	0	0	0	0	69
Total	0	0	0	0	8	275	124	0	3	16	76	0	0	0	0	0	502
Grand Total	1	1	0	0	14	560	264	0	5	18	157	0	1	0	0	0	1021
Apprch %	50	50	0	0	1.7	66.8	31.5	0	2.8	10	87.2	0	100	0	0	0	
Total %	0.1	0.1	0	0	1.4	54.8	25.9	0	0.5	1.8	15.4	0	0.1	0	0	0	

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	1	67	35	0	103	0	1	30	0	31	0	0	0	0	0	134
07:45 AM	1	1	0	0	2	2	93	49	0	144	0	0	25	0	25	1	0	0	0	1	172
08:00 AM	0	0	0	0	0	0	104	43	0	147	1	4	31	0	36	0	0	0	0	0	183
08:15 AM	0	0	0	0	0	4	61	39	0	104	2	6	25	0	33	0	0	0	0	0	137
Total Volume	1	1	0	0	2	7	325	166	0	498	3	11	111	0	125	1	0	0	0	1	626
% App. Total	50	50	0	0		1.4	65.3	33.3	0		2.4	8.8	88.8	0		100	0	0	0		
PHF	.250	.250	.000	.000	.250	.438	.781	.847	.000	.847	.375	.458	.895	.000	.868	.250	.000	.000	.000	.250	.855



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N/S: Pleasant Street Park/ Pearl Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Pleasant Street Park From North				Pleasant Street From East				Pearl Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	3	0	0	0	1	0	0	0	0	0	0	4
07:15 AM	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	4
07:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
07:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	0	0	11	1	0	0	1	0	0	0	0	0	0	13
08:00 AM	1	0	0	0	0	4	1	0	0	0	2	0	0	0	0	0	8
08:15 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
08:30 AM	0	0	0	0	0	4	0	0	1	0	2	0	0	0	0	0	7
08:45 AM	0	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	5
Total	1	0	0	0	0	16	3	0	1	0	4	0	0	0	0	0	25
Grand Total	1	0	0	0	0	27	4	0	1	1	4	0	0	0	0	0	38
Apprch %	100	0	0	0	0	87.1	12.9	0	16.7	16.7	66.7	0	0	0	0	0	
Total %	2.6	0	0	0	0	71.1	10.5	0	2.6	2.6	10.5	0	0	0	0	0	

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	1	0	0	0	1	0	4	1	0	5	0	0	2	0	2	0	0	0	0	0	8
08:15 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	0	0	5
08:30 AM	0	0	0	0	0	0	4	0	0	4	1	0	2	0	3	0	0	0	0	0	7
08:45 AM	0	0	0	0	0	0	3	2	0	5	0	0	0	0	0	0	0	0	0	0	5
Total Volume	1	0	0	0	1	0	16	3	0	19	1	0	4	0	5	0	0	0	0	0	25
% App. Total	100	0	0	0		0	84.2	15.8	0		20	0	80	0		0	0	0	0		
PHF	.250	.000	.000	.000	.250	.000	.800	.375	.000	.950	.250	.000	.500	.000	.417	.000	.000	.000	.000	.000	.781



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Groups Printed- Peds and Bikes

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	16	1	0	0	0	5	0	0	0	0	0	12	0	0	0	0	0	34
07:15 AM	0	0	0	26	4	0	0	0	13	2	0	0	0	0	9	0	0	0	0	0	54
07:30 AM	0	0	0	26	11	0	0	0	10	0	0	0	0	1	11	0	0	0	0	0	59
07:45 AM	0	0	0	21	16	0	0	0	7	1	0	0	0	1	11	0	0	0	0	0	57
Total	0	0	0	89	32	0	0	0	35	3	0	0	0	2	43	0	0	0	0	0	204
08:00 AM	0	0	0	30	28	0	0	1	9	2	0	0	0	9	13	0	0	0	0	0	92
08:15 AM	0	0	0	54	19	0	0	0	19	3	0	0	0	10	20	0	0	0	2	0	127
08:30 AM	0	0	0	36	2	0	0	0	15	0	0	0	0	1	8	0	0	0	0	0	62
08:45 AM	0	0	0	18	8	0	0	1	11	1	0	0	0	4	9	0	0	0	0	0	52
Total	0	0	0	138	57	0	0	2	54	6	0	0	0	24	50	0	0	0	2	0	333
Grand Total	0	0	0	227	89	0	0	2	89	9	0	0	0	26	93	0	0	0	2	0	537
Apprch %	0	0	0	71.8	28.2	0	0	2	89	9	0	0	0	21.8	78.2	0	0	0	100	0	
Total %	0	0	0	42.3	16.6	0	0	0.4	16.6	1.7	0	0	0	4.8	17.3	0	0	0	0.4	0	

Start Time	Pleasant Street Park From North						Pleasant Street From East						Pearl Street From South						Pleasant Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:45 AM																									
07:45 AM	0	0	0	21	16	37	0	0	0	7	1	8	0	0	0	1	11	12	0	0	0	0	0	0	57
08:00 AM	0	0	0	30	28	58	0	0	1	9	2	12	0	0	0	9	13	22	0	0	0	0	0	0	92
08:15 AM	0	0	0	54	19	73	0	0	0	19	3	22	0	0	0	10	20	30	0	0	0	2	0	2	127
08:30 AM	0	0	0	36	2	38	0	0	0	15	0	15	0	0	0	1	8	9	0	0	0	0	0	0	62
Total Volume	0	0	0	141	65	206	0	0	1	50	6	57	0	0	0	21	52	73	0	0	0	2	0	2	338
% App. Total	0	0	0	68.4	31.6		0	0	1.8	87.7	10.5		0	0	0	28.8	71.2		0	0	0	100	0		
PHF	.000	.000	.000	.653	.580	.705	.000	.000	.250	.658	.500	.648	.000	.000	.000	.525	.650	.608	.000	.000	.000	.250	.000	.250	.665



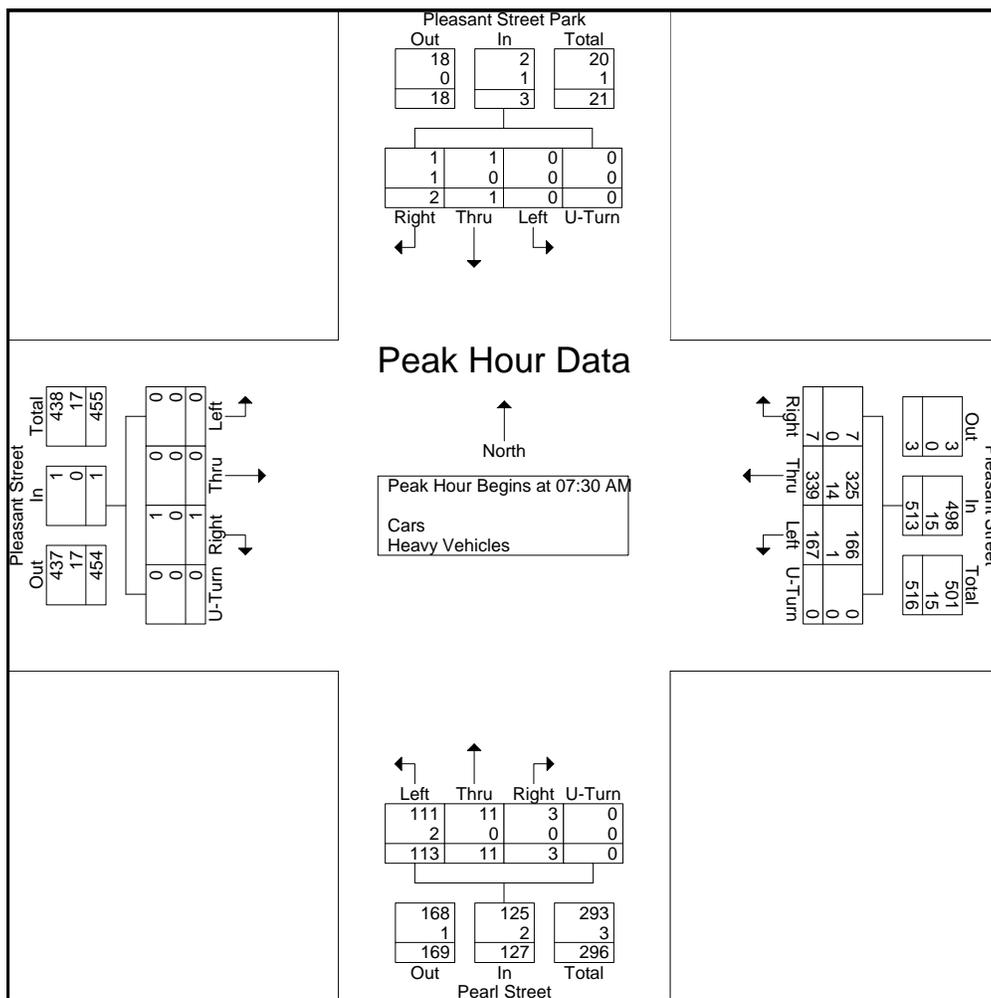
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File Name : 154396 B
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street Park/ Pearl Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	1	69	35	0	105	0	1	30	0	31	0	0	0	0	0	136
07:45 AM	1	1	0	0	2	2	96	49	0	147	0	0	25	0	25	1	0	0	0	1	175
08:00 AM	1	0	0	0	1	0	108	44	0	152	1	4	33	0	38	0	0	0	0	0	191
08:15 AM	0	0	0	0	0	4	66	39	0	109	2	6	25	0	33	0	0	0	0	0	142
Total Volume	2	1	0	0	3	7	339	167	0	513	3	11	113	0	127	1	0	0	0	1	644
% App. Total	66.7	33.3	0	0		1.4	66.1	32.6	0		2.4	8.7	89	0		100	0	0	0		
PHF	.500	.250	.000	.000	.375	.438	.785	.852	.000	.844	.375	.458	.856	.000	.836	.250	.000	.000	.000	.250	.843
Cars	1	1	0	0	2	7	325	166	0	498	3	11	111	0	125	1	0	0	0	1	626
% Cars	50.0	100	0	0	66.7	100	95.9	99.4	0	97.1	100	100	98.2	0	98.4	100	0	0	0	100	97.2
Heavy Vehicles	1	0	0	0	1	0	14	1	0	15	0	0	2	0	2	0	0	0	0	0	18
% Heavy Vehicles	50.0	0	0	0	33.3	0	4.1	0.6	0	2.9	0	0	1.8	0	1.6	0	0	0	0	0	2.8





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File Name : 154396 BB
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N/S: Pleasant Street Park/ Pearl Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Pleasant Street Park From North				Pleasant Street From East				Pearl Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	0	47	23	0	0	5	54	0	0	0	0	0	129
04:15 PM	4	2	1	0	0	49	17	0	1	3	40	0	0	0	0	0	117
04:30 PM	4	4	0	0	3	53	22	0	0	4	45	0	0	0	0	0	135
04:45 PM	2	1	0	0	2	55	18	0	2	6	42	0	0	0	0	0	128
Total	10	7	1	0	5	204	80	0	3	18	181	0	0	0	0	0	509
05:00 PM	3	3	1	0	1	45	41	0	1	2	65	0	0	0	0	0	162
05:15 PM	1	2	0	0	1	60	23	0	1	15	56	0	0	0	0	0	159
05:30 PM	2	1	0	0	1	63	24	0	1	10	47	0	0	0	0	0	149
05:45 PM	1	0	0	0	4	65	32	0	1	7	35	0	0	0	0	0	145
Total	7	6	1	0	7	233	120	0	4	34	203	0	0	0	0	0	615
Grand Total	17	13	2	0	12	437	200	0	7	52	384	0	0	0	0	0	1124
Apprch %	53.1	40.6	6.2	0	1.8	67.3	30.8	0	1.6	11.7	86.7	0	0	0	0	0	
Total %	1.5	1.2	0.2	0	1.1	38.9	17.8	0	0.6	4.6	34.2	0	0	0	0	0	
Cars	17	13	2	0	12	413	197	0	7	52	379	0	0	0	0	0	1092
% Cars	100	100	100	0	100	94.5	98.5	0	100	100	98.7	0	0	0	0	0	97.2
Heavy Vehicles	0	0	0	0	0	24	3	0	0	0	5	0	0	0	0	0	32
% Heavy Vehicles	0	0	0	0	0	5.5	1.5	0	0	0	1.3	0	0	0	0	0	2.8

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	3	3	1	0	7	1	45	41	0	87	1	2	65	0	68	0	0	0	0	0	162
05:15 PM	1	2	0	0	3	1	60	23	0	84	1	15	56	0	72	0	0	0	0	0	159
05:30 PM	2	1	0	0	3	1	63	24	0	88	1	10	47	0	58	0	0	0	0	0	149
05:45 PM	1	0	0	0	1	4	65	32	0	101	1	7	35	0	43	0	0	0	0	0	145
Total Volume	7	6	1	0	14	7	233	120	0	360	4	34	203	0	241	0	0	0	0	0	615
% App. Total	50	42.9	7.1	0		1.9	64.7	33.3	0		1.7	14.1	84.2	0		0	0	0	0	0	
PHF	.583	.500	.250	.000	.500	.438	.896	.732	.000	.891	1.00	.567	.781	.000	.837	.000	.000	.000	.000	.000	.949
Cars	7	6	1	0	14	7	223	119	0	349	4	34	200	0	238	0	0	0	0	0	601
% Cars	100	100	100	0	100	100	95.7	99.2	0	96.9	100	100	98.5	0	98.8	0	0	0	0	0	97.7
Heavy Vehicles	0	0	0	0	0	0	10	1	0	11	0	0	3	0	3	0	0	0	0	0	14
% Heavy Vehicles	0	0	0	0	0	0	4.3	0.8	0	3.1	0	0	1.5	0	1.2	0	0	0	0	0	2.3



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Page No : 1

N/S: Pleasant Street Park/ Pearl Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Pleasant Street Park From North				Pleasant Street From East				Pearl Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	0	46	22	0	0	5	53	0	0	0	0	0	126
04:15 PM	4	2	1	0	0	45	16	0	1	3	40	0	0	0	0	0	112
04:30 PM	4	4	0	0	3	51	22	0	0	4	45	0	0	0	0	0	133
04:45 PM	2	1	0	0	2	48	18	0	2	6	41	0	0	0	0	0	120
Total	10	7	1	0	5	190	78	0	3	18	179	0	0	0	0	0	491
05:00 PM	3	3	1	0	1	40	41	0	1	2	63	0	0	0	0	0	155
05:15 PM	1	2	0	0	1	58	23	0	1	15	56	0	0	0	0	0	157
05:30 PM	2	1	0	0	1	62	23	0	1	10	47	0	0	0	0	0	147
05:45 PM	1	0	0	0	4	63	32	0	1	7	34	0	0	0	0	0	142
Total	7	6	1	0	7	223	119	0	4	34	200	0	0	0	0	0	601
Grand Total	17	13	2	0	12	413	197	0	7	52	379	0	0	0	0	0	1092
Apprch %	53.1	40.6	6.2	0	1.9	66.4	31.7	0	1.6	11.9	86.5	0	0	0	0	0	
Total %	1.6	1.2	0.2	0	1.1	37.8	18	0	0.6	4.8	34.7	0	0	0	0	0	

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	3	3	1	0	7	1	40	41	0	82	1	2	63	0	66	0	0	0	0	0	155
05:15 PM	1	2	0	0	3	1	58	23	0	82	1	15	56	0	72	0	0	0	0	0	157
05:30 PM	2	1	0	0	3	1	62	23	0	86	1	10	47	0	58	0	0	0	0	0	147
05:45 PM	1	0	0	0	1	4	63	32	0	99	1	7	34	0	42	0	0	0	0	0	142
Total Volume	7	6	1	0	14	7	223	119	0	349	4	34	200	0	238	0	0	0	0	0	601
% App. Total	50	42.9	7.1	0		2	63.9	34.1	0		1.7	14.3	84	0		0	0	0	0		
PHF	.583	.500	.250	.000	.500	.438	.885	.726	.000	.881	1.00	.567	.794	.000	.826	.000	.000	.000	.000	.000	.957



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N/S: Pleasant Street Park/ Pearl Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Pleasant Street Park From North				Pleasant Street From East				Pearl Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	3
04:15 PM	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	5
04:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	7	0	0	0	0	1	0	0	0	0	0	8
Total	0	0	0	0	0	14	2	0	0	0	2	0	0	0	0	0	18
05:00 PM	0	0	0	0	0	5	0	0	0	0	2	0	0	0	0	0	7
05:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
05:30 PM	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	3
Total	0	0	0	0	0	10	1	0	0	0	3	0	0	0	0	0	14
Grand Total	0	0	0	0	0	24	3	0	0	0	5	0	0	0	0	0	32
Apprch %	0	0	0	0	0	88.9	11.1	0	0	0	100	0	0	0	0	0	
Total %	0	0	0	0	0	75	9.4	0	0	0	15.6	0	0	0	0	0	

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	5
04:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	7	0	0	7	0	0	1	0	1	0	0	0	0	0	8
05:00 PM	0	0	0	0	0	0	5	0	0	5	0	0	2	0	2	0	0	0	0	0	7
Total Volume	0	0	0	0	0	0	18	1	0	19	0	0	3	0	3	0	0	0	0	0	22
% App. Total	0	0	0	0	0	0	94.7	5.3	0		0	0	100	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.643	.250	.000	.679	.000	.000	.375	.000	.375	.000	.000	.000	.000	.000	.688



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N/S: Pleasant Street Park/ Pearl Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Pleasant Street Park From North					Pleasant Street From East					Pearl Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	9	17	0	0	0	1	1	0	0	0	7	0	0	0	0	0	0	35
04:15 PM	0	0	0	18	13	0	0	1	6	5	0	0	0	2	3	0	0	0	1	0	49
04:30 PM	0	0	0	12	20	0	1	0	3	4	0	0	0	6	4	0	0	0	0	0	50
04:45 PM	0	0	0	7	6	0	1	0	4	3	0	0	0	9	3	0	0	0	0	0	33
Total	0	0	0	46	56	0	2	1	14	13	0	0	0	24	10	0	0	0	1	0	167
05:00 PM	0	0	0	15	19	0	0	0	3	4	0	0	0	7	2	0	1	0	0	0	51
05:15 PM	0	0	0	11	29	0	1	0	4	6	0	0	0	4	2	0	0	0	0	0	57
05:30 PM	0	0	0	12	22	0	0	1	1	10	1	0	0	6	6	0	0	0	0	0	59
05:45 PM	0	0	0	6	20	0	1	0	1	5	0	0	0	6	2	0	0	0	0	0	41
Total	0	0	0	44	90	0	2	1	9	25	1	0	0	23	12	0	1	0	0	0	208
Grand Total	0	0	0	90	146	0	4	2	23	38	1	0	0	47	22	0	1	0	1	0	375
Apprch %	0	0	0	38.1	61.9	0	6	3	34.3	56.7	1.4	0	0	67.1	31.4	0	50	0	50	0	
Total %	0	0	0	24	38.9	0	1.1	0.5	6.1	10.1	0.3	0	0	12.5	5.9	0	0.3	0	0.3	0	

Start Time	Pleasant Street Park From North						Pleasant Street From East						Pearl Street From South						Pleasant Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 05:00 PM																									
05:00 PM	0	0	0	15	19	34	0	0	0	3	4	7	0	0	0	7	2	9	0	1	0	0	0	1	51
05:15 PM	0	0	0	11	29	40	0	1	0	4	6	11	0	0	0	4	2	6	0	0	0	0	0	0	57
05:30 PM	0	0	0	12	22	34	0	0	1	1	10	12	1	0	0	6	6	13	0	0	0	0	0	0	59
05:45 PM	0	0	0	6	20	26	0	1	0	1	5	7	0	0	0	6	2	8	0	0	0	0	0	0	41
Total Volume	0	0	0	44	90	134	0	2	1	9	25	37	1	0	0	23	12	36	0	1	0	0	0	1	208
% App. Total	0	0	0	32.8	67.2		0	5.4	2.7	24.3	67.6		2.8	0	0	63.9	33.3		0	100	0	0	0		
PHF	.000	.000	.000	.733	.776	.838	.000	.500	.250	.563	.625	.771	.250	.000	.000	.821	.500	.692	.000	.250	.000	.000	.000	.250	.881



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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Elm Street From North			Pleasant Street From East			Pleasant Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	0	0	0	18	56	0	0	0	0	74
07:15 AM	0	0	0	27	56	0	0	0	0	83
07:30 AM	0	0	0	46	53	0	0	0	0	99
07:45 AM	0	0	0	63	55	0	0	0	0	118
Total	0	0	0	154	220	0	0	0	0	374
08:00 AM	0	0	0	91	42	0	0	0	0	133
08:15 AM	0	0	0	56	33	0	0	0	0	89
08:30 AM	0	0	0	21	59	0	0	0	0	80
08:45 AM	0	0	0	16	42	0	0	0	0	58
Total	0	0	0	184	176	0	0	0	0	360
Grand Total	0	0	0	338	396	0	0	0	0	734
Apprch %	0	0	0	46	54	0	0	0	0	
Total %	0	0	0	46	54	0	0	0	0	
Cars	0	0	0	334	368	0	0	0	0	702
% Cars	0	0	0	98.8	92.9	0	0	0	0	95.6
Heavy Vehicles	0	0	0	4	28	0	0	0	0	32
% Heavy Vehicles	0	0	0	1.2	7.1	0	0	0	0	4.4

Start Time	Elm Street From North				Pleasant Street From East				Pleasant Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	0	0	0	0	46	53	0	99	0	0	0	0	99
07:45 AM	0	0	0	0	63	55	0	118	0	0	0	0	118
08:00 AM	0	0	0	0	91	42	0	133	0	0	0	0	133
08:15 AM	0	0	0	0	56	33	0	89	0	0	0	0	89
Total Volume	0	0	0	0	256	183	0	439	0	0	0	0	439
% App. Total	0	0	0	0	58.3	41.7	0		0	0	0	0	
PHF	.000	.000	.000	.000	.703	.832	.000	.825	.000	.000	.000	.000	.825
Cars	0	0	0	0	254	169	0	423	0	0	0	0	423
% Cars	0	0	0	0	99.2	92.3	0	96.4	0	0	0	0	96.4
Heavy Vehicles	0	0	0	0	2	14	0	16	0	0	0	0	16
% Heavy Vehicles	0	0	0	0	0.8	7.7	0	3.6	0	0	0	0	3.6



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N: Elm Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Elm Street From North			Pleasant Street From East			Pleasant Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	0	0	0	18	53	0	0	0	0	71
07:15 AM	0	0	0	27	53	0	0	0	0	80
07:30 AM	0	0	0	46	51	0	0	0	0	97
07:45 AM	0	0	0	63	52	0	0	0	0	115
Total	0	0	0	154	209	0	0	0	0	363
08:00 AM	0	0	0	89	38	0	0	0	0	127
08:15 AM	0	0	0	56	28	0	0	0	0	84
08:30 AM	0	0	0	19	54	0	0	0	0	73
08:45 AM	0	0	0	16	39	0	0	0	0	55
Total	0	0	0	180	159	0	0	0	0	339
Grand Total	0	0	0	334	368	0	0	0	0	702
Apprch %	0	0	0	47.6	52.4	0	0	0	0	
Total %	0	0	0	47.6	52.4	0	0	0	0	

Start Time	Elm Street From North				Pleasant Street From East			Pleasant Street From West				Int. Total	
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn		App. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	0	0	0	0	46	51	0	97	0	0	0	0	97
07:45 AM	0	0	0	0	63	52	0	115	0	0	0	0	115
08:00 AM	0	0	0	0	89	38	0	127	0	0	0	0	127
08:15 AM	0	0	0	0	56	28	0	84	0	0	0	0	84
Total Volume	0	0	0	0	254	169	0	423	0	0	0	0	423
% App. Total	0	0	0	0	60	40	0		0	0	0	0	
PHF	.000	.000	.000	.000	.713	.813	.000	.833	.000	.000	.000	.000	.833



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Site Code : 2015041
Start Date : 4/29/2015
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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Elm Street From North			Pleasant Street From East			Pleasant Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	3	0	0	0	0	3
07:15 AM	0	0	0	0	3	0	0	0	0	3
07:30 AM	0	0	0	0	2	0	0	0	0	2
07:45 AM	0	0	0	0	3	0	0	0	0	3
Total	0	0	0	0	11	0	0	0	0	11
08:00 AM	0	0	0	2	4	0	0	0	0	6
08:15 AM	0	0	0	0	5	0	0	0	0	5
08:30 AM	0	0	0	2	5	0	0	0	0	7
08:45 AM	0	0	0	0	3	0	0	0	0	3
Total	0	0	0	4	17	0	0	0	0	21
Grand Total	0	0	0	4	28	0	0	0	0	32
Apprch %	0	0	0	12.5	87.5	0	0	0	0	
Total %	0	0	0	12.5	87.5	0	0	0	0	

Start Time	Elm Street From North				Pleasant Street From East			Pleasant Street From West				Int. Total	
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn		App. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	3
08:00 AM	0	0	0	0	2	4	0	6	0	0	0	0	6
08:15 AM	0	0	0	0	0	5	0	5	0	0	0	0	5
08:30 AM	0	0	0	0	2	5	0	7	0	0	0	0	7
Total Volume	0	0	0	0	4	17	0	21	0	0	0	0	21
% App. Total	0	0	0	0	19	81	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.500	.850	.000	.750	.000	.000	.000	.000	.750



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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Elm Street From North				Pleasant Street From East				Pleasant Street From West				Int. Total
	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	2
07:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	2
07:30 AM	0	0	3	8	0	0	0	0	0	0	0	0	11
07:45 AM	0	0	4	11	0	0	0	0	0	0	0	0	15
Total	0	0	10	20	0	0	0	0	0	0	0	0	30
08:00 AM	0	0	10	17	2	0	0	1	0	0	6	9	45
08:15 AM	0	0	23	13	0	0	0	0	0	0	9	22	67
08:30 AM	0	0	7	0	0	0	0	2	0	0	1	11	21
08:45 AM	0	0	0	1	0	0	0	4	0	0	4	7	16
Total	0	0	40	31	2	0	0	7	0	0	20	49	149
Grand Total	0	0	50	51	2	0	0	7	0	0	20	49	179
Apprch %	0	0	49.5	50.5	22.2	0	0	77.8	0	0	29	71	
Total %	0	0	27.9	28.5	1.1	0	0	3.9	0	0	11.2	27.4	

Start Time	Elm Street From North					Pleasant Street From East					Pleasant Street From West					Int. Total
	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	0	0	10	17	27	2	0	0	1	3	0	0	6	9	15	45
08:15 AM	0	0	23	13	36	0	0	0	0	0	0	0	9	22	31	67
08:30 AM	0	0	7	0	7	0	0	0	2	2	0	0	1	11	12	21
08:45 AM	0	0	0	1	1	0	0	0	4	4	0	0	4	7	11	16
Total Volume	0	0	40	31	71	2	0	0	7	9	0	0	20	49	69	149
% App. Total	0	0	56.3	43.7		22.2	0	0	77.8		0	0	29	71		
PHF	.000	.000	.435	.456	.493	.250	.000	.000	.438	.563	.000	.000	.556	.557	.556	.556



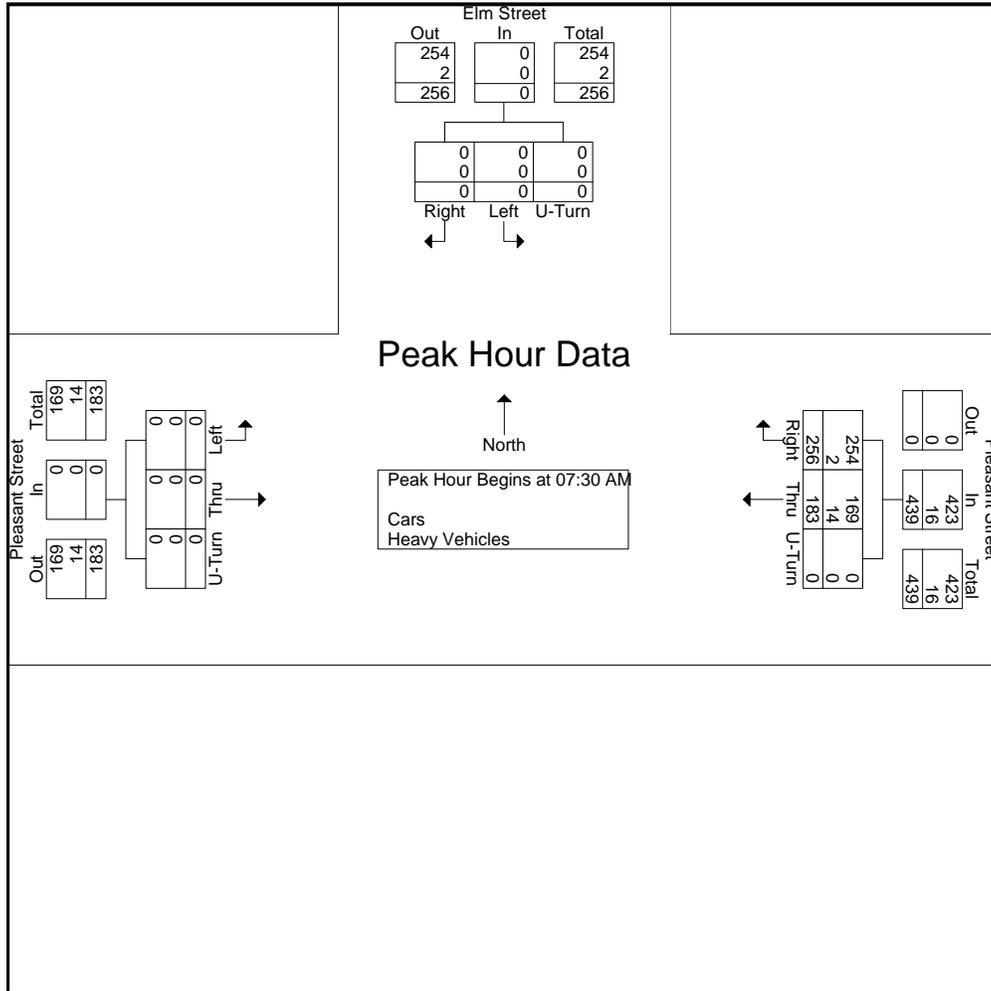
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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Elm Street From North				Pleasant Street From East				Pleasant Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	0	0	0	0	46	53	0	99	0	0	0	0	99
07:45 AM	0	0	0	0	63	55	0	118	0	0	0	0	118
08:00 AM	0	0	0	0	91	42	0	133	0	0	0	0	133
08:15 AM	0	0	0	0	56	33	0	89	0	0	0	0	89
Total Volume	0	0	0	0	256	183	0	439	0	0	0	0	439
% App. Total	0	0	0	0	58.3	41.7	0		0	0	0	0	
PHF	.000	.000	.000	.000	.703	.832	.000	.825	.000	.000	.000	.000	.825
Cars	0	0	0	0	254	169	0	423	0	0	0	0	423
% Cars	0	0	0	0	99.2	92.3	0	96.4	0	0	0	0	96.4
Heavy Vehicles	0	0	0	0	2	14	0	16	0	0	0	0	16
% Heavy Vehicles	0	0	0	0	0.8	7.7	0	3.6	0	0	0	0	3.6





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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Elm Street From North			Pleasant Street From East			Pleasant Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	0	0	68	32	0	0	0	0	100
04:15 PM	0	0	0	49	41	0	0	0	0	90
04:30 PM	0	0	0	65	41	0	0	0	0	106
04:45 PM	0	0	0	51	45	0	0	0	0	96
Total	0	0	0	233	159	0	0	0	0	392
05:00 PM	0	0	0	85	27	0	0	0	0	112
05:15 PM	0	0	0	77	41	0	0	0	0	118
05:30 PM	0	0	0	68	42	0	1	0	0	111
05:45 PM	0	0	0	50	48	0	0	0	0	98
Total	0	0	0	280	158	0	1	0	0	439
Grand Total	0	0	0	513	317	0	1	0	0	831
Apprch %	0	0	0	61.8	38.2	0	100	0	0	
Total %	0	0	0	61.7	38.1	0	0.1	0	0	
Cars	0	0	0	509	289	0	1	0	0	799
% Cars	0	0	0	99.2	91.2	0	100	0	0	96.1
Heavy Vehicles	0	0	0	4	28	0	0	0	0	32
% Heavy Vehicles	0	0	0	0.8	8.8	0	0	0	0	3.9

Start Time	Elm Street From North				Pleasant Street From East				Pleasant Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	85	27	0	112	0	0	0	0	112
05:15 PM	0	0	0	0	77	41	0	118	0	0	0	0	118
05:30 PM	0	0	0	0	68	42	0	110	1	0	0	1	111
05:45 PM	0	0	0	0	50	48	0	98	0	0	0	0	98
Total Volume	0	0	0	0	280	158	0	438	1	0	0	1	439
% App. Total	0	0	0	0	63.9	36.1	0		100	0	0		
PHF	.000	.000	.000	.000	.824	.823	.000	.928	.250	.000	.000	.250	.930
Cars	0	0	0	0	278	148	0	426	1	0	0	1	427
% Cars	0	0	0	0	99.3	93.7	0	97.3	100	0	0	100	97.3
Heavy Vehicles	0	0	0	0	2	10	0	12	0	0	0	0	12
% Heavy Vehicles	0	0	0	0	0.7	6.3	0	2.7	0	0	0	0	2.7



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Start Date : 4/29/2015
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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Elm Street From North			Pleasant Street From East			Pleasant Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	0	0	66	29	0	0	0	0	95
04:15 PM	0	0	0	49	37	0	0	0	0	86
04:30 PM	0	0	0	65	38	0	0	0	0	103
04:45 PM	0	0	0	51	37	0	0	0	0	88
Total	0	0	0	231	141	0	0	0	0	372
05:00 PM	0	0	0	84	22	0	0	0	0	106
05:15 PM	0	0	0	77	38	0	0	0	0	115
05:30 PM	0	0	0	68	41	0	1	0	0	110
05:45 PM	0	0	0	49	47	0	0	0	0	96
Total	0	0	0	278	148	0	1	0	0	427
Grand Total	0	0	0	509	289	0	1	0	0	799
Apprch %	0	0	0	63.8	36.2	0	100	0	0	
Total %	0	0	0	63.7	36.2	0	0.1	0	0	

Start Time	Elm Street From North				Pleasant Street From East			Pleasant Street From West				Int. Total	
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn		App. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	84	22	0	106	0	0	0	0	106
05:15 PM	0	0	0	0	77	38	0	115	0	0	0	0	115
05:30 PM	0	0	0	0	68	41	0	109	1	0	0	1	110
05:45 PM	0	0	0	0	49	47	0	96	0	0	0	0	96
Total Volume	0	0	0	0	278	148	0	426	1	0	0	1	427
% App. Total	0	0	0	0	65.3	34.7	0		100	0	0		
PHF	.000	.000	.000	.000	.827	.787	.000	.926	.250	.000	.000	.250	.928



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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Elm Street From North			Pleasant Street From East			Pleasant Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	0	0	2	3	0	0	0	0	5
04:15 PM	0	0	0	0	4	0	0	0	0	4
04:30 PM	0	0	0	0	3	0	0	0	0	3
04:45 PM	0	0	0	0	8	0	0	0	0	8
Total	0	0	0	2	18	0	0	0	0	20
05:00 PM	0	0	0	1	5	0	0	0	0	6
05:15 PM	0	0	0	0	3	0	0	0	0	3
05:30 PM	0	0	0	0	1	0	0	0	0	1
05:45 PM	0	0	0	1	1	0	0	0	0	2
Total	0	0	0	2	10	0	0	0	0	12
Grand Total	0	0	0	4	28	0	0	0	0	32
Apprch %	0	0	0	12.5	87.5	0	0	0	0	
Total %	0	0	0	12.5	87.5	0	0	0	0	

Start Time	Elm Street From North				Pleasant Street From East				Pleasant Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:15 PM													
04:15 PM	0	0	0	0	0	4	0	4	0	0	0	0	4
04:30 PM	0	0	0	0	0	3	0	3	0	0	0	0	3
04:45 PM	0	0	0	0	0	8	0	8	0	0	0	0	8
05:00 PM	0	0	0	0	1	5	0	6	0	0	0	0	6
Total Volume	0	0	0	0	1	20	0	21	0	0	0	0	21
% App. Total	0	0	0	0	4.8	95.2	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.250	.625	.000	.656	.000	.000	.000	.000	.656



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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Elm Street From North				Pleasant Street From East				Pleasant Street From West				Int. Total
	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	2	4	0	0	0	0	0	0	4	0	10
04:15 PM	0	0	7	3	0	0	0	0	0	0	2	3	15
04:30 PM	0	0	1	2	0	1	0	0	0	0	2	5	11
04:45 PM	0	0	2	3	0	1	0	0	0	0	9	1	16
Total	0	0	12	12	0	2	0	0	0	0	17	9	52
05:00 PM	0	0	8	2	0	0	0	0	0	0	2	1	13
05:15 PM	0	0	0	10	1	0	0	1	0	0	2	1	15
05:30 PM	0	0	0	1	0	0	0	0	0	0	1	4	6
05:45 PM	0	0	2	1	0	0	0	0	0	0	0	2	5
Total	0	0	10	14	1	0	0	1	0	0	5	8	39
Grand Total	0	0	22	26	1	2	0	1	0	0	22	17	91
Apprch %	0	0	45.8	54.2	25	50	0	25	0	0	56.4	43.6	
Total %	0	0	24.2	28.6	1.1	2.2	0	1.1	0	0	24.2	18.7	

Start Time	Elm Street From North					Pleasant Street From East					Pleasant Street From West					Int. Total
	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 04:15 PM																
04:15 PM	0	0	7	3	10	0	0	0	0	0	0	0	2	3	5	15
04:30 PM	0	0	1	2	3	0	1	0	0	1	0	0	2	5	7	11
04:45 PM	0	0	2	3	5	0	1	0	0	1	0	0	9	1	10	16
05:00 PM	0	0	8	2	10	0	0	0	0	0	0	0	2	1	3	13
Total Volume	0	0	18	10	28	0	2	0	0	2	0	0	15	10	25	55
% App. Total	0	0	64.3	35.7		0	100	0	0		0	0	60	40		
PHF	.000	.000	.563	.833	.700	.000	.500	.000	.000	.500	.000	.000	.417	.500	.625	.859



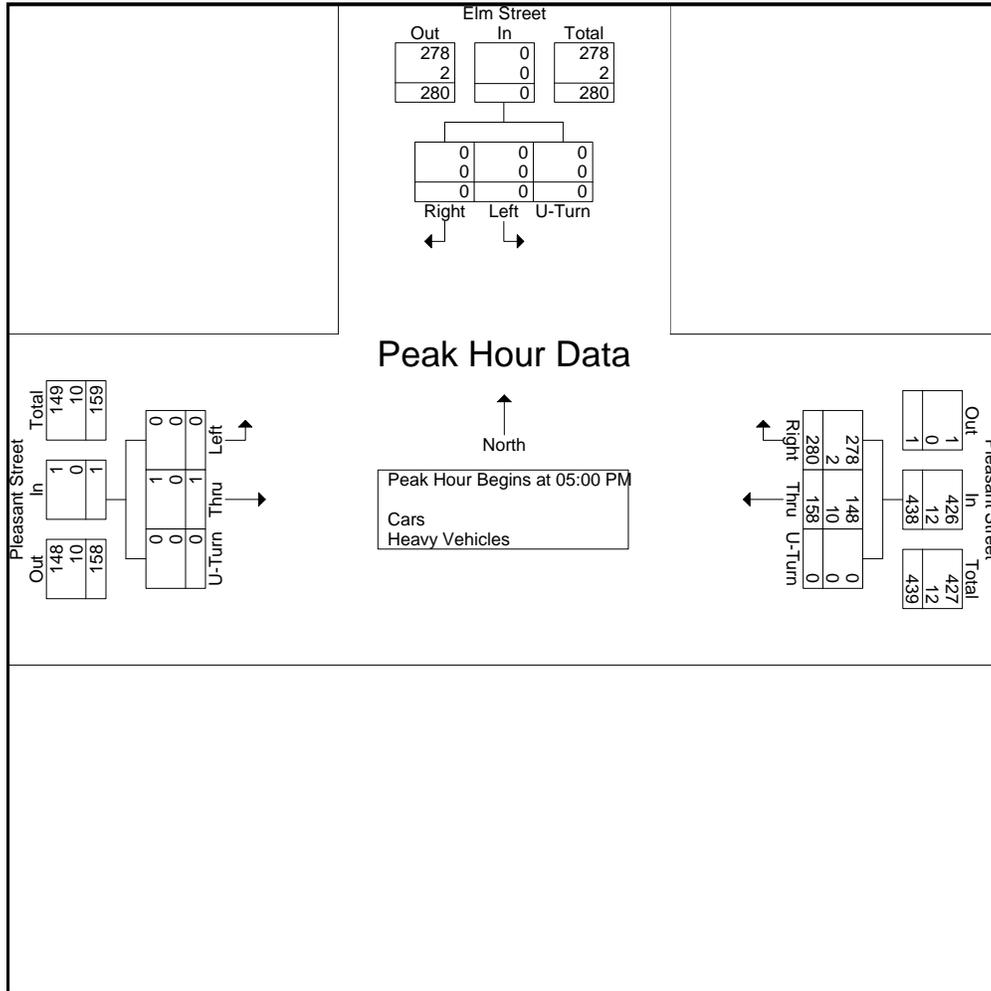
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N: Elm Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Elm Street From North				Pleasant Street From East				Pleasant Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	85	27	0	112	0	0	0	0	112
05:15 PM	0	0	0	0	77	41	0	118	0	0	0	0	118
05:30 PM	0	0	0	0	68	42	0	110	1	0	0	1	111
05:45 PM	0	0	0	0	50	48	0	98	0	0	0	0	98
Total Volume	0	0	0	0	280	158	0	438	1	0	0	1	439
% App. Total	0	0	0	0	63.9	36.1	0		100	0	0		
PHF	.000	.000	.000	.000	.824	.823	.000	.928	.250	.000	.000	.250	.930
Cars	0	0	0	0	278	148	0	426	1	0	0	1	427
% Cars	0	0	0	0	99.3	93.7	0	97.3	100	0	0	100	97.3
Heavy Vehicles	0	0	0	0	2	10	0	12	0	0	0	0	12
% Heavy Vehicles	0	0	0	0	0.7	6.3	0	2.7	0	0	0	0	2.7





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N/S: Commercial Street
E/W: Exchange Street/ Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Commercial Street From North				Exchange Street From East				Commercial Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	4	109	17	0	0	0	0	0	18	46	15	0	0	0	0	0	209
07:15 AM	3	134	32	1	0	0	0	0	23	49	14	0	0	0	0	0	256
07:30 AM	4	153	44	0	0	0	0	0	33	73	17	0	0	0	0	0	324
07:45 AM	5	155	54	0	0	0	0	0	40	80	21	0	0	0	0	0	355
Total	16	551	147	1	0	0	0	0	114	248	67	0	0	0	0	0	1144
08:00 AM	6	141	43	0	0	0	0	0	32	62	22	0	0	0	0	0	306
08:15 AM	5	147	39	0	1	0	0	0	39	75	18	0	0	0	0	0	324
08:30 AM	5	131	39	0	0	0	0	0	27	77	19	0	0	0	0	0	298
08:45 AM	4	100	27	0	1	1	0	0	29	78	12	0	0	0	0	0	252
Total	20	519	148	0	2	1	0	0	127	292	71	0	0	0	0	0	1180
09:00 AM	5	83	15	0	0	0	0	0	14	75	6	0	0	0	0	0	198
09:15 AM	2	80	11	0	0	0	0	0	25	60	17	0	0	0	0	0	195
09:30 AM	3	84	18	0	0	0	0	0	20	74	7	2	0	0	0	0	208
09:45 AM	3	82	7	0	0	0	0	0	23	79	8	0	0	0	0	0	202
Total	13	329	51	0	0	0	0	0	82	288	38	2	0	0	0	0	803
10:00 AM	2	71	11	0	0	0	0	0	14	71	11	0	0	0	0	0	180
10:15 AM	4	72	12	0	0	0	0	0	15	93	9	0	0	0	0	0	205
10:30 AM	4	79	16	0	0	0	0	0	24	78	10	1	0	0	0	0	212
10:45 AM	3	57	16	1	0	0	0	0	21	77	4	0	0	0	0	0	179
Total	13	279	55	1	0	0	0	0	74	319	34	1	0	0	0	0	776
11:00 AM	0	58	9	0	0	0	0	0	15	64	6	2	0	0	0	0	154
11:15 AM	1	72	14	0	0	0	0	0	22	74	6	1	0	0	0	0	190
11:30 AM	2	72	10	0	0	0	0	0	18	82	5	0	0	0	0	0	189
11:45 AM	1	85	14	0	0	0	0	0	18	68	3	0	0	0	0	0	189
Total	4	287	47	0	0	0	0	0	73	288	20	3	0	0	0	0	722
12:00 PM	1	74	15	0	0	0	0	0	14	91	11	0	0	0	0	0	206
12:15 PM	1	81	11	0	0	0	0	0	18	65	5	0	0	0	0	0	181
12:30 PM	2	67	5	1	0	0	0	0	15	74	4	0	0	0	0	0	168
12:45 PM	1	72	21	0	1	0	0	0	24	94	7	1	0	0	0	0	221
Total	5	294	52	1	1	0	0	0	71	324	27	1	0	0	0	0	776
01:00 PM	1	83	15	0	0	0	0	0	23	95	8	0	0	1	0	0	226
01:15 PM	3	80	13	1	0	0	0	0	23	89	7	0	0	0	0	0	216
01:30 PM	2	82	12	0	0	0	0	0	21	76	11	0	0	0	0	0	204
01:45 PM	1	64	7	1	0	0	0	0	21	94	9	0	0	0	0	0	197
Total	7	309	47	2	0	0	0	0	88	354	35	0	0	1	0	0	843
02:00 PM	3	70	10	0	0	0	0	0	18	93	8	1	0	0	0	0	203
02:15 PM	1	93	15	0	1	0	0	0	20	101	10	0	0	0	0	0	241
02:30 PM	3	95	15	1	0	0	0	0	25	97	5	0	0	0	0	0	241
02:45 PM	1	76	11	1	0	0	0	0	21	102	6	1	0	0	0	0	219
Total	8	334	51	2	1	0	0	0	84	393	29	2	0	0	0	0	904
03:00 PM	3	79	10	0	0	1	0	0	26	119	5	0	0	0	0	0	243
03:15 PM	1	77	9	0	0	0	0	0	35	95	8	0	0	0	0	0	225
03:30 PM	3	86	14	0	0	0	0	0	20	102	12	0	0	0	0	0	237
03:45 PM	0	66	12	0	0	0	0	0	23	119	15	1	0	0	0	0	236
Total	7	308	45	0	0	1	0	0	104	435	40	1	0	0	0	0	941
04:00 PM	2	71	14	0	0	0	0	0	29	114	8	2	0	0	0	0	240
04:15 PM	5	70	12	0	1	0	0	0	27	119	8	1	0	0	0	0	243
04:30 PM	5	86	11	0	0	0	0	0	18	112	13	1	0	0	0	0	246
04:45 PM	3	74	12	0	2	0	0	0	21	138	18	1	0	0	0	0	269
Total	15	301	49	0	3	0	0	0	95	483	47	5	0	0	0	0	998



PRECISION
D A T A
INDUSTRIES, LLC

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File Name : 154396 D
Site Code : 2015041
Start Date : 4/29/2015
Page No : 2

N/S: Commercial Street
E/W: Exchange Street/ Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Commercial Street From North				Exchange Street From East				Commercial Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
05:00 PM	2	77	19	0	0	0	0	0	32	164	15	1	0	0	0	0	310
05:15 PM	1	91	16	0	0	0	0	0	29	130	22	0	0	0	0	0	289
05:30 PM	5	101	16	0	0	0	0	0	33	143	23	1	0	0	0	0	322
05:45 PM	2	81	15	0	0	0	0	0	25	144	14	2	0	0	0	0	283
Total	10	350	66	0	0	0	0	0	119	581	74	4	0	0	0	0	1204
Grand Total	118	3861	758	7	7	2	0	0	1031	4005	482	19	0	1	0	0	10291
Apprch %	2.5	81.4	16	0.1	77.8	22.2	0	0	18.6	72.3	8.7	0.3	0	100	0	0	
Total %	1.1	37.5	7.4	0.1	0.1	0	0	0	10	38.9	4.7	0.2	0	0	0	0	
Cars	118	3720	746	7	7	2	0	0	1000	3674	481	19	0	1	0	0	9775
% Cars	100	96.3	98.4	100	100	100	0	0	97	91.7	99.8	100	0	100	0	0	95
Heavy Vehicles	0	141	12	0	0	0	0	0	31	331	1	0	0	0	0	0	516
% Heavy Vehicles	0	3.7	1.6	0	0	0	0	0	3	8.3	0.2	0	0	0	0	0	5

Start Time	Commercial Street From North					Exchange Street From East					Commercial Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	153	44	0	201	0	0	0	0	0	33	73	17	0	123	0	0	0	0	0	324
07:45 AM	5	155	54	0	214	0	0	0	0	0	40	80	21	0	141	0	0	0	0	0	355
08:00 AM	6	141	43	0	190	0	0	0	0	0	32	62	22	0	116	0	0	0	0	0	306
08:15 AM	5	147	39	0	191	1	0	0	0	1	39	75	18	0	132	0	0	0	0	0	324
Total Volume	20	596	180	0	796	1	0	0	0	1	144	290	78	0	512	0	0	0	0	0	1309
% App. Total	2.5	74.9	22.6	0		100	0	0	0		28.1	56.6	15.2	0		0	0	0	0		
PHF	.833	.961	.833	.000	.930	.250	.000	.000	.000	.250	.900	.906	.886	.000	.908	.000	.000	.000	.000	.000	.922
Cars	20	581	180	0	781	1	0	0	0	1	142	250	78	0	470	0	0	0	0	0	1252
% Cars	100	97.5	100	0	98.1	100	0	0	0	100	98.6	86.2	100	0	91.8	0	0	0	0	0	95.6
Heavy Vehicles	0	15	0	0	15	0	0	0	0	0	2	40	0	0	42	0	0	0	0	0	57
% Heavy Vehicles	0	2.5	0	0	1.9	0	0	0	0	0	1.4	13.8	0	0	8.2	0	0	0	0	0	4.4

Start Time	Commercial Street From North					Exchange Street From East					Commercial Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:45 PM																					
12:45 PM	1	72	21	0	94	1	0	0	0	1	24	94	7	1	126	0	0	0	0	0	221
01:00 PM	1	83	15	0	99	0	0	0	0	0	23	95	8	0	126	0	1	0	0	1	226
01:15 PM	3	80	13	1	97	0	0	0	0	0	23	89	7	0	119	0	0	0	0	0	216
01:30 PM	2	82	12	0	96	0	0	0	0	0	21	76	11	0	108	0	0	0	0	0	204
Total Volume	7	317	61	1	386	1	0	0	0	1	91	354	33	1	479	0	1	0	0	1	867
% App. Total	1.8	82.1	15.8	0.3		100	0	0	0		19	73.9	6.9	0.2		0	100	0	0		
PHF	.583	.955	.726	.250	.975	.250	.000	.000	.000	.250	.948	.932	.750	.250	.950	.000	.250	.000	.000	.250	.959
Cars	7	302	60	1	370	1	0	0	0	1	86	323	33	1	443	0	1	0	0	1	815
% Cars	100	95.3	98.4	100	95.9	100	0	0	0	100	94.5	91.2	100	100	92.5	0	100	0	0	100	94.0
Heavy Vehicles	0	15	1	0	16	0	0	0	0	0	5	31	0	0	36	0	0	0	0	0	52
% Heavy Vehicles	0	4.7	1.6	0	4.1	0	0	0	0	0	5.5	8.8	0	0	7.5	0	0	0	0	0	6.0

Start Time	Commercial Street From North					Exchange Street From East					Commercial Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	2	77	19	0	98	0	0	0	0	0	32	164	15	1	212	0	0	0	0	0	310
05:15 PM	1	91	16	0	108	0	0	0	0	0	29	130	22	0	181	0	0	0	0	0	289
05:30 PM	5	101	16	0	122	0	0	0	0	0	33	143	23	1	200	0	0	0	0	0	322
05:45 PM	2	81	15	0	98	0	0	0	0	0	25	144	14	2	185	0	0	0	0	0	283
Total Volume	10	350	66	0	426	0	0	0	0	0	119	581	74	4	778	0	0	0	0	0	1204
% App. Total	2.3	82.2	15.5	0		0	0	0	0		15.3	74.7	9.5	0.5		0	0	0	0		
PHF	.500	.866	.868	.000	.873	.000	.000	.000	.000	.000	.902	.886	.804	.500	.917	.000	.000	.000	.000	.000	.935
Cars	10	341	65	0	416	0	0	0	0	0	119	561	74	4	758	0	0	0	0	0	1174
% Cars	100	97.4	98.5	0	97.7	0	0	0	0	0	100	96.6	100	100	97.4	0	0	0	0	0	97.5
Heavy Vehicles	0	9	1	0	10	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	30
% Heavy Vehicles	0	2.6	1.5	0	2.3	0	0	0	0	0	0	3.4	0	0	2.6	0	0	0	0	0	2.5



PRECISION
D A T A
INDUSTRIES, LLC

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File Name : 154396 D
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Commercial Street
E/W: Exchange Street/ Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Commercial Street From North				Exchange Street From East				Commercial Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	4	108	16	0	0	0	0	0	17	41	15	0	0	0	0	0	201
07:15 AM	3	133	32	1	0	0	0	0	21	39	14	0	0	0	0	0	243
07:30 AM	4	150	44	0	0	0	0	0	32	64	17	0	0	0	0	0	311
07:45 AM	5	151	54	0	0	0	0	0	39	68	21	0	0	0	0	0	338
Total	16	542	146	1	0	0	0	0	109	212	67	0	0	0	0	0	1093
08:00 AM	6	137	43	0	0	0	0	0	32	54	22	0	0	0	0	0	294
08:15 AM	5	143	39	0	1	0	0	0	39	64	18	0	0	0	0	0	309
08:30 AM	5	122	39	0	0	0	0	0	27	64	19	0	0	0	0	0	276
08:45 AM	4	96	26	0	1	1	0	0	28	68	12	0	0	0	0	0	236
Total	20	498	147	0	2	1	0	0	126	250	71	0	0	0	0	0	1115
09:00 AM	5	81	15	0	0	0	0	0	13	65	6	0	0	0	0	0	185
09:15 AM	2	77	11	0	0	0	0	0	25	54	17	0	0	0	0	0	186
09:30 AM	3	77	18	0	0	0	0	0	19	65	7	2	0	0	0	0	191
09:45 AM	3	77	6	0	0	0	0	0	22	72	8	0	0	0	0	0	188
Total	13	312	50	0	0	0	0	0	79	256	38	2	0	0	0	0	750
10:00 AM	2	70	11	0	0	0	0	0	13	64	11	0	0	0	0	0	171
10:15 AM	4	68	12	0	0	0	0	0	15	86	9	0	0	0	0	0	194
10:30 AM	4	76	14	0	0	0	0	0	23	69	10	1	0	0	0	0	197
10:45 AM	3	53	16	1	0	0	0	0	21	70	4	0	0	0	0	0	168
Total	13	267	53	1	0	0	0	0	72	289	34	1	0	0	0	0	730
11:00 AM	0	55	9	0	0	0	0	0	14	57	6	2	0	0	0	0	143
11:15 AM	1	70	14	0	0	0	0	0	20	67	6	1	0	0	0	0	179
11:30 AM	2	68	10	0	0	0	0	0	18	76	5	0	0	0	0	0	179
11:45 AM	1	80	13	0	0	0	0	0	17	59	3	0	0	0	0	0	173
Total	4	273	46	0	0	0	0	0	69	259	20	3	0	0	0	0	674
12:00 PM	1	70	15	0	0	0	0	0	12	87	11	0	0	0	0	0	196
12:15 PM	1	75	10	0	0	0	0	0	18	57	5	0	0	0	0	0	166
12:30 PM	2	64	5	1	0	0	0	0	12	66	4	0	0	0	0	0	154
12:45 PM	1	71	21	0	1	0	0	0	20	88	7	1	0	0	0	0	210
Total	5	280	51	1	1	0	0	0	62	298	27	1	0	0	0	0	726
01:00 PM	1	77	14	0	0	0	0	0	23	87	8	0	0	1	0	0	211
01:15 PM	3	77	13	1	0	0	0	0	23	81	7	0	0	0	0	0	205
01:30 PM	2	77	12	0	0	0	0	0	20	67	11	0	0	0	0	0	189
01:45 PM	1	59	7	1	0	0	0	0	21	86	9	0	0	0	0	0	184
Total	7	290	46	2	0	0	0	0	87	321	35	0	0	1	0	0	789
02:00 PM	3	65	10	0	0	0	0	0	17	85	8	1	0	0	0	0	189
02:15 PM	1	90	15	0	1	0	0	0	20	91	10	0	0	0	0	0	228
02:30 PM	3	95	15	1	0	0	0	0	24	92	5	0	0	0	0	0	235
02:45 PM	1	76	11	1	0	0	0	0	20	93	6	1	0	0	0	0	209
Total	8	326	51	2	1	0	0	0	81	361	29	2	0	0	0	0	861
03:00 PM	3	76	10	0	0	1	0	0	26	106	4	0	0	0	0	0	226
03:15 PM	1	72	9	0	0	0	0	0	33	93	8	0	0	0	0	0	216
03:30 PM	3	82	14	0	0	0	0	0	20	93	12	0	0	0	0	0	224
03:45 PM	0	63	12	0	0	0	0	0	23	115	15	1	0	0	0	0	229
Total	7	293	45	0	0	1	0	0	102	407	39	1	0	0	0	0	895
04:00 PM	2	71	12	0	0	0	0	0	28	108	8	2	0	0	0	0	231
04:15 PM	5	68	11	0	1	0	0	0	27	113	8	1	0	0	0	0	234
04:30 PM	5	86	11	0	0	0	0	0	18	105	13	1	0	0	0	0	239
04:45 PM	3	73	12	0	2	0	0	0	21	134	18	1	0	0	0	0	264
Total	15	298	46	0	3	0	0	0	94	460	47	5	0	0	0	0	968



PRECISION
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File Name : 154396 D
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Page No : 1

N/S: Commercial Street
E/W: Exchange Street/ Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Commercial Street From North				Exchange Street From East				Commercial Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	1	1	0	0	0	0	0	1	5	0	0	0	0	0	0	8
07:15 AM	0	1	0	0	0	0	0	0	2	10	0	0	0	0	0	0	13
07:30 AM	0	3	0	0	0	0	0	0	1	9	0	0	0	0	0	0	13
07:45 AM	0	4	0	0	0	0	0	0	1	12	0	0	0	0	0	0	17
Total	0	9	1	0	0	0	0	0	5	36	0	0	0	0	0	0	51
08:00 AM	0	4	0	0	0	0	0	0	0	8	0	0	0	0	0	0	12
08:15 AM	0	4	0	0	0	0	0	0	0	11	0	0	0	0	0	0	15
08:30 AM	0	9	0	0	0	0	0	0	0	13	0	0	0	0	0	0	22
08:45 AM	0	4	1	0	0	0	0	0	1	10	0	0	0	0	0	0	16
Total	0	21	1	0	0	0	0	0	1	42	0	0	0	0	0	0	65
09:00 AM	0	2	0	0	0	0	0	0	1	10	0	0	0	0	0	0	13
09:15 AM	0	3	0	0	0	0	0	0	0	6	0	0	0	0	0	0	9
09:30 AM	0	7	0	0	0	0	0	0	1	9	0	0	0	0	0	0	17
09:45 AM	0	5	1	0	0	0	0	0	1	7	0	0	0	0	0	0	14
Total	0	17	1	0	0	0	0	0	3	32	0	0	0	0	0	0	53
10:00 AM	0	1	0	0	0	0	0	0	1	7	0	0	0	0	0	0	9
10:15 AM	0	4	0	0	0	0	0	0	0	7	0	0	0	0	0	0	11
10:30 AM	0	3	2	0	0	0	0	0	1	9	0	0	0	0	0	0	15
10:45 AM	0	4	0	0	0	0	0	0	0	7	0	0	0	0	0	0	11
Total	0	12	2	0	0	0	0	0	2	30	0	0	0	0	0	0	46
11:00 AM	0	3	0	0	0	0	0	0	1	7	0	0	0	0	0	0	11
11:15 AM	0	2	0	0	0	0	0	0	2	7	0	0	0	0	0	0	11
11:30 AM	0	4	0	0	0	0	0	0	0	6	0	0	0	0	0	0	10
11:45 AM	0	5	1	0	0	0	0	0	1	9	0	0	0	0	0	0	16
Total	0	14	1	0	0	0	0	0	4	29	0	0	0	0	0	0	48
12:00 PM	0	4	0	0	0	0	0	0	2	4	0	0	0	0	0	0	10
12:15 PM	0	6	1	0	0	0	0	0	0	8	0	0	0	0	0	0	15
12:30 PM	0	3	0	0	0	0	0	0	3	8	0	0	0	0	0	0	14
12:45 PM	0	1	0	0	0	0	0	0	4	6	0	0	0	0	0	0	11
Total	0	14	1	0	0	0	0	0	9	26	0	0	0	0	0	0	50
01:00 PM	0	6	1	0	0	0	0	0	0	8	0	0	0	0	0	0	15
01:15 PM	0	3	0	0	0	0	0	0	0	8	0	0	0	0	0	0	11
01:30 PM	0	5	0	0	0	0	0	0	1	9	0	0	0	0	0	0	15
01:45 PM	0	5	0	0	0	0	0	0	0	8	0	0	0	0	0	0	13
Total	0	19	1	0	0	0	0	0	1	33	0	0	0	0	0	0	54
02:00 PM	0	5	0	0	0	0	0	0	1	8	0	0	0	0	0	0	14
02:15 PM	0	3	0	0	0	0	0	0	0	10	0	0	0	0	0	0	13
02:30 PM	0	0	0	0	0	0	0	0	1	5	0	0	0	0	0	0	6
02:45 PM	0	0	0	0	0	0	0	0	1	9	0	0	0	0	0	0	10
Total	0	8	0	0	0	0	0	0	3	32	0	0	0	0	0	0	43
03:00 PM	0	3	0	0	0	0	0	0	0	13	1	0	0	0	0	0	17
03:15 PM	0	5	0	0	0	0	0	0	2	2	0	0	0	0	0	0	9
03:30 PM	0	4	0	0	0	0	0	0	0	9	0	0	0	0	0	0	13
03:45 PM	0	3	0	0	0	0	0	0	0	4	0	0	0	0	0	0	7
Total	0	15	0	0	0	0	0	0	2	28	1	0	0	0	0	0	46
04:00 PM	0	0	2	0	0	0	0	0	1	6	0	0	0	0	0	0	9
04:15 PM	0	2	1	0	0	0	0	0	0	6	0	0	0	0	0	0	9
04:30 PM	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	7
04:45 PM	0	1	0	0	0	0	0	0	0	4	0	0	0	0	0	0	5
Total	0	3	3	0	0	0	0	0	1	23	0	0	0	0	0	0	30



PRECISION
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File Name : 154396 D
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Commercial Street
E/W: Exchange Street/ Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Commercial Street From North					Exchange Street From East					Commercial Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	14	45	0	0	0	3	1	0	0	0	1	0	0	0	0	2	0	66
07:15 AM	0	0	0	20	48	0	0	0	3	5	0	0	0	0	0	0	0	0	3	0	79
07:30 AM	0	0	0	27	73	0	0	0	9	4	0	0	0	3	0	0	0	0	5	0	121
07:45 AM	0	0	0	18	111	0	0	0	1	12	0	0	0	1	0	0	0	0	11	1	155
Total	0	0	0	79	277	0	0	0	16	22	0	0	0	5	0	0	0	0	21	1	421
08:00 AM	0	0	0	16	96	0	0	0	4	8	0	0	0	5	0	0	0	0	17	0	146
08:15 AM	0	0	0	16	83	0	0	0	4	13	0	0	0	0	0	0	0	0	10	0	126
08:30 AM	0	0	0	16	91	0	0	0	3	15	0	0	0	1	0	0	0	0	6	0	132
08:45 AM	0	0	0	28	55	0	0	0	5	7	0	0	0	0	0	0	0	0	5	1	101
Total	0	0	0	76	325	0	0	0	16	43	0	0	0	6	0	0	0	0	38	1	505
09:00 AM	0	0	0	18	48	0	0	0	11	3	0	0	0	2	0	0	0	0	0	0	82
09:15 AM	0	0	0	24	47	0	0	0	2	6	1	0	0	0	0	0	0	0	1	0	81
09:30 AM	0	0	0	20	36	0	0	0	5	1	0	0	0	1	1	0	0	0	0	0	64
09:45 AM	0	0	0	13	30	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	46
Total	0	0	0	75	161	0	0	0	20	11	1	0	0	3	1	0	0	0	1	0	273
10:00 AM	0	0	0	27	24	0	0	0	6	4	0	0	0	1	0	0	0	0	2	1	65
10:15 AM	0	0	0	18	28	0	0	0	7	9	0	0	0	0	1	0	0	0	1	0	64
10:30 AM	0	0	0	24	29	0	0	0	5	8	0	1	0	0	0	0	0	0	0	2	69
10:45 AM	0	0	0	26	21	0	0	0	3	4	1	0	0	2	0	0	0	0	4	2	63
Total	0	0	0	95	102	0	0	0	21	25	1	1	0	3	1	0	0	0	7	5	261
11:00 AM	0	0	0	25	17	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	47
11:15 AM	0	0	0	19	29	0	0	0	4	1	0	0	0	0	0	0	0	0	0	0	53
11:30 AM	0	0	1	15	17	0	0	0	24	1	0	0	0	0	0	0	0	0	0	0	58
11:45 AM	0	0	0	11	22	0	0	0	1	4	0	0	0	0	0	0	0	0	2	0	40
Total	0	0	1	70	85	0	0	0	31	9	0	0	0	0	0	0	0	0	2	0	198
12:00 PM	0	0	0	39	22	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	71
12:15 PM	0	0	0	18	28	0	0	0	10	6	0	0	0	1	0	0	0	0	1	3	67
12:30 PM	0	0	0	21	16	0	0	0	3	6	0	0	0	0	0	0	0	0	3	2	51
12:45 PM	0	0	0	23	22	0	0	0	5	5	0	0	0	1	0	0	0	0	6	2	64
Total	0	0	0	101	88	0	0	0	23	22	0	0	0	2	0	0	0	0	10	7	253
01:00 PM	0	0	0	19	20	0	0	0	12	4	0	0	0	0	0	0	0	0	0	0	55
01:15 PM	0	0	0	41	19	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	74
01:30 PM	0	0	0	30	23	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	61
01:45 PM	0	0	0	20	20	0	0	0	6	5	0	1	0	0	0	0	0	0	0	0	52
Total	0	0	0	110	82	0	0	0	38	11	0	1	0	0	0	0	0	0	0	0	242
02:00 PM	0	0	0	45	26	0	0	0	6	7	0	0	0	0	1	0	0	0	1	0	86
02:15 PM	0	0	1	44	18	0	0	0	9	6	0	0	0	2	0	0	0	0	2	1	83
02:30 PM	0	0	0	13	19	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	40
02:45 PM	0	0	0	28	26	0	0	0	4	9	0	0	0	0	0	0	0	0	2	0	69
Total	0	0	1	130	89	0	0	0	23	26	0	0	0	2	1	0	0	0	5	1	278
03:00 PM	0	0	0	30	22	0	0	0	8	1	0	0	0	0	0	0	0	0	0	0	61
03:15 PM	0	0	0	20	25	0	0	0	4	1	0	0	0	1	0	0	0	0	1	0	52
03:30 PM	0	0	0	55	20	0	0	0	11	6	0	0	0	1	1	0	0	0	1	0	95
03:45 PM	0	0	0	55	19	0	0	0	10	3	0	0	0	0	0	0	0	0	1	0	88
Total	0	0	0	160	86	0	0	0	33	11	0	0	0	2	1	0	0	0	3	0	296
04:00 PM	0	0	0	64	29	0	0	0	22	4	0	0	0	0	0	0	0	0	0	0	119
04:15 PM	0	0	0	34	17	0	0	0	2	2	0	0	0	9	1	0	0	0	2	0	67
04:30 PM	0	0	0	72	41	0	0	0	16	2	0	0	0	0	1	0	0	0	0	0	132
04:45 PM	0	0	0	67	29	0	0	0	28	5	0	0	0	2	0	0	0	0	0	0	131
Total	0	0	0	237	116	0	0	0	68	13	0	0	0	11	2	0	0	0	2	0	449



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File Name : 154396 D
Site Code : 2015041
Start Date : 4/29/2015
Page No : 2

N/S: Commercial Street
E/W: Exchange Street/ Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Commercial Street From North					Exchange Street From East					Commercial Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
05:00 PM	0	0	0	40	41	0	0	0	4	7	0	0	0	2	0	0	0	0	0	1	95
05:15 PM	0	0	0	134	25	0	0	0	14	4	0	0	0	2	2	0	0	0	0	0	181
05:30 PM	0	0	0	77	28	0	0	0	6	3	0	0	0	3	1	0	0	0	0	0	118
05:45 PM	0	1	0	97	21	0	0	0	10	3	0	0	0	1	1	0	0	0	0	0	134
Total	0	1	0	348	115	0	0	0	34	17	0	0	0	8	4	0	0	0	0	1	528
Grand Total	0	1	2	1481	1526	0	0	0	323	210	2	2	0	42	10	0	0	0	89	16	3704
Apprch %	0	0	0.1	49.2	50.7	0	0	0	60.6	39.4	3.6	3.6	0	75	17.9	0	0	0	84.8	15.2	
Total %	0	0	0.1	40	41.2	0	0	0	8.7	5.7	0.1	0.1	0	1.1	0.3	0	0	0	2.4	0.4	

Start Time	Commercial Street From North						Exchange Street From East						Commercial Street From South						Pleasant Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	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	0	18	111	129	0	0	0	1	12	13	0	0	0	1	0	1	0	0	0	11	1	12	155
08:00 AM	0	0	0	16	96	112	0	0	0	4	8	12	0	0	0	5	0	5	0	0	0	17	0	17	146
08:15 AM	0	0	0	16	83	99	0	0	0	4	13	17	0	0	0	0	0	0	0	0	0	10	0	10	126
08:30 AM	0	0	0	16	91	107	0	0	0	3	15	18	0	0	0	1	0	1	0	0	0	6	0	6	132
Total Volume	0	0	0	66	381	447	0	0	0	12	48	60	0	0	0	7	0	7	0	0	0	44	1	45	559
% App. Total	0	0	0	14.8	85.2		0	0	0	20	80		0	0	0	100	0		0	0	0	97.8	2.2		
PHF	.000	.000	.000	.917	.858	.866	.000	.000	.000	.750	.800	.833	.000	.000	.000	.350	.000	.350	.000	.000	.000	.647	.250	.662	.902

Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 10:00 AM																									
10:00 AM	0	0	0	27	24	51	0	0	0	6	4	10	0	0	0	1	0	1	0	0	0	2	1	3	65
10:15 AM	0	0	0	18	28	46	0	0	0	7	9	16	0	0	0	0	1	1	0	0	0	1	0	1	64
10:30 AM	0	0	0	24	29	53	0	0	0	5	8	13	0	1	0	0	0	1	0	0	0	0	2	2	69
10:45 AM	0	0	0	26	21	47	0	0	0	3	4	7	1	0	0	2	0	3	0	0	0	4	2	6	63
Total Volume	0	0	0	95	102	197	0	0	0	21	25	46	1	1	0	3	1	6	0	0	0	7	5	12	261
% App. Total	0	0	0	48.2	51.8		0	0	0	45.7	54.3		16.7	16.7	0	50	16.7		0	0	0	58.3	41.7		
PHF	.000	.000	.000	.880	.879	.929	.000	.000	.000	.750	.694	.719	.250	.250	.000	.375	.250	.500	.000	.000	.000	.438	.625	.500	.946

Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:30 PM																									
04:30 PM	0	0	0	72	41	113	0	0	0	16	2	18	0	0	0	0	1	1	0	0	0	0	0	0	132
04:45 PM	0	0	0	67	29	96	0	0	0	28	5	33	0	0	0	2	0	2	0	0	0	0	0	0	131
05:00 PM	0	0	0	40	41	81	0	0	0	4	7	11	0	0	0	2	0	2	0	0	0	0	1	1	95
05:15 PM	0	0	0	134	25	159	0	0	0	14	4	18	0	0	0	2	2	4	0	0	0	0	0	0	181
Total Volume	0	0	0	313	136	449	0	0	0	62	18	80	0	0	0	6	3	9	0	0	0	0	1	1	539
% App. Total	0	0	0	69.7	30.3		0	0	0	77.5	22.5		0	0	0	66.7	33.3		0	0	0	0	100		
PHF	.000	.000	.000	.584	.829	.706	.000	.000	.000	.554	.643	.606	.000	.000	.000	.750	.375	.563	.000	.000	.000	.000	.250	.250	.744



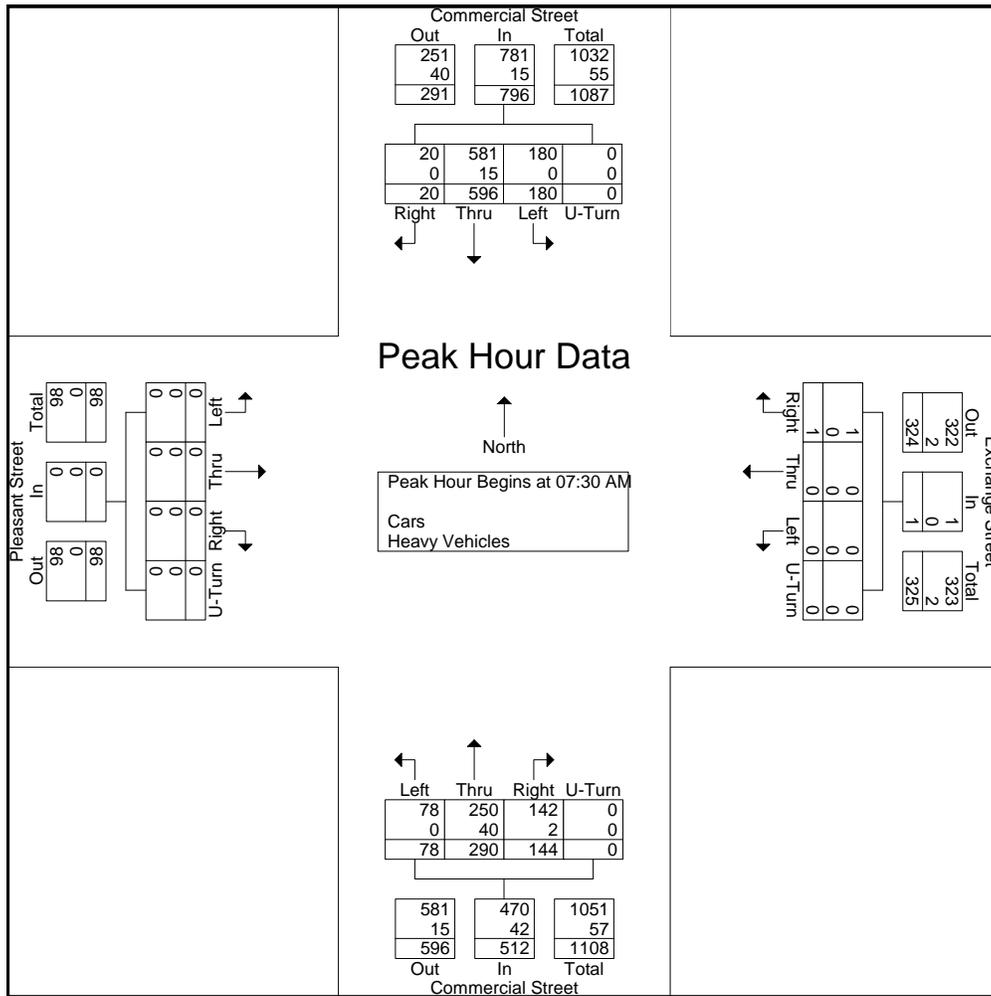
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Commercial Street From North					Exchange Street From East					Commercial Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 09:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	4	153	44	0	201	0	0	0	0	0	33	73	17	0	123	0	0	0	0	0	324
07:45 AM	5	155	54	0	214	0	0	0	0	0	40	80	21	0	141	0	0	0	0	0	355
08:00 AM	6	141	43	0	190	0	0	0	0	0	32	62	22	0	116	0	0	0	0	0	306
08:15 AM	5	147	39	0	191	1	0	0	0	1	39	75	18	0	132	0	0	0	0	0	324
Total Volume	20	596	180	0	796	1	0	0	0	1	144	290	78	0	512	0	0	0	0	0	1309
% App. Total	2.5	74.9	22.6	0		100	0	0	0		28.1	56.6	15.2	0		0	0	0	0		
PHF	.833	.961	.833	.000	.930	.250	.000	.000	.000	.250	.900	.906	.886	.000	.908	.000	.000	.000	.000	.000	.922
Cars	20	581	180	0	781	1	0	0	0	1	142	250	78	0	470	0	0	0	0	0	1252
% Cars	100	97.5	100	0	98.1	100	0	0	0	100	98.6	86.2	100	0	91.8	0	0	0	0	0	95.6
Heavy Vehicles	0	15	0	0	15	0	0	0	0	0	2	40	0	0	42	0	0	0	0	0	57
% Heavy Vehicles	0	2.5	0	0	1.9	0	0	0	0	0	1.4	13.8	0	0	8.2	0	0	0	0	0	4.4





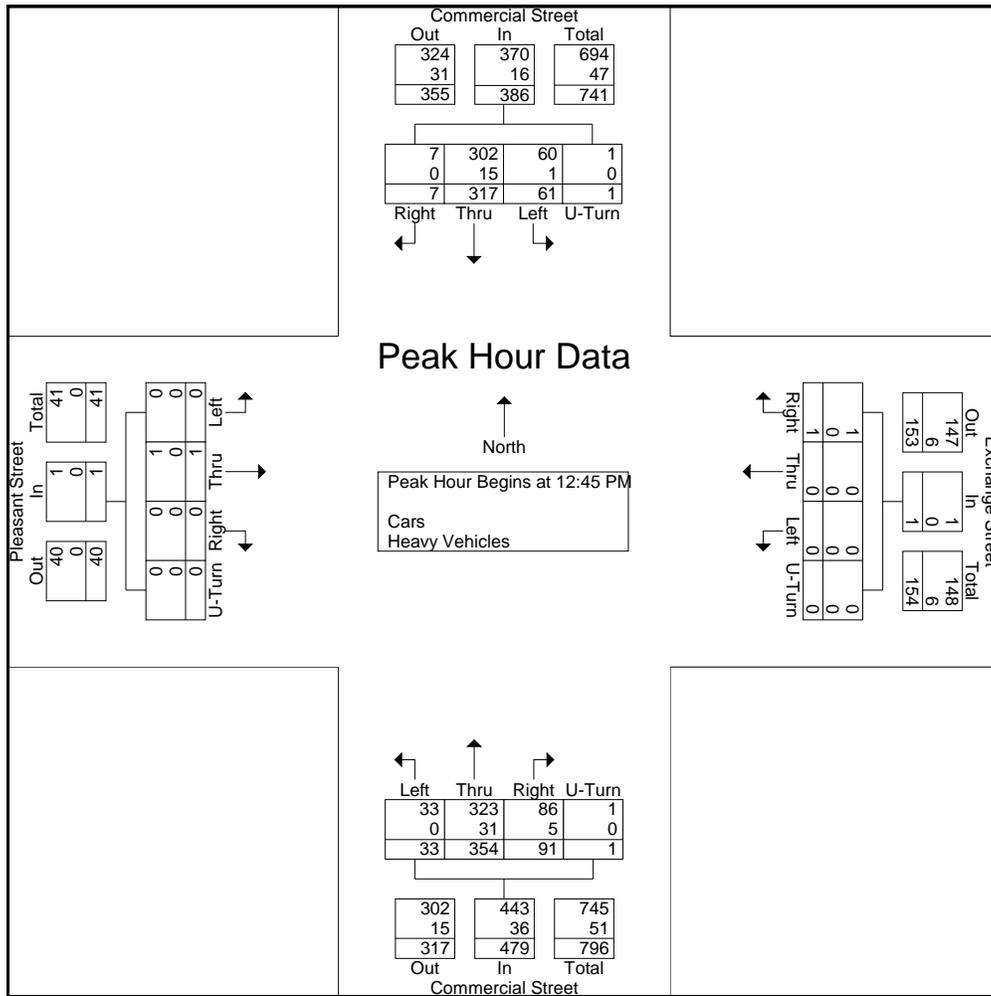
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N/S: Commercial Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 D
Site Code : 2015041
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Page No : 2

Start Time	Commercial Street From North					Exchange Street From East					Commercial Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:45 PM																					
12:45 PM	1	72	21	0	94	1	0	0	0	1	24	94	7	1	126	0	0	0	0	0	221
01:00 PM	1	83	15	0	99	0	0	0	0	0	23	95	8	0	126	0	1	0	0	1	226
01:15 PM	3	80	13	1	97	0	0	0	0	0	23	89	7	0	119	0	0	0	0	0	216
01:30 PM	2	82	12	0	96	0	0	0	0	0	21	76	11	0	108	0	0	0	0	0	204
Total Volume	7	317	61	1	386	1	0	0	0	1	91	354	33	1	479	0	1	0	0	1	867
% App. Total	1.8	82.1	15.8	0.3	100	0	0	0	0	0	19	73.9	6.9	0.2	100	0	100	0	0	0	100
PHF	.583	.955	.726	.250	.975	.250	.000	.000	.000	.250	.948	.932	.750	.250	.950	.000	.250	.000	.000	.250	.959
Cars	7	302	60	1	370	1	0	0	0	1	86	323	33	1	443	0	1	0	0	1	815
% Cars	100	95.3	98.4	100	95.9	100	0	0	0	100	94.5	91.2	100	100	92.5	0	100	0	0	100	94.0
Heavy Vehicles	0	15	1	0	16	0	0	0	0	0	5	31	0	0	36	0	0	0	0	0	52
% Heavy Vehicles	0	4.7	1.6	0	4.1	0	0	0	0	0	5.5	8.8	0	0	7.5	0	0	0	0	0	6.0





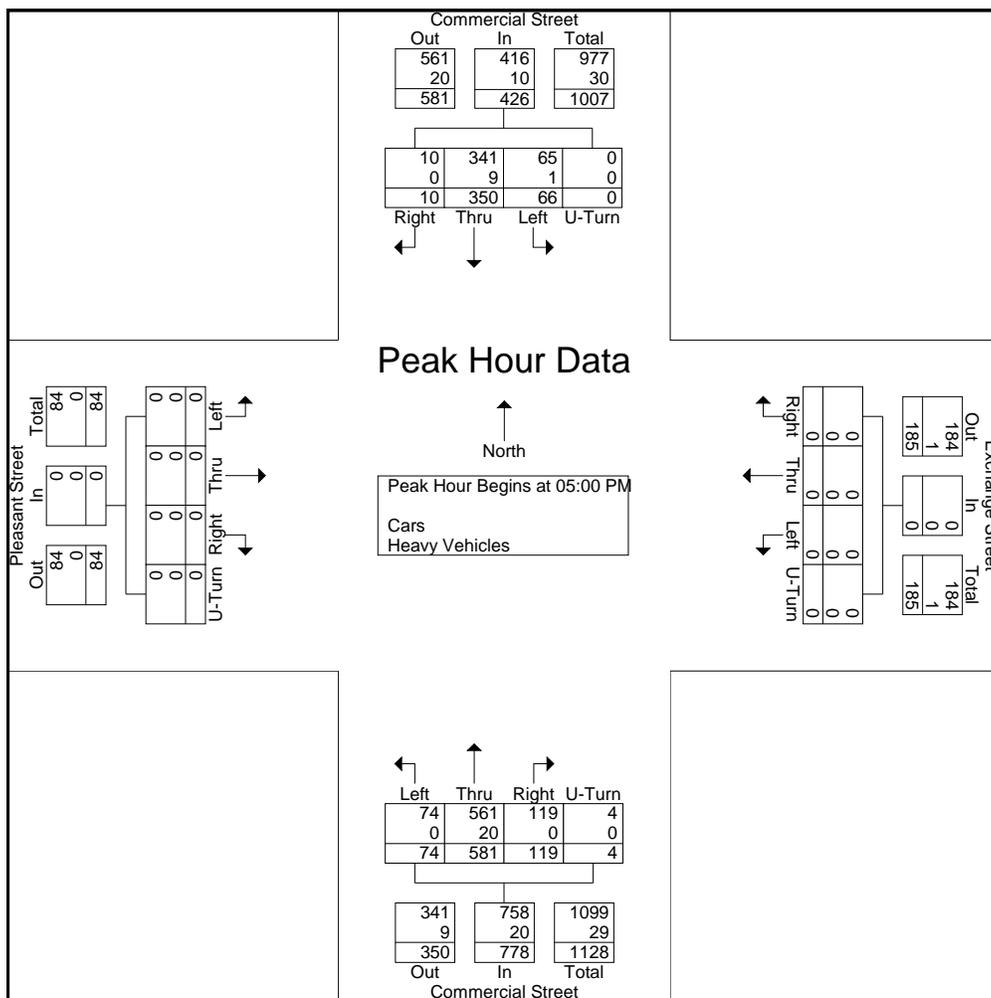
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File Name : 154396 D
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Client: Howard Stein-Hudson/ K. Pyke

Start Time	Commercial Street From North					Exchange Street From East					Commercial Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 02:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	2	77	19	0	98	0	0	0	0	0	32	164	15	1	212	0	0	0	0	0	310
05:15 PM	1	91	16	0	108	0	0	0	0	0	29	130	22	0	181	0	0	0	0	0	289
05:30 PM	5	101	16	0	122	0	0	0	0	0	33	143	23	1	200	0	0	0	0	0	322
05:45 PM	2	81	15	0	98	0	0	0	0	0	25	144	14	2	185	0	0	0	0	0	283
Total Volume	10	350	66	0	426	0	0	0	0	0	119	581	74	4	778	0	0	0	0	0	1204
% App. Total	2.3	82.2	15.5	0		0	0	0	0	0	15.3	74.7	9.5	0.5		0	0	0	0	0	
PHF	.500	.866	.868	.000	.873	.000	.000	.000	.000	.000	.902	.886	.804	.500	.917	.000	.000	.000	.000	.000	.935
Cars	10	341	65	0	416	0	0	0	0	0	119	561	74	4	758	0	0	0	0	0	1174
% Cars	100	97.4	98.5	0	97.7	0	0	0	0	0	100	96.6	100	100	97.4	0	0	0	0	0	97.5
Heavy Vehicles	0	9	1	0	10	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	30
% Heavy Vehicles	0	2.6	1.5	0	2.3	0	0	0	0	0	0	3.4	0	0	2.6	0	0	0	0	0	2.5





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File Name : 154396 E
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

S: Abbot Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Pleasant Street From East			Abbott Street From South			Pleasant Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
07:00 AM	1	7	0	0	0	0	1	0	0	9
07:15 AM	0	10	0	0	0	0	1	0	0	11
07:30 AM	1	17	0	0	0	0	1	0	0	19
07:45 AM	1	25	0	0	0	0	1	0	0	27
Total	3	59	0	0	0	0	4	0	0	66
08:00 AM	3	27	0	0	0	0	3	0	0	33
08:15 AM	2	31	0	0	0	0	1	0	0	34
08:30 AM	0	19	0	0	0	0	3	0	0	22
08:45 AM	0	23	0	0	0	0	1	0	0	24
Total	5	100	0	0	0	0	8	0	0	113
Grand Total	8	159	0	0	0	0	12	0	0	179
Apprch %	4.8	95.2	0	0	0	0	100	0	0	
Total %	4.5	88.8	0	0	0	0	6.7	0	0	

Start Time	Pleasant Street From East				Abbott Street From South				Pleasant Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	1	25	0	26	0	0	0	0	1	0	0	1	27
08:00 AM	3	27	0	30	0	0	0	0	3	0	0	3	33
08:15 AM	2	31	0	33	0	0	0	0	1	0	0	1	34
08:30 AM	0	19	0	19	0	0	0	0	3	0	0	3	22
Total Volume	6	102	0	108	0	0	0	0	8	0	0	8	116
% App. Total	5.6	94.4	0		0	0	0		100	0	0		
PHF	.500	.823	.000	.818	.000	.000	.000	.000	.667	.000	.000	.667	.853



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File Name : 154396 E
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

S: Abbot Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Pleasant Street From East				Abbott Street From South				Pleasant Street From West				Int. Total
	Thru	Left	Peds SB	Peds NB	Right	Left	Peds WB	Peds EB	Right	Thru	Peds NB	Peds SB	
07:00 AM	0	0	0	0	0	0	3	0	0	0	3	3	9
07:15 AM	0	0	2	0	0	0	5	3	0	0	1	2	13
07:30 AM	0	0	2	0	0	0	5	3	0	0	1	3	14
07:45 AM	0	0	0	0	0	0	8	2	0	0	7	6	23
Total	0	0	4	0	0	0	21	8	0	0	12	14	59
08:00 AM	0	0	0	0	0	0	5	2	0	0	6	0	13
08:15 AM	0	0	1	0	0	0	20	2	0	0	1	2	26
08:30 AM	1	1	0	0	0	0	11	18	0	0	13	8	52
08:45 AM	0	1	0	0	0	0	7	9	0	0	7	1	25
Total	1	2	1	0	0	0	43	31	0	0	27	11	116
Grand Total	1	2	5	0	0	0	64	39	0	0	39	25	175
Apprch %	12.5	25	62.5	0	0	0	62.1	37.9	0	0	60.9	39.1	
Total %	0.6	1.1	2.9	0	0	0	36.6	22.3	0	0	22.3	14.3	

Start Time	Pleasant Street From East					Abbott Street From South					Pleasant Street From West					Int. Total
	Thru	Left	Peds SB	Peds NB	App. Total	Right	Left	Peds WB	Peds EB	App. Total	Right	Thru	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	0	0	0	0	0	0	0	5	2	7	0	0	6	0	6	13
08:15 AM	0	0	1	0	1	0	0	20	2	22	0	0	1	2	3	26
08:30 AM	1	1	0	0	2	0	0	11	18	29	0	0	13	8	21	52
08:45 AM	0	1	0	0	1	0	0	7	9	16	0	0	7	1	8	25
Total Volume	1	2	1	0	4	0	0	43	31	74	0	0	27	11	38	116
% App. Total	25	50	25	0		0	0	58.1	41.9		0	0	71.1	28.9		
PHF	.250	.500	.250	.000	.500	.000	.000	.538	.431	.638	.000	.000	.519	.344	.452	.558



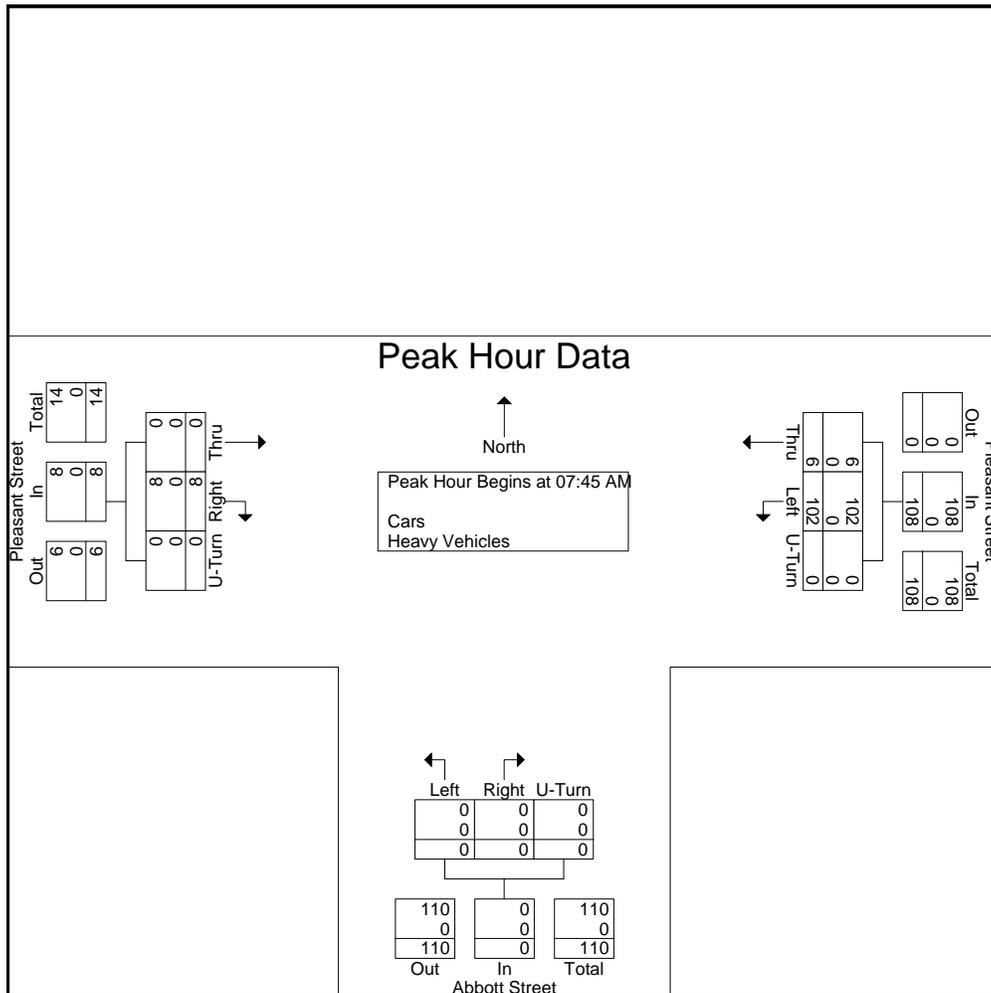
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S: Abbot Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 E
Site Code : 2015041
Start Date : 4/29/2015
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Start Time	Pleasant Street From East				Abbott Street From South				Pleasant Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	1	25	0	26	0	0	0	0	1	0	0	1	27
08:00 AM	3	27	0	30	0	0	0	0	3	0	0	3	33
08:15 AM	2	31	0	33	0	0	0	0	1	0	0	1	34
08:30 AM	0	19	0	19	0	0	0	0	3	0	0	3	22
Total Volume	6	102	0	108	0	0	0	0	8	0	0	8	116
% App. Total	5.6	94.4	0		0	0	0		100	0	0		
PHF	.500	.823	.000	.818	.000	.000	.000	.000	.667	.000	.000	.667	.853
Cars	6	102	0	108	0	0	0	0	8	0	0	8	116
% Cars	100	100	0	100	0	0	0	0	100	0	0	100	100
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0





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Site Code : 2015041
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Page No : 1

S: Abbott Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Pleasant Street From East			Abbott Street From South			Pleasant Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
04:00 PM	1	21	0	0	0	0	2	0	0	24
04:15 PM	1	18	0	0	0	0	0	0	0	19
04:30 PM	6	6	0	0	0	0	6	0	0	18
04:45 PM	2	10	0	0	0	0	1	0	0	13
Total	10	55	0	0	0	0	9	0	0	74
05:00 PM	0	12	0	0	0	0	2	0	0	14
05:15 PM	0	20	0	0	0	0	0	0	0	20
05:30 PM	0	18	0	0	0	0	1	0	0	19
05:45 PM	2	10	0	0	0	0	2	0	0	14
Total	2	60	0	0	0	0	5	0	0	67
Grand Total	12	115	0	0	0	0	14	0	0	141
Apprch %	9.4	90.6	0	0	0	0	100	0	0	
Total %	8.5	81.6	0	0	0	0	9.9	0	0	

Start Time	Pleasant Street From East				Abbott Street From South				Pleasant Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	1	21	0	22	0	0	0	0	2	0	0	2	24
04:15 PM	1	18	0	19	0	0	0	0	0	0	0	0	19
04:30 PM	6	6	0	12	0	0	0	0	6	0	0	6	18
04:45 PM	2	10	0	12	0	0	0	0	1	0	0	1	13
Total Volume	10	55	0	65	0	0	0	0	9	0	0	9	74
% App. Total	15.4	84.6	0		0	0	0		100	0	0		
PHF	.417	.655	.000	.739	.000	.000	.000	.000	.375	.000	.000	.375	.771



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File Name : 154396 EE
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Page No : 1

S: Abbott Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Pleasant Street From East				Abbott Street From South				Pleasant Street From West				Int. Total
	Thru	Left	Peds SB	Peds NB	Right	Left	Peds WB	Peds EB	Right	Thru	Peds NB	Peds SB	
04:00 PM	0	0	0	2	0	0	10	5	0	0	12	7	36
04:15 PM	0	0	0	1	0	0	4	3	0	0	2	6	16
04:30 PM	0	0	0	1	0	0	19	4	0	0	12	8	44
04:45 PM	2	0	0	0	0	0	9	1	0	0	14	7	33
Total	2	0	0	4	0	0	42	13	0	0	40	28	129
05:00 PM	0	0	0	0	0	0	11	7	0	0	10	6	34
05:15 PM	0	0	2	1	0	0	6	7	0	0	10	6	32
05:30 PM	0	0	0	0	0	0	6	8	0	0	7	6	27
05:45 PM	0	0	1	0	0	0	12	8	0	0	12	7	40
Total	0	0	3	1	0	0	35	30	0	0	39	25	133
Grand Total	2	0	3	5	0	0	77	43	0	0	79	53	262
Apprch %	20	0	30	50	0	0	64.2	35.8	0	0	59.8	40.2	
Total %	0.8	0	1.1	1.9	0	0	29.4	16.4	0	0	30.2	20.2	

Start Time	Pleasant Street From East					Abbott Street From South					Pleasant Street From West					Int. Total
	Thru	Left	Peds SB	Peds NB	App. Total	Right	Left	Peds WB	Peds EB	App. Total	Right	Thru	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 04:30 PM																
04:30 PM	0	0	0	1	1	0	0	19	4	23	0	0	12	8	20	44
04:45 PM	2	0	0	0	2	0	0	9	1	10	0	0	14	7	21	33
05:00 PM	0	0	0	0	0	0	0	11	7	18	0	0	10	6	16	34
05:15 PM	0	0	2	1	3	0	0	6	7	13	0	0	10	6	16	32
Total Volume	2	0	2	2	6	0	0	45	19	64	0	0	46	27	73	143
% App. Total	33.3	0	33.3	33.3		0	0	70.3	29.7		0	0	63	37		
PHF	.250	.000	.250	.500	.500	.000	.000	.592	.679	.696	.000	.000	.821	.844	.869	.813



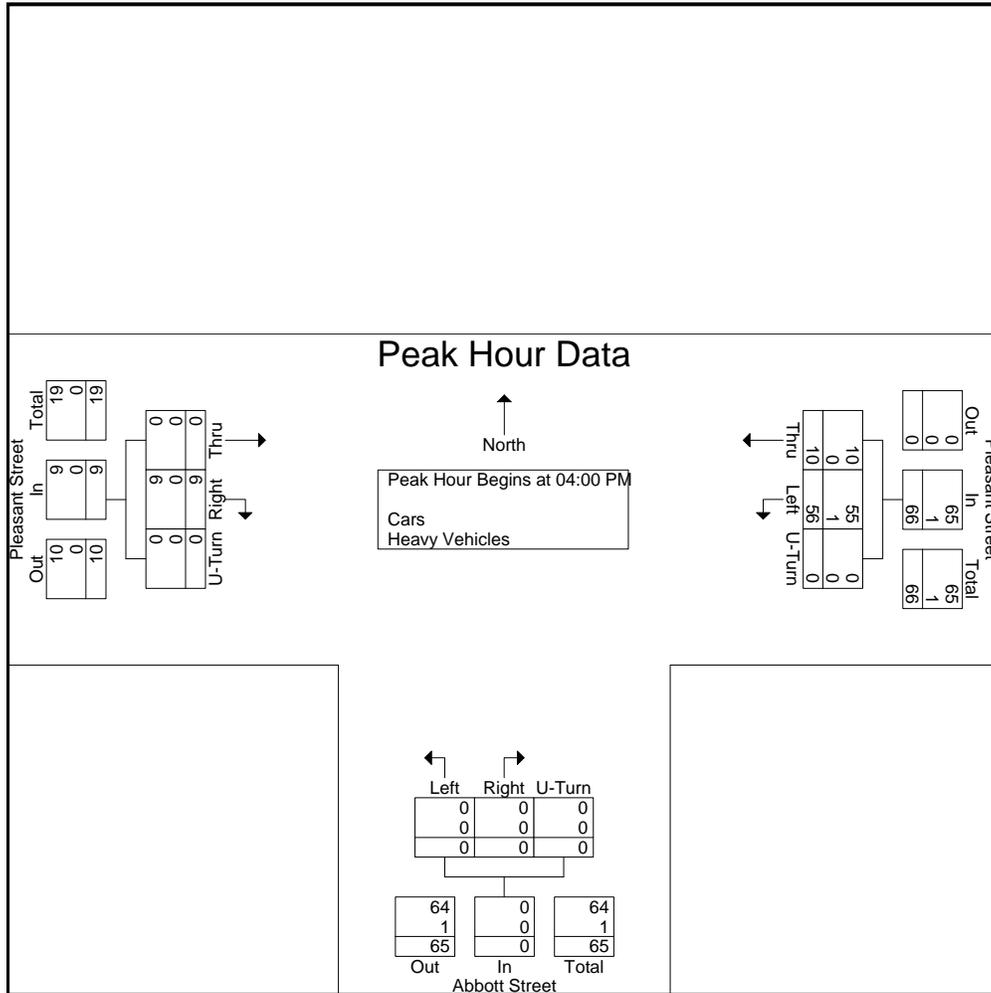
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S: Abbott Street
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 EE
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Start Time	Pleasant Street From East				Abbott Street From South				Pleasant Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	1	22	0	23	0	0	0	0	2	0	0	2	25
04:15 PM	1	18	0	19	0	0	0	0	0	0	0	0	19
04:30 PM	6	6	0	12	0	0	0	0	6	0	0	6	18
04:45 PM	2	10	0	12	0	0	0	0	1	0	0	1	13
Total Volume	10	56	0	66	0	0	0	0	9	0	0	9	75
% App. Total	15.2	84.8	0		0	0	0		100	0	0		
PHF	.417	.636	.000	.717	.000	.000	.000	.000	.375	.000	.000	.375	.750
Cars	10	55	0	65	0	0	0	0	9	0	0	9	74
% Cars	100	98.2	0	98.5	0	0	0	0	100	0	0	100	98.7
Heavy Vehicles	0	1	0	1	0	0	0	0	0	0	0	0	1
% Heavy Vehicles	0	1.8	0	1.5	0	0	0	0	0	0	0	0	1.3





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File Name : 154396 F
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Abbott Street From North			Exchange Street From East			Exchange Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	0	8	0	0	0	0	32	0	0	40
07:15 AM	0	11	0	0	0	0	48	0	0	59
07:30 AM	0	13	0	0	0	0	61	0	0	74
07:45 AM	0	27	0	0	0	0	85	0	0	112
Total	0	59	0	0	0	0	226	0	0	285
08:00 AM	0	29	0	0	0	0	71	0	0	100
08:15 AM	0	26	0	0	0	0	69	0	0	95
08:30 AM	0	24	0	0	0	0	79	0	0	103
08:45 AM	0	25	0	0	0	0	51	0	0	76
Total	0	104	0	0	0	0	270	0	0	374
Grand Total	0	163	0	0	0	0	496	0	0	659
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	24.7	0	0	0	0	75.3	0	0	
Cars	0	162	0	0	0	0	488	0	0	650
% Cars	0	99.4	0	0	0	0	98.4	0	0	98.6
Heavy Vehicles	0	1	0	0	0	0	8	0	0	9
% Heavy Vehicles	0	0.6	0	0	0	0	1.6	0	0	1.4

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	27	0	27	0	0	0	0	85	0	0	85	112
08:00 AM	0	29	0	29	0	0	0	0	71	0	0	71	100
08:15 AM	0	26	0	26	0	0	0	0	69	0	0	69	95
08:30 AM	0	24	0	24	0	0	0	0	79	0	0	79	103
Total Volume	0	106	0	106	0	0	0	0	304	0	0	304	410
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.914	.000	.914	.000	.000	.000	.000	.894	.000	.000	.894	.915
Cars	0	106	0	106	0	0	0	0	303	0	0	303	409
% Cars	0	100	0	100	0	0	0	0	99.7	0	0	99.7	99.8
Heavy Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
% Heavy Vehicles	0	0	0	0	0	0	0	0	0.3	0	0	0.3	0.2



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Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Abbott Street From North			Exchange Street From East			Exchange Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	0	8	0	0	0	0	29	0	0	37
07:15 AM	0	11	0	0	0	0	46	0	0	57
07:30 AM	0	13	0	0	0	0	61	0	0	74
07:45 AM	0	27	0	0	0	0	84	0	0	111
Total	0	59	0	0	0	0	220	0	0	279
08:00 AM	0	29	0	0	0	0	71	0	0	100
08:15 AM	0	26	0	0	0	0	69	0	0	95
08:30 AM	0	24	0	0	0	0	79	0	0	103
08:45 AM	0	24	0	0	0	0	49	0	0	73
Total	0	103	0	0	0	0	268	0	0	371
Grand Total	0	162	0	0	0	0	488	0	0	650
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	24.9	0	0	0	0	75.1	0	0	

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	27	0	27	0	0	0	0	84	0	0	84	111
08:00 AM	0	29	0	29	0	0	0	0	71	0	0	71	100
08:15 AM	0	26	0	26	0	0	0	0	69	0	0	69	95
08:30 AM	0	24	0	24	0	0	0	0	79	0	0	79	103
Total Volume	0	106	0	106	0	0	0	0	303	0	0	303	409
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.914	.000	.914	.000	.000	.000	.000	.902	.000	.000	.902	.921



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N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Abbott Street From North			Exchange Street From East			Exchange Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	0	3	0	0	3
07:15 AM	0	0	0	0	0	0	2	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	1	0	0	1
Total	0	0	0	0	0	0	6	0	0	6
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	1	0	0	0	0	2	0	0	3
Total	0	1	0	0	0	0	2	0	0	3
Grand Total	0	1	0	0	0	0	8	0	0	9
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	11.1	0	0	0	0	88.9	0	0	

Start Time	Abbott Street From North				Exchange Street From East			Exchange Street From West				Int. Total	
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn		App. Total
Peak Hour Analysis From 07:00 AM to 08:45 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	3	0	0	3	3
07:15 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	0	0	0	0	0	0	6	0	0	6	6
% App. Total	0	0	0	0	0	0	0	0	100	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.500



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File Name : 154396 F
Site Code : 2015041
Start Date : 4/29/2015
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N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	3	17	0	0	0	3	0	0	12	0	35
07:15 AM	0	0	13	16	0	0	0	3	0	0	24	0	56
07:30 AM	0	0	7	21	0	1	1	4	1	0	24	0	59
07:45 AM	0	0	14	28	0	1	1	10	0	0	30	3	87
Total	0	0	37	82	0	2	2	20	1	0	90	3	237
08:00 AM	0	0	13	33	0	1	1	12	0	0	22	2	84
08:15 AM	0	0	10	30	0	1	1	9	0	0	27	1	79
08:30 AM	0	0	14	28	0	0	3	8	0	0	23	0	76
08:45 AM	0	0	16	21	0	0	3	14	0	0	16	3	73
Total	0	0	53	112	0	2	8	43	0	0	88	6	312
Grand Total	0	0	90	194	0	4	10	63	1	0	178	9	549
Apprch %	0	0	31.7	68.3	0	5.2	13	81.8	0.5	0	94.7	4.8	
Total %	0	0	16.4	35.3	0	0.7	1.8	11.5	0.2	0	32.4	1.6	

Start Time	Abbott Street From North					Exchange Street From East					Exchange Street From West					Int. Total
	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:45 AM																
07:45 AM	0	0	14	28	42	0	1	1	10	12	0	0	30	3	33	87
08:00 AM	0	0	13	33	46	0	1	1	12	14	0	0	22	2	24	84
08:15 AM	0	0	10	30	40	0	1	1	9	11	0	0	27	1	28	79
08:30 AM	0	0	14	28	42	0	0	3	8	11	0	0	23	0	23	76
Total Volume	0	0	51	119	170	0	3	6	39	48	0	0	102	6	108	326
% App. Total	0	0	30	70		0	6.2	12.5	81.2		0	0	94.4	5.6		
PHF	.000	.000	.911	.902	.924	.000	.750	.500	.813	.857	.000	.000	.850	.500	.818	.937



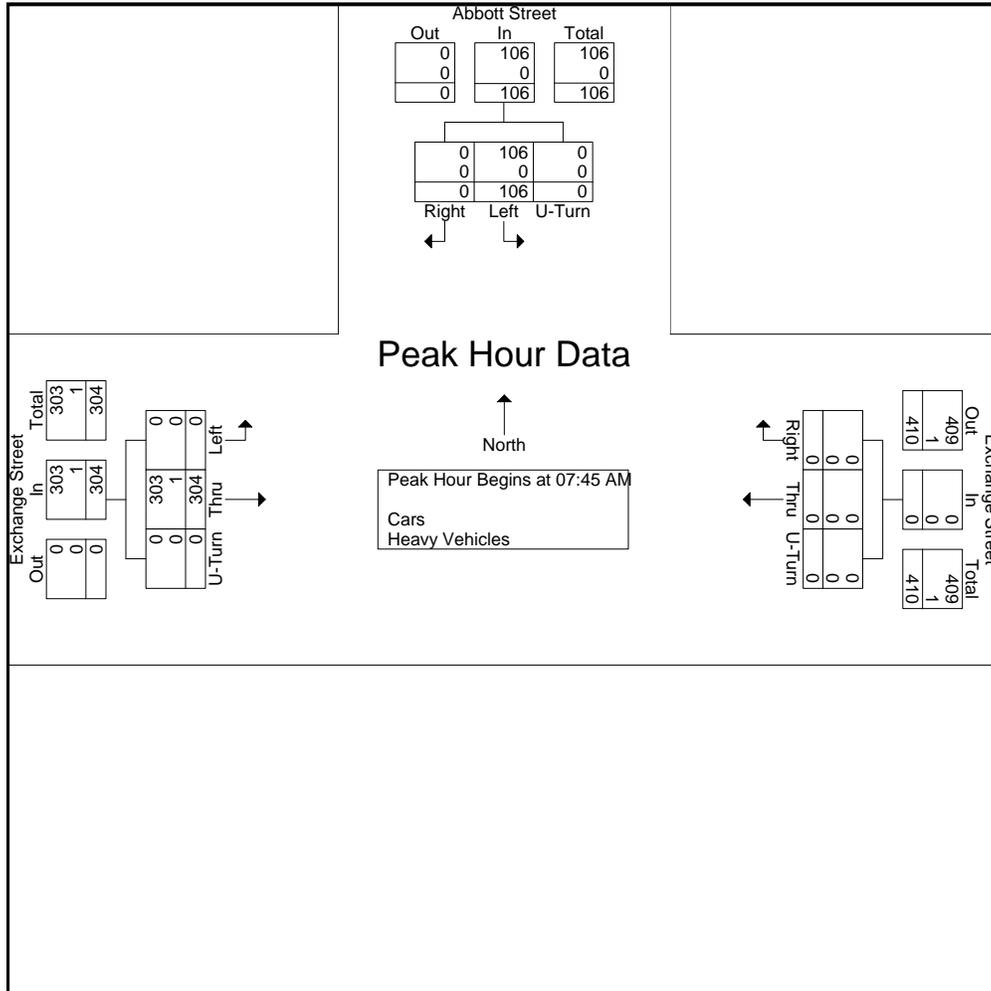
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File Name : 154396 F
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N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	27	0	27	0	0	0	0	85	0	0	85	112
08:00 AM	0	29	0	29	0	0	0	0	71	0	0	71	100
08:15 AM	0	26	0	26	0	0	0	0	69	0	0	69	95
08:30 AM	0	24	0	24	0	0	0	0	79	0	0	79	103
Total Volume	0	106	0	106	0	0	0	0	304	0	0	304	410
% App. Total	0	100	0	100	0	0	0	0	100	0	0	100	100
PHF	.000	.914	.000	.914	.000	.000	.000	.000	.894	.000	.000	.894	.915
Cars	0	106	0	106	0	0	0	0	303	0	0	303	409
% Cars	0	100	0	100	0	0	0	0	99.7	0	0	99.7	99.8
Heavy Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	1
% Heavy Vehicles	0	0	0	0	0	0	0	0	0.3	0	0	0.3	0.2





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Start Date : 4/29/2015
Page No : 1

N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Abbott Street From North			Exchange Street From East			Exchange Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	27	0	0	0	0	65	0	0	92
04:15 PM	0	18	0	0	0	0	47	0	0	65
04:30 PM	0	13	0	0	0	0	33	0	0	46
04:45 PM	0	11	0	0	0	0	30	0	0	41
Total	0	69	0	0	0	0	175	0	0	244
05:00 PM	0	14	0	0	0	0	51	0	0	65
05:15 PM	0	20	0	0	0	0	47	0	0	67
05:30 PM	0	22	0	0	0	0	59	0	0	81
05:45 PM	0	10	0	0	0	0	39	0	0	49
Total	0	66	0	0	0	0	196	0	0	262
Grand Total	0	135	0	0	0	0	371	0	0	506
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	26.7	0	0	0	0	73.3	0	0	
Cars	0	132	0	0	0	0	365	0	0	497
% Cars	0	97.8	0	0	0	0	98.4	0	0	98.2
Heavy Vehicles	0	3	0	0	0	0	6	0	0	9
% Heavy Vehicles	0	2.2	0	0	0	0	1.6	0	0	1.8

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	14	0	14	0	0	0	0	51	0	0	51	65
05:15 PM	0	20	0	20	0	0	0	0	47	0	0	47	67
05:30 PM	0	22	0	22	0	0	0	0	59	0	0	59	81
05:45 PM	0	10	0	10	0	0	0	0	39	0	0	39	49
Total Volume	0	66	0	66	0	0	0	0	196	0	0	196	262
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.831	.000	.000	.831	.809
Cars	0	65	0	65	0	0	0	0	195	0	0	195	260
% Cars	0	98.5	0	98.5	0	0	0	0	99.5	0	0	99.5	99.2
Heavy Vehicles	0	1	0	1	0	0	0	0	1	0	0	1	2
% Heavy Vehicles	0	1.5	0	1.5	0	0	0	0	0.5	0	0	0.5	0.8



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Start Date : 4/29/2015
Page No : 1

N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Abbott Street From North			Exchange Street From East			Exchange Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	26	0	0	0	0	62	0	0	88
04:15 PM	0	18	0	0	0	0	46	0	0	64
04:30 PM	0	13	0	0	0	0	33	0	0	46
04:45 PM	0	10	0	0	0	0	29	0	0	39
Total	0	67	0	0	0	0	170	0	0	237
05:00 PM	0	13	0	0	0	0	50	0	0	63
05:15 PM	0	20	0	0	0	0	47	0	0	67
05:30 PM	0	22	0	0	0	0	59	0	0	81
05:45 PM	0	10	0	0	0	0	39	0	0	49
Total	0	65	0	0	0	0	195	0	0	260
Grand Total	0	132	0	0	0	0	365	0	0	497
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	26.6	0	0	0	0	73.4	0	0	

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	13	0	13	0	0	0	0	50	0	0	50	63
05:15 PM	0	20	0	20	0	0	0	0	47	0	0	47	67
05:30 PM	0	22	0	22	0	0	0	0	59	0	0	59	81
05:45 PM	0	10	0	10	0	0	0	0	39	0	0	39	49
Total Volume	0	65	0	65	0	0	0	0	195	0	0	195	260
% App. Total	0	100	0	100	0	0	0	0	100	0	0	100	
PHF	.000	.739	.000	.739	.000	.000	.000	.000	.826	.000	.000	.826	.802



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N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Abbott Street From North			Exchange Street From East			Exchange Street From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	1	0	0	0	0	3	0	0	4
04:15 PM	0	0	0	0	0	0	1	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	0	0	0	1	0	0	2
Total	0	2	0	0	0	0	5	0	0	7
05:00 PM	0	1	0	0	0	0	1	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	1	0	0	2
Grand Total	0	3	0	0	0	0	6	0	0	9
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	33.3	0	0	0	0	66.7	0	0	

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	1	0	1	0	0	0	0	3	0	0	3	4
04:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	1	0	1	0	0	0	0	1	0	0	1	2
Total Volume	0	2	0	2	0	0	0	0	5	0	0	5	7
% App. Total	0	100	0	0	0	0	0	0	100	0	0	0	0
PHF	.000	.500	.000	.500	.000	.000	.000	.000	.417	.000	.000	.417	.438



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Page No : 1

N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	14	12	0	0	12	2	0	0	5	9	54
04:15 PM	0	0	26	5	0	0	9	4	0	0	1	0	45
04:30 PM	0	0	28	14	0	0	2	3	0	0	0	5	52
04:45 PM	0	0	10	22	0	0	4	2	0	0	1	4	43
Total	0	0	78	53	0	0	27	11	0	0	7	18	194
05:00 PM	0	0	18	13	0	0	7	2	1	0	0	1	42
05:15 PM	0	0	41	12	0	0	2	0	1	0	4	3	63
05:30 PM	0	0	37	12	0	0	2	1	0	0	2	4	58
05:45 PM	0	0	31	12	0	0	3	1	0	0	3	2	52
Total	0	0	127	49	0	0	14	4	2	0	9	10	215
Grand Total	0	0	205	102	0	0	41	15	2	0	16	28	409
Apprch %	0	0	66.8	33.2	0	0	73.2	26.8	4.3	0	34.8	60.9	
Total %	0	0	50.1	24.9	0	0	10	3.7	0.5	0	3.9	6.8	

Start Time	Abbott Street From North					Exchange Street From East					Exchange Street From West					Int. Total
	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	0	0	18	13	31	0	0	7	2	9	1	0	0	1	2	42
05:15 PM	0	0	41	12	53	0	0	2	0	2	1	0	4	3	8	63
05:30 PM	0	0	37	12	49	0	0	2	1	3	0	0	2	4	6	58
05:45 PM	0	0	31	12	43	0	0	3	1	4	0	0	3	2	5	52
Total Volume	0	0	127	49	176	0	0	14	4	18	2	0	9	10	21	215
% App. Total	0	0	72.2	27.8		0	0	77.8	22.2		9.5	0	42.9	47.6		
PHF	.000	.000	.774	.942	.830	.000	.000	.500	.500	.500	.500	.000	.563	.625	.656	.853



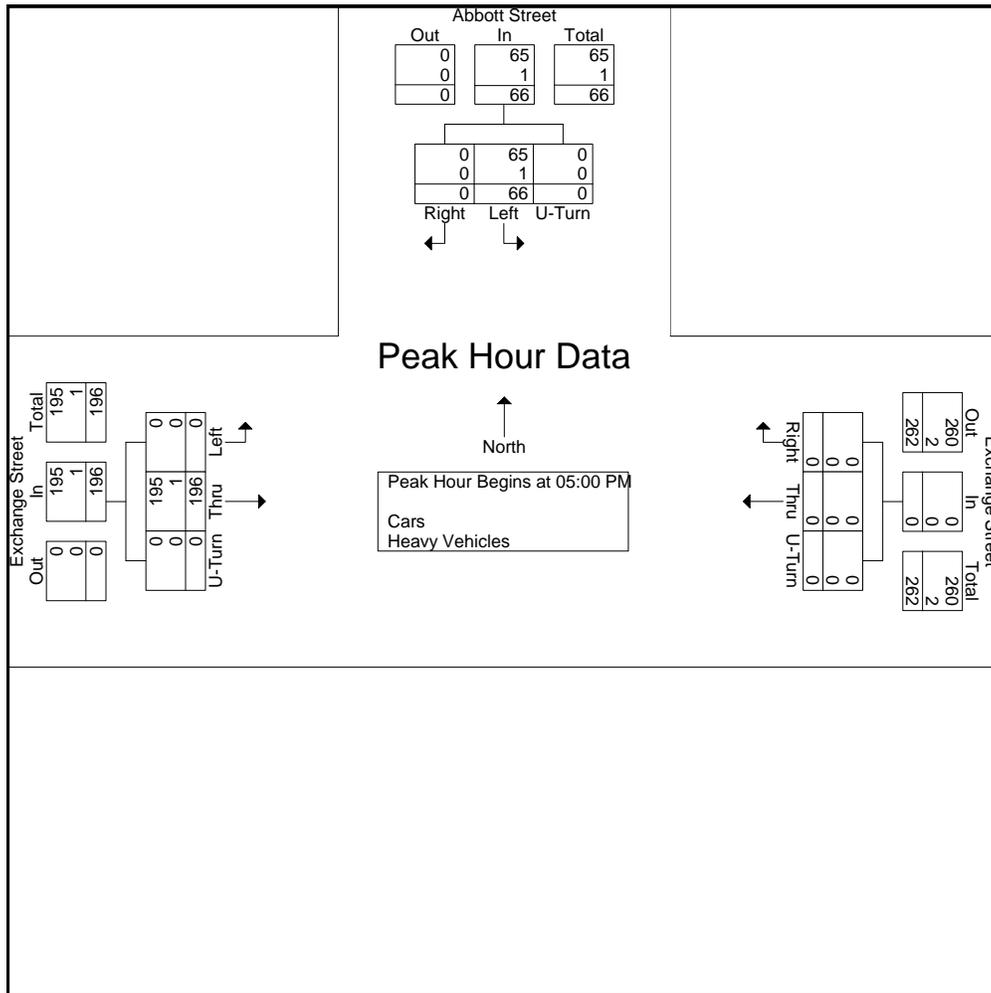
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N: Abbott Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Abbott Street From North				Exchange Street From East				Exchange Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	14	0	14	0	0	0	0	51	0	0	51	65
05:15 PM	0	20	0	20	0	0	0	0	47	0	0	47	67
05:30 PM	0	22	0	22	0	0	0	0	59	0	0	59	81
05:45 PM	0	10	0	10	0	0	0	0	39	0	0	39	49
Total Volume	0	66	0	66	0	0	0	0	196	0	0	196	262
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.750	.000	.750	.000	.000	.000	.000	.831	.000	.000	.831	.809
Cars	0	65	0	65	0	0	0	0	195	0	0	195	260
% Cars	0	98.5	0	98.5	0	0	0	0	99.5	0	0	99.5	99.2
Heavy Vehicles	0	1	0	1	0	0	0	0	1	0	0	1	2
% Heavy Vehicles	0	1.5	0	1.5	0	0	0	0	0.5	0	0	0.5	0.8





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File Name : 154396 G
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

S: Jackson Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Exchange Street From East			Jackson Street From South			Exchange Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
07:00 AM	0	0	0	2	0	0	24	16	0	42
07:15 AM	0	0	0	3	0	0	26	32	0	61
07:30 AM	0	0	0	7	0	0	41	32	0	80
07:45 AM	0	0	0	5	0	0	71	39	0	115
Total	0	0	0	17	0	0	162	119	0	298
08:00 AM	0	0	0	4	0	0	59	41	0	104
08:15 AM	0	0	0	4	0	0	54	43	0	101
08:30 AM	0	0	0	4	0	0	58	46	0	108
08:45 AM	0	0	0	4	0	0	37	36	0	77
Total	0	0	0	16	0	0	208	166	0	390
Grand Total	0	0	0	33	0	0	370	285	0	688
Apprch %	0	0	0	100	0	0	56.5	43.5	0	
Total %	0	0	0	4.8	0	0	53.8	41.4	0	
Cars	0	0	0	32	0	0	369	279	0	680
% Cars	0	0	0	97	0	0	99.7	97.9	0	98.8
Heavy Vehicles	0	0	0	1	0	0	1	6	0	8
% Heavy Vehicles	0	0	0	3	0	0	0.3	2.1	0	1.2

Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	5	0	0	5	71	39	0	110	115
08:00 AM	0	0	0	0	4	0	0	4	59	41	0	100	104
08:15 AM	0	0	0	0	4	0	0	4	54	43	0	97	101
08:30 AM	0	0	0	0	4	0	0	4	58	46	0	104	108
Total Volume	0	0	0	0	17	0	0	17	242	169	0	411	428
% App. Total	0	0	0	0	100	0	0	100	58.9	41.1	0	100	99.5
PHF	.000	.000	.000	.000	.850	.000	.000	.850	.852	.918	.000	.934	.930
Cars	0	0	0	0	16	0	0	16	242	168	0	410	426
% Cars	0	0	0	0	94.1	0	0	94.1	100	99.4	0	99.8	99.5
Heavy Vehicles	0	0	0	0	1	0	0	1	0	1	0	1	2
% Heavy Vehicles	0	0	0	0	5.9	0	0	5.9	0	0.6	0	0.2	0.5



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File Name : 154396 G
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

S: Jackson Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Exchange Street From East			Jackson Street From South			Exchange Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
07:00 AM	0	0	0	2	0	0	23	15	0	40
07:15 AM	0	0	0	3	0	0	26	30	0	59
07:30 AM	0	0	0	7	0	0	41	32	0	80
07:45 AM	0	0	0	5	0	0	71	38	0	114
Total	0	0	0	17	0	0	161	115	0	293
08:00 AM	0	0	0	4	0	0	59	41	0	104
08:15 AM	0	0	0	3	0	0	54	43	0	100
08:30 AM	0	0	0	4	0	0	58	46	0	108
08:45 AM	0	0	0	4	0	0	37	34	0	75
Total	0	0	0	15	0	0	208	164	0	387
Grand Total	0	0	0	32	0	0	369	279	0	680
Apprch %	0	0	0	100	0	0	56.9	43.1	0	
Total %	0	0	0	4.7	0	0	54.3	41	0	

Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	5	0	0	5	71	38	0	109	114
08:00 AM	0	0	0	0	4	0	0	4	59	41	0	100	104
08:15 AM	0	0	0	0	3	0	0	3	54	43	0	97	100
08:30 AM	0	0	0	0	4	0	0	4	58	46	0	104	108
Total Volume	0	0	0	0	16	0	0	16	242	168	0	410	426
% App. Total	0	0	0	0	100	0	0	100	59	41	0	100	100
PHF	.000	.000	.000	.000	.800	.000	.000	.800	.852	.913	.000	.940	.934



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S: Jackson Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Exchange Street From East			Jackson Street From South			Exchange Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
07:00 AM	0	0	0	0	0	0	1	1	0	2
07:15 AM	0	0	0	0	0	0	0	2	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	0	0	1	4	0	5
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	1	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	1	0	0	0	2	0	3
Grand Total	0	0	0	1	0	0	1	6	0	8
Apprch %	0	0	0	100	0	0	14.3	85.7	0	
Total %	0	0	0	12.5	0	0	12.5	75	0	

Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 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	1	1	0	2	2
07:15 AM	0	0	0	0	0	0	0	0	0	2	0	2	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	0	0	0	0	1	4	0	5	5
% App. Total	0	0	0	0	0	0	0	0	20	80	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.500	.000	.625	.625



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S: Jackson Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	Peds SB	Peds NB	Right	Left	Peds WB	Peds EB	Right	Thru	Peds NB	Peds SB	
07:00 AM	0	2	0	0	0	0	3	4	0	0	12	0	21
07:15 AM	0	0	1	0	0	0	1	4	0	0	24	0	30
07:30 AM	0	0	1	1	0	0	1	2	0	1	30	4	40
07:45 AM	0	0	0	0	0	1	4	1	0	0	29	3	38
Total	0	2	2	1	0	1	9	11	0	1	95	7	129
08:00 AM	1	0	0	1	0	0	6	5	0	0	23	1	37
08:15 AM	1	0	0	0	0	0	3	3	0	0	19	2	28
08:30 AM	0	0	0	0	0	0	5	7	0	0	24	4	40
08:45 AM	0	0	0	1	0	0	4	9	0	0	21	5	40
Total	2	0	0	2	0	0	18	24	0	0	87	12	145
Grand Total	2	2	2	3	0	1	27	35	0	1	182	19	274
Apprch %	22.2	22.2	22.2	33.3	0	1.6	42.9	55.6	0	0.5	90.1	9.4	
Total %	0.7	0.7	0.7	1.1	0	0.4	9.9	12.8	0	0.4	66.4	6.9	

Start Time	Exchange Street From East					Jackson Street From South					Exchange Street From West					Int. Total
	Thru	Left	Peds SB	Peds NB	App. Total	Right	Left	Peds WB	Peds EB	App. Total	Right	Thru	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:15 AM																
07:15 AM	0	0	1	0	1	0	0	1	4	5	0	0	24	0	24	30
07:30 AM	0	0	1	1	2	0	0	1	2	3	0	1	30	4	35	40
07:45 AM	0	0	0	0	0	0	1	4	1	6	0	0	29	3	32	38
08:00 AM	1	0	0	1	2	0	0	6	5	11	0	0	23	1	24	37
Total Volume	1	0	2	2	5	0	1	12	12	25	0	1	106	8	115	145
% App. Total	20	0	40	40		0	4	48	48		0	0.9	92.2	7		
PHF	.250	.000	.500	.500	.625	.000	.250	.500	.600	.568	.000	.250	.883	.500	.821	.906



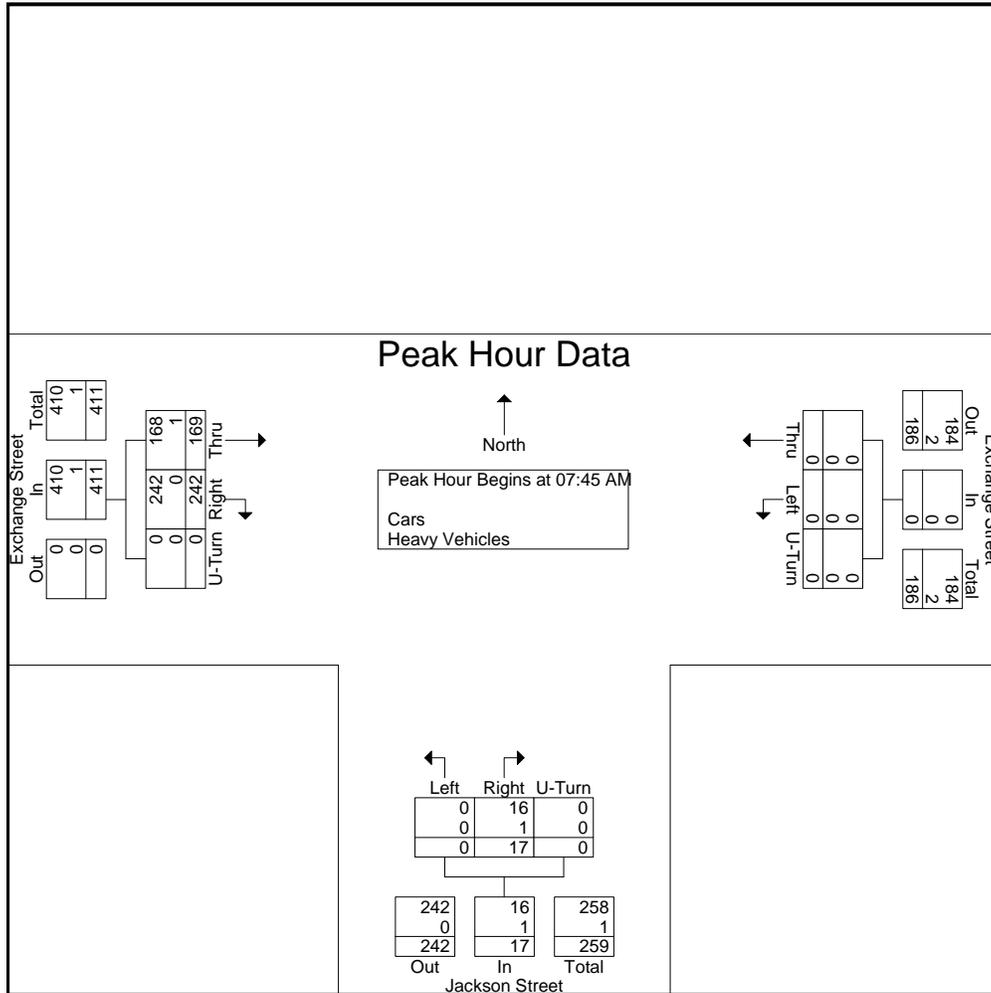
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S: Jackson Street
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Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	5	0	0	5	71	39	0	110	115
08:00 AM	0	0	0	0	4	0	0	4	59	41	0	100	104
08:15 AM	0	0	0	0	4	0	0	4	54	43	0	97	101
08:30 AM	0	0	0	0	4	0	0	4	58	46	0	104	108
Total Volume	0	0	0	0	17	0	0	17	242	169	0	411	428
% App. Total	0	0	0	0	100	0	0	100	58.9	41.1	0	100	99.5
PHF	.000	.000	.000	.000	.850	.000	.000	.850	.852	.918	.000	.934	.930
Cars	0	0	0	0	16	0	0	16	242	168	0	410	426
% Cars	0	0	0	0	94.1	0	0	94.1	100	99.4	0	99.8	99.5
Heavy Vehicles	0	0	0	0	1	0	0	1	0	1	0	1	2
% Heavy Vehicles	0	0	0	0	5.9	0	0	5.9	0	0.6	0	0.2	0.5





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S: Jackson Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Exchange Street From East			Jackson Street From South			Exchange Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
04:00 PM	0	0	0	13	0	0	38	54	0	105
04:15 PM	0	0	0	11	0	0	21	44	0	76
04:30 PM	0	0	0	12	0	0	20	25	0	57
04:45 PM	0	0	0	13	0	0	9	32	0	54
Total	0	0	0	49	0	0	88	155	0	292
05:00 PM	0	0	0	15	0	0	28	37	0	80
05:15 PM	0	0	0	17	0	0	28	38	0	83
05:30 PM	0	0	0	20	0	0	27	54	0	101
05:45 PM	0	0	0	22	0	0	17	33	0	72
Total	0	0	0	74	0	0	100	162	0	336
Grand Total	0	0	0	123	0	0	188	317	0	628
Apprch %	0	0	0	100	0	0	37.2	62.8	0	
Total %	0	0	0	19.6	0	0	29.9	50.5	0	
Cars	0	0	0	122	0	0	185	315	0	622
% Cars	0	0	0	99.2	0	0	98.4	99.4	0	99
Heavy Vehicles	0	0	0	1	0	0	3	2	0	6
% Heavy Vehicles	0	0	0	0.8	0	0	1.6	0.6	0	1

Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	15	0	0	15	28	37	0	65	80
05:15 PM	0	0	0	0	17	0	0	17	28	38	0	66	83
05:30 PM	0	0	0	0	20	0	0	20	27	54	0	81	101
05:45 PM	0	0	0	0	22	0	0	22	17	33	0	50	72
Total Volume	0	0	0	0	74	0	0	74	100	162	0	262	336
% App. Total	0	0	0	0	100	0	0	100	38.2	61.8	0	100	99.1
PHF	.000	.000	.000	.000	.841	.000	.000	.841	.893	.750	.000	.809	.832
Cars	0	0	0	0	73	0	0	73	98	162	0	260	333
% Cars	0	0	0	0	98.6	0	0	98.6	98.0	100	0	99.2	99.1
Heavy Vehicles	0	0	0	0	1	0	0	1	2	0	0	2	3
% Heavy Vehicles	0	0	0	0	1.4	0	0	1.4	2.0	0	0	0.8	0.9



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Start Date : 4/29/2015
Page No : 1

S: Jackson Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Exchange Street From East			Jackson Street From South			Exchange Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
04:00 PM	0	0	0	13	0	0	37	52	0	102
04:15 PM	0	0	0	11	0	0	21	44	0	76
04:30 PM	0	0	0	12	0	0	20	25	0	57
04:45 PM	0	0	0	13	0	0	9	32	0	54
Total	0	0	0	49	0	0	87	153	0	289
05:00 PM	0	0	0	15	0	0	26	37	0	78
05:15 PM	0	0	0	17	0	0	28	38	0	83
05:30 PM	0	0	0	20	0	0	27	54	0	101
05:45 PM	0	0	0	21	0	0	17	33	0	71
Total	0	0	0	73	0	0	98	162	0	333
Grand Total	0	0	0	122	0	0	185	315	0	622
Apprch %	0	0	0	100	0	0	37	63	0	
Total %	0	0	0	19.6	0	0	29.7	50.6	0	

Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	15	0	0	15	26	37	0	63	78
05:15 PM	0	0	0	0	17	0	0	17	28	38	0	66	83
05:30 PM	0	0	0	0	20	0	0	20	27	54	0	81	101
05:45 PM	0	0	0	0	21	0	0	21	17	33	0	50	71
Total Volume	0	0	0	0	73	0	0	73	98	162	0	260	333
% App. Total	0	0	0	0	100	0	0		37.7	62.3	0		
PHF	.000	.000	.000	.000	.869	.000	.000	.869	.875	.750	.000	.802	.824



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S: Jackson Street
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Exchange Street From East			Jackson Street From South			Exchange Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
04:00 PM	0	0	0	0	0	0	1	2	0	3
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	2	0	3
05:00 PM	0	0	0	0	0	0	2	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	1	0	0	2	0	0	3
Grand Total	0	0	0	1	0	0	3	2	0	6
Apprch %	0	0	0	100	0	0	60	40	0	
Total %	0	0	0	16.7	0	0	50	33.3	0	

Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	0	0	0	0	0	0	0	1	2	0	3	3
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	1	2	0	3	3
% App. Total	0	0	0	0	0	0	0	0	33.3	66.7	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.250	.250



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S: Jackson Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	Peds SB	Peds NB	Right	Left	Peds WB	Peds EB	Right	Thru	Peds NB	Peds SB	
04:00 PM	0	0	2	1	0	0	7	1	0	0	3	18	32
04:15 PM	0	0	0	0	0	1	6	3	0	0	3	9	22
04:30 PM	0	0	2	1	0	1	10	6	0	0	2	3	25
04:45 PM	0	0	0	0	0	0	4	5	0	0	6	7	22
Total	0	0	4	2	0	2	27	15	0	0	14	37	101
05:00 PM	0	0	0	2	0	0	8	5	0	1	4	12	32
05:15 PM	0	0	0	0	0	0	7	3	0	1	4	12	27
05:30 PM	0	0	1	1	0	0	8	5	0	0	1	7	23
05:45 PM	0	0	0	2	0	0	2	9	0	0	2	5	20
Total	0	0	1	5	0	0	25	22	0	2	11	36	102
Grand Total	0	0	5	7	0	2	52	37	0	2	25	73	203
Apprch %	0	0	41.7	58.3	0	2.2	57.1	40.7	0	2	25	73	
Total %	0	0	2.5	3.4	0	1	25.6	18.2	0	1	12.3	36	

Start Time	Exchange Street From East					Jackson Street From South					Exchange Street From West					Int. Total
	Thru	Left	Peds SB	Peds NB	App. Total	Right	Left	Peds WB	Peds EB	App. Total	Right	Thru	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 04:30 PM																
04:30 PM	0	0	2	1	3	0	1	10	6	17	0	0	2	3	5	25
04:45 PM	0	0	0	0	0	0	0	4	5	9	0	0	6	7	13	22
05:00 PM	0	0	0	2	2	0	0	8	5	13	0	1	4	12	17	32
05:15 PM	0	0	0	0	0	0	0	7	3	10	0	1	4	12	17	27
Total Volume	0	0	2	3	5	0	1	29	19	49	0	2	16	34	52	106
% App. Total	0	0	40	60		0	2	59.2	38.8		0	3.8	30.8	65.4		
PHF	.000	.000	.250	.375	.417	.000	.250	.725	.792	.721	.000	.500	.667	.708	.765	.828



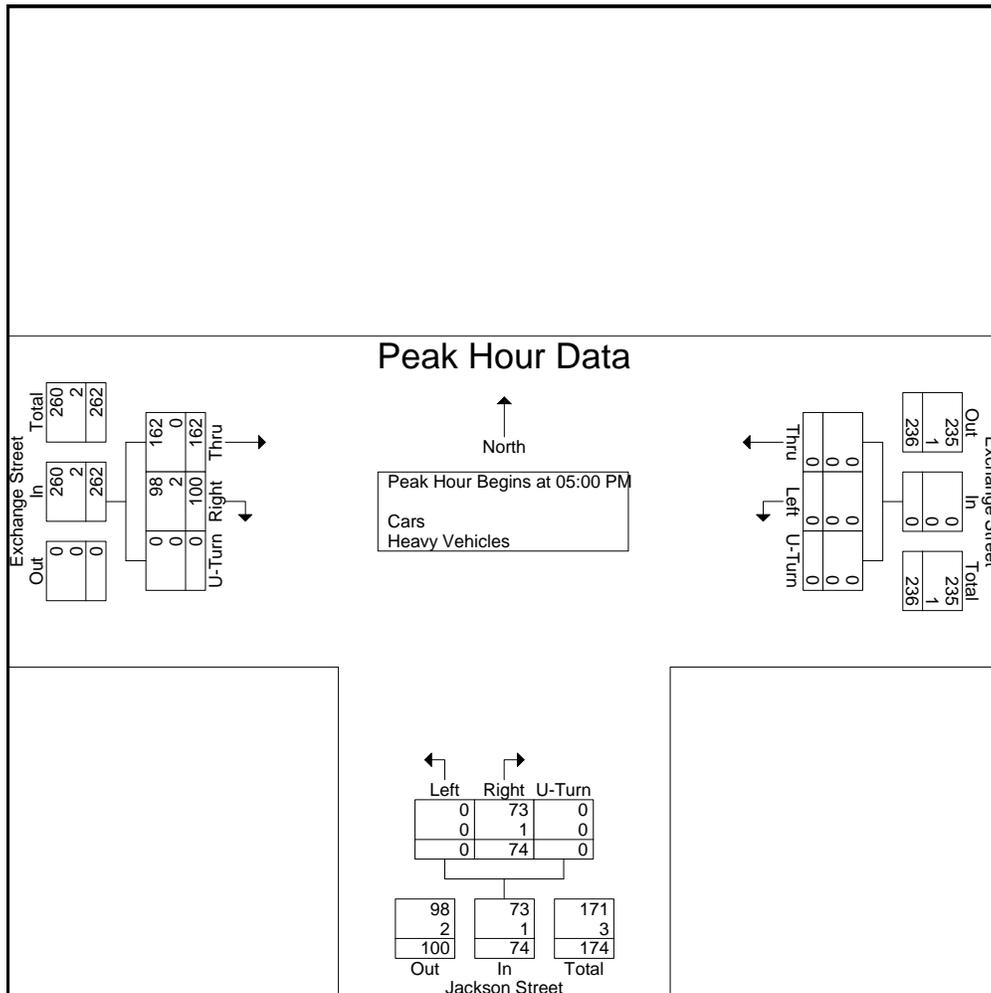
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Start Time	Exchange Street From East				Jackson Street From South				Exchange Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	0	0	0	0	15	0	0	15	28	37	0	65	80
05:15 PM	0	0	0	0	17	0	0	17	28	38	0	66	83
05:30 PM	0	0	0	0	20	0	0	20	27	54	0	81	101
05:45 PM	0	0	0	0	22	0	0	22	17	33	0	50	72
Total Volume	0	0	0	0	74	0	0	74	100	162	0	262	336
% App. Total	0	0	0	0	100	0	0	100	38.2	61.8	0	100	100
PHF	.000	.000	.000	.000	.841	.000	.000	.841	.893	.750	.000	.809	.832
Cars	0	0	0	0	73	0	0	73	98	162	0	260	333
% Cars	0	0	0	0	98.6	0	0	98.6	98.0	100	0	99.2	99.1
Heavy Vehicles	0	0	0	0	1	0	0	1	2	0	0	2	3
% Heavy Vehicles	0	0	0	0	1.4	0	0	1.4	2.0	0	0	0.8	0.9





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File Name : 154396 H
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
E/W: Bank Driveway/ Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Main Street From North				Bank Driveway From East				Main Street From South				Pleasant Street From West				Int. Total	
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn		
07:00 AM	14	86	1	2	0	0	0	0	1	56	11	0	0	0	0	0	0	171
07:15 AM	13	103	0	1	0	0	0	0	0	96	9	0	0	0	0	0	0	222
07:30 AM	31	86	0	2	0	0	0	0	0	102	29	0	0	0	0	0	0	250
07:45 AM	28	120	0	0	0	0	0	0	0	105	38	0	0	0	0	0	0	291
Total	86	395	1	5	0	0	0	0	1	359	87	0	0	0	0	0	0	934
08:00 AM	38	104	0	2	0	0	0	0	0	79	22	0	0	0	0	0	0	245
08:15 AM	33	86	2	0	1	0	0	1	1	75	25	0	0	0	0	0	0	224
08:30 AM	30	110	0	4	1	0	0	2	2	77	31	0	0	0	0	0	0	257
08:45 AM	34	97	1	2	0	0	0	0	4	81	18	0	0	0	0	0	0	237
Total	135	397	3	8	2	0	0	3	7	312	96	0	0	0	0	0	0	963
Grand Total	221	792	4	13	2	0	0	3	8	671	183	0	0	0	0	0	0	1897
Apprch %	21.5	76.9	0.4	1.3	40	0	0	60	0.9	77.8	21.2	0	0	0	0	0	0	
Total %	11.6	41.8	0.2	0.7	0.1	0	0	0.2	0.4	35.4	9.6	0	0	0	0	0	0	
Cars	215	736	4	13	2	0	0	2	8	599	175	0	0	0	0	0	0	1754
% Cars	97.3	92.9	100	100	100	0	0	66.7	100	89.3	95.6	0	0	0	0	0	0	92.5
Heavy Vehicles	6	56	0	0	0	0	0	1	0	72	8	0	0	0	0	0	0	143
% Heavy Vehicles	2.7	7.1	0	0	0	0	0	33.3	0	10.7	4.4	0	0	0	0	0	0	7.5

Start Time	Main Street From North					Bank Driveway From East					Main Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	28	120	0	0	148	0	0	0	0	0	0	105	38	0	143	0	0	0	0	0	291
08:00 AM	38	104	0	2	144	0	0	0	0	0	0	79	22	0	101	0	0	0	0	0	245
08:15 AM	33	86	2	0	121	1	0	0	1	2	1	75	25	0	101	0	0	0	0	0	224
08:30 AM	30	110	0	4	144	1	0	0	2	3	2	77	31	0	110	0	0	0	0	0	257
Total Volume	129	420	2	6	557	2	0	0	3	5	3	336	116	0	455	0	0	0	0	0	1017
% App. Total	23.2	75.4	0.4	1.1		40	0	0	60		0.7	73.8	25.5	0		0	0	0	0	0	
PHF	.849	.875	.250	.375	.941	.500	.000	.000	.375	.417	.375	.800	.763	.000	.795	.000	.000	.000	.000	.000	.874
Cars	126	388	2	6	522	2	0	0	2	4	3	300	111	0	414	0	0	0	0	0	940
% Cars	97.7	92.4	100	100	93.7	100	0	0	66.7	80.0	100	89.3	95.7	0	91.0	0	0	0	0	0	92.4
Heavy Vehicles	3	32	0	0	35	0	0	0	1	1	0	36	5	0	41	0	0	0	0	0	77
% Heavy Vehicles	2.3	7.6	0	0	6.3	0	0	0	33.3	20.0	0	10.7	4.3	0	9.0	0	0	0	0	0	7.6



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File Name : 154396 H
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
E/W: Bank Driveway/ Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Main Street From North					Bank Driveway From East					Main Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	1	0	7	2	0	0	0	1	0	0	0	2	0	0	0	0	0	2	2	17
07:15 AM	2	0	0	21	8	0	0	0	0	2	0	1	1	2	0	0	0	0	7	2	46
07:30 AM	0	0	0	19	19	0	0	0	0	1	0	0	0	1	2	0	0	0	7	7	56
07:45 AM	0	0	0	17	15	0	0	0	0	1	0	0	0	3	3	0	0	0	6	3	48
Total	2	1	0	64	44	0	0	0	1	4	0	1	3	6	5	0	0	0	22	14	167
08:00 AM	0	1	0	2	9	0	0	0	1	1	0	0	0	3	1	0	0	0	4	7	29
08:15 AM	0	2	0	5	6	0	0	0	0	2	0	0	0	0	5	0	0	0	3	14	37
08:30 AM	0	1	0	5	10	0	0	0	0	2	0	0	0	0	5	0	0	0	10	16	49
08:45 AM	0	1	0	2	16	0	0	0	1	1	0	0	0	0	2	0	0	0	18	13	54
Total	0	5	0	14	41	0	0	0	2	6	0	0	0	3	13	0	0	0	35	50	169
Grand Total	2	6	0	78	85	0	0	0	3	10	0	1	3	9	18	0	0	0	57	64	336
Apprch %	1.2	3.5	0	45.6	49.7	0	0	0	23.1	76.9	0	3.2	9.7	29	58.1	0	0	0	47.1	52.9	
Total %	0.6	1.8	0	23.2	25.3	0	0	0	0.9	3	0	0.3	0.9	2.7	5.4	0	0	0	17	19	

Start Time	Main Street From North						Bank Driveway From East						Main Street From South						Pleasant Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:15 AM																									
07:15 AM	2	0	0	21	8	31	0	0	0	0	2	2	0	1	1	2	0	4	0	0	0	7	2	9	46
07:30 AM	0	0	0	19	19	38	0	0	0	0	1	1	0	0	0	1	2	3	0	0	0	7	7	14	56
07:45 AM	0	0	0	17	15	32	0	0	0	0	1	1	0	0	0	3	3	6	0	0	0	6	3	9	48
08:00 AM	0	1	0	2	9	12	0	0	0	1	1	2	0	0	0	3	1	4	0	0	0	4	7	11	29
Total Volume	2	1	0	59	51	113	0	0	0	1	5	6	0	1	1	9	6	17	0	0	0	24	19	43	179
% App. Total	1.8	0.9	0	52.2	45.1		0	0	0	16.7	83.3		0	5.9	5.9	52.9	35.3		0	0	0	55.8	44.2		
PHF	.250	.250	.000	.702	.671	.743	.000	.000	.000	.250	.625	.750	.000	.250	.250	.750	.500	.708	.000	.000	.000	.857	.679	.768	.799



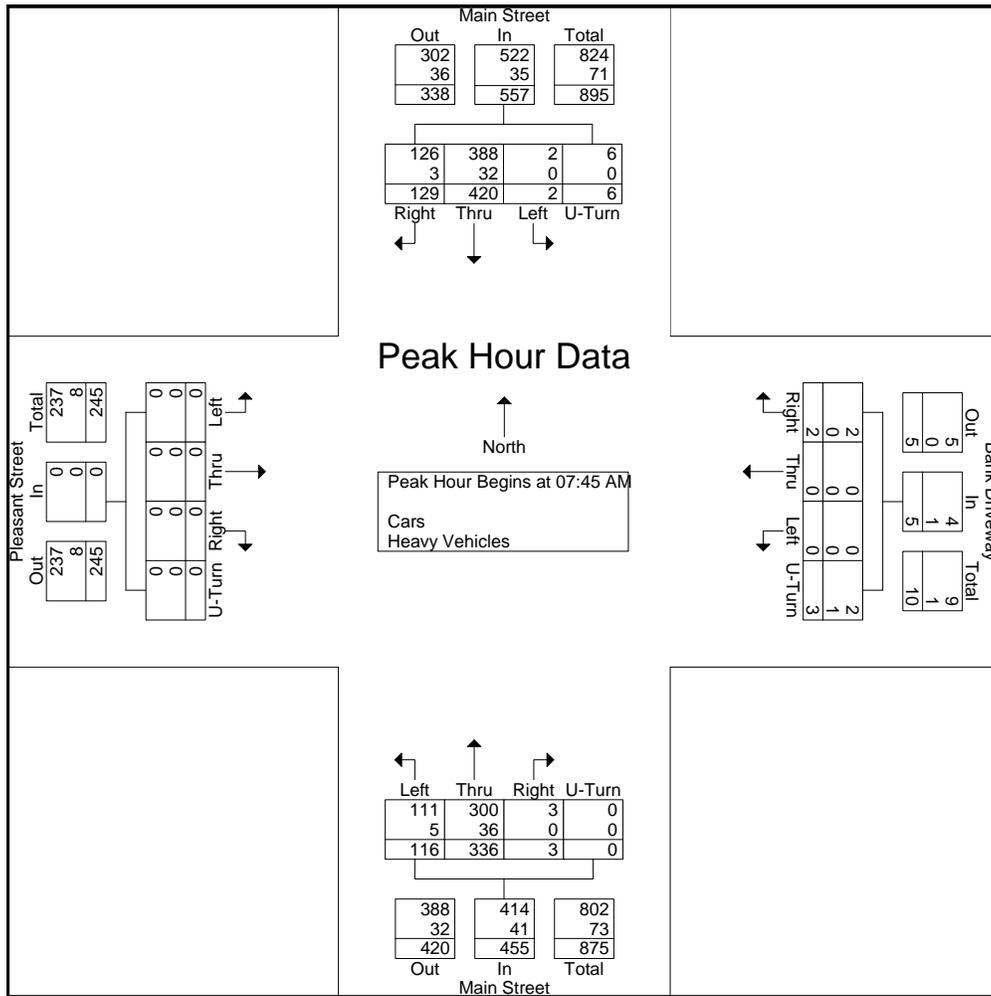
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Client: Howard Stein-Hudson/ K. Pyke

Start Time	Main Street From North					Bank Driveway From East					Main Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	28	120	0	0	148	0	0	0	0	0	0	105	38	0	143	0	0	0	0	0	291
08:00 AM	38	104	0	2	144	0	0	0	0	0	0	79	22	0	101	0	0	0	0	0	245
08:15 AM	33	86	2	0	121	1	0	0	1	2	1	75	25	0	101	0	0	0	0	0	224
08:30 AM	30	110	0	4	144	1	0	0	2	3	2	77	31	0	110	0	0	0	0	0	257
Total Volume	129	420	2	6	557	2	0	0	3	5	3	336	116	0	455	0	0	0	0	0	1017
% App. Total	23.2	75.4	0.4	1.1		40	0	0	60		0.7	73.8	25.5	0		0	0	0	0		
PHF	.849	.875	.250	.375	.941	.500	.000	.000	.375	.417	.375	.800	.763	.000	.795	.000	.000	.000	.000	.000	.874
Cars	126	388	2	6	522	2	0	0	2	4	3	300	111	0	414	0	0	0	0	0	940
% Cars	97.7	92.4	100	100	93.7	100	0	0	66.7	80.0	100	89.3	95.7	0	91.0	0	0	0	0	0	92.4
Heavy Vehicles	3	32	0	0	35	0	0	0	1	1	0	36	5	0	41	0	0	0	0	0	77
% Heavy Vehicles	2.3	7.6	0	0	6.3	0	0	0	33.3	20.0	0	10.7	4.3	0	9.0	0	0	0	0	0	7.6





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N/S: Main Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Main Street From North				Bank Driveway From East				Main Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	27	79	0	0	0	0	1	0	0	133	37	0	0	0	0	0	277
04:15 PM	21	89	0	2	0	0	0	0	0	122	28	0	0	0	0	0	262
04:30 PM	18	87	0	0	1	1	1	0	0	124	39	0	0	0	0	0	271
04:45 PM	20	78	0	1	0	0	0	0	0	121	28	2	0	0	0	0	250
Total	86	333	0	3	1	1	2	0	0	500	132	2	0	0	0	0	1060
05:00 PM	20	81	0	0	1	1	2	0	0	126	26	0	0	0	0	0	257
05:15 PM	31	65	0	3	2	0	0	0	0	124	34	0	0	0	0	0	259
05:30 PM	18	80	0	1	1	0	0	0	1	153	34	0	0	0	0	0	288
05:45 PM	27	102	1	2	0	0	0	0	1	149	33	0	0	0	0	0	315
Total	96	328	1	6	4	1	2	0	2	552	127	0	0	0	0	0	1119
Grand Total	182	661	1	9	5	2	4	0	2	1052	259	2	0	0	0	0	2179
Apprch %	21.3	77.5	0.1	1.1	45.5	18.2	36.4	0	0.2	80	19.7	0.2	0	0	0	0	
Total %	8.4	30.3	0	0.4	0.2	0.1	0.2	0	0.1	48.3	11.9	0.1	0	0	0	0	
Cars	177	630	1	9	5	2	4	0	2	996	254	2	0	0	0	0	2082
% Cars	97.3	95.3	100	100	100	100	100	0	100	94.7	98.1	100	0	0	0	0	95.5
Heavy Vehicles	5	31	0	0	0	0	0	0	0	56	5	0	0	0	0	0	97
% Heavy Vehicles	2.7	4.7	0	0	0	0	0	0	0	5.3	1.9	0	0	0	0	0	4.5

Start Time	Main Street From North					Bank Driveway From East					Main Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	20	81	0	0	101	1	1	2	0	4	0	126	26	0	152	0	0	0	0	0	257
05:15 PM	31	65	0	3	99	2	0	0	0	2	0	124	34	0	158	0	0	0	0	0	259
05:30 PM	18	80	0	1	99	1	0	0	0	1	1	153	34	0	188	0	0	0	0	0	288
05:45 PM	27	102	1	2	132	0	0	0	0	0	1	149	33	0	183	0	0	0	0	0	315
Total Volume	96	328	1	6	431	4	1	2	0	7	2	552	127	0	681	0	0	0	0	0	1119
% App. Total	22.3	76.1	0.2	1.4		57.1	14.3	28.6	0		0.3	81.1	18.6	0		0	0	0	0	0	
PHF	.774	.804	.250	.500	.816	.500	.250	.250	.000	.438	.500	.902	.934	.000	.906	.000	.000	.000	.000	.000	.888
Cars	91	315	1	6	413	4	1	2	0	7	2	523	125	0	650	0	0	0	0	0	1070
% Cars	94.8	96.0	100	100	95.8	100	100	100	0	100	100	94.7	98.4	0	95.4	0	0	0	0	0	95.6
Heavy Vehicles	5	13	0	0	18	0	0	0	0	0	0	29	2	0	31	0	0	0	0	0	49
% Heavy Vehicles	5.2	4.0	0	0	4.2	0	0	0	0	0	0	5.3	1.6	0	4.6	0	0	0	0	0	4.4



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Groups Printed- Peds and Bikes

Start Time	Main Street From North					Bank Driveway From East					Main Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	2	0	0	16	7	0	0	0	2	2	0	2	0	3	9	0	0	0	12	3	58
04:15 PM	0	0	0	11	15	0	0	0	2	1	0	0	0	5	3	0	0	0	8	16	61
04:30 PM	0	0	0	10	9	0	0	0	0	1	0	1	0	3	1	0	0	0	13	15	53
04:45 PM	0	0	0	13	15	0	1	0	2	0	0	0	0	3	9	0	0	0	5	9	57
Total	2	0	0	50	46	0	1	0	6	4	0	3	0	14	22	0	0	0	38	43	229
05:00 PM	0	0	0	12	17	0	0	0	0	3	0	1	0	3	10	0	0	0	10	8	64
05:15 PM	0	0	0	12	13	0	0	0	0	1	0	3	0	7	4	0	0	0	10	4	54
05:30 PM	0	0	0	11	11	0	0	0	0	6	0	1	0	1	8	0	0	0	11	3	52
05:45 PM	0	0	0	10	6	0	0	0	4	2	0	0	1	8	8	0	0	0	11	5	55
Total	0	0	0	45	47	0	0	0	4	12	0	5	1	19	30	0	0	0	42	20	225
Grand Total	2	0	0	95	93	0	1	0	10	16	0	8	1	33	52	0	0	0	80	63	454
Apprch %	1.1	0	0	50	48.9	0	3.7	0	37	59.3	0	8.5	1.1	35.1	55.3	0	0	0	55.9	44.1	
Total %	0.4	0	0	20.9	20.5	0	0.2	0	2.2	3.5	0	1.8	0.2	7.3	11.5	0	0	0	17.6	13.9	

Start Time	Main Street From North						Bank Driveway From East						Main Street From South						Pleasant Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:15 PM																									
04:15 PM	0	0	0	11	15	26	0	0	0	2	1	3	0	0	0	5	3	8	0	0	0	8	16	24	61
04:30 PM	0	0	0	10	9	19	0	0	0	0	1	1	0	1	0	3	1	5	0	0	0	13	15	28	53
04:45 PM	0	0	0	13	15	28	0	1	0	2	0	3	0	0	0	3	9	12	0	0	0	5	9	14	57
05:00 PM	0	0	0	12	17	29	0	0	0	0	3	3	0	1	0	3	10	14	0	0	0	10	8	18	64
Total Volume	0	0	0	46	56	102	0	1	0	4	5	10	0	2	0	14	23	39	0	0	0	36	48	84	235
% App. Total	0	0	0	45.1	54.9		0	10	0	40	50		0	5.1	0	35.9	59		0	0	0	42.9	57.1		
PHF	.000	.000	.000	.885	.824	.879	.000	.250	.000	.500	.417	.833	.000	.500	.000	.700	.575	.696	.000	.000	.000	.692	.750	.750	.918



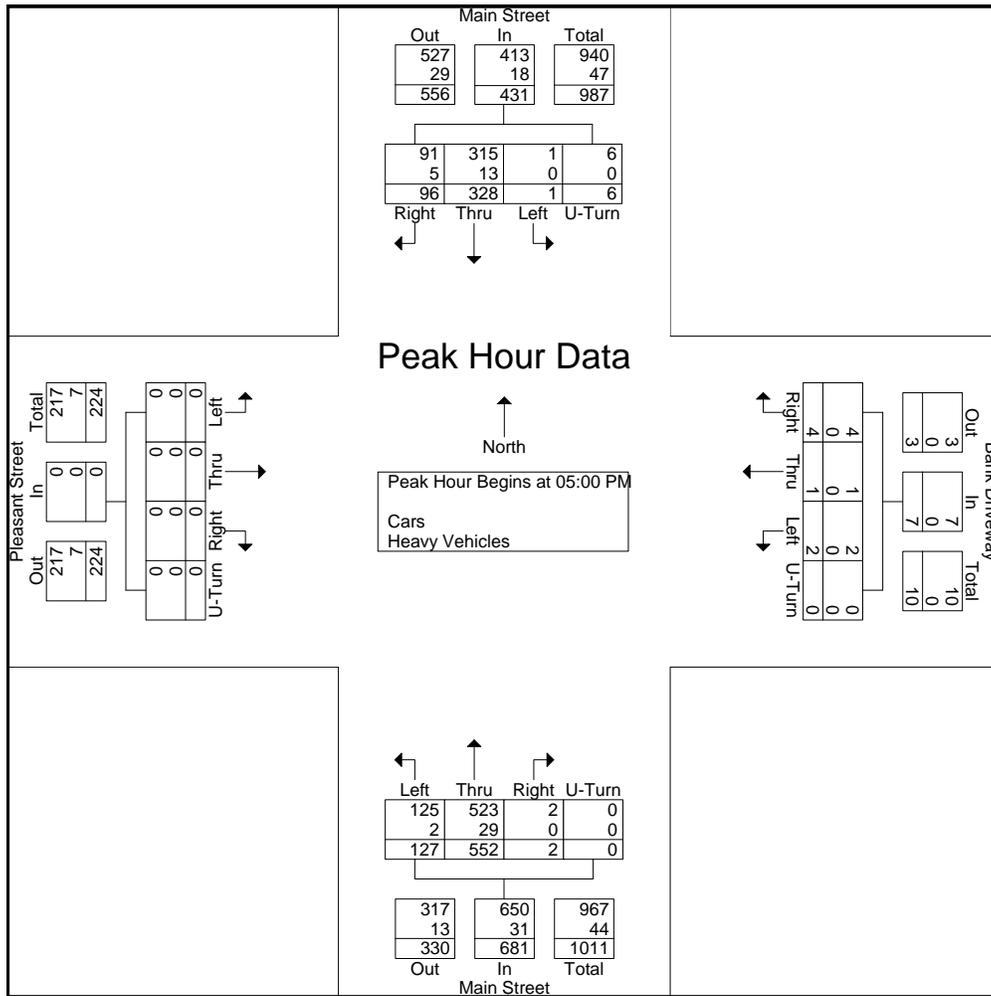
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Start Time	Main Street From North					Bank Driveway From East					Main Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	20	81	0	0	101	1	1	2	0	4	0	126	26	0	152	0	0	0	0	0	257
05:15 PM	31	65	0	3	99	2	0	0	0	2	0	124	34	0	158	0	0	0	0	0	259
05:30 PM	18	80	0	1	99	1	0	0	0	1	1	153	34	0	188	0	0	0	0	0	288
05:45 PM	27	102	1	2	132	0	0	0	0	0	1	149	33	0	183	0	0	0	0	0	315
Total Volume	96	328	1	6	431	4	1	2	0	7	2	552	127	0	681	0	0	0	0	0	1119
% App. Total	22.3	76.1	0.2	1.4		57.1	14.3	28.6	0		0.3	81.1	18.6	0		0	0	0	0		
PHF	.774	.804	.250	.500	.816	.500	.250	.250	.000	.438	.500	.902	.934	.000	.906	.000	.000	.000	.000	.000	.888
Cars	91	315	1	6	413	4	1	2	0	7	2	523	125	0	650	0	0	0	0	0	1070
% Cars	94.8	96.0	100	100	95.8	100	100	100	0	100	100	94.7	98.4	0	95.4	0	0	0	0	0	95.6
Heavy Vehicles	5	13	0	0	18	0	0	0	0	0	0	29	2	0	31	0	0	0	0	0	49
% Heavy Vehicles	5.2	4.0	0	0	4.2	0	0	0	0	0	0	5.3	1.6	0	4.6	0	0	0	0	0	4.4





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File Name : 154396 I
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
E/W: Irving Street/ Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Main Street From North				Irving Street From East				Main Street From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	95	0	0	0	0	0	0	0	67	0	0	17	1	5	0	185
07:15 AM	0	93	1	0	0	0	0	0	0	93	0	0	3	1	12	0	203
07:30 AM	0	100	2	0	0	0	0	0	10	124	0	0	9	4	12	0	261
07:45 AM	0	106	5	0	0	0	0	0	8	131	0	0	9	6	15	0	280
Total	0	394	8	0	0	0	0	0	18	415	0	0	38	12	44	0	929
08:00 AM	0	111	1	2	0	0	0	0	2	86	0	0	11	0	10	0	223
08:15 AM	0	84	0	0	0	0	0	0	7	76	0	0	9	1	15	0	192
08:30 AM	0	115	1	0	0	0	0	0	1	93	0	1	17	0	17	0	245
08:45 AM	0	88	2	0	0	0	0	0	5	85	0	0	19	0	16	0	215
Total	0	398	4	2	0	0	0	0	15	340	0	1	56	1	58	0	875
Grand Total	0	792	12	2	0	0	0	0	33	755	0	1	94	13	102	0	1804
Apprch %	0	98.3	1.5	0.2	0	0	0	0	4.2	95.7	0	0.1	45	6.2	48.8	0	
Total %	0	43.9	0.7	0.1	0	0	0	0	1.8	41.9	0	0.1	5.2	0.7	5.7	0	
Cars	0	741	11	2	0	0	0	0	31	671	0	1	90	12	100	0	1659
% Cars	0	93.6	91.7	100	0	0	0	0	93.9	88.9	0	100	95.7	92.3	98	0	92
Heavy Vehicles	0	51	1	0	0	0	0	0	2	84	0	0	4	1	2	0	145
% Heavy Vehicles	0	6.4	8.3	0	0	0	0	0	6.1	11.1	0	0	4.3	7.7	2	0	8

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	93	1	0	94	0	0	0	0	0	0	93	0	0	93	3	1	12	0	16	203
07:30 AM	0	100	2	0	102	0	0	0	0	0	10	124	0	0	134	9	4	12	0	25	261
07:45 AM	0	106	5	0	111	0	0	0	0	0	8	131	0	0	139	9	6	15	0	30	280
08:00 AM	0	111	1	2	114	0	0	0	0	0	2	86	0	0	88	11	0	10	0	21	223
Total Volume	0	410	9	2	421	0	0	0	0	0	20	434	0	0	454	32	11	49	0	92	967
% App. Total	0	97.4	2.1	0.5		0	0	0	0		4.4	95.6	0	0		34.8	12	53.3	0		
PHF	.000	.923	.450	.250	.923	.000	.000	.000	.000	.000	.500	.828	.000	.000	.817	.727	.458	.817	.000	.767	.863
Cars	0	383	9	2	394	0	0	0	0	0	20	390	0	0	410	31	11	48	0	90	894
% Cars	0	93.4	100	100	93.6	0	0	0	0	0	100	89.9	0	0	90.3	96.9	100	98.0	0	97.8	92.5
Heavy Vehicles	0	27	0	0	27	0	0	0	0	0	0	44	0	0	44	1	0	1	0	2	73
% Heavy Vehicles	0	6.6	0	0	6.4	0	0	0	0	0	0	10.1	0	0	9.7	3.1	0	2.0	0	2.2	7.5



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File Name : 154396 I
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
E/W: Irving Street/ Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Main Street From North				Irving Street From East				Main Street From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	89	0	0	0	0	0	0	0	55	0	0	15	0	5	0	164
07:15 AM	0	85	1	0	0	0	0	0	0	83	0	0	3	1	11	0	184
07:30 AM	0	96	2	0	0	0	0	0	10	110	0	0	9	4	12	0	243
07:45 AM	0	98	5	0	0	0	0	0	8	125	0	0	9	6	15	0	266
Total	0	368	8	0	0	0	0	0	18	373	0	0	36	11	43	0	857
08:00 AM	0	104	1	2	0	0	0	0	2	72	0	0	10	0	10	0	201
08:15 AM	0	79	0	0	0	0	0	0	6	63	0	0	9	1	14	0	172
08:30 AM	0	106	1	0	0	0	0	0	1	87	0	1	17	0	17	0	230
08:45 AM	0	84	1	0	0	0	0	0	4	76	0	0	18	0	16	0	199
Total	0	373	3	2	0	0	0	0	13	298	0	1	54	1	57	0	802
Grand Total	0	741	11	2	0	0	0	0	31	671	0	1	90	12	100	0	1659
Apprch %	0	98.3	1.5	0.3	0	0	0	0	4.4	95.4	0	0.1	44.6	5.9	49.5	0	
Total %	0	44.7	0.7	0.1	0	0	0	0	1.9	40.4	0	0.1	5.4	0.7	6	0	

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	85	1	0	86	0	0	0	0	0	0	83	0	0	83	3	1	11	0	15	184
07:30 AM	0	96	2	0	98	0	0	0	0	0	10	110	0	0	120	9	4	12	0	25	243
07:45 AM	0	98	5	0	103	0	0	0	0	0	8	125	0	0	133	9	6	15	0	30	266
08:00 AM	0	104	1	2	107	0	0	0	0	0	2	72	0	0	74	10	0	10	0	20	201
Total Volume	0	383	9	2	394	0	0	0	0	0	20	390	0	0	410	31	11	48	0	90	894
% App. Total	0	97.2	2.3	0.5		0	0	0	0		4.9	95.1	0	0		34.4	12.2	53.3	0		
PHF	.000	.921	.450	.250	.921	.000	.000	.000	.000	.000	.500	.780	.000	.000	.771	.775	.458	.800	.000	.750	.840



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N/S: Main Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Main Street From North				Irving Street From East				Main Street From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	6	0	0	0	0	0	0	0	12	0	0	2	1	0	0	21
07:15 AM	0	8	0	0	0	0	0	0	0	10	0	0	0	0	1	0	19
07:30 AM	0	4	0	0	0	0	0	0	0	14	0	0	0	0	0	0	18
07:45 AM	0	8	0	0	0	0	0	0	0	6	0	0	0	0	0	0	14
Total	0	26	0	0	0	0	0	0	0	42	0	0	2	1	1	0	72
08:00 AM	0	7	0	0	0	0	0	0	0	14	0	0	1	0	0	0	22
08:15 AM	0	5	0	0	0	0	0	0	1	13	0	0	0	0	1	0	20
08:30 AM	0	9	0	0	0	0	0	0	0	6	0	0	0	0	0	0	15
08:45 AM	0	4	1	0	0	0	0	0	1	9	0	0	1	0	0	0	16
Total	0	25	1	0	0	0	0	0	2	42	0	0	2	0	1	0	73
Grand Total	0	51	1	0	0	0	0	0	2	84	0	0	4	1	2	0	145
Apprch %	0	98.1	1.9	0	0	0	0	0	2.3	97.7	0	0	57.1	14.3	28.6	0	
Total %	0	35.2	0.7	0	0	0	0	0	1.4	57.9	0	0	2.8	0.7	1.4	0	

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	4	0	0	4	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	18
07:45 AM	0	8	0	0	8	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	14
08:00 AM	0	7	0	0	7	0	0	0	0	0	0	14	0	0	14	1	0	0	0	1	22
08:15 AM	0	5	0	0	5	0	0	0	0	0	1	13	0	0	14	0	0	1	0	1	20
Total Volume	0	24	0	0	24	0	0	0	0	0	1	47	0	0	48	1	0	1	0	2	74
% App. Total	0	100	0	0		0	0	0	0		2.1	97.9	0	0		50	0	50	0		
PHF	.000	.750	.000	.000	.750	.000	.000	.000	.000	.000	.250	.839	.000	.000	.857	.250	.000	.250	.000	.500	.841



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File Name : 154396 I
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N/S: Main Street
E/W: Irving Street/ Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	1	5	0	0	0	0	9	0	0	0	3	0	0	0	0	5	1	24
07:15 AM	0	2	0	4	7	0	0	0	1	6	0	0	0	1	1	0	0	0	4	3	29
07:30 AM	0	1	0	3	9	0	0	0	2	4	0	0	0	2	0	0	0	0	9	12	42
07:45 AM	0	1	0	8	18	0	0	0	2	3	0	0	0	5	0	0	0	0	9	7	53
Total	0	4	0	16	39	0	0	0	5	22	0	0	0	11	1	0	0	0	27	23	148
08:00 AM	0	0	0	0	6	0	0	0	1	1	0	0	0	2	0	0	0	0	0	7	17
08:15 AM	0	1	0	1	8	0	0	0	0	3	0	0	0	1	0	0	0	0	7	8	29
08:30 AM	0	0	0	1	6	0	0	0	1	0	0	0	0	4	0	0	0	0	11	11	34
08:45 AM	0	2	0	3	7	0	0	0	0	7	0	0	0	2	0	0	0	0	19	9	49
Total	0	3	0	5	27	0	0	0	2	11	0	0	0	9	0	0	0	0	37	35	129
Grand Total	0	7	0	21	66	0	0	0	7	33	0	0	0	20	1	0	0	0	64	58	277
Apprch %	0	7.4	0	22.3	70.2	0	0	0	17.5	82.5	0	0	0	95.2	4.8	0	0	0	52.5	47.5	
Total %	0	2.5	0	7.6	23.8	0	0	0	2.5	11.9	0	0	0	7.2	0.4	0	0	0	23.1	20.9	

Start Time	Main Street From North						Irving Street From East						Main Street From South						Exchange Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:00 AM																									
07:00 AM	0	0	0	1	5	6	0	0	0	0	9	9	0	0	0	3	0	3	0	0	0	5	1	6	24
07:15 AM	0	2	0	4	7	13	0	0	0	1	6	7	0	0	0	1	1	2	0	0	0	4	3	7	29
07:30 AM	0	1	0	3	9	13	0	0	0	2	4	6	0	0	0	2	0	2	0	0	0	9	12	21	42
07:45 AM	0	1	0	8	18	27	0	0	0	2	3	5	0	0	0	5	0	5	0	0	0	9	7	16	53
Total Volume	0	4	0	16	39	59	0	0	0	5	22	27	0	0	0	11	1	12	0	0	0	27	23	50	148
% App. Total	0	6.8	0	27.1	66.1		0	0	0	18.5	81.5		0	0	0	91.7	8.3		0	0	0	54	46		.698
PHF	.000	.500	.000	.542	.546		.000	.000	.000	.625	.611	.750	.000	.000	.000	.550	.250	.600	.000	.000	.000	.750	.479	.595	



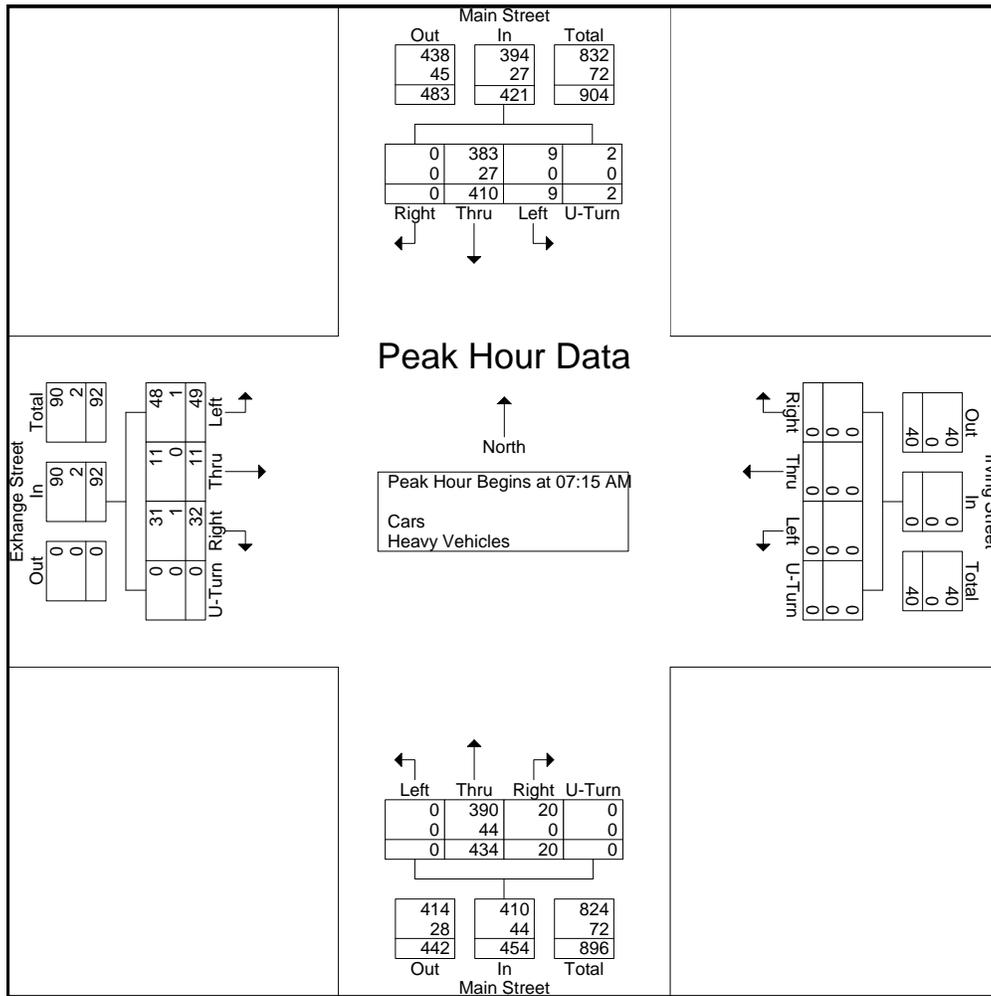
PRECISION
DATA
INDUSTRIES, LLC

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Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	93	1	0	94	0	0	0	0	0	0	93	0	0	93	3	1	12	0	16	203
07:30 AM	0	100	2	0	102	0	0	0	0	0	10	124	0	0	134	9	4	12	0	25	261
07:45 AM	0	106	5	0	111	0	0	0	0	0	8	131	0	0	139	9	6	15	0	30	280
08:00 AM	0	111	1	2	114	0	0	0	0	0	2	86	0	0	88	11	0	10	0	21	223
Total Volume	0	410	9	2	421	0	0	0	0	0	20	434	0	0	454	32	11	49	0	92	967
% App. Total	0	97.4	2.1	0.5		0	0	0	0		4.4	95.6	0	0		34.8	12	53.3	0		
PHF	.000	.923	.450	.250	.923	.000	.000	.000	.000	.000	.500	.828	.000	.000	.817	.727	.458	.817	.000	.767	.863
Cars	0	383	9	2	394	0	0	0	0	0	20	390	0	0	410	31	11	48	0	90	894
% Cars	0	93.4	100	100	93.6	0	0	0	0	0	100	89.9	0	0	90.3	96.9	100	98.0	0	97.8	92.5
Heavy Vehicles	0	27	0	0	27	0	0	0	0	0	0	44	0	0	44	1	0	1	0	2	73
% Heavy Vehicles	0	6.6	0	0	6.4	0	0	0	0	0	0	10.1	0	0	9.7	3.1	0	2.0	0	2.2	7.5





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Page No : 1

N/S: Main Street
E/W: Irving Street/ Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Main Street From North				Irving Street From East				Main Street From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	79	2	0	0	0	0	0	2	140	0	0	19	1	33	0	276
04:15 PM	0	89	1	0	0	0	1	0	2	121	0	0	29	0	37	0	280
04:30 PM	0	86	0	0	0	1	0	0	5	142	0	0	28	0	24	0	286
04:45 PM	0	88	1	0	0	0	0	0	4	116	0	0	22	1	29	0	261
Total	0	342	4	0	0	1	1	0	13	519	0	0	98	2	123	0	1103
05:00 PM	0	80	0	0	0	0	0	0	2	126	0	0	27	0	31	0	266
05:15 PM	0	58	3	0	0	0	0	0	7	124	0	0	31	1	33	0	257
05:30 PM	0	78	2	0	0	0	0	0	5	143	0	0	32	1	46	0	307
05:45 PM	0	101	1	0	0	0	0	0	1	146	0	0	23	0	37	0	309
Total	0	317	6	0	0	0	0	0	15	539	0	0	113	2	147	0	1139
Grand Total	0	659	10	0	0	1	1	0	28	1058	0	0	211	4	270	0	2242
Apprch %	0	98.5	1.5	0	0	50	50	0	2.6	97.4	0	0	43.5	0.8	55.7	0	
Total %	0	29.4	0.4	0	0	0	0	0	1.2	47.2	0	0	9.4	0.2	12	0	
Cars	0	627	10	0	0	0	1	0	28	1001	0	0	209	3	266	0	2145
% Cars	0	95.1	100	0	0	0	100	0	100	94.6	0	0	99.1	75	98.5	0	95.7
Heavy Vehicles	0	32	0	0	0	1	0	0	0	57	0	0	2	1	4	0	97
% Heavy Vehicles	0	4.9	0	0	0	100	0	0	0	5.4	0	0	0.9	25	1.5	0	4.3

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	80	0	0	80	0	0	0	0	0	2	126	0	0	128	27	0	31	0	58	266
05:15 PM	0	58	3	0	61	0	0	0	0	0	7	124	0	0	131	31	1	33	0	65	257
05:30 PM	0	78	2	0	80	0	0	0	0	0	5	143	0	0	148	32	1	46	0	79	307
05:45 PM	0	101	1	0	102	0	0	0	0	0	1	146	0	0	147	23	0	37	0	60	309
Total Volume	0	317	6	0	323	0	0	0	0	0	15	539	0	0	554	113	2	147	0	262	1139
% App. Total	0	98.1	1.9	0		0	0	0	0		2.7	97.3	0	0		43.1	0.8	56.1	0		
PHF	.000	.785	.500	.000	.792	.000	.000	.000	.000	.000	.536	.923	.000	.000	.936	.883	.500	.799	.000	.829	.922
Cars	0	302	6	0	308	0	0	0	0	0	15	510	0	0	525	113	2	145	0	260	1093
% Cars	0	95.3	100	0	95.4	0	0	0	0	0	100	94.6	0	0	94.8	100	100	98.6	0	99.2	96.0
Heavy Vehicles	0	15	0	0	15	0	0	0	0	0	0	29	0	0	29	0	0	2	0	2	46
% Heavy Vehicles	0	4.7	0	0	4.6	0	0	0	0	0	0	5.4	0	0	5.2	0	0	1.4	0	0.8	4.0



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File Name : 154396 II
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
E/W: Irving Street/ Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Main Street From North				Irving Street From East				Main Street From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	77	2	0	0	0	0	0	2	135	0	0	19	0	33	0	268
04:15 PM	0	82	1	0	0	0	1	0	2	112	0	0	27	0	36	0	261
04:30 PM	0	83	0	0	0	0	0	0	5	134	0	0	28	0	24	0	274
04:45 PM	0	83	1	0	0	0	0	0	4	110	0	0	22	1	28	0	249
Total	0	325	4	0	0	0	1	0	13	491	0	0	96	1	121	0	1052
05:00 PM	0	78	0	0	0	0	0	0	2	120	0	0	27	0	30	0	257
05:15 PM	0	54	3	0	0	0	0	0	7	117	0	0	31	1	33	0	246
05:30 PM	0	73	2	0	0	0	0	0	5	133	0	0	32	1	45	0	291
05:45 PM	0	97	1	0	0	0	0	0	1	140	0	0	23	0	37	0	299
Total	0	302	6	0	0	0	0	0	15	510	0	0	113	2	145	0	1093
Grand Total	0	627	10	0	0	0	1	0	28	1001	0	0	209	3	266	0	2145
Apprch %	0	98.4	1.6	0	0	0	100	0	2.7	97.3	0	0	43.7	0.6	55.6	0	
Total %	0	29.2	0.5	0	0	0	0	0	1.3	46.7	0	0	9.7	0.1	12.4	0	

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	78	0	0	78	0	0	0	0	0	2	120	0	0	122	27	0	30	0	57	257
05:15 PM	0	54	3	0	57	0	0	0	0	0	7	117	0	0	124	31	1	33	0	65	246
05:30 PM	0	73	2	0	75	0	0	0	0	0	5	133	0	0	138	32	1	45	0	78	291
05:45 PM	0	97	1	0	98	0	0	0	0	0	1	140	0	0	141	23	0	37	0	60	299
Total Volume	0	302	6	0	308	0	0	0	0	0	15	510	0	0	525	113	2	145	0	260	1093
% App. Total	0	98.1	1.9	0		0	0	0	0		2.9	97.1	0	0		43.5	0.8	55.8	0		
PHF	.000	.778	.500	.000	.786	.000	.000	.000	.000	.000	.536	.911	.000	.000	.931	.883	.500	.806	.000	.833	.914



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N/S: Main Street
E/W: Irving Street/ Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Main Street From North				Irving Street From East				Main Street From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	2	0	0	0	0	0	0	0	5	0	0	0	1	0	0	8
04:15 PM	0	7	0	0	0	0	0	0	0	9	0	0	2	0	1	0	19
04:30 PM	0	3	0	0	0	1	0	0	0	8	0	0	0	0	0	0	12
04:45 PM	0	5	0	0	0	0	0	0	0	6	0	0	0	0	1	0	12
Total	0	17	0	0	0	1	0	0	0	28	0	0	2	1	2	0	51
05:00 PM	0	2	0	0	0	0	0	0	0	6	0	0	0	0	1	0	9
05:15 PM	0	4	0	0	0	0	0	0	0	7	0	0	0	0	0	0	11
05:30 PM	0	5	0	0	0	0	0	0	0	10	0	0	0	0	1	0	16
05:45 PM	0	4	0	0	0	0	0	0	0	6	0	0	0	0	0	0	10
Total	0	15	0	0	0	0	0	0	0	29	0	0	0	0	2	0	46
Grand Total	0	32	0	0	0	1	0	0	0	57	0	0	2	1	4	0	97
Apprch %	0	100	0	0	0	100	0	0	0	100	0	0	28.6	14.3	57.1	0	
Total %	0	33	0	0	0	1	0	0	0	58.8	0	0	2.1	1	4.1	0	

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	7	0	0	7	0	0	0	0	0	0	9	0	0	9	2	0	1	0	3	19
04:30 PM	0	3	0	0	3	0	1	0	0	1	0	8	0	0	8	0	0	0	0	0	12
04:45 PM	0	5	0	0	5	0	0	0	0	0	0	6	0	0	6	0	0	1	0	1	12
05:00 PM	0	2	0	0	2	0	0	0	0	0	0	6	0	0	6	0	0	1	0	1	9
Total Volume	0	17	0	0	17	0	1	0	0	1	0	29	0	0	29	2	0	3	0	5	52
% App. Total	0	100	0	0		0	100	0	0		0	100	0	0		40	0	60	0		
PHF	.000	.607	.000	.000	.607	.000	.250	.000	.000	.250	.000	.806	.000	.000	.806	.250	.000	.750	.000	.417	.684



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N/S: Main Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	12	5	0	0	0	6	5	0	2	0	1	1	0	0	0	17	20	69
04:15 PM	0	0	0	6	0	0	0	0	13	4	0	0	0	3	2	0	0	0	4	12	44
04:30 PM	0	0	0	10	6	0	0	0	7	3	0	1	0	2	1	0	0	0	10	14	54
04:45 PM	0	3	0	2	5	0	0	0	3	1	0	0	0	0	3	0	0	0	7	11	35
Total	0	3	0	30	16	0	0	0	29	13	0	3	0	6	7	0	0	0	38	57	202
05:00 PM	0	1	0	3	3	0	0	0	2	3	0	1	0	2	0	0	1	0	6	10	32
05:15 PM	0	0	0	14	2	0	0	0	4	3	0	3	0	1	3	1	0	0	6	2	39
05:30 PM	0	0	0	12	1	0	0	0	6	0	0	1	0	1	2	0	0	0	6	7	36
05:45 PM	0	0	0	14	8	0	0	0	8	4	0	1	0	4	2	0	0	0	11	12	64
Total	0	1	0	43	14	0	0	0	20	10	0	6	0	8	7	1	1	0	29	31	171
Grand Total	0	4	0	73	30	0	0	0	49	23	0	9	0	14	14	1	1	0	67	88	373
Apprch %	0	3.7	0	68.2	28	0	0	0	68.1	31.9	0	24.3	0	37.8	37.8	0.6	0.6	0	42.7	56.1	
Total %	0	1.1	0	19.6	8	0	0	0	13.1	6.2	0	2.4	0	3.8	3.8	0.3	0.3	0	18	23.6	

Start Time	Main Street From North						Irving Street From East						Main Street From South						Exchange Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:00 PM																									
04:00 PM	0	0	0	12	5	17	0	0	0	6	5	11	0	2	0	1	1	4	0	0	0	17	20	37	69
04:15 PM	0	0	0	6	0	6	0	0	0	13	4	17	0	0	0	3	2	5	0	0	0	4	12	16	44
04:30 PM	0	0	0	10	6	16	0	0	0	7	3	10	0	1	0	2	1	4	0	0	0	10	14	24	54
04:45 PM	0	3	0	2	5	10	0	0	0	3	1	4	0	0	0	0	3	3	0	0	0	7	11	18	35
Total Volume	0	3	0	30	16	49	0	0	0	29	13	42	0	3	0	6	7	16	0	0	0	38	57	95	202
% App. Total	0	6.1	0	61.2	32.7		0	0	0	69	31		0	18.8	0	37.5	43.8		0	0	0	40	60		
PHF	.000	.250	.000	.625	.667	.721	.000	.000	.000	.558	.650	.618	.000	.375	.000	.500	.583	.800	.000	.000	.000	.559	.713	.642	.732



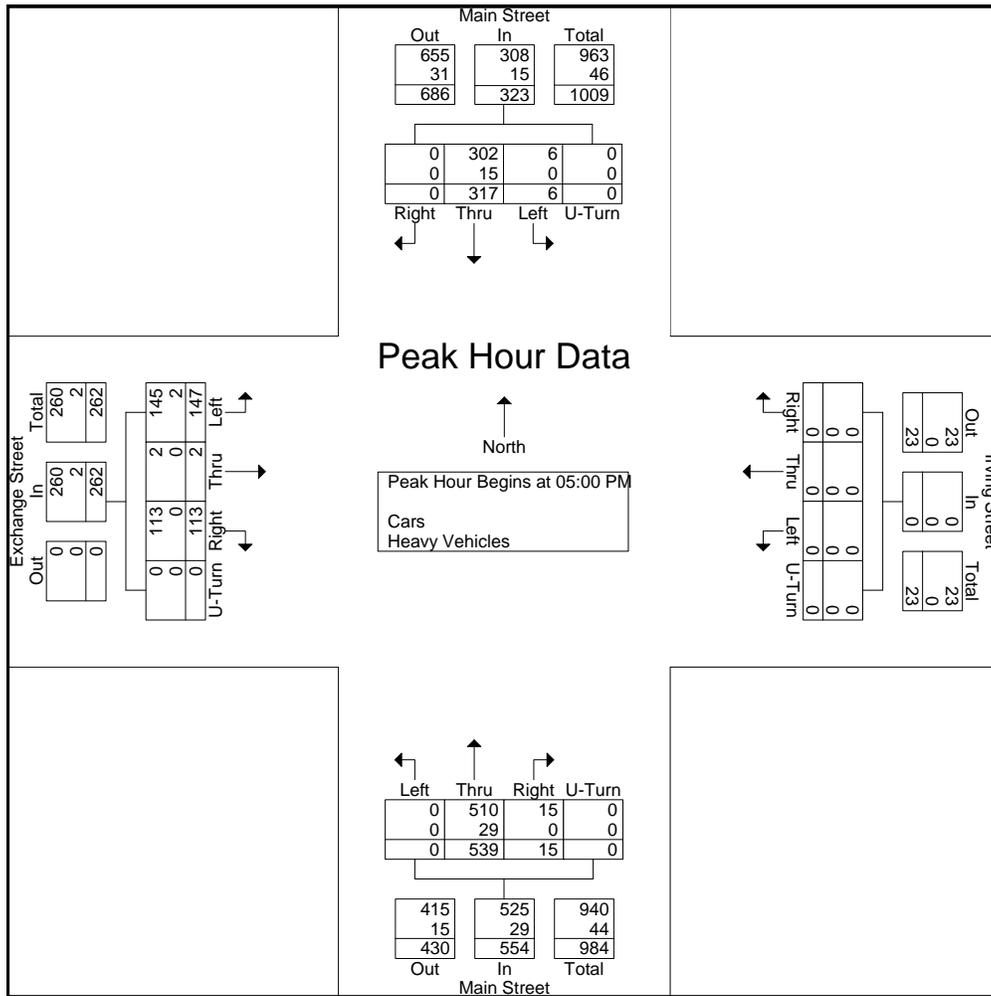
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File Name : 154396 II
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
E/W: Irving Street/ Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Main Street From North					Irving Street From East					Main Street From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	80	0	0	80	0	0	0	0	0	2	126	0	0	128	27	0	31	0	58	266
05:15 PM	0	58	3	0	61	0	0	0	0	0	7	124	0	0	131	31	1	33	0	65	257
05:30 PM	0	78	2	0	80	0	0	0	0	0	5	143	0	0	148	32	1	46	0	79	307
05:45 PM	0	101	1	0	102	0	0	0	0	0	1	146	0	0	147	23	0	37	0	60	309
Total Volume	0	317	6	0	323	0	0	0	0	0	15	539	0	0	554	113	2	147	0	262	1139
% App. Total	0	98.1	1.9	0		0	0	0	0		2.7	97.3	0	0		43.1	0.8	56.1	0		
PHF	.000	.785	.500	.000	.792	.000	.000	.000	.000	.000	.536	.923	.000	.000	.936	.883	.500	.799	.000	.829	.922
Cars	0	302	6	0	308	0	0	0	0	0	15	510	0	0	525	113	2	145	0	260	1093
% Cars	0	95.3	100	0	95.4	0	0	0	0	0	100	94.6	0	0	94.8	100	100	98.6	0	99.2	96.0
Heavy Vehicles	0	15	0	0	15	0	0	0	0	0	0	29	0	0	29	0	0	2	0	2	46
% Heavy Vehicles	0	4.7	0	0	4.6	0	0	0	0	0	0	5.4	0	0	5.2	0	0	1.4	0	0.8	4.0





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Page No : 1

N/S: Washington Street
E/W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Washington Street From North				Florence Street From East				Washington Street From South				Florence Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	31	1	11	0	2	71	1	0	0	5	7	0	0	20	9	0	158
07:15 AM	46	4	17	0	3	79	0	0	4	10	4	0	0	24	4	0	195
07:30 AM	61	10	15	0	5	89	0	0	8	10	8	0	0	33	9	0	248
07:45 AM	80	11	17	0	8	87	2	0	8	14	7	0	2	31	10	0	277
Total	218	26	60	0	18	326	3	0	20	39	26	0	2	108	32	0	878
08:00 AM	76	17	7	0	5	105	3	0	9	9	10	0	2	31	5	1	280
08:15 AM	53	7	12	0	5	82	4	0	6	7	13	0	4	29	8	0	230
08:30 AM	53	7	5	0	5	87	1	0	6	9	9	0	0	30	7	0	219
08:45 AM	32	5	8	0	5	56	0	0	7	5	7	0	0	29	8	0	162
Total	214	36	32	0	20	330	8	0	28	30	39	0	6	119	28	1	891
Grand Total	432	62	92	0	38	656	11	0	48	69	65	0	8	227	60	1	1769
Apprch %	73.7	10.6	15.7	0	5.4	93	1.6	0	26.4	37.9	35.7	0	2.7	76.7	20.3	0.3	
Total %	24.4	3.5	5.2	0	2.1	37.1	0.6	0	2.7	3.9	3.7	0	0.5	12.8	3.4	0.1	
Cars	428	62	90	0	38	628	11	0	42	68	64	0	7	206	57	1	1702
% Cars	99.1	100	97.8	0	100	95.7	100	0	87.5	98.6	98.5	0	87.5	90.7	95	100	96.2
Heavy Vehicles	4	0	2	0	0	28	0	0	6	1	1	0	1	21	3	0	67
% Heavy Vehicles	0.9	0	2.2	0	0	4.3	0	0	12.5	1.4	1.5	0	12.5	9.3	5	0	3.8

Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	61	10	15	0	86	5	89	0	0	94	8	10	8	0	26	0	33	9	0	42	248
07:45 AM	80	11	17	0	108	8	87	2	0	97	8	14	7	0	29	2	31	10	0	43	277
08:00 AM	76	17	7	0	100	5	105	3	0	113	9	9	10	0	28	2	31	5	1	39	280
08:15 AM	53	7	12	0	72	5	82	4	0	91	6	7	13	0	26	4	29	8	0	41	230
Total Volume	270	45	51	0	366	23	363	9	0	395	31	40	38	0	109	8	124	32	1	165	1035
% App. Total	73.8	12.3	13.9	0		5.8	91.9	2.3	0		28.4	36.7	34.9	0		4.8	75.2	19.4	0.6		
PHF	.844	.662	.750	.000	.847	.719	.864	.563	.000	.874	.861	.714	.731	.000	.940	.500	.939	.800	.250	.959	.924
Cars	268	45	50	0	363	23	347	9	0	379	27	39	37	0	103	7	114	31	1	153	998
% Cars	99.3	100	98.0	0	99.2	100	95.6	100	0	95.9	87.1	97.5	97.4	0	94.5	87.5	91.9	96.9	100	92.7	96.4
Heavy Vehicles	2	0	1	0	3	0	16	0	0	16	4	1	1	0	6	1	10	1	0	12	37
% Heavy Vehicles	0.7	0	2.0	0	0.8	0	4.4	0	0	4.1	12.9	2.5	2.6	0	5.5	12.5	8.1	3.1	0	7.3	3.6

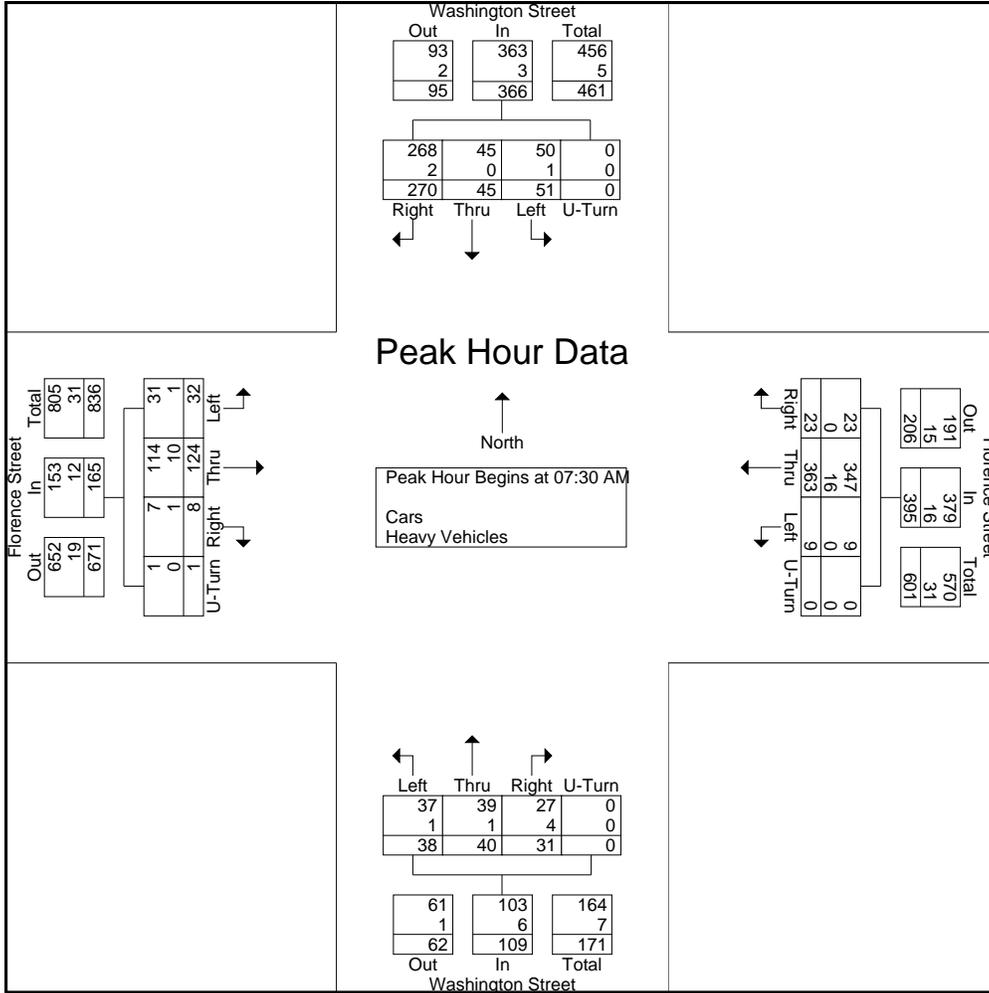


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N/S: Washington Street
E/W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Washington Street From North				Florence Street From East				Washington Street From South				Florence Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	31	1	11	0	2	68	1	0	0	5	7	0	0	17	9	0	152
07:15 AM	45	4	17	0	3	77	0	0	3	10	4	0	0	21	4	0	188
07:30 AM	60	10	15	0	5	87	0	0	7	10	8	0	0	30	9	0	241
07:45 AM	79	11	17	0	8	82	2	0	7	13	7	0	2	28	9	0	265
Total	215	26	60	0	18	314	3	0	17	38	26	0	2	96	31	0	846
08:00 AM	76	17	7	0	5	102	3	0	8	9	10	0	1	31	5	1	275
08:15 AM	53	7	11	0	5	76	4	0	5	7	12	0	4	25	8	0	217
08:30 AM	52	7	4	0	5	82	1	0	6	9	9	0	0	27	7	0	209
08:45 AM	32	5	8	0	5	54	0	0	6	5	7	0	0	27	6	0	155
Total	213	36	30	0	20	314	8	0	25	30	38	0	5	110	26	1	856
Grand Total	428	62	90	0	38	628	11	0	42	68	64	0	7	206	57	1	1702
Apprch %	73.8	10.7	15.5	0	5.6	92.8	1.6	0	24.1	39.1	36.8	0	2.6	76	21	0.4	
Total %	25.1	3.6	5.3	0	2.2	36.9	0.6	0	2.5	4	3.8	0	0.4	12.1	3.3	0.1	

Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	60	10	15	0	85	5	87	0	0	92	7	10	8	0	25	0	30	9	0	39	241
07:45 AM	79	11	17	0	107	8	82	2	0	92	7	13	7	0	27	2	28	9	0	39	265
08:00 AM	76	17	7	0	100	5	102	3	0	110	8	9	10	0	27	1	31	5	1	38	275
08:15 AM	53	7	11	0	71	5	76	4	0	85	5	7	12	0	24	4	25	8	0	37	217
Total Volume	268	45	50	0	363	23	347	9	0	379	27	39	37	0	103	7	114	31	1	153	998
% App. Total	73.8	12.4	13.8	0		6.1	91.6	2.4	0		26.2	37.9	35.9	0		4.6	74.5	20.3	0.7		
PHF	.848	.662	.735	.000	.848	.719	.850	.563	.000	.861	.844	.750	.771	.000	.954	.438	.919	.861	.250	.981	.907

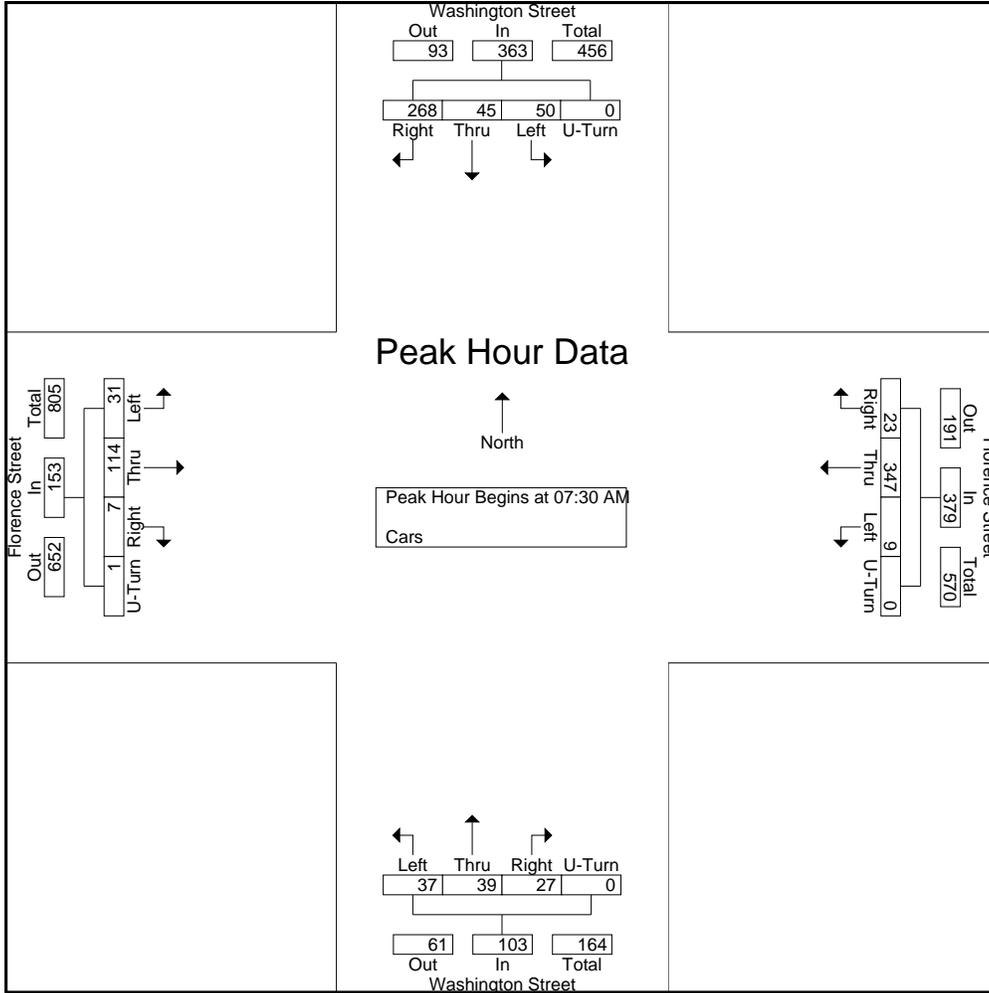


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N/S: Washington Street
E/W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 J
Site Code : 2015041
Start Date : 4/29/2015
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Groups Printed- Heavy Vehicles

Start Time	Washington Street From North				Florence Street From East				Washington Street From South				Florence Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0	6
07:15 AM	1	0	0	0	0	2	0	0	1	0	0	0	0	3	0	0	7
07:30 AM	1	0	0	0	0	2	0	0	1	0	0	0	0	3	0	0	7
07:45 AM	1	0	0	0	0	5	0	0	1	1	0	0	0	3	1	0	12
Total	3	0	0	0	0	12	0	0	3	1	0	0	0	12	1	0	32
08:00 AM	0	0	0	0	0	3	0	0	1	0	0	0	1	0	0	0	5
08:15 AM	0	0	1	0	0	6	0	0	1	0	1	0	0	4	0	0	13
08:30 AM	1	0	1	0	0	5	0	0	0	0	0	0	0	3	0	0	10
08:45 AM	0	0	0	0	0	2	0	0	1	0	0	0	0	2	2	0	7
Total	1	0	2	0	0	16	0	0	3	0	1	0	1	9	2	0	35
Grand Total	4	0	2	0	0	28	0	0	6	1	1	0	1	21	3	0	67
Apprch %	66.7	0	33.3	0	0	100	0	0	75	12.5	12.5	0	4	84	12	0	
Total %	6	0	3	0	0	41.8	0	0	9	1.5	1.5	0	1.5	31.3	4.5	0	

Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	1	0	0	0	1	0	5	0	0	5	1	1	0	0	2	0	3	1	0	4	12
08:00 AM	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	1	0	0	0	1	5
08:15 AM	0	0	1	0	1	0	6	0	0	6	1	0	1	0	2	0	4	0	0	4	13
08:30 AM	1	0	1	0	2	0	5	0	0	5	0	0	0	0	0	0	3	0	0	3	10
Total Volume	2	0	2	0	4	0	19	0	0	19	3	1	1	0	5	1	10	1	0	12	40
% App. Total	50	0	50	0		0	100	0	0		60	20	20	0		8.3	83.3	8.3	0		
PHF	.500	.000	.500	.000	.500	.000	.792	.000	.000	.792	.750	.250	.250	.000	.625	.250	.625	.250	.000	.750	.769

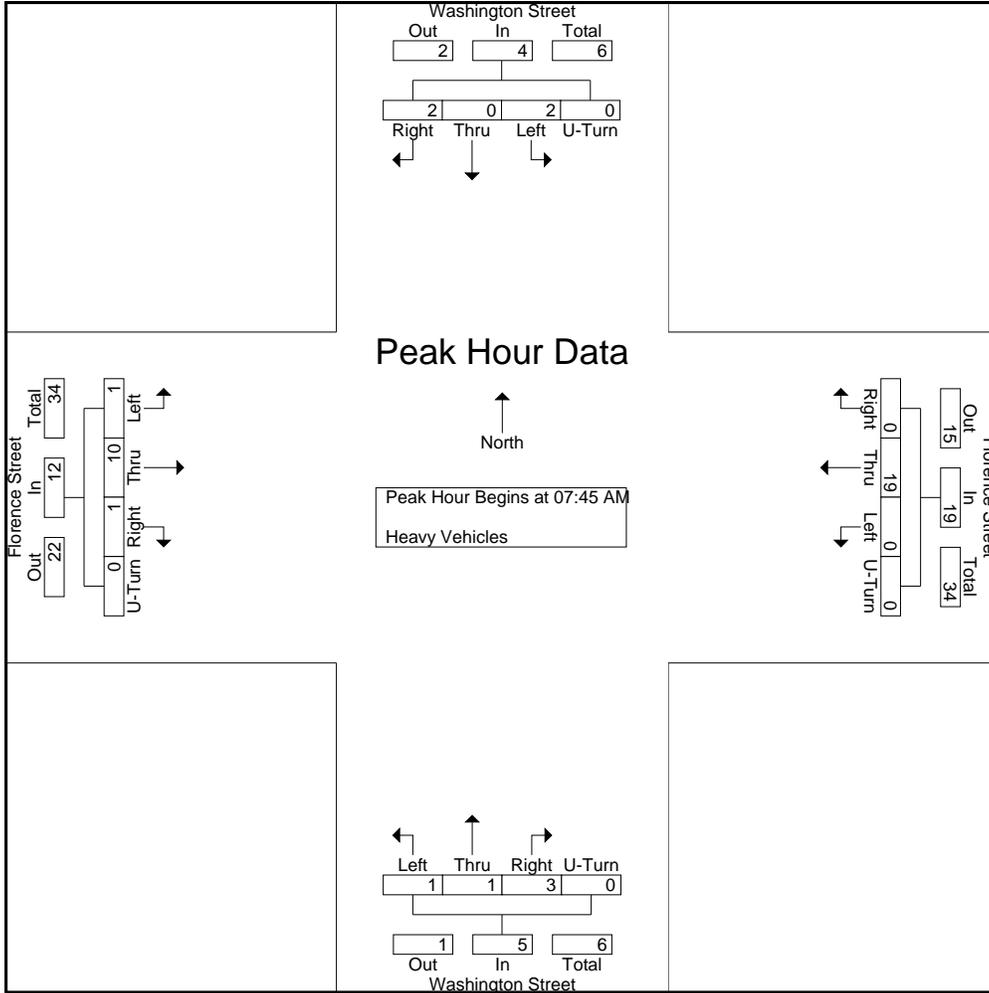


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Groups Printed- Peds and Bikes

Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	0	8	0	0	1	0	0	0	0	0	5	0	0	0	0	1	0	15
07:15 AM	0	0	0	2	16	0	1	0	1	0	0	0	0	7	1	0	0	0	1	0	29
07:30 AM	0	0	0	2	6	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	11
07:45 AM	0	0	0	0	13	0	1	0	0	1	0	0	0	3	0	0	0	0	2	0	20
Total	0	0	0	4	43	0	2	1	2	1	0	0	0	16	1	0	0	0	5	0	75
08:00 AM	0	0	0	2	12	0	0	0	2	0	0	0	0	5	1	0	0	0	0	0	22
08:15 AM	0	0	0	4	18	0	0	0	1	2	0	0	0	8	3	0	0	0	3	1	40
08:30 AM	0	1	0	10	10	0	0	1	2	0	0	0	0	9	3	0	0	0	5	0	41
08:45 AM	0	0	0	3	14	0	0	0	5	0	0	0	0	1	0	0	1	0	1	3	28
Total	0	1	0	19	54	0	0	1	10	2	0	0	0	23	7	0	1	0	9	4	131
Grand Total	0	1	0	23	97	0	2	2	12	3	0	0	0	39	8	0	1	0	14	4	206
Apprch %	0	0.8	0	19	80.2	0	10.5	10.5	63.2	15.8	0	0	0	83	17	0	5.3	0	73.7	21.1	
Total %	0	0.5	0	11.2	47.1	0	1	1	5.8	1.5	0	0	0	18.9	3.9	0	0.5	0	6.8	1.9	

Start Time	Washington Street From North						Florence Street From East						Washington Street From South						Florence Street From West						Int. Total						
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total							
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 08:00 AM																															
08:00 AM	0	0	0	2	12	14	0	0	0	2	0	2	0	0	0	5	1	6	0	0	0	0	0	0	0	0	0	0	0	0	22
08:15 AM	0	0	0	4	18	22	0	0	0	1	2	3	0	0	0	8	3	11	0	0	0	3	1	4	0	0	0	3	1	4	40
08:30 AM	0	1	0	10	10	21	0	0	1	2	0	3	0	0	0	9	3	12	0	0	0	5	0	5	0	0	0	5	0	5	41
08:45 AM	0	0	0	3	14	17	0	0	0	5	0	5	0	0	0	1	0	1	0	1	0	1	3	5	0	1	0	1	3	5	28
Total Volume	0	1	0	19	54	74	0	0	1	10	2	13	0	0	0	23	7	30	0	1	0	9	4	14	0	1	0	9	4	14	131
% App. Total	0	1.4	0	25.7	73		0	0	7.7	76.9	15.4		0	0	0	76.7	23.3		0	7.1	0	64.3	28.6		0	7.1	0	64.3	28.6		
PHF	.000	.250	.000	.475	.750	.841	.000	.000	.250	.500	.250	.650	.000	.000	.000	.639	.583	.625	.000	.250	.000	.450	.333	.700	.000	.250	.000	.450	.333	.700	.799

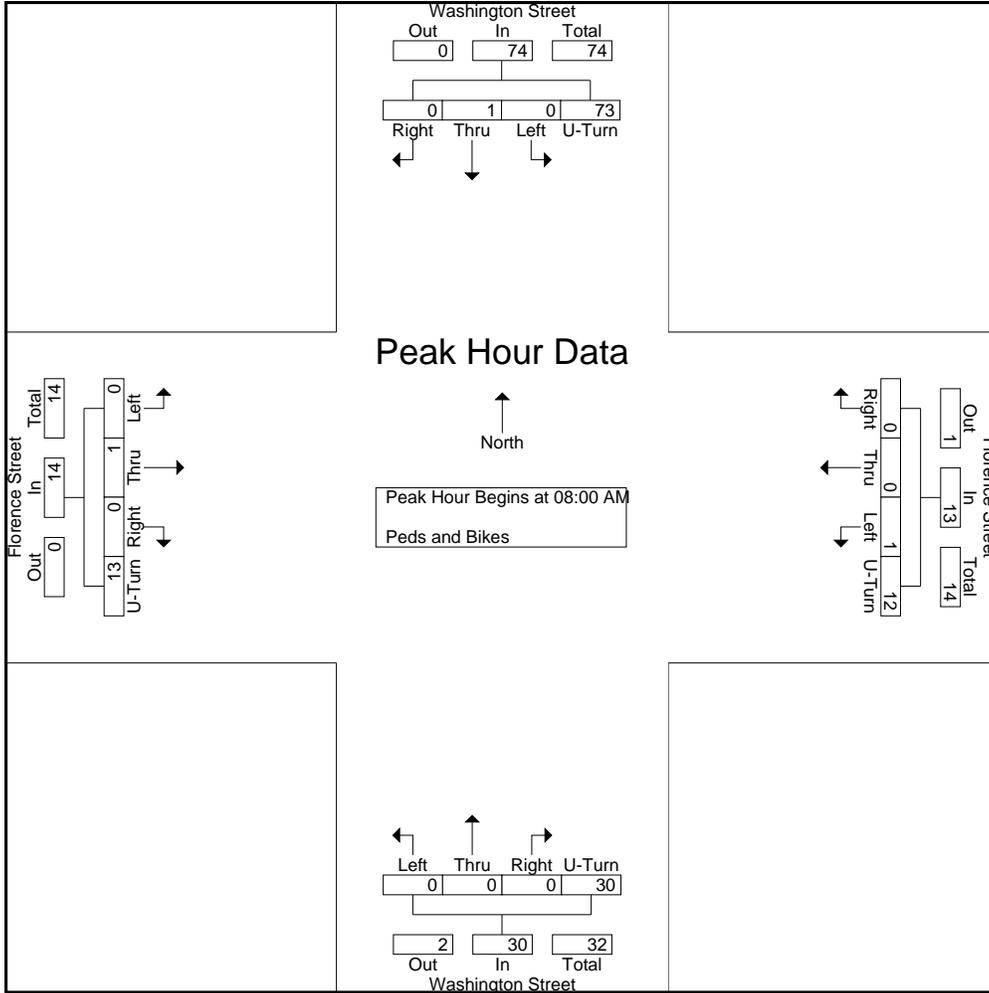


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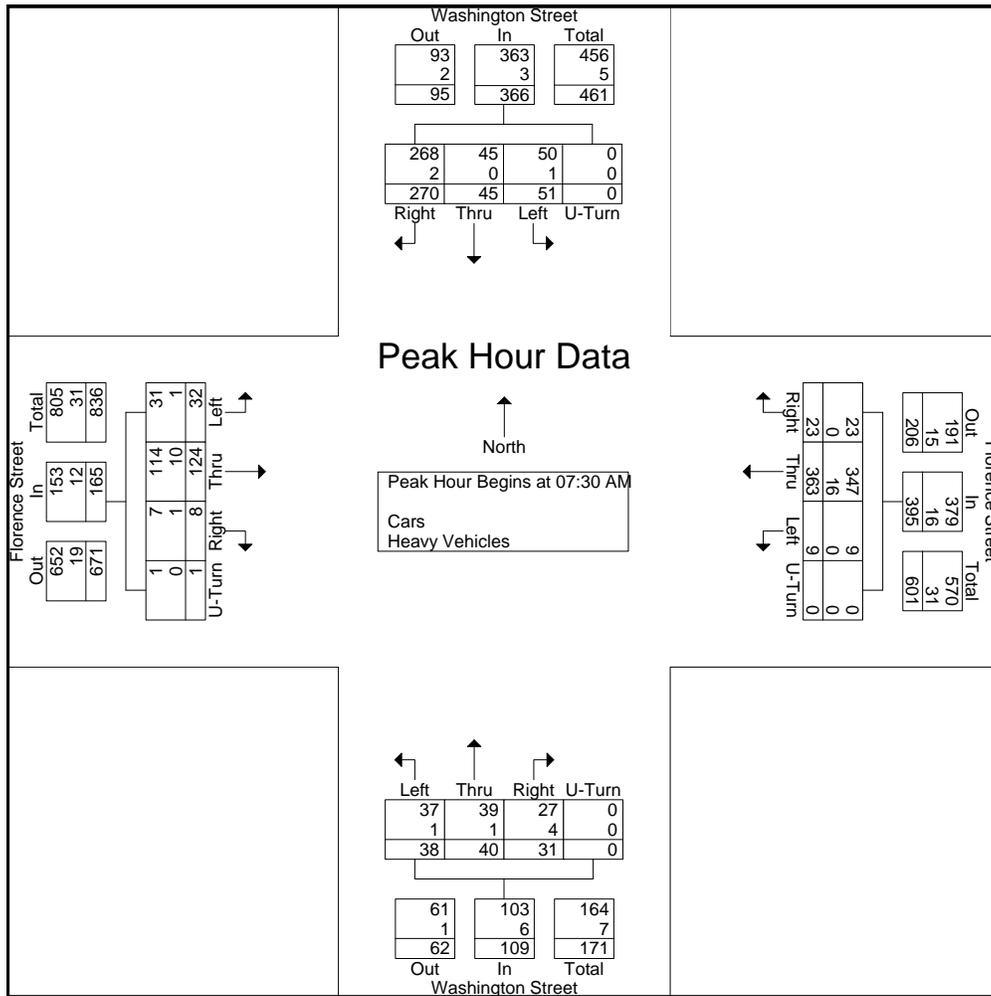
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Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	61	10	15	0	86	5	89	0	0	94	8	10	8	0	26	0	33	9	0	42	248
07:45 AM	80	11	17	0	108	8	87	2	0	97	8	14	7	0	29	2	31	10	0	43	277
08:00 AM	76	17	7	0	100	5	105	3	0	113	9	9	10	0	28	2	31	5	1	39	280
08:15 AM	53	7	12	0	72	5	82	4	0	91	6	7	13	0	26	4	29	8	0	41	230
Total Volume	270	45	51	0	366	23	363	9	0	395	31	40	38	0	109	8	124	32	1	165	1035
% App. Total	73.8	12.3	13.9	0		5.8	91.9	2.3	0		28.4	36.7	34.9	0		4.8	75.2	19.4	0.6		
PHF	.844	.662	.750	.000	.847	.719	.864	.563	.000	.874	.861	.714	.731	.000	.940	.500	.939	.800	.250	.959	.924
Cars	268	45	50	0	363	23	347	9	0	379	27	39	37	0	103	7	114	31	1	153	998
% Cars	99.3	100	98.0	0	99.2	100	95.6	100	0	95.9	87.1	97.5	97.4	0	94.5	87.5	91.9	96.9	100	92.7	96.4
Heavy Vehicles	2	0	1	0	3	0	16	0	0	16	4	1	1	0	6	1	10	1	0	12	37
% Heavy Vehicles	0.7	0	2.0	0	0.8	0	4.4	0	0	4.1	12.9	2.5	2.6	0	5.5	12.5	8.1	3.1	0	7.3	3.6





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N/S: Washington Street
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Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Washington Street From North				Florence Street From East				Washington Street From South				Florence Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	17	1	10	0	9	40	2	0	11	10	15	0	2	43	33	0	193
04:15 PM	18	2	5	0	11	44	3	0	9	14	10	0	2	46	22	0	186
04:30 PM	14	2	8	0	14	57	3	0	8	21	12	0	0	46	27	0	212
04:45 PM	26	3	14	0	10	31	0	0	8	16	15	0	4	51	30	0	208
Total	75	8	37	0	44	172	8	0	36	61	52	0	8	186	112	0	799
05:00 PM	17	3	5	0	11	44	5	0	9	13	13	0	0	61	39	1	221
05:15 PM	16	4	5	0	5	49	1	0	15	14	13	0	4	45	37	0	208
05:30 PM	26	4	17	0	11	46	1	0	11	20	16	0	2	53	32	2	241
05:45 PM	17	4	14	0	9	47	0	0	13	16	8	0	3	71	28	1	231
Total	76	15	41	0	36	186	7	0	48	63	50	0	9	230	136	4	901
Grand Total	151	23	78	0	80	358	15	0	84	124	102	0	17	416	248	4	1700
Apprch %	59.9	9.1	31	0	17.7	79	3.3	0	27.1	40	32.9	0	2.5	60.7	36.2	0.6	
Total %	8.9	1.4	4.6	0	4.7	21.1	0.9	0	4.9	7.3	6	0	1	24.5	14.6	0.2	
Cars	151	23	77	0	79	335	15	0	83	123	97	0	17	410	246	4	1660
% Cars	100	100	98.7	0	98.8	93.6	100	0	98.8	99.2	95.1	0	100	98.6	99.2	100	97.6
Heavy Vehicles	0	0	1	0	1	23	0	0	1	1	5	0	0	6	2	0	40
% Heavy Vehicles	0	0	1.3	0	1.2	6.4	0	0	1.2	0.8	4.9	0	0	1.4	0.8	0	2.4

Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	17	3	5	0	25	11	44	5	0	60	9	13	13	0	35	0	61	39	1	101	221
05:15 PM	16	4	5	0	25	5	49	1	0	55	15	14	13	0	42	4	45	37	0	86	208
05:30 PM	26	4	17	0	47	11	46	1	0	58	11	20	16	0	47	2	53	32	2	89	241
05:45 PM	17	4	14	0	35	9	47	0	0	56	13	16	8	0	37	3	71	28	1	103	231
Total Volume	76	15	41	0	132	36	186	7	0	229	48	63	50	0	161	9	230	136	4	379	901
% App. Total	57.6	11.4	31.1	0		15.7	81.2	3.1	0		29.8	39.1	31.1	0		2.4	60.7	35.9	1.1		
PHF	.731	.938	.603	.000	.702	.818	.949	.350	.000	.954	.800	.788	.781	.000	.856	.563	.810	.872	.500	.920	.935
Cars	76	15	41	0	132	35	174	7	0	216	47	62	48	0	157	9	227	135	4	375	880
% Cars	100	100	100	0	100	97.2	93.5	100	0	94.3	97.9	98.4	96.0	0	97.5	100	98.7	99.3	100	98.9	97.7
Heavy Vehicles	0	0	0	0	0	1	12	0	0	13	1	1	2	0	4	0	3	1	0	4	21
% Heavy Vehicles	0	0	0	0	0	2.8	6.5	0	0	5.7	2.1	1.6	4.0	0	2.5	0	1.3	0.7	0	1.1	2.3



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Groups Printed- Cars

Start Time	Washington Street From North				Florence Street From East				Washington Street From South				Florence Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	17	1	9	0	9	39	2	0	11	10	15	0	2	43	32	0	190
04:15 PM	18	2	5	0	11	39	3	0	9	14	10	0	2	46	22	0	181
04:30 PM	14	2	8	0	14	56	3	0	8	21	12	0	0	45	27	0	210
04:45 PM	26	3	14	0	10	27	0	0	8	16	12	0	4	49	30	0	199
Total	75	8	36	0	44	161	8	0	36	61	49	0	8	183	111	0	780
05:00 PM	17	3	5	0	11	38	5	0	9	13	13	0	0	60	39	1	214
05:15 PM	16	4	5	0	5	47	1	0	15	13	13	0	4	43	36	0	202
05:30 PM	26	4	17	0	11	43	1	0	10	20	14	0	2	53	32	2	235
05:45 PM	17	4	14	0	8	46	0	0	13	16	8	0	3	71	28	1	229
Total	76	15	41	0	35	174	7	0	47	62	48	0	9	227	135	4	880
Grand Total	151	23	77	0	79	335	15	0	83	123	97	0	17	410	246	4	1660
Apprch %	60.2	9.2	30.7	0	18.4	78.1	3.5	0	27.4	40.6	32	0	2.5	60.6	36.3	0.6	
Total %	9.1	1.4	4.6	0	4.8	20.2	0.9	0	5	7.4	5.8	0	1	24.7	14.8	0.2	

Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	17	3	5	0	25	11	38	5	0	54	9	13	13	0	35	0	60	39	1	100	214
05:15 PM	16	4	5	0	25	5	47	1	0	53	15	13	13	0	41	4	43	36	0	83	202
05:30 PM	26	4	17	0	47	11	43	1	0	55	10	20	14	0	44	2	53	32	2	89	235
05:45 PM	17	4	14	0	35	8	46	0	0	54	13	16	8	0	37	3	71	28	1	103	229
Total Volume	76	15	41	0	132	35	174	7	0	216	47	62	48	0	157	9	227	135	4	375	880
% App. Total	57.6	11.4	31.1	0		16.2	80.6	3.2	0		29.9	39.5	30.6	0		2.4	60.5	36	1.1		
PHF	.731	.938	.603	.000	.702	.795	.926	.350	.000	.982	.783	.775	.857	.000	.892	.563	.799	.865	.500	.910	.936



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File Name : 154396 JJ
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Washington Street
E/W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Washington Street From North				Florence Street From East				Washington Street From South				Florence Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	3
04:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5
04:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
04:45 PM	0	0	0	0	0	4	0	0	0	0	3	0	0	2	0	0	9
Total	0	0	1	0	0	11	0	0	0	0	3	0	0	3	1	0	19
05:00 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	1	0	0	7
05:15 PM	0	0	0	0	0	2	0	0	0	1	0	0	0	2	1	0	6
05:30 PM	0	0	0	0	0	3	0	0	1	0	2	0	0	0	0	0	6
05:45 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	1	12	0	0	1	1	2	0	0	3	1	0	21
Grand Total	0	0	1	0	1	23	0	0	1	1	5	0	0	6	2	0	40
Apprch %	0	0	100	0	4.2	95.8	0	0	14.3	14.3	71.4	0	0	75	25	0	
Total %	0	0	2.5	0	2.5	57.5	0	0	2.5	2.5	12.5	0	0	15	5	0	

Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	4	0	0	4	0	0	3	0	3	0	2	0	0	2	9
05:00 PM	0	0	0	0	0	0	6	0	0	6	0	0	0	0	0	0	1	0	0	1	7
05:15 PM	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	0	2	1	0	3	6
05:30 PM	0	0	0	0	0	0	3	0	0	3	1	0	2	0	3	0	0	0	0	0	6
Total Volume	0	0	0	0	0	0	15	0	0	15	1	1	5	0	7	0	5	1	0	6	28
% App. Total	0	0	0	0	0	0	100	0	0	100	14.3	14.3	71.4	0	100	0	83.3	16.7	0	100	
PHF	.000	.000	.000	.000	.000	.000	.625	.000	.000	.625	.250	.250	.417	.000	.583	.000	.625	.250	.000	.500	.778



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File Name : 154396 JJ
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Page No : 1

N/S: Washington Street
E/W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	5	1	0	0	0	0	8	0	0	0	3	3	0	0	0	1	0	21
04:15 PM	0	0	0	4	4	0	0	0	3	3	0	0	0	2	4	0	0	0	1	3	24
04:30 PM	0	0	0	6	8	0	1	0	2	3	0	0	0	3	3	0	0	0	1	3	30
04:45 PM	0	0	0	9	2	0	0	0	1	1	0	0	0	3	2	0	0	0	0	2	20
Total	0	0	0	24	15	0	1	0	6	15	0	0	0	11	12	0	0	0	3	8	95
05:00 PM	0	0	0	2	6	0	0	0	1	0	0	0	0	3	1	0	0	0	3	1	17
05:15 PM	0	1	0	11	1	0	0	0	1	3	0	0	0	1	13	0	0	0	2	3	36
05:30 PM	0	0	0	11	6	0	0	0	1	3	0	0	0	1	3	0	0	0	5	2	32
05:45 PM	0	0	0	16	2	0	0	0	2	5	1	1	0	1	9	0	0	0	4	0	41
Total	0	1	0	40	15	0	0	0	5	11	1	1	0	6	26	0	0	0	14	6	126
Grand Total	0	1	0	64	30	0	1	0	11	26	1	1	0	17	38	0	0	0	17	14	221
Apprch %	0	1.1	0	67.4	31.6	0	2.6	0	28.9	68.4	1.8	1.8	0	29.8	66.7	0	0	0	54.8	45.2	
Total %	0	0.5	0	29	13.6	0	0.5	0	5	11.8	0.5	0.5	0	7.7	17.2	0	0	0	7.7	6.3	

Start Time	Washington Street From North						Florence Street From East						Washington Street From South						Florence Street From West						Int. Total						
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total							
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 05:00 PM																															
05:00 PM	0	0	0	2	6	8	0	0	0	1	0	1	0	0	0	3	1	4	0	0	0	3	1	4	0	0	0	3	1	4	17
05:15 PM	0	1	0	11	1	13	0	0	0	1	3	4	0	0	0	1	13	14	0	0	0	2	3	5	0	0	0	2	3	5	36
05:30 PM	0	0	0	11	6	17	0	0	0	1	3	4	0	0	0	1	3	4	0	0	0	5	2	7	0	0	0	5	2	7	32
05:45 PM	0	0	0	16	2	18	0	0	0	2	5	7	1	1	0	1	9	12	0	0	0	4	0	4	0	0	0	4	0	4	41
Total Volume	0	1	0	40	15	56	0	0	0	5	11	16	1	1	0	6	26	34	0	0	0	14	6	20	0	0	0	14	6	20	126
% App. Total	0	1.8	0	71.4	26.8		0	0	0	31.2	68.8		2.9	2.9	0	17.6	76.5		0	0	0	70	30		0	0	0	70	30		
PHF	.000	.250	.000	.625	.625	.778	.000	.000	.000	.625	.550	.571	.250	.250	.000	.500	.500	.607	.000	.000	.000	.700	.500	.714	.000	.000	.000	.700	.500	.768	



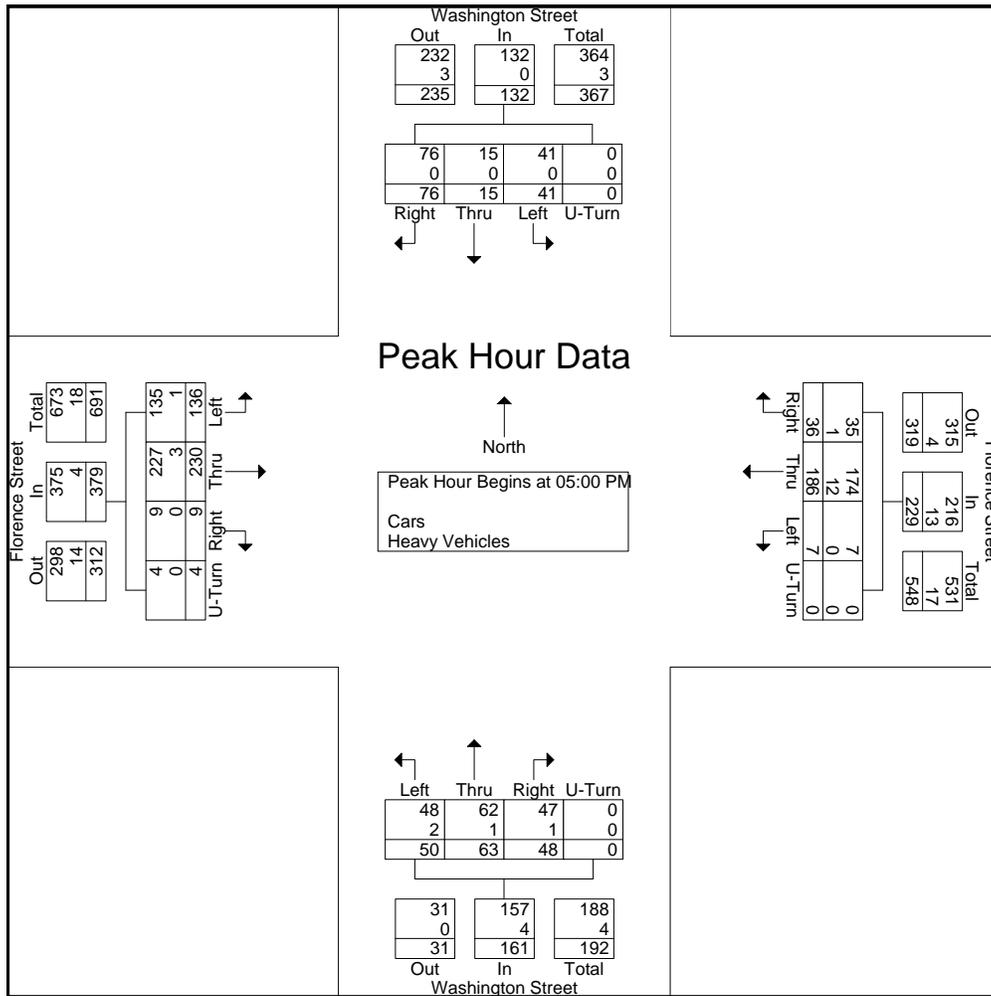
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N/S: Washington Street
E/W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 JJ
Site Code : 2015041
Start Date : 4/29/2015
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Start Time	Washington Street From North					Florence Street From East					Washington Street From South					Florence Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	17	3	5	0	25	11	44	5	0	60	9	13	13	0	35	0	61	39	1	101	221
05:15 PM	16	4	5	0	25	5	49	1	0	55	15	14	13	0	42	4	45	37	0	86	208
05:30 PM	26	4	17	0	47	11	46	1	0	58	11	20	16	0	47	2	53	32	2	89	241
05:45 PM	17	4	14	0	35	9	47	0	0	56	13	16	8	0	37	3	71	28	1	103	231
Total Volume	76	15	41	0	132	36	186	7	0	229	48	63	50	0	161	9	230	136	4	379	901
% App. Total	57.6	11.4	31.1	0		15.7	81.2	3.1	0		29.8	39.1	31.1	0		2.4	60.7	35.9	1.1		
PHF	.731	.938	.603	.000	.702	.818	.949	.350	.000	.954	.800	.788	.781	.000	.856	.563	.810	.872	.500	.920	.935
Cars	76	15	41	0	132	35	174	7	0	216	47	62	48	0	157	9	227	135	4	375	880
% Cars	100	100	100	0	100	97.2	93.5	100	0	94.3	97.9	98.4	96.0	0	97.5	100	98.7	99.3	100	98.9	97.7
Heavy Vehicles	0	0	0	0	0	1	12	0	0	13	1	1	2	0	4	0	3	1	0	4	21
% Heavy Vehicles	0	0	0	0	0	2.8	6.5	0	0	5.7	2.1	1.6	4.0	0	2.5	0	1.3	0.7	0	1.1	2.3





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File Name : 154396 K
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Washington St/ S. Washington St
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Washington Street From North				Pleasant Street From East				S. Washington Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	1	0	0	6	8	8	0	0	0	0	0	0	0	0	0	23
07:15 AM	0	0	0	0	11	12	10	0	0	0	0	0	0	0	0	0	33
07:30 AM	0	0	0	0	22	19	3	0	0	0	0	0	0	0	0	0	44
07:45 AM	0	0	0	0	23	31	15	0	0	0	0	0	0	0	0	0	69
Total	0	1	0	0	62	70	36	0	0	0	0	0	0	0	0	0	169
08:00 AM	0	0	0	0	20	34	17	0	0	0	0	0	0	0	0	0	71
08:15 AM	0	0	0	0	12	38	16	0	0	0	0	0	0	0	0	0	66
08:30 AM	0	0	0	0	18	17	20	0	0	0	0	0	0	0	0	0	55
08:45 AM	0	0	0	0	13	22	19	0	0	0	0	0	0	0	0	0	54
Total	0	0	0	0	63	111	72	0	0	0	0	0	0	0	0	0	246
Grand Total	0	1	0	0	125	181	108	0	0	0	0	0	0	0	0	0	415
Apprch %	0	100	0	0	30.2	43.7	26.1	0	0	0	0	0	0	0	0	0	
Total %	0	0.2	0	0	30.1	43.6	26	0	0	0	0	0	0	0	0	0	
Cars	0	1	0	0	119	179	105	0	0	0	0	0	0	0	0	0	404
% Cars	0	100	0	0	95.2	98.9	97.2	0	0	0	0	0	0	0	0	0	97.3
Heavy Vehicles	0	0	0	0	6	2	3	0	0	0	0	0	0	0	0	0	11
% Heavy Vehicles	0	0	0	0	4.8	1.1	2.8	0	0	0	0	0	0	0	0	0	2.7

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	23	31	15	0	69	0	0	0	0	0	0	0	0	0	0	69
08:00 AM	0	0	0	0	0	20	34	17	0	71	0	0	0	0	0	0	0	0	0	0	71
08:15 AM	0	0	0	0	0	12	38	16	0	66	0	0	0	0	0	0	0	0	0	0	66
08:30 AM	0	0	0	0	0	18	17	20	0	55	0	0	0	0	0	0	0	0	0	0	55
Total Volume	0	0	0	0	0	73	120	68	0	261	0	0	0	0	0	0	0	0	0	0	261
% App. Total	0	0	0	0	0	28	46	26.1	0	97.7	0	0	0	0	0	0	0	0	0	0	97.7
PHF	.000	.000	.000	.000	.000	.793	.789	.850	.000	.919	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.919
Cars	0	0	0	0	0	69	119	67	0	255	0	0	0	0	0	0	0	0	0	0	255
% Cars	0	0	0	0	0	94.5	99.2	98.5	0	97.7	0	0	0	0	0	0	0	0	0	0	97.7
Heavy Vehicles	0	0	0	0	0	4	1	1	0	6	0	0	0	0	0	0	0	0	0	0	6
% Heavy Vehicles	0	0	0	0	0	5.5	0.8	1.5	0	2.3	0	0	0	0	0	0	0	0	0	0	2.3



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File Name : 154396 K
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Start Date : 4/29/2015
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N/S: Washington St/ S. Washington St
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Washington Street From North				Pleasant Street From East				S. Washington Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	1	0	0	6	8	6	0	0	0	0	0	0	0	0	0	21
07:15 AM	0	0	0	0	10	12	10	0	0	0	0	0	0	0	0	0	32
07:30 AM	0	0	0	0	21	19	3	0	0	0	0	0	0	0	0	0	43
07:45 AM	0	0	0	0	22	31	15	0	0	0	0	0	0	0	0	0	68
Total	0	1	0	0	59	70	34	0	0	0	0	0	0	0	0	0	164
08:00 AM	0	0	0	0	18	34	16	0	0	0	0	0	0	0	0	0	68
08:15 AM	0	0	0	0	11	37	16	0	0	0	0	0	0	0	0	0	64
08:30 AM	0	0	0	0	18	17	20	0	0	0	0	0	0	0	0	0	55
08:45 AM	0	0	0	0	13	21	19	0	0	0	0	0	0	0	0	0	53
Total	0	0	0	0	60	109	71	0	0	0	0	0	0	0	0	0	240
Grand Total	0	1	0	0	119	179	105	0	0	0	0	0	0	0	0	0	404
Apprch %	0	100	0	0	29.5	44.4	26.1	0	0	0	0	0	0	0	0	0	
Total %	0	0.2	0	0	29.5	44.3	26	0	0	0	0	0	0	0	0	0	

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	22	31	15	0	68	0	0	0	0	0	0	0	0	0	0	68
08:00 AM	0	0	0	0	0	18	34	16	0	68	0	0	0	0	0	0	0	0	0	0	68
08:15 AM	0	0	0	0	0	11	37	16	0	64	0	0	0	0	0	0	0	0	0	0	64
08:30 AM	0	0	0	0	0	18	17	20	0	55	0	0	0	0	0	0	0	0	0	0	55
Total Volume	0	0	0	0	0	69	119	67	0	255	0	0	0	0	0	0	0	0	0	0	255
% App. Total	0	0	0	0	0	27.1	46.7	26.3	0		0	0	0	0	0	0	0	0	0	0	
PHF	.000	.000	.000	.000	.000	.784	.804	.838	.000	.938	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.938



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Groups Printed- Heavy Vehicles

Start Time	Washington Street From North				Pleasant Street From East				S. Washington Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
07:15 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	5
08:00 AM	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	3
08:15 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	6
Grand Total	0	0	0	0	6	2	3	0	0	0	0	0	0	0	0	0	11
Apprch %	0	0	0	0	54.5	18.2	27.3	0	0	0	0	0	0	0	0	0	
Total %	0	0	0	0	54.5	18.2	27.3	0	0	0	0	0	0	0	0	0	

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	3
08:15 AM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	5	1	1	0	7	0	0	0	0	0	0	0	0	0	0	7
% App. Total	0	0	0	0	0	71.4	14.3	14.3	0		0	0	0	0	0	0	0	0	0		
PHF	.000	.000	.000	.000	.000	.625	.250	.250	.000	.583	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.583



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File Name : 154396 K
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Washington St/ S. Washington St
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	1	0	3	10	0	1	0	1	0	0	0	0	4	0	0	0	0	1	0	21
07:15 AM	0	0	0	18	13	0	0	0	0	0	0	0	0	2	3	0	0	0	0	2	38
07:30 AM	0	0	0	22	18	0	0	0	3	1	0	0	0	3	3	0	0	0	0	0	50
07:45 AM	0	0	0	27	22	0	0	0	1	1	0	0	0	6	6	0	0	0	0	1	64
Total	0	1	0	70	63	0	1	0	5	2	0	0	0	15	12	0	0	0	1	3	173
08:00 AM	0	0	0	11	27	0	0	0	3	4	0	0	0	8	7	0	0	0	0	0	60
08:15 AM	0	0	0	25	27	0	0	0	3	4	0	0	0	9	4	0	0	0	0	3	75
08:30 AM	1	1	0	23	21	0	1	0	2	10	0	0	0	6	15	0	0	0	2	0	82
08:45 AM	0	0	0	33	16	0	1	0	2	9	0	0	0	9	16	0	0	0	3	1	90
Total	1	1	0	92	91	0	2	0	10	27	0	0	0	32	42	0	0	0	5	4	307
Grand Total	1	2	0	162	154	0	3	0	15	29	0	0	0	47	54	0	0	0	6	7	480
Apprch %	0.3	0.6	0	50.8	48.3	0	6.4	0	31.9	61.7	0	0	0	46.5	53.5	0	0	0	46.2	53.8	
Total %	0.2	0.4	0	33.8	32.1	0	0.6	0	3.1	6	0	0	0	9.8	11.2	0	0	0	1.2	1.5	

Start Time	Washington Street From North						Pleasant Street From East						S. Washington Street From South						Pleasant Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 08:00 AM																									
08:00 AM	0	0	0	11	27	38	0	0	0	3	4	7	0	0	0	8	7	15	0	0	0	0	0	0	60
08:15 AM	0	0	0	25	27	52	0	0	0	3	4	7	0	0	0	9	4	13	0	0	0	0	3	3	75
08:30 AM	1	1	0	23	21	46	0	1	0	2	10	13	0	0	0	6	15	21	0	0	0	2	0	2	82
08:45 AM	0	0	0	33	16	49	0	1	0	2	9	12	0	0	0	9	16	25	0	0	0	3	1	4	90
Total Volume	1	1	0	92	91	185	0	2	0	10	27	39	0	0	0	32	42	74	0	0	0	5	4	9	307
% App. Total	0.5	0.5	0	49.7	49.2		0	5.1	0	25.6	69.2		0	0	0	43.2	56.8		0	0	0	55.6	44.4		
PHF	.250	.250	.000	.697	.843	.889	.000	.500	.000	.833	.675	.750	.000	.000	.000	.889	.656	.740	.000	.000	.000	.417	.333	.563	.853



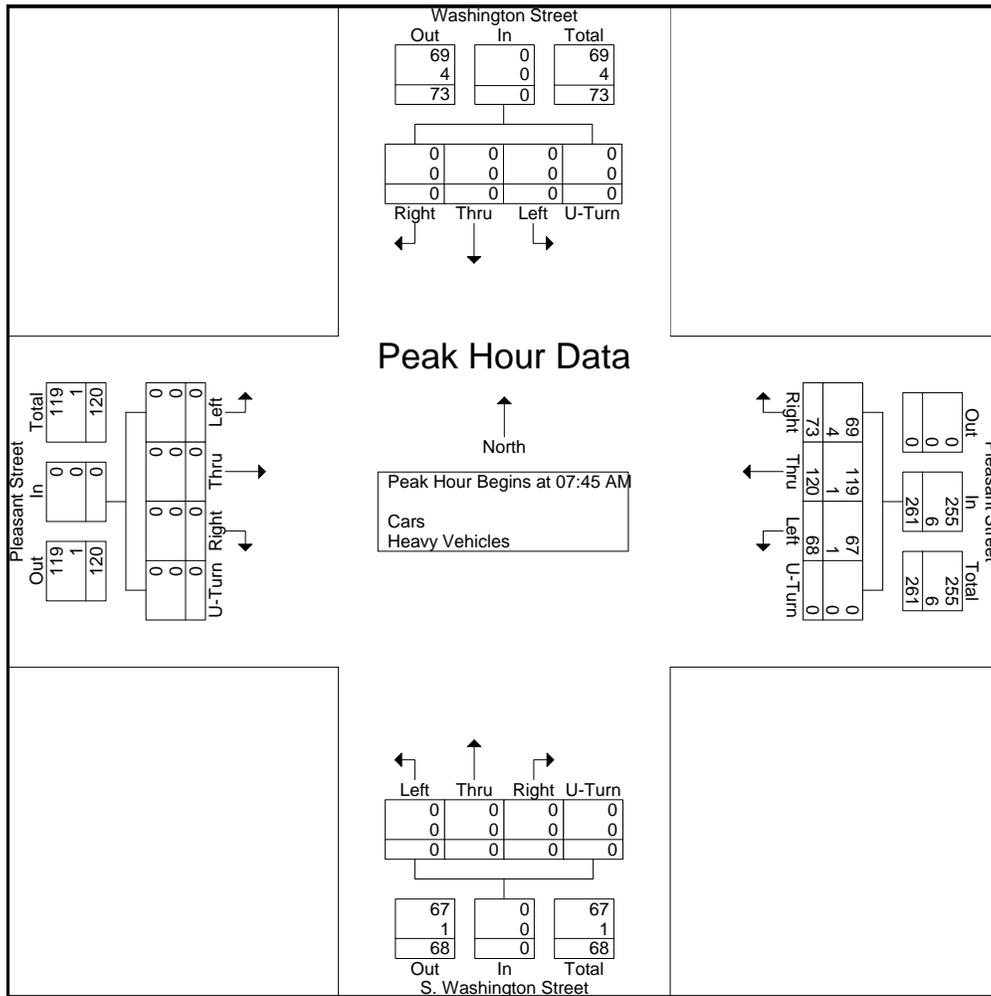
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N/S: Washington St/ S. Washington St
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total	
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																						
Peak Hour for Entire Intersection Begins at 07:45 AM																						
07:45 AM	0	0	0	0	0	23	31	15	0	69	0	0	0	0	0	0	0	0	0	0	0	69
08:00 AM	0	0	0	0	0	20	34	17	0	71	0	0	0	0	0	0	0	0	0	0	0	71
08:15 AM	0	0	0	0	0	12	38	16	0	66	0	0	0	0	0	0	0	0	0	0	0	66
08:30 AM	0	0	0	0	0	18	17	20	0	55	0	0	0	0	0	0	0	0	0	0	0	55
Total Volume	0	0	0	0	0	73	120	68	0	261	0	0	0	0	0	0	0	0	0	0	0	261
% App. Total	0	0	0	0	0	28	46	26.1	0		0	0	0	0		0	0	0	0			
PHF	.000	.000	.000	.000	.000	.793	.789	.850	.000	.919	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.919	
Cars	0	0	0	0	0	69	119	67	0	255	0	0	0	0	0	0	0	0	0	0	0	255
% Cars	0	0	0	0	0	94.5	99.2	98.5	0	97.7	0	0	0	0	0	0	0	0	0	0	0	97.7
Heavy Vehicles	0	0	0	0	0	4	1	1	0	6	0	0	0	0	0	0	0	0	0	0	0	6
% Heavy Vehicles	0	0	0	0	0	5.5	0.8	1.5	0	2.3	0	0	0	0	0	0	0	0	0	0	0	2.3





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N/S: Washington St/ S. Washington St
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Washington Street From North				Pleasant Street From East				S. Washington Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	16	20	31	0	0	0	0	0	0	0	0	0	67
04:15 PM	0	0	0	0	23	18	24	0	0	0	0	0	0	0	0	0	65
04:30 PM	0	0	0	0	16	14	26	0	0	0	0	0	0	0	0	0	56
04:45 PM	0	0	0	0	19	8	21	0	0	0	0	0	0	0	0	0	48
Total	0	0	0	0	74	60	102	0	0	0	0	0	0	0	0	0	236
05:00 PM	0	0	0	0	19	13	30	0	0	0	0	0	0	0	0	0	62
05:15 PM	0	0	0	0	28	23	28	0	0	0	0	0	0	0	0	0	79
05:30 PM	0	0	0	0	21	14	26	0	0	0	0	0	0	0	1	0	62
05:45 PM	0	0	0	0	26	17	18	0	0	0	0	0	0	0	0	0	61
Total	0	0	0	0	94	67	102	0	0	0	0	0	0	0	1	0	264
Grand Total	0	0	0	0	168	127	204	0	0	0	0	0	0	0	1	0	500
Apprch %	0	0	0	0	33.7	25.5	40.9	0	0	0	0	0	0	0	100	0	
Total %	0	0	0	0	33.6	25.4	40.8	0	0	0	0	0	0	0	0.2	0	
Cars	0	0	0	0	163	122	202	0	0	0	0	0	0	0	1	0	488
% Cars	0	0	0	0	97	96.1	99	0	0	0	0	0	0	0	100	0	97.6
Heavy Vehicles	0	0	0	0	5	5	2	0	0	0	0	0	0	0	0	0	12
% Heavy Vehicles	0	0	0	0	3	3.9	1	0	0	0	0	0	0	0	0	0	2.4

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	19	13	30	0	62	0	0	0	0	0	0	0	0	0	0	62
05:15 PM	0	0	0	0	0	28	23	28	0	79	0	0	0	0	0	0	0	0	0	0	79
05:30 PM	0	0	0	0	0	21	14	26	0	61	0	0	0	0	0	0	0	1	0	1	62
05:45 PM	0	0	0	0	0	26	17	18	0	61	0	0	0	0	0	0	0	0	0	0	61
Total Volume	0	0	0	0	0	94	67	102	0	263	0	0	0	0	0	0	0	1	0	1	264
% App. Total	0	0	0	0	0	35.7	25.5	38.8	0	97.3	0	0	0	0	0	0	0	100	0	100	97.3
PHF	.000	.000	.000	.000	.000	.839	.728	.850	.000	.832	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.835
Cars	0	0	0	0	0	89	66	101	0	256	0	0	0	0	0	0	0	1	0	1	257
% Cars	0	0	0	0	0	94.7	98.5	99.0	0	97.3	0	0	0	0	0	0	0	100	0	100	97.3
Heavy Vehicles	0	0	0	0	0	5	1	1	0	7	0	0	0	0	0	0	0	0	0	0	7
% Heavy Vehicles	0	0	0	0	0	5.3	1.5	1.0	0	2.7	0	0	0	0	0	0	0	0	0	0	2.7



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Start Date : 4/29/2015
Page No : 1

N/S: Washington St/ S. Washington St
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Washington Street From North				Pleasant Street From East				S. Washington Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	16	17	30	0	0	0	0	0	0	0	0	0	63
04:15 PM	0	0	0	0	23	17	24	0	0	0	0	0	0	0	0	0	64
04:30 PM	0	0	0	0	16	14	26	0	0	0	0	0	0	0	0	0	56
04:45 PM	0	0	0	0	19	8	21	0	0	0	0	0	0	0	0	0	48
Total	0	0	0	0	74	56	101	0	0	0	0	0	0	0	0	0	231
05:00 PM	0	0	0	0	17	12	30	0	0	0	0	0	0	0	0	0	59
05:15 PM	0	0	0	0	27	23	27	0	0	0	0	0	0	0	0	0	77
05:30 PM	0	0	0	0	19	14	26	0	0	0	0	0	0	0	1	0	60
05:45 PM	0	0	0	0	26	17	18	0	0	0	0	0	0	0	0	0	61
Total	0	0	0	0	89	66	101	0	0	0	0	0	0	0	1	0	257
Grand Total	0	0	0	0	163	122	202	0	0	0	0	0	0	0	1	0	488
Apprch %	0	0	0	0	33.5	25.1	41.5	0	0	0	0	0	0	0	100	0	
Total %	0	0	0	0	33.4	25	41.4	0	0	0	0	0	0	0	0.2	0	

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total	
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																						
Peak Hour for Entire Intersection Begins at 05:00 PM																						
05:00 PM	0	0	0	0	0	17	12	30	0	59	0	0	0	0	0	0	0	0	0	0	0	59
05:15 PM	0	0	0	0	0	27	23	27	0	77	0	0	0	0	0	0	0	0	0	0	0	77
05:30 PM	0	0	0	0	0	19	14	26	0	59	0	0	0	0	0	0	0	1	0	1	0	60
05:45 PM	0	0	0	0	0	26	17	18	0	61	0	0	0	0	0	0	0	0	0	0	0	61
Total Volume	0	0	0	0	0	89	66	101	0	256	0	0	0	0	0	0	0	1	0	1	0	257
% App. Total	0	0	0	0	0	34.8	25.8	39.5	0		0	0	0	0	0	0	0	100	0		0	
PHF	.000	.000	.000	.000	.000	.824	.717	.842	.000	.831	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.000	.834



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N/S: Washington St/ S. Washington St
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Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Washington Street From North				Pleasant Street From East				S. Washington Street From South				Pleasant Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	4
04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	4	1	0	0	0	0	0	0	0	0	0	5
05:00 PM	0	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	3
05:15 PM	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
05:30 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	5	1	1	0	0	0	0	0	0	0	0	0	7
Grand Total	0	0	0	0	5	5	2	0	0	0	0	0	0	0	0	0	12
Apprch %	0	0	0	0	41.7	41.7	16.7	0	0	0	0	0	0	0	0	0	
Total %	0	0	0	0	41.7	41.7	16.7	0	0	0	0	0	0	0	0	0	

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	3
05:15 PM	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	2
05:30 PM	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	5	1	1	0	7	0	0	0	0	0	0	0	0	0	0	7
% App. Total	0	0	0	0	0	71.4	14.3	14.3	0		0	0	0	0	0	0	0	0	0	0	
PHF	.000	.000	.000	.000	.000	.625	.250	.250	.000	.583	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.583



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Groups Printed- Peds and Bikes

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	30	39	0	0	0	8	5	0	0	0	15	11	0	0	0	1	6	115
04:15 PM	0	0	0	22	14	0	0	0	4	4	0	0	0	17	10	0	0	0	1	0	72
04:30 PM	0	0	0	19	24	0	0	0	9	5	0	0	0	28	3	0	0	0	4	2	94
04:45 PM	0	0	0	24	20	0	2	0	5	2	0	0	0	15	5	0	0	0	0	1	74
Total	0	0	0	95	97	0	2	0	26	16	0	0	0	75	29	0	0	0	6	9	355
05:00 PM	0	0	0	20	16	0	0	0	2	1	0	0	0	20	8	0	0	0	6	4	77
05:15 PM	0	0	0	17	19	0	1	1	8	7	0	0	0	18	10	0	0	0	3	3	87
05:30 PM	0	0	0	21	20	0	0	0	3	4	0	0	0	13	13	0	0	0	3	1	78
05:45 PM	0	0	0	25	15	1	1	0	3	2	0	1	0	14	17	0	0	0	3	3	85
Total	0	0	0	83	70	1	2	1	16	14	0	1	0	65	48	0	0	0	15	11	327
Grand Total	0	0	0	178	167	1	4	1	42	30	0	1	0	140	77	0	0	0	21	20	682
Apprch %	0	0	0	51.6	48.4	1.3	5.1	1.3	53.8	38.5	0	0.5	0	64.2	35.3	0	0	0	51.2	48.8	
Total %	0	0	0	26.1	24.5	0.1	0.6	0.1	6.2	4.4	0	0.1	0	20.5	11.3	0	0	0	3.1	2.9	

Start Time	Washington Street From North						Pleasant Street From East						S. Washington Street From South						Pleasant Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:00 PM																									
04:00 PM	0	0	0	30	39	69	0	0	0	8	5	13	0	0	0	15	11	26	0	0	0	1	6	7	115
04:15 PM	0	0	0	22	14	36	0	0	0	4	4	8	0	0	0	17	10	27	0	0	0	1	0	1	72
04:30 PM	0	0	0	19	24	43	0	0	0	9	5	14	0	0	0	28	3	31	0	0	0	4	2	6	94
04:45 PM	0	0	0	24	20	44	0	2	0	5	2	9	0	0	0	15	5	20	0	0	0	0	1	1	74
Total Volume	0	0	0	95	97	192	0	2	0	26	16	44	0	0	0	75	29	104	0	0	0	6	9	15	355
% App. Total	0	0	0	49.5	50.5		0	4.5	0	59.1	36.4		0	0	0	72.1	27.9		0	0	0	40	60		
PHF	.000	.000	.000	.792	.622	.696	.000	.250	.000	.722	.800	.786	.000	.000	.000	.670	.659	.839	.000	.000	.000	.375	.375	.536	.772



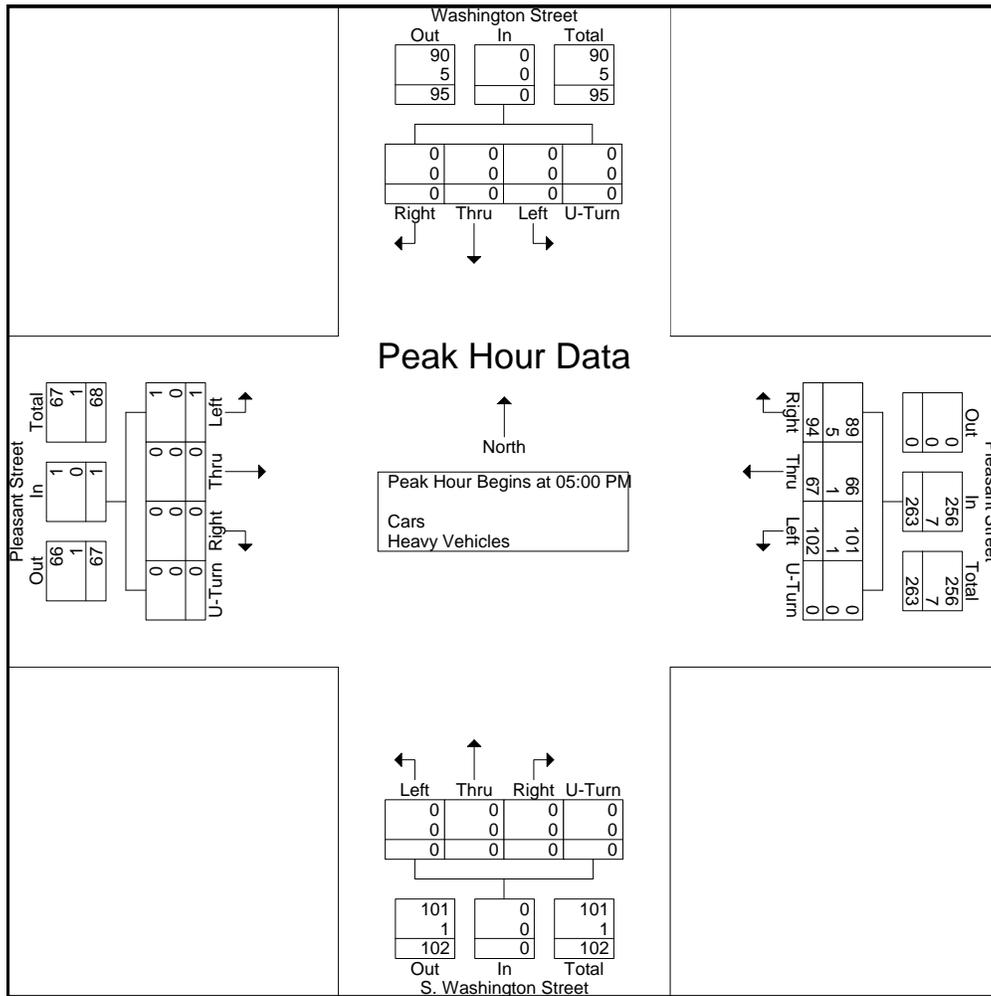
PRECISION
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N/S: Washington St/ S. Washington St
E/W: Pleasant Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 KK
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Start Time	Washington Street From North					Pleasant Street From East					S. Washington Street From South					Pleasant Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	0	0	0	19	13	30	0	62	0	0	0	0	0	0	0	0	0	0	62
05:15 PM	0	0	0	0	0	28	23	28	0	79	0	0	0	0	0	0	0	0	0	0	79
05:30 PM	0	0	0	0	0	21	14	26	0	61	0	0	0	0	0	0	0	1	0	1	62
05:45 PM	0	0	0	0	0	26	17	18	0	61	0	0	0	0	0	0	0	0	0	0	61
Total Volume	0	0	0	0	0	94	67	102	0	263	0	0	0	0	0	0	0	1	0	1	264
% App. Total	0	0	0	0	0	35.7	25.5	38.8	0		0	0	0	0		0	0	100	0		
PHF	.000	.000	.000	.000	.000	.839	.728	.850	.000	.832	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.835
Cars	0	0	0	0	0	89	66	101	0	256	0	0	0	0	0	0	0	1	0	1	257
% Cars	0	0	0	0	0	94.7	98.5	99.0	0	97.3	0	0	0	0	0	0	0	100	0	100	97.3
Heavy Vehicles	0	0	0	0	0	5	1	1	0	7	0	0	0	0	0	0	0	0	0	0	7
% Heavy Vehicles	0	0	0	0	0	5.3	1.5	1.0	0	2.7	0	0	0	0	0	0	0	0	0	0	2.7





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File Name : 154396 L
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	S. Washington Street From North				Exchange Street From East				Parking Lot From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	9	0	0	0	0	0	0	0	0	0	0	18	0	0	27
07:15 AM	0	0	9	0	0	0	0	0	0	0	0	0	0	34	0	0	43
07:30 AM	0	0	4	0	0	0	0	0	0	0	0	0	1	35	0	0	40
07:45 AM	0	0	13	0	0	0	0	0	0	0	0	0	0	40	0	0	53
Total	0	0	35	0	0	0	0	0	0	0	0	0	1	127	0	0	163
08:00 AM	0	0	13	0	0	0	0	0	0	0	0	0	0	44	0	0	57
08:15 AM	0	0	12	0	0	0	0	0	0	0	0	0	0	43	0	0	55
08:30 AM	0	0	15	0	0	0	0	0	0	0	0	0	1	46	0	0	62
08:45 AM	0	0	19	0	0	0	0	0	0	0	0	0	0	42	0	0	61
Total	0	0	59	0	0	0	0	0	0	0	0	0	1	175	0	0	235
Grand Total	0	0	94	0	0	0	0	0	0	0	0	0	2	302	0	0	398
Apprch %	0	0	100	0	0	0	0	0	0	0	0	0	0.7	99.3	0	0	
Total %	0	0	23.6	0	0	0	0	0	0	0	0	0	0.5	75.9	0	0	
Cars	0	0	91	0	0	0	0	0	0	0	0	0	2	294	0	0	387
% Cars	0	0	96.8	0	0	0	0	0	0	0	0	0	100	97.4	0	0	97.2
Heavy Vehicles	0	0	3	0	0	0	0	0	0	0	0	0	0	8	0	0	11
% Heavy Vehicles	0	0	3.2	0	0	0	0	0	0	0	0	0	0	2.6	0	0	2.8

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	13	0	13	0	0	0	0	0	0	0	0	0	0	0	44	0	0	44	57
08:15 AM	0	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	43	0	0	43	55
08:30 AM	0	0	15	0	15	0	0	0	0	0	0	0	0	0	0	1	46	0	0	47	62
08:45 AM	0	0	19	0	19	0	0	0	0	0	0	0	0	0	0	0	42	0	0	42	61
Total Volume	0	0	59	0	59	0	0	0	0	0	0	0	0	0	0	1	175	0	0	176	235
% App. Total	0	0	100	0		0	0	0	0	0	0	0	0	0	0	0.6	99.4	0	0		
PHF	.000	.000	.776	.000	.776	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.951	.000	.000	.936	.948
Cars	0	0	58	0	58	0	0	0	0	0	0	0	0	0	0	1	171	0	0	172	230
% Cars	0	0	98.3	0	98.3	0	0	0	0	0	0	0	0	0	0	100	97.7	0	0	97.7	97.9
Heavy Vehicles	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	5
% Heavy Vehicles	0	0	1.7	0	1.7	0	0	0	0	0	0	0	0	0	0	0	2.3	0	0	2.3	2.1



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File Name : 154396 L
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	S. Washington Street From North				Exchange Street From East				Parking Lot From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	7	0	0	0	0	0	0	0	0	0	0	17	0	0	24
07:15 AM	0	0	9	0	0	0	0	0	0	0	0	0	0	32	0	0	41
07:30 AM	0	0	4	0	0	0	0	0	0	0	0	0	1	35	0	0	40
07:45 AM	0	0	13	0	0	0	0	0	0	0	0	0	0	39	0	0	52
Total	0	0	33	0	0	0	0	0	0	0	0	0	1	123	0	0	157
08:00 AM	0	0	12	0	0	0	0	0	0	0	0	0	0	44	0	0	56
08:15 AM	0	0	12	0	0	0	0	0	0	0	0	0	0	42	0	0	54
08:30 AM	0	0	15	0	0	0	0	0	0	0	0	0	1	46	0	0	62
08:45 AM	0	0	19	0	0	0	0	0	0	0	0	0	0	39	0	0	58
Total	0	0	58	0	0	0	0	0	0	0	0	0	1	171	0	0	230
Grand Total	0	0	91	0	0	0	0	0	0	0	0	0	2	294	0	0	387
Apprch %	0	0	100	0	0	0	0	0	0	0	0	0	0.7	99.3	0	0	
Total %	0	0	23.5	0	0	0	0	0	0	0	0	0	0.5	76	0	0	

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	44	0	0	44	56
08:15 AM	0	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	42	0	0	42	54
08:30 AM	0	0	15	0	15	0	0	0	0	0	0	0	0	0	0	1	46	0	0	47	62
08:45 AM	0	0	19	0	19	0	0	0	0	0	0	0	0	0	0	0	39	0	0	39	58
Total Volume	0	0	58	0	58	0	0	0	0	0	0	0	0	0	0	1	171	0	0	172	230
% App. Total	0	0	100	0		0	0	0	0		0	0	0	0		0.6	99.4	0	0		
PHF	.000	.000	.763	.000	.763	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.929	.000	.000	.915	.927



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File Name : 154396 L
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	S. Washington Street From North				Exchange Street From East				Parking Lot From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	3
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	0	2	0	0	0	0	0	0	0	0	0	0	4	0	0	6
08:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
Total	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	5
Grand Total	0	0	3	0	0	0	0	0	0	0	0	0	0	8	0	0	11
Apprch %	0	0	100	0	0	0	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	27.3	0	0	0	0	0	0	0	0	0	0	72.7	0	0	

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	6
% App. Total	0	0	100	0		0	0	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.500



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File Name : 154396 L
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	5	8	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	18
07:15 AM	0	0	0	9	9	0	0	0	0	1	0	0	0	1	6	0	0	0	0	0	26
07:30 AM	0	0	0	7	10	0	0	0	2	0	0	0	0	5	2	0	1	0	0	0	27
07:45 AM	0	0	0	11	15	0	0	0	1	0	0	0	0	6	2	0	0	0	1	0	36
Total	0	0	0	32	42	0	0	0	3	1	0	0	0	17	10	0	1	0	1	0	107
08:00 AM	0	0	0	4	13	0	0	0	0	0	0	0	0	5	4	0	0	0	1	1	28
08:15 AM	0	0	0	12	13	0	2	0	0	0	0	0	0	2	4	0	0	0	0	0	33
08:30 AM	0	1	0	15	17	0	0	0	1	1	0	0	0	4	3	0	0	0	1	0	43
08:45 AM	0	0	0	11	8	0	0	0	1	1	0	0	0	3	7	0	0	1	0	0	32
Total	0	1	0	42	51	0	2	0	2	2	0	0	0	14	18	0	0	1	2	1	136
Grand Total	0	1	0	74	93	0	2	0	5	3	0	0	0	31	28	0	1	1	3	1	243
Apprch %	0	0.6	0	44	55.4	0	20	0	50	30	0	0	0	52.5	47.5	0	16.7	16.7	50	16.7	
Total %	0	0.4	0	30.5	38.3	0	0.8	0	2.1	1.2	0	0	0	12.8	11.5	0	0.4	0.4	1.2	0.4	

Start Time	S. Washington Street From North						Exchange Street From East						Parking Lot From South						Exchange Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:45 AM																									
07:45 AM	0	0	0	11	15	26	0	0	0	1	0	1	0	0	0	6	2	8	0	0	0	1	0	1	36
08:00 AM	0	0	0	4	13	17	0	0	0	0	0	0	0	0	0	5	4	9	0	0	0	1	1	2	28
08:15 AM	0	0	0	12	13	25	0	2	0	0	0	2	0	0	0	2	4	6	0	0	0	0	0	0	33
08:30 AM	0	1	0	15	17	33	0	0	0	1	1	2	0	0	0	4	3	7	0	0	0	1	0	1	43
Total Volume	0	1	0	42	58	101	0	2	0	2	1	5	0	0	0	17	13	30	0	0	0	3	1	4	140
% App. Total	0	1	0	41.6	57.4		0	40	0	40	20		0	0	0	56.7	43.3		0	0	0	75	25		
PHF	.000	.250	.000	.700	.853	.765	.000	.250	.000	.500	.250	.625	.000	.000	.000	.708	.813	.833	.000	.000	.000	.750	.250	.500	.814



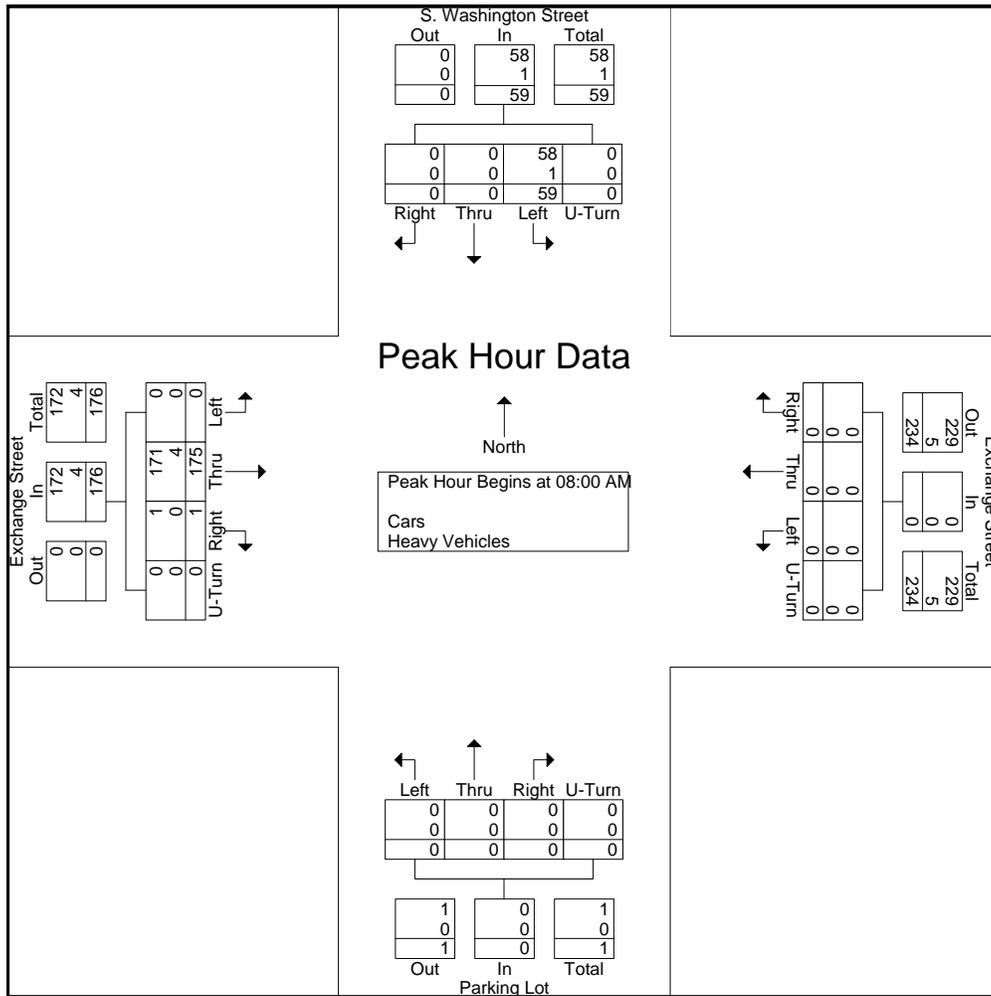
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File Name : 154396 L
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	13	0	13	0	0	0	0	0	0	0	0	0	0	0	44	0	0	44	57
08:15 AM	0	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	43	0	0	43	55
08:30 AM	0	0	15	0	15	0	0	0	0	0	0	0	0	0	0	1	46	0	0	47	62
08:45 AM	0	0	19	0	19	0	0	0	0	0	0	0	0	0	0	0	42	0	0	42	61
Total Volume	0	0	59	0	59	0	0	0	0	0	0	0	0	0	0	1	175	0	0	176	235
% App. Total	0	0	100	0		0	0	0	0		0	0	0	0		0.6	99.4	0	0		
PHF	.000	.000	.776	.000	.776	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.951	.000	.000	.936	.948
Cars	0	0	58	0	58	0	0	0	0	0	0	0	0	0	0	1	171	0	0	172	230
% Cars	0	0	98.3	0	98.3	0	0	0	0	0	0	0	0	0	0	100	97.7	0	0	97.7	97.9
Heavy Vehicles	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	5
% Heavy Vehicles	0	0	1.7	0	1.7	0	0	0	0	0	0	0	0	0	0	0	2.3	0	0	2.3	2.1





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Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	S. Washington Street From North				Exchange Street From East				Parking Lot From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	26	0	0	0	0	0	0	0	0	0	0	68	0	0	94
04:15 PM	0	0	22	0	0	0	0	0	1	0	0	0	0	53	0	0	76
04:30 PM	0	0	27	0	0	0	0	0	0	0	0	0	1	37	0	0	65
04:45 PM	0	0	18	0	0	0	0	0	1	0	0	0	0	44	0	0	63
Total	0	0	93	0	0	0	0	0	2	0	0	0	1	202	0	0	298
05:00 PM	0	0	27	0	0	0	0	0	0	0	0	0	1	54	0	0	82
05:15 PM	0	0	33	0	0	0	0	0	0	0	0	0	0	52	0	0	85
05:30 PM	0	0	26	0	0	0	0	0	0	0	0	0	2	73	0	0	101
05:45 PM	0	0	19	0	0	0	0	0	1	0	0	0	0	53	0	0	73
Total	0	0	105	0	0	0	0	0	1	0	0	0	3	232	0	0	341
Grand Total	0	0	198	0	0	0	0	0	3	0	0	0	4	434	0	0	639
Apprch %	0	0	100	0	0	0	0	0	100	0	0	0	0.9	99.1	0	0	
Total %	0	0	31	0	0	0	0	0	0.5	0	0	0	0.6	67.9	0	0	
Cars	0	0	197	0	0	0	0	0	3	0	0	0	4	430	0	0	634
% Cars	0	0	99.5	0	0	0	0	0	100	0	0	0	100	99.1	0	0	99.2
Heavy Vehicles	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	5
% Heavy Vehicles	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0.9	0	0	0.8

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	27	0	27	0	0	0	0	0	0	0	0	0	0	1	54	0	0	55	82
05:15 PM	0	0	33	0	33	0	0	0	0	0	0	0	0	0	0	0	52	0	0	52	85
05:30 PM	0	0	26	0	26	0	0	0	0	0	0	0	0	0	0	2	73	0	0	75	101
05:45 PM	0	0	19	0	19	0	0	0	0	0	1	0	0	0	1	0	53	0	0	53	73
Total Volume	0	0	105	0	105	0	0	0	0	0	1	0	0	0	1	3	232	0	0	235	341
% App. Total	0	0	100	0		0	0	0	0		100	0	0	0		1.3	98.7	0	0		
PHF	.000	.000	.795	.000	.795	.000	.000	.000	.000	.000	.250	.000	.000	.000	.250	.375	.795	.000	.000	.783	.844
Cars	0	0	104	0	104	0	0	0	0	0	1	0	0	0	1	3	232	0	0	235	340
% Cars	0	0	99.0	0	99.0	0	0	0	0	0	100	0	0	0	100	100	100	0	0	100	99.7
Heavy Vehicles	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Heavy Vehicles	0	0	1.0	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3



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File Name : 154396 LL
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	S. Washington Street From North				Exchange Street From East				Parking Lot From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	26	0	0	0	0	0	0	0	0	0	0	65	0	0	91
04:15 PM	0	0	22	0	0	0	0	0	1	0	0	0	0	53	0	0	76
04:30 PM	0	0	27	0	0	0	0	0	0	0	0	0	1	37	0	0	65
04:45 PM	0	0	18	0	0	0	0	0	1	0	0	0	0	43	0	0	62
Total	0	0	93	0	0	0	0	0	2	0	0	0	1	198	0	0	294
05:00 PM	0	0	27	0	0	0	0	0	0	0	0	0	1	54	0	0	82
05:15 PM	0	0	32	0	0	0	0	0	0	0	0	0	0	52	0	0	84
05:30 PM	0	0	26	0	0	0	0	0	0	0	0	0	2	73	0	0	101
05:45 PM	0	0	19	0	0	0	0	0	1	0	0	0	0	53	0	0	73
Total	0	0	104	0	0	0	0	0	1	0	0	0	3	232	0	0	340
Grand Total	0	0	197	0	0	0	0	0	3	0	0	0	4	430	0	0	634
Apprch %	0	0	100	0	0	0	0	0	100	0	0	0	0.9	99.1	0	0	
Total %	0	0	31.1	0	0	0	0	0	0.5	0	0	0	0.6	67.8	0	0	

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	27	0	27	0	0	0	0	0	0	0	0	0	0	1	54	0	0	55	82
05:15 PM	0	0	32	0	32	0	0	0	0	0	0	0	0	0	0	0	52	0	0	52	84
05:30 PM	0	0	26	0	26	0	0	0	0	0	0	0	0	0	0	2	73	0	0	75	101
05:45 PM	0	0	19	0	19	0	0	0	0	0	1	0	0	0	1	0	53	0	0	53	73
Total Volume	0	0	104	0	104	0	0	0	0	0	1	0	0	0	1	3	232	0	0	235	340
% App. Total	0	0	100	0		0	0	0	0	0	100	0	0	0		1.3	98.7	0	0		
PHF	.000	.000	.813	.000	.813	.000	.000	.000	.000	.000	.250	.000	.000	.000	.250	.375	.795	.000	.000	.783	.842



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File Name : 154396 LL
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	S. Washington Street From North				Exchange Street From East				Parking Lot From South				Exchange Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	0	5
Apprch %	0	0	100	0	0	0	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	20	0	0	0	0	0	0	0	0	0	0	80	0	0	

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	3
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	4
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.333	.000	.000	.333	.333



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File Name : 154396 LL
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Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	6	10	0	0	0	0	1	0	0	0	5	4	0	0	0	4	2	32
04:15 PM	0	0	0	16	3	0	0	0	2	3	0	0	0	4	1	0	0	0	2	1	32
04:30 PM	0	0	0	18	6	0	0	0	3	3	0	0	0	4	5	0	0	0	4	3	46
04:45 PM	0	0	0	7	7	0	0	0	4	1	0	0	0	2	3	0	0	0	2	0	26
Total	0	0	0	47	26	0	0	0	9	8	0	0	0	15	13	0	0	0	12	6	136
05:00 PM	0	0	0	10	3	0	0	0	3	0	0	0	0	4	6	0	1	0	0	0	27
05:15 PM	0	1	0	28	5	0	0	0	1	2	0	0	0	2	1	0	1	0	2	0	43
05:30 PM	0	0	0	29	10	0	0	0	1	1	0	0	0	8	4	0	0	0	1	0	54
05:45 PM	0	0	0	16	8	0	0	0	3	1	0	0	0	3	4	0	0	0	0	0	35
Total	0	1	0	83	26	0	0	0	8	4	0	0	0	17	15	0	2	0	3	0	159
Grand Total	0	1	0	130	52	0	0	0	17	12	0	0	0	32	28	0	2	0	15	6	295
Apprch %	0	0.5	0	71	28.4	0	0	0	58.6	41.4	0	0	0	53.3	46.7	0	8.7	0	65.2	26.1	
Total %	0	0.3	0	44.1	17.6	0	0	0	5.8	4.1	0	0	0	10.8	9.5	0	0.7	0	5.1	2	

Start Time	S. Washington Street From North						Exchange Street From East						Parking Lot From South						Exchange Street From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 05:00 PM																									
05:00 PM	0	0	0	10	3	13	0	0	0	3	0	3	0	0	0	4	6	10	0	1	0	0	0	1	27
05:15 PM	0	1	0	28	5	34	0	0	0	1	2	3	0	0	0	2	1	3	0	1	0	2	0	3	43
05:30 PM	0	0	0	29	10	39	0	0	0	1	1	2	0	0	0	8	4	12	0	0	0	1	0	1	54
05:45 PM	0	0	0	16	8	24	0	0	0	3	1	4	0	0	0	3	4	7	0	0	0	0	0	0	35
Total Volume	0	1	0	83	26	110	0	0	0	8	4	12	0	0	0	17	15	32	0	2	0	3	0	5	159
% App. Total	0	0.9	0	75.5	23.6		0	0	0	66.7	33.3		0	0	0	53.1	46.9		0	40	0	60	0		
PHF	.000	.250	.000	.716	.650	.705	.000	.000	.000	.667	.500	.750	.000	.000	.000	.531	.625	.667	.000	.500	.000	.375	.000	.417	.736



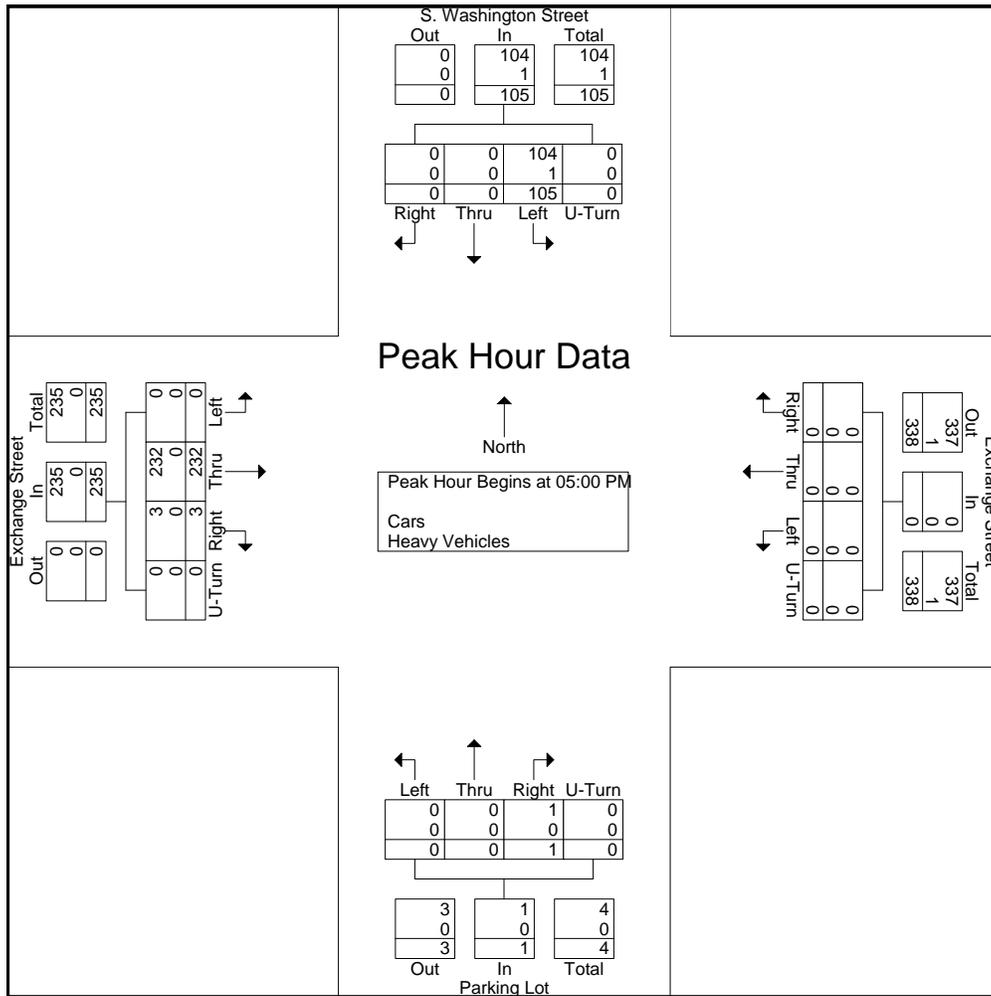
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File Name : 154396 LL
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: S. Washington St/ Parking Lot
E/W: Exchange Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	S. Washington Street From North					Exchange Street From East					Parking Lot From South					Exchange Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	0	27	0	27	0	0	0	0	0	0	0	0	0	0	1	54	0	0	55	82
05:15 PM	0	0	33	0	33	0	0	0	0	0	0	0	0	0	0	0	52	0	0	52	85
05:30 PM	0	0	26	0	26	0	0	0	0	0	0	0	0	0	0	2	73	0	0	75	101
05:45 PM	0	0	19	0	19	0	0	0	0	0	1	0	0	0	1	0	53	0	0	53	73
Total Volume	0	0	105	0	105	0	0	0	0	0	1	0	0	0	1	3	232	0	0	235	341
% App. Total	0	0	100	0		0	0	0	0		100	0	0	0		1.3	98.7	0	0		
PHF	.000	.000	.795	.000	.795	.000	.000	.000	.000	.000	.250	.000	.000	.000	.250	.375	.795	.000	.000	.783	.844
Cars	0	0	104	0	104	0	0	0	0	0	1	0	0	0	1	3	232	0	0	235	340
% Cars	0	0	99.0	0	99.0	0	0	0	0	0	100	0	0	0	100	100	100	0	0	100	99.7
Heavy Vehicles	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Heavy Vehicles	0	0	1.0	0	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3





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File Name : 154396 M
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Main Street From North			Main Street From South			Florence Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	29	92	0	54	35	0	27	9	0	246
07:15 AM	45	106	0	59	47	0	43	12	0	312
07:30 AM	49	80	0	78	60	0	48	26	0	341
07:45 AM	49	73	0	86	58	0	41	23	0	330
Total	172	351	0	277	200	0	159	70	0	1229
08:00 AM	50	77	0	69	62	0	27	21	0	306
08:15 AM	45	69	0	53	54	0	30	22	0	273
08:30 AM	50	93	0	67	53	0	29	10	0	302
08:45 AM	25	75	0	49	44	0	25	14	0	232
Total	170	314	0	238	213	0	111	67	0	1113
Grand Total	342	665	0	515	413	0	270	137	0	2342
Apprch %	34	66	0	55.5	44.5	0	66.3	33.7	0	
Total %	14.6	28.4	0	22	17.6	0	11.5	5.8	0	
Cars	334	634	0	492	392	0	259	123	0	2234
% Cars	97.7	95.3	0	95.5	94.9	0	95.9	89.8	0	95.4
Heavy Vehicles	8	31	0	23	21	0	11	14	0	108
% Heavy Vehicles	2.3	4.7	0	4.5	5.1	0	4.1	10.2	0	4.6

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	45	106	0	151	59	47	0	106	43	12	0	55	312
07:30 AM	49	80	0	129	78	60	0	138	48	26	0	74	341
07:45 AM	49	73	0	122	86	58	0	144	41	23	0	64	330
08:00 AM	50	77	0	127	69	62	0	131	27	21	0	48	306
Total Volume	193	336	0	529	292	227	0	519	159	82	0	241	1289
% App. Total	36.5	63.5	0		56.3	43.7	0		66	34	0		
PHF	.965	.792	.000	.876	.849	.915	.000	.901	.828	.788	.000	.814	.945
Cars	190	325	0	515	282	218	0	500	156	74	0	230	1245
% Cars	98.4	96.7	0	97.4	96.6	96.0	0	96.3	98.1	90.2	0	95.4	96.6
Heavy Vehicles	3	11	0	14	10	9	0	19	3	8	0	11	44
% Heavy Vehicles	1.6	3.3	0	2.6	3.4	4.0	0	3.7	1.9	9.8	0	4.6	3.4



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File Name : 154396 M
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Main Street From North			Main Street From South			Florence Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	28	90	0	51	33	0	24	9	0	235
07:15 AM	45	103	0	57	46	0	42	11	0	304
07:30 AM	49	79	0	73	57	0	47	23	0	328
07:45 AM	47	69	0	84	55	0	40	20	0	315
Total	169	341	0	265	191	0	153	63	0	1182
08:00 AM	49	74	0	68	60	0	27	20	0	298
08:15 AM	44	65	0	50	48	0	28	19	0	254
08:30 AM	48	86	0	64	51	0	28	8	0	285
08:45 AM	24	68	0	45	42	0	23	13	0	215
Total	165	293	0	227	201	0	106	60	0	1052
Grand Total	334	634	0	492	392	0	259	123	0	2234
Apprch %	34.5	65.5	0	55.7	44.3	0	67.8	32.2	0	
Total %	15	28.4	0	22	17.5	0	11.6	5.5	0	

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	45	103	0	148	57	46	0	103	42	11	0	53	304
07:30 AM	49	79	0	128	73	57	0	130	47	23	0	70	328
07:45 AM	47	69	0	116	84	55	0	139	40	20	0	60	315
08:00 AM	49	74	0	123	68	60	0	128	27	20	0	47	298
Total Volume	190	325	0	515	282	218	0	500	156	74	0	230	1245
% App. Total	36.9	63.1	0		56.4	43.6	0		67.8	32.2	0		
PHF	.969	.789	.000	.870	.839	.908	.000	.899	.830	.804	.000	.821	.949



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File Name : 154396 M
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Main Street From North			Main Street From South			Florence Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
07:00 AM	1	2	0	3	2	0	3	0	0	11
07:15 AM	0	3	0	2	1	0	1	1	0	8
07:30 AM	0	1	0	5	3	0	1	3	0	13
07:45 AM	2	4	0	2	3	0	1	3	0	15
Total	3	10	0	12	9	0	6	7	0	47
08:00 AM	1	3	0	1	2	0	0	1	0	8
08:15 AM	1	4	0	3	6	0	2	3	0	19
08:30 AM	2	7	0	3	2	0	1	2	0	17
08:45 AM	1	7	0	4	2	0	2	1	0	17
Total	5	21	0	11	12	0	5	7	0	61
Grand Total	8	31	0	23	21	0	11	14	0	108
Apprch %	20.5	79.5	0	52.3	47.7	0	44	56	0	
Total %	7.4	28.7	0	21.3	19.4	0	10.2	13	0	

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	1	3	0	4	1	2	0	3	0	1	0	1	8
08:15 AM	1	4	0	5	3	6	0	9	2	3	0	5	19
08:30 AM	2	7	0	9	3	2	0	5	1	2	0	3	17
08:45 AM	1	7	0	8	4	2	0	6	2	1	0	3	17
Total Volume	5	21	0	26	11	12	0	23	5	7	0	12	61
% App. Total	19.2	80.8	0		47.8	52.2	0		41.7	58.3	0		
PHF	.625	.750	.000	.722	.688	.500	.000	.639	.625	.583	.000	.600	.803



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N/S: Main Street
W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	
07:00 AM	0	0	2	6	0	0	0	2	0	0	0	3	13
07:15 AM	0	2	4	3	0	0	1	0	0	0	0	2	12
07:30 AM	0	2	11	1	0	0	1	4	0	0	0	1	20
07:45 AM	0	1	6	9	0	0	0	0	0	1	2	0	19
Total	0	5	23	19	0	0	2	6	0	1	2	6	64
08:00 AM	0	0	1	4	0	0	1	0	0	0	0	1	7
08:15 AM	0	2	0	2	0	0	1	0	0	1	4	1	11
08:30 AM	0	1	2	6	0	0	0	1	0	0	2	3	15
08:45 AM	0	1	2	5	0	0	0	1	1	0	4	4	18
Total	0	4	5	17	0	0	2	2	1	1	10	9	51
Grand Total	0	9	28	36	0	0	4	8	1	2	12	15	115
Apprch %	0	12.3	38.4	49.3	0	0	33.3	66.7	3.3	6.7	40	50	
Total %	0	7.8	24.3	31.3	0	0	3.5	7	0.9	1.7	10.4	13	

Start Time	Main Street From North					Main Street From South					Florence Street From West					Int. Total
	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:00 AM																
07:00 AM	0	0	2	6	8	0	0	0	2	2	0	0	0	3	3	13
07:15 AM	0	2	4	3	9	0	0	1	0	1	0	0	0	2	2	12
07:30 AM	0	2	11	1	14	0	0	1	4	5	0	0	0	1	1	20
07:45 AM	0	1	6	9	16	0	0	0	0	0	0	1	2	0	3	19
Total Volume	0	5	23	19	47	0	0	2	6	8	0	1	2	6	9	64
% App. Total	0	10.6	48.9	40.4		0	0	25	75		0	11.1	22.2	66.7		
PHF	.000	.625	.523	.528	.734	.000	.000	.500	.375	.400	.000	.250	.250	.500	.750	.800



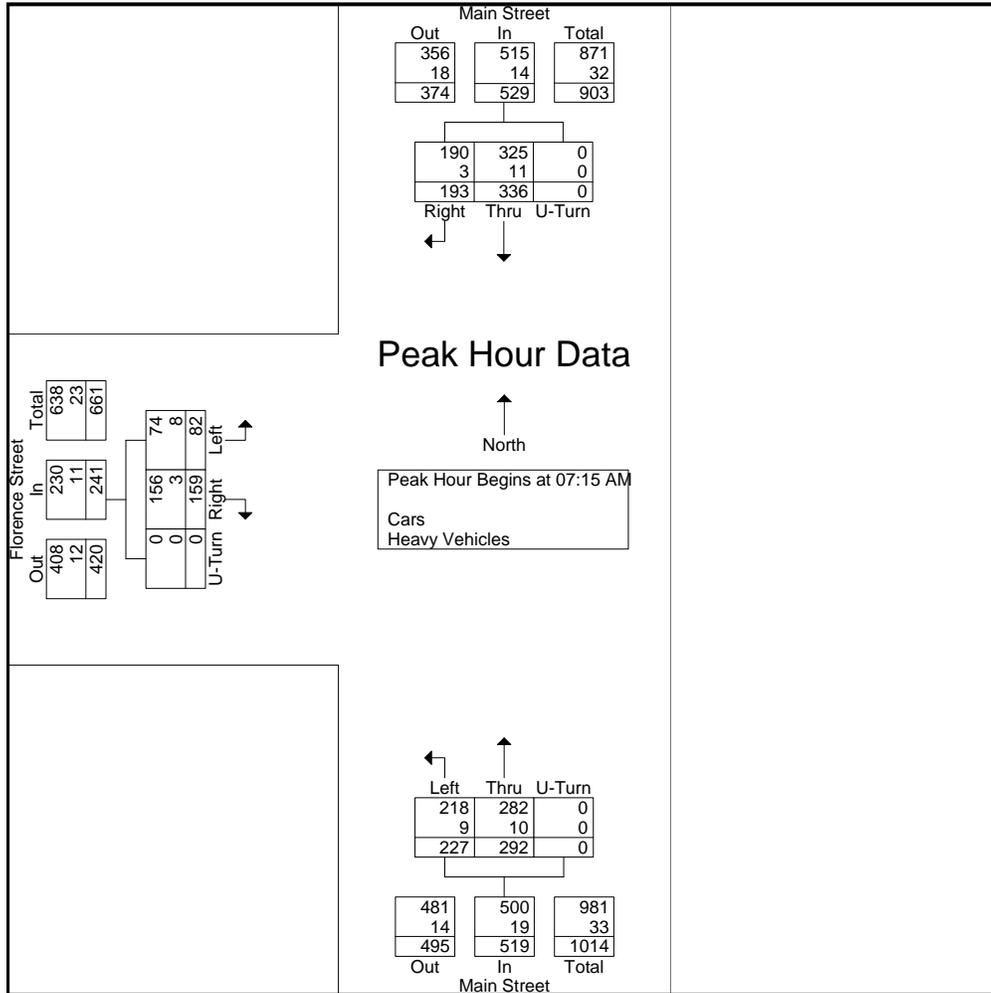
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File Name : 154396 M
Site Code : 2015041
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Page No : 1

N/S: Main Street
W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	45	106	0	151	59	47	0	106	43	12	0	55	312
07:30 AM	49	80	0	129	78	60	0	138	48	26	0	74	341
07:45 AM	49	73	0	122	86	58	0	144	41	23	0	64	330
08:00 AM	50	77	0	127	69	62	0	131	27	21	0	48	306
Total Volume	193	336	0	529	292	227	0	519	159	82	0	241	1289
% App. Total	36.5	63.5	0		56.3	43.7	0		66	34	0		
PHF	.965	.792	.000	.876	.849	.915	.000	.901	.828	.788	.000	.814	.945
Cars	190	325	0	515	282	218	0	500	156	74	0	230	1245
% Cars	98.4	96.7	0	97.4	96.6	96.0	0	96.3	98.1	90.2	0	95.4	96.6
Heavy Vehicles	3	11	0	14	10	9	0	19	3	8	0	11	44
% Heavy Vehicles	1.6	3.3	0	2.6	3.4	4.0	0	3.7	1.9	9.8	0	4.6	3.4





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Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 MM
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Main Street From North			Main Street From South			Florence Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
04:00 PM	25	71	0	93	36	0	36	35	0	296
04:15 PM	21	70	0	89	52	0	36	29	0	297
04:30 PM	24	73	0	90	48	1	47	31	0	314
04:45 PM	18	62	0	79	35	0	47	39	0	280
Total	88	276	0	351	171	1	166	134	0	1187
05:00 PM	22	69	0	76	43	0	42	42	0	294
05:15 PM	20	69	0	79	34	1	36	35	0	274
05:30 PM	26	78	0	94	47	0	54	40	0	339
05:45 PM	22	99	0	85	45	0	51	52	0	354
Total	90	315	0	334	169	1	183	169	0	1261
Grand Total	178	591	0	685	340	2	349	303	0	2448
Apprch %	23.1	76.9	0	66.7	33.1	0.2	53.5	46.5	0	
Total %	7.3	24.1	0	28	13.9	0.1	14.3	12.4	0	
Cars	172	572	0	666	318	2	344	300	0	2374
% Cars	96.6	96.8	0	97.2	93.5	100	98.6	99	0	97
Heavy Vehicles	6	19	0	19	22	0	5	3	0	74
% Heavy Vehicles	3.4	3.2	0	2.8	6.5	0	1.4	1	0	3

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	22	69	0	91	76	43	0	119	42	42	0	84	294
05:15 PM	20	69	0	89	79	34	1	114	36	35	0	71	274
05:30 PM	26	78	0	104	94	47	0	141	54	40	0	94	339
05:45 PM	22	99	0	121	85	45	0	130	51	52	0	103	354
Total Volume	90	315	0	405	334	169	1	504	183	169	0	352	1261
% App. Total	22.2	77.8	0		66.3	33.5	0.2		52	48	0		
PHF	.865	.795	.000	.837	.888	.899	.250	.894	.847	.813	.000	.854	.891
Cars	87	304	0	391	326	158	1	485	180	167	0	347	1223
% Cars	96.7	96.5	0	96.5	97.6	93.5	100	96.2	98.4	98.8	0	98.6	97.0
Heavy Vehicles	3	11	0	14	8	11	0	19	3	2	0	5	38
% Heavy Vehicles	3.3	3.5	0	3.5	2.4	6.5	0	3.8	1.6	1.2	0	1.4	3.0



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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 MM
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Groups Printed- Cars

Start Time	Main Street From North			Main Street From South			Florence Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
04:00 PM	24	67	0	92	35	0	35	35	0	288
04:15 PM	21	69	0	86	47	0	36	29	0	288
04:30 PM	23	73	0	87	46	1	46	30	0	306
04:45 PM	17	59	0	75	32	0	47	39	0	269
Total	85	268	0	340	160	1	164	133	0	1151
05:00 PM	19	65	0	73	41	0	42	41	0	281
05:15 PM	20	67	0	77	32	1	34	35	0	266
05:30 PM	26	75	0	92	42	0	53	40	0	328
05:45 PM	22	97	0	84	43	0	51	51	0	348
Total	87	304	0	326	158	1	180	167	0	1223
Grand Total	172	572	0	666	318	2	344	300	0	2374
Apprch %	23.1	76.9	0	67.5	32.3	0.2	53.4	46.6	0	
Total %	7.2	24.1	0	28.1	13.4	0.1	14.5	12.6	0	

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	19	65	0	84	73	41	0	114	42	41	0	83	281
05:15 PM	20	67	0	87	77	32	1	110	34	35	0	69	266
05:30 PM	26	75	0	101	92	42	0	134	53	40	0	93	328
05:45 PM	22	97	0	119	84	43	0	127	51	51	0	102	348
Total Volume	87	304	0	391	326	158	1	485	180	167	0	347	1223
% App. Total	22.3	77.7	0	0.0	67.2	32.6	0.2	0.0	51.9	48.1	0	0.0	0.0
PHF	.837	.784	.000	.821	.886	.919	.250	.905	.849	.819	.000	.850	.879



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N/S: Main Street
W: Florence Street
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Main Street From North			Main Street From South			Florence Street From West			Int. Total
	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	
04:00 PM	1	4	0	1	1	0	1	0	0	8
04:15 PM	0	1	0	3	5	0	0	0	0	9
04:30 PM	1	0	0	3	2	0	1	1	0	8
04:45 PM	1	3	0	4	3	0	0	0	0	11
Total	3	8	0	11	11	0	2	1	0	36
05:00 PM	3	4	0	3	2	0	0	1	0	13
05:15 PM	0	2	0	2	2	0	2	0	0	8
05:30 PM	0	3	0	2	5	0	1	0	0	11
05:45 PM	0	2	0	1	2	0	0	1	0	6
Total	3	11	0	8	11	0	3	2	0	38
Grand Total	6	19	0	19	22	0	5	3	0	74
Apprch %	24	76	0	46.3	53.7	0	62.5	37.5	0	
Total %	8.1	25.7	0	25.7	29.7	0	6.8	4.1	0	

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	1	3	0	4	4	3	0	7	0	0	0	0	11
05:00 PM	3	4	0	7	3	2	0	5	0	1	0	1	13
05:15 PM	0	2	0	2	2	2	0	4	2	0	0	2	8
05:30 PM	0	3	0	3	2	5	0	7	1	0	0	1	11
Total Volume	4	12	0	16	11	12	0	23	3	1	0	4	43
% App. Total	25	75	0		47.8	52.2	0		75	25	0		
PHF	.333	.750	.000	.571	.688	.600	.000	.821	.375	.250	.000	.500	.827



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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 MM
Site Code : 2015041
Start Date : 4/29/2015
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Groups Printed- Peds and Bikes

Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	
04:00 PM	0	0	3	5	1	0	1	0	0	0	3	3	16
04:15 PM	0	0	3	3	0	0	2	0	0	0	6	7	21
04:30 PM	0	1	4	3	1	0	1	1	0	0	8	3	22
04:45 PM	0	0	5	0	0	0	0	0	0	0	6	2	13
Total	0	1	15	11	2	0	4	1	0	0	23	15	72
05:00 PM	0	0	11	4	0	0	0	1	0	0	2	5	23
05:15 PM	0	0	2	1	3	0	0	4	0	0	3	4	17
05:30 PM	0	1	5	4	1	0	1	0	0	0	7	4	23
05:45 PM	0	0	7	6	0	0	0	0	0	0	2	5	20
Total	0	1	25	15	4	0	1	5	0	0	14	18	83
Grand Total	0	2	40	26	6	0	5	6	0	0	37	33	155
Apprch %	0	2.9	58.8	38.2	35.3	0	29.4	35.3	0	0	52.9	47.1	
Total %	0	1.3	25.8	16.8	3.9	0	3.2	3.9	0	0	23.9	21.3	

Start Time	Main Street From North					Main Street From South					Florence Street From West				Int. Total	
	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB		App. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	0	0	11	4	15	0	0	0	1	1	0	0	2	5	7	23
05:15 PM	0	0	2	1	3	3	0	0	4	7	0	0	3	4	7	17
05:30 PM	0	1	5	4	10	1	0	1	0	2	0	0	7	4	11	23
05:45 PM	0	0	7	6	13	0	0	0	0	0	0	0	2	5	7	20
Total Volume	0	1	25	15	41	4	0	1	5	10	0	0	14	18	32	83
% App. Total	0	2.4	61	36.6		40	0	10	50		0	0	43.8	56.2		
PHF	.000	.250	.568	.625	.683	.333	.000	.250	.313	.357	.000	.000	.500	.900	.727	.902



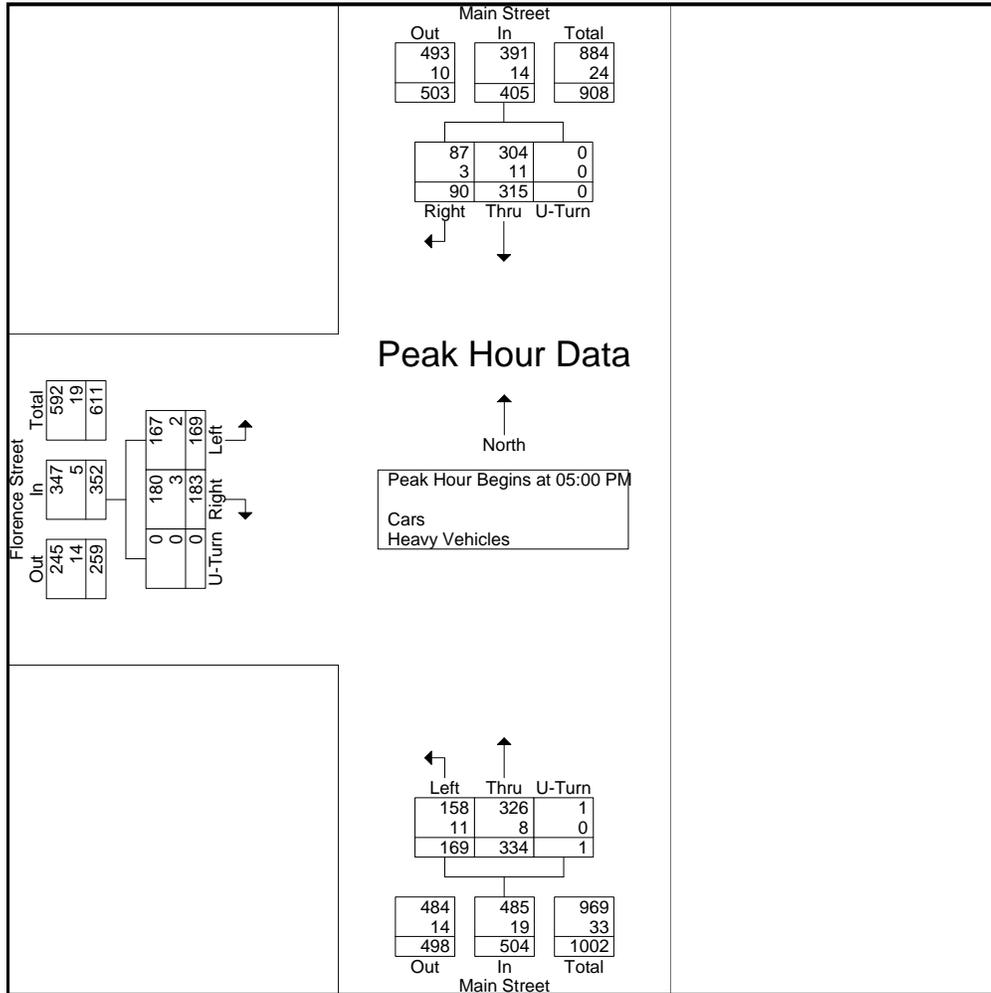
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Start Time	Main Street From North				Main Street From South				Florence Street From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 05:00 PM													
05:00 PM	22	69	0	91	76	43	0	119	42	42	0	84	294
05:15 PM	20	69	0	89	79	34	1	114	36	35	0	71	274
05:30 PM	26	78	0	104	94	47	0	141	54	40	0	94	339
05:45 PM	22	99	0	121	85	45	0	130	51	52	0	103	354
Total Volume	90	315	0	405	334	169	1	504	183	169	0	352	1261
% App. Total	22.2	77.8	0		66.3	33.5	0.2		52	48	0		
PHF	.865	.795	.000	.837	.888	.899	.250	.894	.847	.813	.000	.854	.891
Cars	87	304	0	391	326	158	1	485	180	167	0	347	1223
% Cars	96.7	96.5	0	96.5	97.6	93.5	100	96.2	98.4	98.8	0	98.6	97.0
Heavy Vehicles	3	11	0	14	8	11	0	19	3	2	0	5	38
% Heavy Vehicles	3.3	3.5	0	3.5	2.4	6.5	0	3.8	1.6	1.2	0	1.4	3.0





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Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Pleasant Street From North				Centre Street (Route 60) From East				Parking Lot From South				Pleasant Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	57	0	0	0	0	102	0	0	0	0	0	0	0	191	0	0	350
07:15 AM	56	0	0	0	0	117	0	0	0	0	0	0	0	193	0	0	366
07:30 AM	53	0	0	0	0	120	0	0	0	0	0	0	0	188	0	0	361
07:45 AM	55	0	0	0	0	100	0	0	1	0	0	0	1	178	0	0	335
Total	221	0	0	0	0	439	0	0	1	0	0	0	1	750	0	0	1412
08:00 AM	46	0	0	0	0	128	0	0	0	0	0	0	0	157	0	0	331
08:15 AM	32	0	0	0	0	95	0	0	2	0	0	0	0	177	0	0	306
08:30 AM	61	0	0	0	0	94	0	0	0	0	0	0	0	172	0	0	327
08:45 AM	42	0	0	0	0	90	0	0	0	0	0	0	0	180	0	0	312
Total	181	0	0	0	0	407	0	0	2	0	0	0	0	686	0	0	1276
Grand Total	402	0	0	0	0	846	0	0	3	0	0	0	1	1436	0	0	2688
Apprch %	100	0	0	0	0	100	0	0	100	0	0	0	0.1	99.9	0	0	
Total %	15	0	0	0	0	31.5	0	0	0.1	0	0	0	0	53.4	0	0	
Cars	376	0	0	0	0	782	0	0	3	0	0	0	1	1339	0	0	2501
% Cars	93.5	0	0	0	0	92.4	0	0	100	0	0	0	100	93.2	0	0	93
Heavy Vehicles	26	0	0	0	0	64	0	0	0	0	0	0	0	97	0	0	187
% Heavy Vehicles	6.5	0	0	0	0	7.6	0	0	0	0	0	0	0	6.8	0	0	7

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	57	0	0	0	57	0	102	0	0	102	0	0	0	0	0	0	191	0	0	191	350
07:15 AM	56	0	0	0	56	0	117	0	0	117	0	0	0	0	0	0	193	0	0	193	366
07:30 AM	53	0	0	0	53	0	120	0	0	120	0	0	0	0	0	0	188	0	0	188	361
07:45 AM	55	0	0	0	55	0	100	0	0	100	1	0	0	0	1	1	178	0	0	179	335
Total Volume	221	0	0	0	221	0	439	0	0	439	1	0	0	0	1	1	750	0	0	751	1412
% App. Total	100	0	0	0	100	0	100	0	0	100	100	0	0	0	100	0.1	99.9	0	0		
PHF	.969	.000	.000	.000	.969	.000	.915	.000	.000	.915	.250	.000	.000	.000	.250	.250	.972	.000	.000	.973	.964
Cars	210	0	0	0	210	0	409	0	0	409	1	0	0	0	1	1	696	0	0	697	1317
% Cars	95.0	0	0	0	95.0	0	93.2	0	0	93.2	100	0	0	0	100	100	92.8	0	0	92.8	93.3
Heavy Vehicles	11	0	0	0	11	0	30	0	0	30	0	0	0	0	0	0	54	0	0	54	95
% Heavy Vehicles	5.0	0	0	0	5.0	0	6.8	0	0	6.8	0	0	0	0	0	0	7.2	0	0	7.2	6.7



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File Name : 154396 N
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Pleasant Street From North				Centre Street (Route 60) From East				Parking Lot From South				Pleasant Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	54	0	0	0	0	91	0	0	0	0	0	0	0	175	0	0	320
07:15 AM	53	0	0	0	0	110	0	0	0	0	0	0	0	175	0	0	338
07:30 AM	51	0	0	0	0	112	0	0	0	0	0	0	0	179	0	0	342
07:45 AM	52	0	0	0	0	96	0	0	1	0	0	0	1	167	0	0	317
Total	210	0	0	0	0	409	0	0	1	0	0	0	1	696	0	0	1317
08:00 AM	42	0	0	0	0	116	0	0	0	0	0	0	0	145	0	0	303
08:15 AM	28	0	0	0	0	89	0	0	2	0	0	0	0	168	0	0	287
08:30 AM	57	0	0	0	0	84	0	0	0	0	0	0	0	160	0	0	301
08:45 AM	39	0	0	0	0	84	0	0	0	0	0	0	0	170	0	0	293
Total	166	0	0	0	0	373	0	0	2	0	0	0	0	643	0	0	1184
Grand Total	376	0	0	0	0	782	0	0	3	0	0	0	1	1339	0	0	2501
Apprch %	100	0	0	0	0	100	0	0	100	0	0	0	0.1	99.9	0	0	
Total %	15	0	0	0	0	31.3	0	0	0.1	0	0	0	0	53.5	0	0	

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	54	0	0	0	54	0	91	0	0	91	0	0	0	0	0	0	175	0	0	175	320
07:15 AM	53	0	0	0	53	0	110	0	0	110	0	0	0	0	0	0	175	0	0	175	338
07:30 AM	51	0	0	0	51	0	112	0	0	112	0	0	0	0	0	0	179	0	0	179	342
07:45 AM	52	0	0	0	52	0	96	0	0	96	1	0	0	0	1	1	167	0	0	168	317
Total Volume	210	0	0	0	210	0	409	0	0	409	1	0	0	0	1	1	696	0	0	697	1317
% App. Total	100	0	0	0		0	100	0	0		100	0	0	0		0.1	99.9	0	0		
PHF	.972	.000	.000	.000	.972	.000	.913	.000	.000	.913	.250	.000	.000	.000	.250	.250	.972	.000	.000	.973	.963



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File Name : 154396 N
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Pleasant Street From North				Centre Street (Route 60) From East				Parking Lot From South				Pleasant Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	3	0	0	0	0	11	0	0	0	0	0	0	0	16	0	0	30
07:15 AM	3	0	0	0	0	7	0	0	0	0	0	0	0	18	0	0	28
07:30 AM	2	0	0	0	0	8	0	0	0	0	0	0	0	9	0	0	19
07:45 AM	3	0	0	0	0	4	0	0	0	0	0	0	0	11	0	0	18
Total	11	0	0	0	0	30	0	0	0	0	0	0	0	54	0	0	95
08:00 AM	4	0	0	0	0	12	0	0	0	0	0	0	0	12	0	0	28
08:15 AM	4	0	0	0	0	6	0	0	0	0	0	0	0	9	0	0	19
08:30 AM	4	0	0	0	0	10	0	0	0	0	0	0	0	12	0	0	26
08:45 AM	3	0	0	0	0	6	0	0	0	0	0	0	0	10	0	0	19
Total	15	0	0	0	0	34	0	0	0	0	0	0	0	43	0	0	92
Grand Total	26	0	0	0	0	64	0	0	0	0	0	0	0	97	0	0	187
Apprch %	100	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	
Total %	13.9	0	0	0	0	34.2	0	0	0	0	0	0	0	51.9	0	0	

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	3	0	0	0	3	0	11	0	0	11	0	0	0	0	0	0	16	0	0	16	30
07:15 AM	3	0	0	0	3	0	7	0	0	7	0	0	0	0	0	0	18	0	0	18	28
07:30 AM	2	0	0	0	2	0	8	0	0	8	0	0	0	0	0	0	9	0	0	9	19
07:45 AM	3	0	0	0	3	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	18
Total Volume	11	0	0	0	11	0	30	0	0	30	0	0	0	0	0	0	54	0	0	54	95
% App. Total	100	0	0	0		0	100	0	0		0	0	0	0		0	100	0	0		
PHF	.917	.000	.000	.000	.917	.000	.682	.000	.000	.682	.000	.000	.000	.000	.000	.000	.750	.000	.000	.750	.792



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File Name : 154396 N
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	7
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	0	0	0	0	0	6
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	14
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	4	0	1	0	0	0	10
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	14	22	0	1	0	0	0	37
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	7	6	0	0	0	0	0	13
08:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	4	10	0	0	0	0	0	15
08:30 AM	0	0	0	0	0	0	0	0	0	3	0	0	0	0	8	0	0	0	0	0	11
08:45 AM	0	0	0	0	0	0	0	0	0	6	0	0	0	2	5	0	1	0	0	0	15
Total	0	0	0	0	0	0	0	0	1	10	0	0	0	13	29	0	1	0	0	0	54
Grand Total	0	0	0	0	0	0	0	0	1	10	0	0	0	27	51	0	2	0	0	0	91
Apprch %	0	0	0	0	0	0	0	0	9.1	90.9	0	0	0	34.6	65.4	0	100	0	0	0	
Total %	0	0	0	0	0	0	0	0	1.1	11	0	0	0	29.7	56	0	2.2	0	0	0	

Start Time	Pleasant Street From North						Centre Street (Route 60) From East						Parking Lot From South						Pleasant Street (Route 60) From West						Int. Total	
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 08:00 AM																										
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	6	13	0	0	0	0	0	0	0	13
08:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	4	10	14	0	0	0	0	0	0	0	15
08:30 AM	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	8	8	0	0	0	0	0	0	0	11
08:45 AM	0	0	0	0	0	0	0	0	0	1	6	7	0	0	0	2	5	7	0	1	0	0	0	0	1	15
Total Volume	0	0	0	0	0	0	0	0	0	1	10	11	0	0	0	13	29	42	0	1	0	0	0	0	1	54
% App. Total	0	0	0	0	0	0	0	0	0	9.1	90.9		0	0	0	31	69		0	100	0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.417	.393	.000	.000	.000	.464	.725	.750	.000	.250	.000	.000	.000	.000	.250	.900



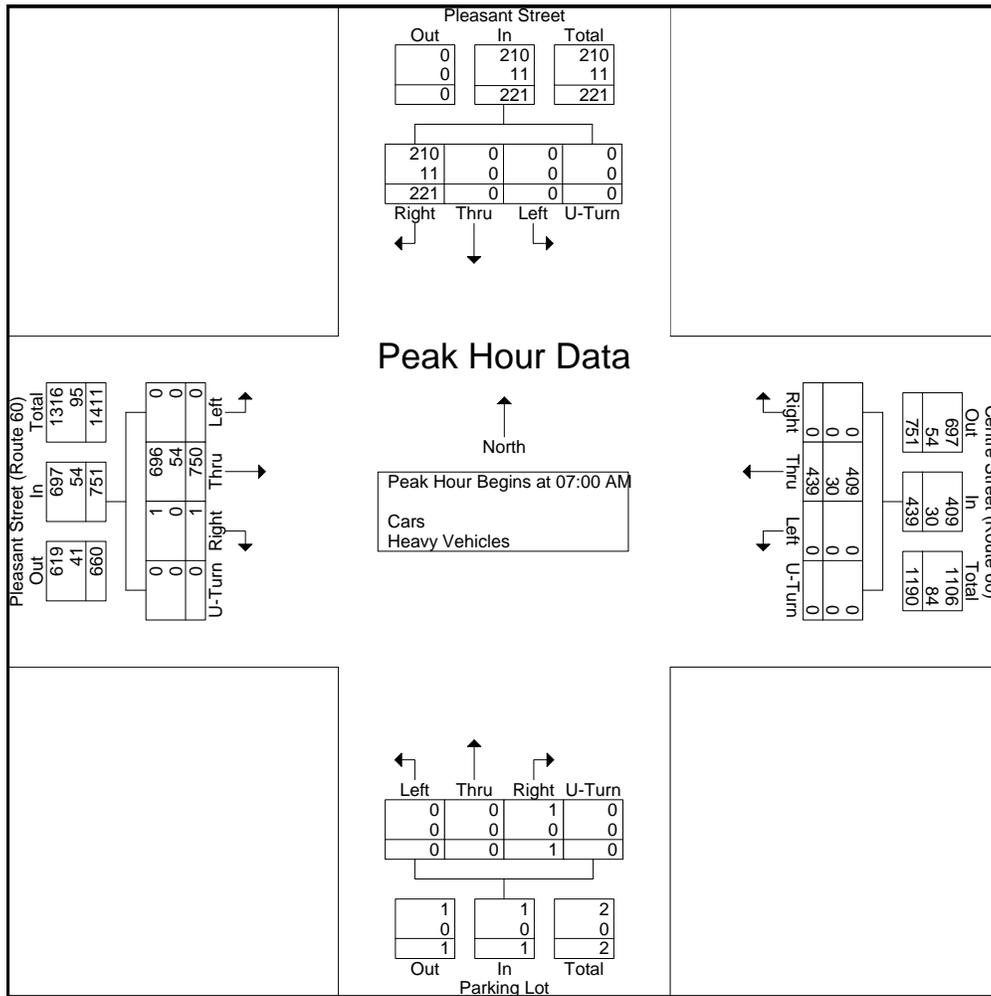
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N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 N
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	57	0	0	0	57	0	102	0	0	102	0	0	0	0	0	0	191	0	0	191	350
07:15 AM	56	0	0	0	56	0	117	0	0	117	0	0	0	0	0	0	193	0	0	193	366
07:30 AM	53	0	0	0	53	0	120	0	0	120	0	0	0	0	0	0	188	0	0	188	361
07:45 AM	55	0	0	0	55	0	100	0	0	100	1	0	0	0	1	1	178	0	0	179	335
Total Volume	221	0	0	0	221	0	439	0	0	439	1	0	0	0	1	1	750	0	0	751	1412
% App. Total	100	0	0	0		0	100	0	0		100	0	0	0		0.1	99.9	0	0		
PHF	.969	.000	.000	.000	.969	.000	.915	.000	.000	.915	.250	.000	.000	.000	.250	.250	.972	.000	.000	.973	.964
Cars	210	0	0	0	210	0	409	0	0	409	1	0	0	0	1	1	696	0	0	697	1317
% Cars	95.0	0	0	0	95.0	0	93.2	0	0	93.2	100	0	0	0	100	100	92.8	0	0	92.8	93.3
Heavy Vehicles	11	0	0	0	11	0	30	0	0	30	0	0	0	0	0	0	54	0	0	54	95
% Heavy Vehicles	5.0	0	0	0	5.0	0	6.8	0	0	6.8	0	0	0	0	0	0	7.2	0	0	7.2	6.7





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N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Pleasant Street From North				Centre Street (Route 60) From East				Parking Lot From South				Pleasant Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	32	0	1	0	0	124	0	0	0	0	0	0	0	174	0	0	331
04:15 PM	42	0	0	0	0	131	0	1	6	0	0	0	0	171	0	0	351
04:30 PM	40	0	0	0	0	131	0	0	5	0	0	0	0	155	0	0	331
04:45 PM	45	0	0	0	0	123	0	0	8	0	0	0	0	168	0	0	344
Total	159	0	1	0	0	509	0	1	19	0	0	0	0	668	0	0	1357
05:00 PM	28	0	0	0	0	141	0	1	4	0	0	0	0	181	0	0	355
05:15 PM	40	0	1	0	0	127	0	0	5	0	0	0	0	196	0	0	369
05:30 PM	43	0	0	0	0	135	0	1	5	0	0	0	0	192	0	0	376
05:45 PM	48	0	1	0	0	109	0	0	2	0	0	0	0	207	0	0	367
Total	159	0	2	0	0	512	0	2	16	0	0	0	0	776	0	0	1467
Grand Total	318	0	3	0	0	1021	0	3	35	0	0	0	0	1444	0	0	2824
Apprch %	99.1	0	0.9	0	0	99.7	0	0.3	100	0	0	0	0	100	0	0	
Total %	11.3	0	0.1	0	0	36.2	0	0.1	1.2	0	0	0	0	51.1	0	0	
Cars	295	0	3	0	0	989	0	3	35	0	0	0	0	1398	0	0	2723
% Cars	92.8	0	100	0	0	96.9	0	100	100	0	0	0	0	96.8	0	0	96.4
Heavy Vehicles	23	0	0	0	0	32	0	0	0	0	0	0	0	46	0	0	101
% Heavy Vehicles	7.2	0	0	0	0	3.1	0	0	0	0	0	0	0	3.2	0	0	3.6

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	28	0	0	0	28	0	141	0	1	142	4	0	0	0	4	0	181	0	0	181	355
05:15 PM	40	0	1	0	41	0	127	0	0	127	5	0	0	0	5	0	196	0	0	196	369
05:30 PM	43	0	0	0	43	0	135	0	1	136	5	0	0	0	5	0	192	0	0	192	376
05:45 PM	48	0	1	0	49	0	109	0	0	109	2	0	0	0	2	0	207	0	0	207	367
Total Volume	159	0	2	0	161	0	512	0	2	514	16	0	0	0	16	0	776	0	0	776	1467
% App. Total	98.8	0	1.2	0		0	99.6	0	0.4		100	0	0	0		0	100	0	0		
PHF	.828	.000	.500	.000	.821	.000	.908	.000	.500	.905	.800	.000	.000	.000	.800	.000	.937	.000	.000	.937	.975
Cars	149	0	2	0	151	0	502	0	2	504	16	0	0	0	16	0	756	0	0	756	1427
% Cars	93.7	0	100	0	93.8	0	98.0	0	100	98.1	100	0	0	0	100	0	97.4	0	0	97.4	97.3
Heavy Vehicles	10	0	0	0	10	0	10	0	0	10	0	0	0	0	0	0	20	0	0	20	40
% Heavy Vehicles	6.3	0	0	0	6.2	0	2.0	0	0	1.9	0	0	0	0	0	0	2.6	0	0	2.6	2.7



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Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Pleasant Street From North				Centre Street (Route 60) From East				Parking Lot From South				Pleasant Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	31	0	1	0	0	117	0	0	0	0	0	0	0	162	0	0	311
04:15 PM	39	0	0	0	0	121	0	1	6	0	0	0	0	166	0	0	333
04:30 PM	38	0	0	0	0	129	0	0	5	0	0	0	0	150	0	0	322
04:45 PM	38	0	0	0	0	120	0	0	8	0	0	0	0	164	0	0	330
Total	146	0	1	0	0	487	0	1	19	0	0	0	0	642	0	0	1296
05:00 PM	23	0	0	0	0	139	0	1	4	0	0	0	0	174	0	0	341
05:15 PM	37	0	1	0	0	122	0	0	5	0	0	0	0	193	0	0	358
05:30 PM	42	0	0	0	0	134	0	1	5	0	0	0	0	190	0	0	372
05:45 PM	47	0	1	0	0	107	0	0	2	0	0	0	0	199	0	0	356
Total	149	0	2	0	0	502	0	2	16	0	0	0	0	756	0	0	1427
Grand Total	295	0	3	0	0	989	0	3	35	0	0	0	0	1398	0	0	2723
Apprch %	99	0	1	0	0	99.7	0	0.3	100	0	0	0	0	100	0	0	
Total %	10.8	0	0.1	0	0	36.3	0	0.1	1.3	0	0	0	0	51.3	0	0	

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	23	0	0	0	23	0	139	0	1	140	4	0	0	0	4	0	174	0	0	174	341
05:15 PM	37	0	1	0	38	0	122	0	0	122	5	0	0	0	5	0	193	0	0	193	358
05:30 PM	42	0	0	0	42	0	134	0	1	135	5	0	0	0	5	0	190	0	0	190	372
05:45 PM	47	0	1	0	48	0	107	0	0	107	2	0	0	0	2	0	199	0	0	199	356
Total Volume	149	0	2	0	151	0	502	0	2	504	16	0	0	0	16	0	756	0	0	756	1427
% App. Total	98.7	0	1.3	0		0	99.6	0	0.4		100	0	0	0		0	100	0	0		
PHF	.793	.000	.500	.000	.786	.000	.903	.000	.500	.900	.800	.000	.000	.000	.800	.000	.950	.000	.000	.950	.959



PRECISION
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File Name : 154396 NN
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Pleasant Street From North				Centre Street (Route 60) From East				Parking Lot From South				Pleasant Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	1	0	0	0	0	7	0	0	0	0	0	0	0	12	0	0	20
04:15 PM	3	0	0	0	0	10	0	0	0	0	0	0	0	5	0	0	18
04:30 PM	2	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0	9
04:45 PM	7	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0	14
Total	13	0	0	0	0	22	0	0	0	0	0	0	0	26	0	0	61
05:00 PM	5	0	0	0	0	2	0	0	0	0	0	0	0	7	0	0	14
05:15 PM	3	0	0	0	0	5	0	0	0	0	0	0	0	3	0	0	11
05:30 PM	1	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	4
05:45 PM	1	0	0	0	0	2	0	0	0	0	0	0	0	8	0	0	11
Total	10	0	0	0	0	10	0	0	0	0	0	0	0	20	0	0	40
Grand Total	23	0	0	0	0	32	0	0	0	0	0	0	0	46	0	0	101
Apprch %	100	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	
Total %	22.8	0	0	0	0	31.7	0	0	0	0	0	0	0	45.5	0	0	

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	1	0	0	0	1	0	7	0	0	7	0	0	0	0	0	0	12	0	0	12	20
04:15 PM	3	0	0	0	3	0	10	0	0	10	0	0	0	0	0	0	5	0	0	5	18
04:30 PM	2	0	0	0	2	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	9
04:45 PM	7	0	0	0	7	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	14
Total Volume	13	0	0	0	13	0	22	0	0	22	0	0	0	0	0	0	26	0	0	26	61
% App. Total	100	0	0	0		0	100	0	0		0	0	0	0		0	100	0	0		
PHF	.464	.000	.000	.000	.464	.000	.550	.000	.000	.550	.000	.000	.000	.000	.000	.000	.542	.000	.000	.542	.763



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File Name : 154396 NN
Site Code : 2015041
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Page No : 1

N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	0	2	0	0	0	8
04:15 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	5	2	0	0	0	0	0	10
04:30 PM	0	0	0	0	0	0	0	0	8	1	0	0	0	6	3	0	0	0	0	0	18
04:45 PM	0	0	0	0	0	0	0	0	2	0	0	0	0	7	4	0	0	0	0	0	13
Total	0	0	0	0	0	0	0	0	13	1	0	0	0	22	11	0	2	0	0	0	49
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	0	1	0	0	0	9
05:15 PM	0	0	0	0	0	0	0	0	2	1	0	0	0	4	2	0	0	0	0	0	9
05:30 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	10	3	0	0	0	0	0	16
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	0	3
Total	0	0	0	0	0	0	0	0	5	1	0	0	0	20	10	0	1	0	0	0	37
Grand Total	0	0	0	0	0	0	0	0	18	2	0	0	0	42	21	0	3	0	0	0	86
Apprch %	0	0	0	0	0	0	0	0	90	10	0	0	0	66.7	33.3	0	100	0	0	0	
Total %	0	0	0	0	0	0	0	0	20.9	2.3	0	0	0	48.8	24.4	0	3.5	0	0	0	

Start Time	Pleasant Street From North						Centre Street (Route 60) From East						Parking Lot From South						Pleasant Street (Route 60) From West						Int. Total	
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:15 PM																										
04:15 PM	0	0	0	0	0	0	0	0	0	3	0	3	0	0	0	5	2	7	0	0	0	0	0	0	0	10
04:30 PM	0	0	0	0	0	0	0	0	0	8	1	9	0	0	0	6	3	9	0	0	0	0	0	0	0	18
04:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	7	4	11	0	0	0	0	0	0	0	13
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4	8	0	1	0	0	0	0	1	9
Total Volume	0	0	0	0	0	0	0	0	0	13	1	14	0	0	0	22	13	35	0	1	0	0	0	0	1	50
% App. Total	0	0	0	0	0		0	0	0	92.9	7.1		0	0	0	62.9	37.1		0	100	0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.406	.250	.389	.000	.000	.000	.786	.813	.795	.000	.250	.000	.000	.000	.000	.250	.694



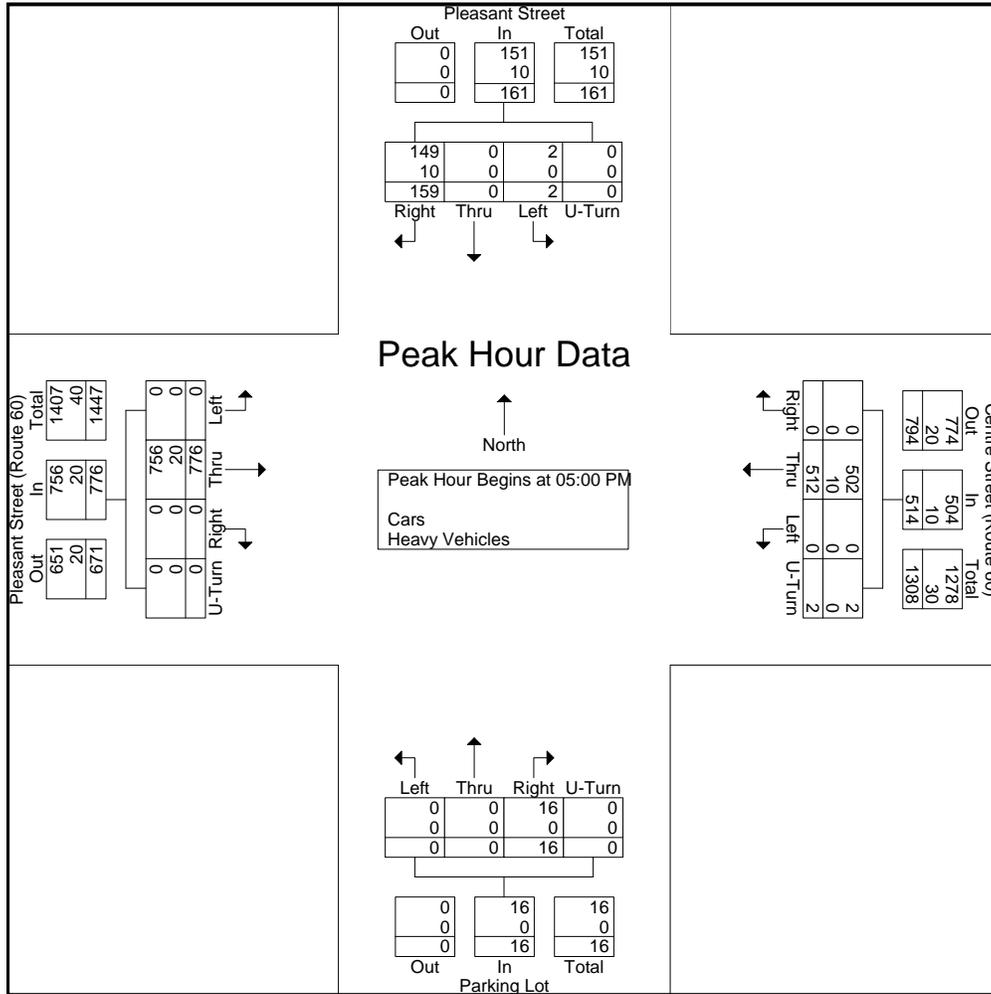
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N/S: Pleasant Street/ Parking Lot
E/W: Centre St/ Pleasant St (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 NN
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Start Time	Pleasant Street From North					Centre Street (Route 60) From East					Parking Lot From South					Pleasant Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	28	0	0	0	28	0	141	0	1	142	4	0	0	0	4	0	181	0	0	181	355
05:15 PM	40	0	1	0	41	0	127	0	0	127	5	0	0	0	5	0	196	0	0	196	369
05:30 PM	43	0	0	0	43	0	135	0	1	136	5	0	0	0	5	0	192	0	0	192	376
05:45 PM	48	0	1	0	49	0	109	0	0	109	2	0	0	0	2	0	207	0	0	207	367
Total Volume	159	0	2	0	161	0	512	0	2	514	16	0	0	0	16	0	776	0	0	776	1467
% App. Total	98.8	0	1.2	0		0	99.6	0	0.4		100	0	0	0		0	100	0	0		
PHF	.828	.000	.500	.000	.821	.000	.908	.000	.500	.905	.800	.000	.000	.000	.800	.000	.937	.000	.000	.937	.975
Cars	149	0	2	0	151	0	502	0	2	504	16	0	0	0	16	0	756	0	0	756	1427
% Cars	93.7	0	100	0	93.8	0	98.0	0	100	98.1	100	0	0	0	100	0	97.4	0	0	97.4	97.3
Heavy Vehicles	10	0	0	0	10	0	10	0	0	10	0	0	0	0	0	0	20	0	0	20	40
% Heavy Vehicles	6.3	0	0	0	6.2	0	2.0	0	0	1.9	0	0	0	0	0	0	2.6	0	0	2.6	2.7





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File Name : 154396 O
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pearl Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Pearl Street From North				Centre Street (Route 60) From East				Pearl Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	25	2	0	6	101	0	0	12	4	1	0	5	179	2	0	337
07:15 AM	0	28	1	0	9	107	0	0	12	6	5	0	15	174	0	0	357
07:30 AM	0	30	4	0	17	117	0	0	21	10	1	0	8	183	0	0	391
07:45 AM	0	47	10	0	17	106	0	0	24	9	1	0	7	166	0	0	387
Total	0	130	17	0	49	431	0	0	69	29	8	0	35	702	2	0	1472
08:00 AM	0	36	7	0	28	120	18	0	12	18	9	0	27	151	0	0	426
08:15 AM	0	35	5	0	19	84	2	0	18	12	9	0	6	172	0	1	363
08:30 AM	1	26	8	0	7	93	0	0	19	10	2	0	0	162	0	0	328
08:45 AM	0	12	0	0	10	85	1	0	9	4	0	0	1	173	0	0	295
Total	1	109	20	0	64	382	21	0	58	44	20	0	34	658	0	1	1412
Grand Total	1	239	37	0	113	813	21	0	127	73	28	0	69	1360	2	1	2884
Apprch %	0.4	86.3	13.4	0	11.9	85.9	2.2	0	55.7	32	12.3	0	4.8	95	0.1	0.1	
Total %	0	8.3	1.3	0	3.9	28.2	0.7	0	4.4	2.5	1	0	2.4	47.2	0.1	0	
Cars	1	235	37	0	109	748	21	0	124	73	26	0	69	1269	2	1	2715
% Cars	100	98.3	100	0	96.5	92	100	0	97.6	100	92.9	0	100	93.3	100	100	94.1
Heavy Vehicles	0	4	0	0	4	65	0	0	3	0	2	0	0	91	0	0	169
% Heavy Vehicles	0	1.7	0	0	3.5	8	0	0	2.4	0	7.1	0	0	6.7	0	0	5.9

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	30	4	0	34	17	117	0	0	134	21	10	1	0	32	8	183	0	0	191	391
07:45 AM	0	47	10	0	57	17	106	0	0	123	24	9	1	0	34	7	166	0	0	173	387
08:00 AM	0	36	7	0	43	28	120	18	0	166	12	18	9	0	39	27	151	0	0	178	426
08:15 AM	0	35	5	0	40	19	84	2	0	105	18	12	9	0	39	6	172	0	1	179	363
Total Volume	0	148	26	0	174	81	427	20	0	528	75	49	20	0	144	48	672	0	1	721	1567
% App. Total	0	85.1	14.9	0		15.3	80.9	3.8	0		52.1	34	13.9	0		6.7	93.2	0	0.1		
PHF	.000	.787	.650	.000	.763	.723	.890	.278	.000	.795	.781	.681	.556	.000	.923	.444	.918	.000	.250	.944	.920
Cars	0	146	26	0	172	79	396	20	0	495	73	49	20	0	142	48	633	0	1	682	1491
% Cars	0	98.6	100	0	98.9	97.5	92.7	100	0	93.8	97.3	100	100	0	98.6	100	94.2	0	100	94.6	95.1
Heavy Vehicles	0	2	0	0	2	2	31	0	0	33	2	0	0	0	2	0	39	0	0	39	76
% Heavy Vehicles	0	1.4	0	0	1.1	2.5	7.3	0	0	6.3	2.7	0	0	0	1.4	0	5.8	0	0	5.4	4.9



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N/S: Pearl Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Pearl Street From North				Centre Street (Route 60) From East				Pearl Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	25	2	0	6	90	0	0	12	4	1	0	5	165	2	0	312
07:15 AM	0	27	1	0	9	102	0	0	12	6	3	0	15	156	0	0	331
07:30 AM	0	30	4	0	17	109	0	0	21	10	1	0	8	175	0	0	375
07:45 AM	0	47	10	0	17	101	0	0	24	9	1	0	7	156	0	0	372
Total	0	129	17	0	49	402	0	0	69	29	6	0	35	652	2	0	1390
08:00 AM	0	35	7	0	26	109	18	0	12	18	9	0	27	139	0	0	400
08:15 AM	0	34	5	0	19	77	2	0	16	12	9	0	6	163	0	1	344
08:30 AM	1	26	8	0	5	80	0	0	18	10	2	0	0	151	0	0	301
08:45 AM	0	11	0	0	10	80	1	0	9	4	0	0	1	164	0	0	280
Total	1	106	20	0	60	346	21	0	55	44	20	0	34	617	0	1	1325
Grand Total	1	235	37	0	109	748	21	0	124	73	26	0	69	1269	2	1	2715
Apprch %	0.4	86.1	13.6	0	12.4	85.2	2.4	0	55.6	32.7	11.7	0	5.1	94.6	0.1	0.1	
Total %	0	8.7	1.4	0	4	27.6	0.8	0	4.6	2.7	1	0	2.5	46.7	0.1	0	

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	30	4	0	34	17	109	0	0	126	21	10	1	0	32	8	175	0	0	183	375
07:45 AM	0	47	10	0	57	17	101	0	0	118	24	9	1	0	34	7	156	0	0	163	372
08:00 AM	0	35	7	0	42	26	109	18	0	153	12	18	9	0	39	27	139	0	0	166	400
08:15 AM	0	34	5	0	39	19	77	2	0	98	16	12	9	0	37	6	163	0	1	170	344
Total Volume	0	146	26	0	172	79	396	20	0	495	73	49	20	0	142	48	633	0	1	682	1491
% App. Total	0	84.9	15.1	0		16	80	4	0		51.4	34.5	14.1	0		7	92.8	0	0.1		
PHF	.000	.777	.650	.000	.754	.760	.908	.278	.000	.809	.760	.681	.556	.000	.910	.444	.904	.000	.250	.932	.932



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Groups Printed- Heavy Vehicles

Start Time	Pearl Street From North				Centre Street (Route 60) From East				Pearl Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	11	0	0	0	0	0	0	0	14	0	0	25
07:15 AM	0	1	0	0	0	5	0	0	0	0	2	0	0	18	0	0	26
07:30 AM	0	0	0	0	0	8	0	0	0	0	0	0	0	8	0	0	16
07:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	10	0	0	15
Total	0	1	0	0	0	29	0	0	0	0	2	0	0	50	0	0	82
08:00 AM	0	1	0	0	2	11	0	0	0	0	0	0	0	12	0	0	26
08:15 AM	0	1	0	0	0	7	0	0	2	0	0	0	0	9	0	0	19
08:30 AM	0	0	0	0	2	13	0	0	1	0	0	0	0	11	0	0	27
08:45 AM	0	1	0	0	0	5	0	0	0	0	0	0	0	9	0	0	15
Total	0	3	0	0	4	36	0	0	3	0	0	0	0	41	0	0	87
Grand Total	0	4	0	0	4	65	0	0	3	0	2	0	0	91	0	0	169
Apprch %	0	100	0	0	5.8	94.2	0	0	60	0	40	0	0	100	0	0	
Total %	0	2.4	0	0	2.4	38.5	0	0	1.8	0	1.2	0	0	53.8	0	0	

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	10	0	0	10	15
08:00 AM	0	1	0	0	1	2	11	0	0	13	0	0	0	0	0	0	12	0	0	12	26
08:15 AM	0	1	0	0	1	0	7	0	0	7	2	0	0	0	2	0	9	0	0	9	19
08:30 AM	0	0	0	0	0	2	13	0	0	15	1	0	0	0	1	0	11	0	0	11	27
Total Volume	0	2	0	0	2	4	36	0	0	40	3	0	0	0	3	0	42	0	0	42	87
% App. Total	0	100	0	0		10	90	0	0		100	0	0	0		0	100	0	0		
PHF	.000	.500	.000	.000	.500	.500	.692	.000	.000	.667	.375	.000	.000	.000	.375	.000	.875	.000	.000	.875	.806



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File Name : 154396 O
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pearl Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total					
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB						
07:00 AM	0	0	0	0	0	0	0	0	2	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47
07:15 AM	0	0	0	0	1	0	0	0	2	45	0	0	0	0	1	0	0	0	4	1	0	0	0	0	0	54
07:30 AM	0	0	0	0	1	0	0	0	6	39	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	49
07:45 AM	0	0	0	0	1	0	0	0	7	43	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52
Total	0	0	0	0	3	0	0	0	17	172	3	0	0	0	2	0	0	0	4	1	0	0	0	0	0	202
08:00 AM	0	0	0	0	0	0	0	0	2	52	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	57
08:15 AM	0	0	0	0	0	0	0	0	7	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49
08:30 AM	0	0	0	0	0	0	0	0	2	35	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	38
08:45 AM	0	1	0	0	0	0	0	0	3	32	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	38
Total	0	1	0	0	0	0	0	0	14	161	0	0	0	0	1	0	2	0	1	2	0	0	0	0	0	182
Grand Total	0	1	0	0	3	0	0	0	31	333	3	0	0	0	3	0	2	0	5	3	0	0	0	0	0	384
Apprch %	0	25	0	0	75	0	0	0	8.5	91.5	50	0	0	0	50	0	20	0	50	30	0	0	0	0	0	
Total %	0	0.3	0	0	0.8	0	0	0	8.1	86.7	0.8	0	0	0	0.8	0	0.5	0	1.3	0.8	0	0	0	0	0	

Start Time	Pearl Street From North						Centre Street (Route 60) From East						Pearl Street From South						Centre Street (Route 60) From West						Int. Total						
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total							
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 07:15 AM																															
07:15 AM	0	0	0	0	1	1	0	0	0	2	45	47	0	0	0	0	1	1	0	0	0	4	1	5	0	0	0	0	0	0	54
07:30 AM	0	0	0	0	1	1	0	0	0	6	39	45	2	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	49
07:45 AM	0	0	0	0	1	1	0	0	0	7	43	50	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	52
08:00 AM	0	0	0	0	0	0	0	0	0	2	52	54	0	0	0	0	0	0	0	1	0	1	1	3	0	0	0	0	0	0	57
Total Volume	0	0	0	0	3	3	0	0	0	17	179	196	3	0	0	0	2	5	0	1	0	5	2	8	0	0	0	0	0	0	212
% App. Total	0	0	0	0	100		0	0	0	8.7	91.3		60	0	0	0	40		0	12.5	0	62.5	25		0	0	0	0	0	0	
PHF	.000	.000	.000	.000	.750	.750	.000	.000	.000	.607	.861	.907	.375	.000	.000	.000	.500	.417	.000	.250	.000	.313	.500	.400	.000	.000	.000	.000	.000	.930	



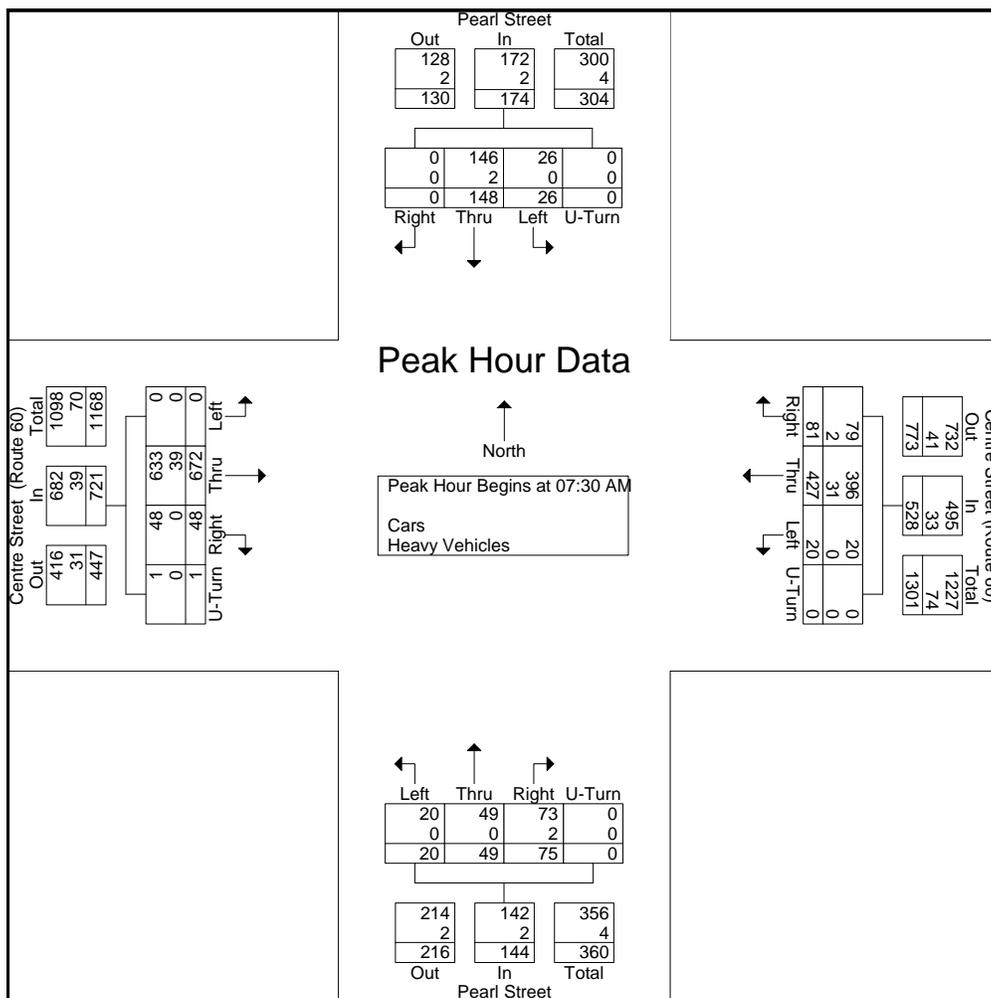
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File Name : 154396 O
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N/S: Pearl Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	30	4	0	34	17	117	0	0	134	21	10	1	0	32	8	183	0	0	191	391
07:45 AM	0	47	10	0	57	17	106	0	0	123	24	9	1	0	34	7	166	0	0	173	387
08:00 AM	0	36	7	0	43	28	120	18	0	166	12	18	9	0	39	27	151	0	0	178	426
08:15 AM	0	35	5	0	40	19	84	2	0	105	18	12	9	0	39	6	172	0	1	179	363
Total Volume	0	148	26	0	174	81	427	20	0	528	75	49	20	0	144	48	672	0	1	721	1567
% App. Total	0	85.1	14.9	0		15.3	80.9	3.8	0		52.1	34	13.9	0		6.7	93.2	0	0.1		
PHF	.000	.787	.650	.000	.763	.723	.890	.278	.000	.795	.781	.681	.556	.000	.923	.444	.918	.000	.250	.944	.920
Cars	0	146	26	0	172	79	396	20	0	495	73	49	20	0	142	48	633	0	1	682	1491
% Cars	0	98.6	100	0	98.9	97.5	92.7	100	0	93.8	97.3	100	100	0	98.6	100	94.2	0	100	94.6	95.1
Heavy Vehicles	0	2	0	0	2	2	31	0	0	33	2	0	0	0	2	0	39	0	0	39	76
% Heavy Vehicles	0	1.4	0	0	1.1	2.5	7.3	0	0	6.3	2.7	0	0	0	1.4	0	5.8	0	0	5.4	4.9





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N/S: Pearl Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Pearl Street From North				Centre Street (Route 60) From East				Pearl Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	21	3	0	31	125	1	0	19	29	3	0	7	172	0	0	411
04:15 PM	0	13	9	0	24	126	0	0	20	23	1	0	10	164	0	0	390
04:30 PM	0	17	9	0	23	129	0	0	12	26	4	0	5	155	1	0	381
04:45 PM	0	9	8	0	25	117	0	0	20	25	5	0	8	167	0	1	385
Total	0	60	29	0	103	497	1	0	71	103	13	0	30	658	1	1	1567
05:00 PM	0	22	20	0	36	139	1	0	20	40	6	0	6	178	0	0	468
05:15 PM	0	16	7	0	40	118	0	0	19	29	7	0	8	182	1	0	427
05:30 PM	0	19	9	0	34	128	0	0	17	24	2	0	8	184	0	0	425
05:45 PM	0	13	17	0	30	100	0	0	20	9	3	0	6	199	1	1	399
Total	0	70	53	0	140	485	1	0	76	102	18	0	28	743	2	1	1719
Grand Total	0	130	82	0	243	982	2	0	147	205	31	0	58	1401	3	2	3286
Apprch %	0	61.3	38.7	0	19.8	80	0.2	0	38.4	53.5	8.1	0	4	95.7	0.2	0.1	
Total %	0	4	2.5	0	7.4	29.9	0.1	0	4.5	6.2	0.9	0	1.8	42.6	0.1	0.1	
Cars	0	128	81	0	238	952	2	0	146	204	30	0	57	1342	3	2	3185
% Cars	0	98.5	98.8	0	97.9	96.9	100	0	99.3	99.5	96.8	0	98.3	95.8	100	100	96.9
Heavy Vehicles	0	2	1	0	5	30	0	0	1	1	1	0	1	59	0	0	101
% Heavy Vehicles	0	1.5	1.2	0	2.1	3.1	0	0	0.7	0.5	3.2	0	1.7	4.2	0	0	3.1

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	22	20	0	42	36	139	1	0	176	20	40	6	0	66	6	178	0	0	184	468
05:15 PM	0	16	7	0	23	40	118	0	0	158	19	29	7	0	55	8	182	1	0	191	427
05:30 PM	0	19	9	0	28	34	128	0	0	162	17	24	2	0	43	8	184	0	0	192	425
05:45 PM	0	13	17	0	30	30	100	0	0	130	20	9	3	0	32	6	199	1	1	207	399
Total Volume	0	70	53	0	123	140	485	1	0	626	76	102	18	0	196	28	743	2	1	774	1719
% App. Total	0	56.9	43.1	0		22.4	77.5	0.2	0		38.8	52	9.2	0		3.6	96	0.3	0.1		
PHF	.000	.795	.663	.000	.732	.875	.872	.250	.000	.889	.950	.638	.643	.000	.742	.875	.933	.500	.250	.935	.918
Cars	0	69	53	0	122	137	475	1	0	613	76	101	18	0	195	27	719	2	1	749	1679
% Cars	0	98.6	100	0	99.2	97.9	97.9	100	0	97.9	100	99.0	100	0	99.5	96.4	96.8	100	100	96.8	97.7
Heavy Vehicles	0	1	0	0	1	3	10	0	0	13	0	1	0	0	1	1	24	0	0	25	40
% Heavy Vehicles	0	1.4	0	0	0.8	2.1	2.1	0	0	2.1	0	1.0	0	0	0.5	3.6	3.2	0	0	3.2	2.3



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Page No : 1

N/S: Pearl Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Pearl Street From North				Centre Street (Route 60) From East				Pearl Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	21	3	0	30	118	1	0	18	29	3	0	7	157	0	0	387
04:15 PM	0	12	9	0	24	117	0	0	20	23	1	0	10	155	0	0	371
04:30 PM	0	17	9	0	23	128	0	0	12	26	3	0	5	149	1	0	373
04:45 PM	0	9	7	0	24	114	0	0	20	25	5	0	8	162	0	1	375
Total	0	59	28	0	101	477	1	0	70	103	12	0	30	623	1	1	1506
05:00 PM	0	22	20	0	34	137	1	0	20	39	6	0	6	171	0	0	456
05:15 PM	0	16	7	0	40	113	0	0	19	29	7	0	8	176	1	0	416
05:30 PM	0	18	9	0	34	127	0	0	17	24	2	0	8	182	0	0	421
05:45 PM	0	13	17	0	29	98	0	0	20	9	3	0	5	190	1	1	386
Total	0	69	53	0	137	475	1	0	76	101	18	0	27	719	2	1	1679
Grand Total	0	128	81	0	238	952	2	0	146	204	30	0	57	1342	3	2	3185
Apprch %	0	61.2	38.8	0	20	79.9	0.2	0	38.4	53.7	7.9	0	4.1	95.6	0.2	0.1	
Total %	0	4	2.5	0	7.5	29.9	0.1	0	4.6	6.4	0.9	0	1.8	42.1	0.1	0.1	

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	22	20	0	42	34	137	1	0	172	20	39	6	0	65	6	171	0	0	177	456
05:15 PM	0	16	7	0	23	40	113	0	0	153	19	29	7	0	55	8	176	1	0	185	416
05:30 PM	0	18	9	0	27	34	127	0	0	161	17	24	2	0	43	8	182	0	0	190	421
05:45 PM	0	13	17	0	30	29	98	0	0	127	20	9	3	0	32	5	190	1	1	197	386
Total Volume	0	69	53	0	122	137	475	1	0	613	76	101	18	0	195	27	719	2	1	749	1679
% App. Total	0	56.6	43.4	0		22.3	77.5	0.2	0		39	51.8	9.2	0		3.6	96	0.3	0.1		
PHF	.000	.784	.663	.000	.726	.856	.867	.250	.000	.891	.950	.647	.643	.000	.750	.844	.946	.500	.250	.951	.921



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Groups Printed- Heavy Vehicles

Start Time	Pearl Street From North				Centre Street (Route 60) From East				Pearl Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	1	7	0	0	1	0	0	0	0	15	0	0	24
04:15 PM	0	1	0	0	0	9	0	0	0	0	0	0	0	9	0	0	19
04:30 PM	0	0	0	0	0	1	0	0	0	0	1	0	0	6	0	0	8
04:45 PM	0	0	1	0	1	3	0	0	0	0	0	0	0	5	0	0	10
Total	0	1	1	0	2	20	0	0	1	0	1	0	0	35	0	0	61
05:00 PM	0	0	0	0	2	2	0	0	0	1	0	0	0	7	0	0	12
05:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	6	0	0	11
05:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	2	0	0	4
05:45 PM	0	0	0	0	1	2	0	0	0	0	0	0	1	9	0	0	13
Total	0	1	0	0	3	10	0	0	0	1	0	0	1	24	0	0	40
Grand Total	0	2	1	0	5	30	0	0	1	1	1	0	1	59	0	0	101
Apprch %	0	66.7	33.3	0	14.3	85.7	0	0	33.3	33.3	33.3	0	1.7	98.3	0	0	
Total %	0	2	1	0	5	29.7	0	0	1	1	1	0	1	58.4	0	0	

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	1	7	0	0	8	1	0	0	0	1	0	15	0	0	15	24
04:15 PM	0	1	0	0	1	0	9	0	0	9	0	0	0	0	0	0	9	0	0	9	19
04:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	6	0	0	6	8
04:45 PM	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	0	5	0	0	5	10
Total Volume	0	1	1	0	2	2	20	0	0	22	1	0	1	0	2	0	35	0	0	35	61
% App. Total	0	50	50	0		9.1	90.9	0	0		50	0	50	0		0	100	0	0		
PHF	.000	.250	.250	.000	.500	.500	.556	.000	.000	.611	.250	.000	.250	.000	.500	.000	.583	.000	.000	.583	.635



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P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
Email: datarequests@pdillc.com

File Name : 154396 OO
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Pearl Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	0	0	0	1	0	16	7	0	0	0	0	0	0	2	0	0	0	26
04:15 PM	0	1	0	1	0	0	0	0	9	12	0	0	0	0	0	0	0	0	0	4	27
04:30 PM	0	0	0	0	0	0	0	0	24	7	0	0	0	2	0	0	0	0	0	1	34
04:45 PM	0	0	0	0	0	0	0	0	23	4	0	0	0	0	0	0	0	0	0	1	28
Total	0	1	0	1	0	0	1	0	72	30	0	0	0	2	0	0	2	0	0	6	115
05:00 PM	0	0	0	0	1	0	0	0	19	9	0	0	0	1	0	0	1	0	0	0	31
05:15 PM	0	0	0	0	1	0	0	0	26	9	1	0	0	0	0	0	0	0	0	0	37
05:30 PM	0	1	0	0	0	1	0	0	20	3	0	0	0	0	0	0	0	0	1	0	26
05:45 PM	0	0	0	1	0	0	1	0	36	4	0	1	0	1	1	0	0	0	0	0	45
Total	0	1	0	1	2	1	1	0	101	25	1	1	0	2	1	0	1	0	1	0	139
Grand Total	0	2	0	2	2	1	2	0	173	55	1	1	0	4	1	0	3	0	1	6	254
Apprch %	0	33.3	0	33.3	33.3	0.4	0.9	0	74.9	23.8	14.3	14.3	0	57.1	14.3	0	30	0	10	60	
Total %	0	0.8	0	0.8	0.8	0.4	0.8	0	68.1	21.7	0.4	0.4	0	1.6	0.4	0	1.2	0	0.4	2.4	

Start Time	Pearl Street From North						Centre Street (Route 60) From East						Pearl Street From South						Centre Street (Route 60) From West						Int. Total						
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total							
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 05:00 PM																															
05:00 PM	0	0	0	0	1	1	0	0	0	19	9	28	0	0	0	1	0	1	0	1	0	0	0	1	0	1	0	0	0	1	31
05:15 PM	0	0	0	0	1	1	0	0	0	26	9	35	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	37
05:30 PM	0	1	0	0	0	1	1	0	0	20	3	24	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	1	26
05:45 PM	0	0	0	1	0	1	0	1	0	36	4	41	0	1	0	1	1	3	0	0	0	0	0	0	0	0	0	0	0	0	45
Total Volume	0	1	0	1	2	4	1	1	0	101	25	128	1	1	0	2	1	5	0	1	0	1	0	2	0	1	0	1	0	2	139
% App. Total	0	25	0	25	50		0.8	0.8	0	78.9	19.5		20	20	0	40	20		0	50	0	50	0		0	50	0	50	0		
PHF	.000	.250	.000	.250	.500	1.00	.250	.250	.000	.701	.694	.780	.250	.250	.000	.500	.250	.417	.000	.250	.000	.250	.000	.500	.000	.250	.000	.250	.000	.772	



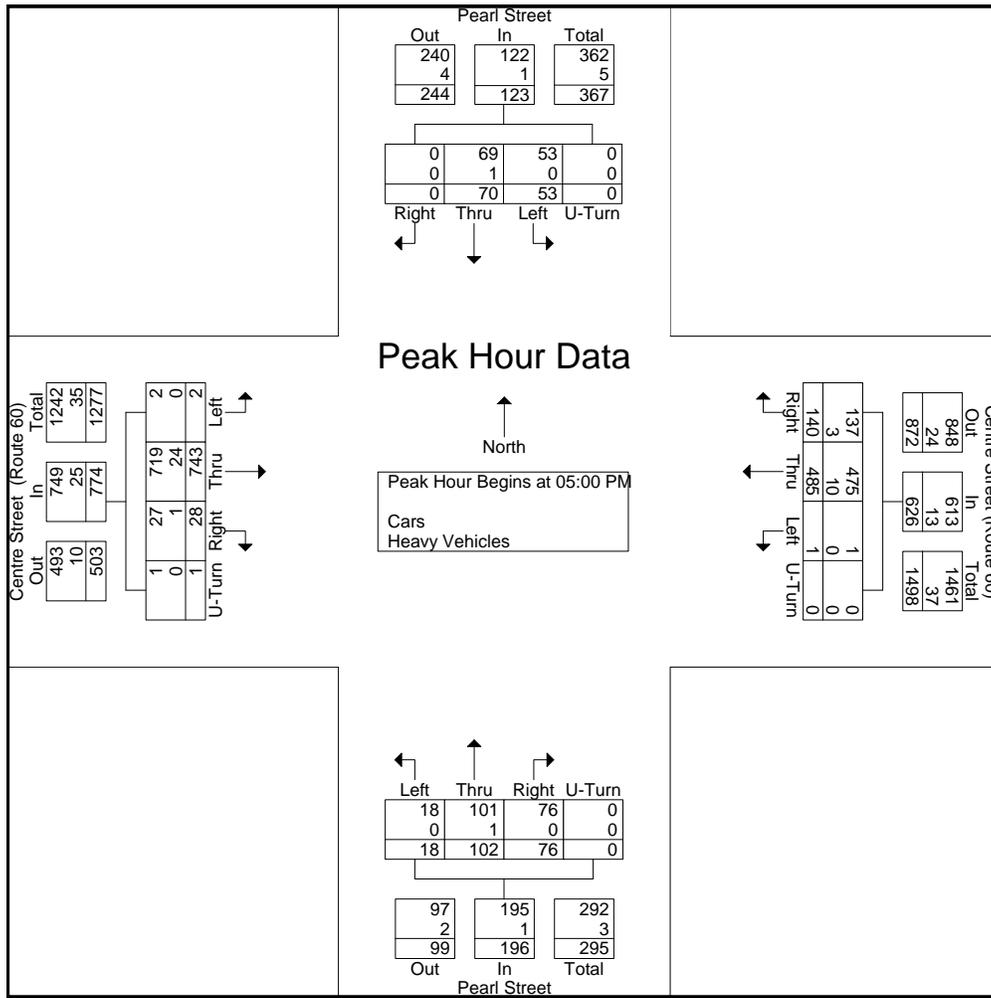
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N/S: Pearl Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 OO
Site Code : 2015041
Start Date : 4/29/2015
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Start Time	Pearl Street From North					Centre Street (Route 60) From East					Pearl Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	22	20	0	42	36	139	1	0	176	20	40	6	0	66	6	178	0	0	184	468
05:15 PM	0	16	7	0	23	40	118	0	0	158	19	29	7	0	55	8	182	1	0	191	427
05:30 PM	0	19	9	0	28	34	128	0	0	162	17	24	2	0	43	8	184	0	0	192	425
05:45 PM	0	13	17	0	30	30	100	0	0	130	20	9	3	0	32	6	199	1	1	207	399
Total Volume	0	70	53	0	123	140	485	1	0	626	76	102	18	0	196	28	743	2	1	774	1719
% App. Total	0	56.9	43.1	0		22.4	77.5	0.2	0		38.8	52	9.2	0		3.6	96	0.3	0.1		
PHF	.000	.795	.663	.000	.732	.875	.872	.250	.000	.889	.950	.638	.643	.000	.742	.875	.933	.500	.250	.935	.918
Cars	0	69	53	0	122	137	475	1	0	613	76	101	18	0	195	27	719	2	1	749	1679
% Cars	0	98.6	100	0	99.2	97.9	97.9	100	0	97.9	100	99.0	100	0	99.5	96.4	96.8	100	100	96.8	97.7
Heavy Vehicles	0	1	0	0	1	3	10	0	0	13	0	1	0	0	1	1	24	0	0	25	40
% Heavy Vehicles	0	1.4	0	0	0.8	2.1	2.1	0	0	2.1	0	1.0	0	0	0.5	3.6	3.2	0	0	3.2	2.3





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File Name : 154396 P
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Commercial Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Commercial Street From North				Centre Street (Route 60) From East				Commercial Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	9	83	32	0	30	108	50	0	12	34	9	0	37	119	16	0	539
07:15 AM	4	120	37	0	24	135	64	0	29	37	5	0	27	129	14	0	625
07:30 AM	6	126	47	0	33	126	44	0	14	56	4	0	30	131	30	0	647
07:45 AM	10	138	33	0	50	124	63	0	18	62	15	0	34	109	29	0	685
Total	29	467	149	0	137	493	221	0	73	189	33	0	128	488	89	0	2496
08:00 AM	7	125	46	0	42	148	58	1	11	60	11	0	29	96	18	0	652
08:15 AM	10	120	42	0	43	91	60	0	19	46	10	0	23	115	42	0	621
08:30 AM	14	117	34	0	31	91	52	0	24	47	8	0	32	105	23	0	578
08:45 AM	8	78	36	0	37	77	50	0	35	47	11	0	18	116	35	0	548
Total	39	440	158	0	153	407	220	1	89	200	40	0	102	432	118	0	2399
Grand Total	68	907	307	0	290	900	441	1	162	389	73	0	230	920	207	0	4895
Apprch %	5.3	70.7	23.9	0	17.8	55.1	27	0.1	26	62.3	11.7	0	16.9	67.8	15.3	0	
Total %	1.4	18.5	6.3	0	5.9	18.4	9	0	3.3	7.9	1.5	0	4.7	18.8	4.2	0	
Cars	46	880	257	0	255	852	432	1	150	366	59	0	215	868	186	0	4567
% Cars	67.6	97	83.7	0	87.9	94.7	98	100	92.6	94.1	80.8	0	93.5	94.3	89.9	0	93.3
Heavy Vehicles	22	27	50	0	35	48	9	0	12	23	14	0	15	52	21	0	328
% Heavy Vehicles	32.4	3	16.3	0	12.1	5.3	2	0	7.4	5.9	19.2	0	6.5	5.7	10.1	0	6.7

Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	4	120	37	0	161	24	135	64	0	223	29	37	5	0	71	27	129	14	0	170	625
07:30 AM	6	126	47	0	179	33	126	44	0	203	14	56	4	0	74	30	131	30	0	191	647
07:45 AM	10	138	33	0	181	50	124	63	0	237	18	62	15	0	95	34	109	29	0	172	685
08:00 AM	7	125	46	0	178	42	148	58	1	249	11	60	11	0	82	29	96	18	0	143	652
Total Volume	27	509	163	0	699	149	533	229	1	912	72	215	35	0	322	120	465	91	0	676	2609
% App. Total	3.9	72.8	23.3	0		16.3	58.4	25.1	0.1		22.4	66.8	10.9	0		17.8	68.8	13.5	0		
PHF	.675	.922	.867	.000	.965	.745	.900	.895	.250	.916	.621	.867	.583	.000	.847	.882	.887	.758	.000	.885	.952
Cars	19	496	139	0	654	130	507	225	1	863	68	205	26	0	299	110	440	82	0	632	2448
% Cars	70.4	97.4	85.3	0	93.6	87.2	95.1	98.3	100	94.6	94.4	95.3	74.3	0	92.9	91.7	94.6	90.1	0	93.5	93.8
Heavy Vehicles	8	13	24	0	45	19	26	4	0	49	4	10	9	0	23	10	25	9	0	44	161
% Heavy Vehicles	29.6	2.6	14.7	0	6.4	12.8	4.9	1.7	0	5.4	5.6	4.7	25.7	0	7.1	8.3	5.4	9.9	0	6.5	6.2



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Groups Printed- Cars

Start Time	Commercial Street From North				Centre Street (Route 60) From East				Commercial Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	8	81	27	0	28	101	49	0	12	31	7	0	36	110	13	0	503
07:15 AM	3	117	31	0	17	128	60	0	27	35	4	0	25	119	12	0	578
07:30 AM	3	124	39	0	30	120	44	0	13	53	4	0	27	126	29	0	612
07:45 AM	7	134	29	0	45	117	63	0	17	60	12	0	32	105	24	0	645
Total	21	456	126	0	120	466	216	0	69	179	27	0	120	460	78	0	2338
08:00 AM	6	121	40	0	38	142	58	1	11	57	6	0	26	90	17	0	613
08:15 AM	6	115	33	0	39	85	58	0	18	43	10	0	22	109	39	0	577
08:30 AM	8	111	28	0	24	82	50	0	20	44	7	0	30	98	20	0	522
08:45 AM	5	77	30	0	34	77	50	0	32	43	9	0	17	111	32	0	517
Total	25	424	131	0	135	386	216	1	81	187	32	0	95	408	108	0	2229
Grand Total	46	880	257	0	255	852	432	1	150	366	59	0	215	868	186	0	4567
Apprch %	3.9	74.4	21.7	0	16.6	55.3	28.1	0.1	26.1	63.7	10.3	0	16.9	68.4	14.7	0	
Total %	1	19.3	5.6	0	5.6	18.7	9.5	0	3.3	8	1.3	0	4.7	19	4.1	0	

Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	3	117	31	0	151	17	128	60	0	205	27	35	4	0	66	25	119	12	0	156	578
07:30 AM	3	124	39	0	166	30	120	44	0	194	13	53	4	0	70	27	126	29	0	182	612
07:45 AM	7	134	29	0	170	45	117	63	0	225	17	60	12	0	89	32	105	24	0	161	645
08:00 AM	6	121	40	0	167	38	142	58	1	239	11	57	6	0	74	26	90	17	0	133	613
Total Volume	19	496	139	0	654	130	507	225	1	863	68	205	26	0	299	110	440	82	0	632	2448
% App. Total	2.9	75.8	21.3	0		15.1	58.7	26.1	0.1		22.7	68.6	8.7	0		17.4	69.6	13	0		
PHF	.679	.925	.869	.000	.962	.722	.893	.893	.250	.903	.630	.854	.542	.000	.840	.859	.873	.707	.000	.868	.949



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Groups Printed- Heavy Vehicles

Start Time	Commercial Street From North				Centre Street (Route 60) From East				Commercial Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	1	2	5	0	2	7	1	0	0	3	2	0	1	9	3	0	36
07:15 AM	1	3	6	0	7	7	4	0	2	2	1	0	2	10	2	0	47
07:30 AM	3	2	8	0	3	6	0	0	1	3	0	0	3	5	1	0	35
07:45 AM	3	4	4	0	5	7	0	0	1	2	3	0	2	4	5	0	40
Total	8	11	23	0	17	27	5	0	4	10	6	0	8	28	11	0	158
08:00 AM	1	4	6	0	4	6	0	0	0	3	5	0	3	6	1	0	39
08:15 AM	4	5	9	0	4	6	2	0	1	3	0	0	1	6	3	0	44
08:30 AM	6	6	6	0	7	9	2	0	4	3	1	0	2	7	3	0	56
08:45 AM	3	1	6	0	3	0	0	0	3	4	2	0	1	5	3	0	31
Total	14	16	27	0	18	21	4	0	8	13	8	0	7	24	10	0	170
Grand Total	22	27	50	0	35	48	9	0	12	23	14	0	15	52	21	0	328
Apprch %	22.2	27.3	50.5	0	38	52.2	9.8	0	24.5	46.9	28.6	0	17	59.1	23.9	0	
Total %	6.7	8.2	15.2	0	10.7	14.6	2.7	0	3.7	7	4.3	0	4.6	15.9	6.4	0	

Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	3	4	4	0	11	5	7	0	0	12	1	2	3	0	6	2	4	5	0	11	40
08:00 AM	1	4	6	0	11	4	6	0	0	10	0	3	5	0	8	3	6	1	0	10	39
08:15 AM	4	5	9	0	18	4	6	2	0	12	1	3	0	0	4	1	6	3	0	10	44
08:30 AM	6	6	6	0	18	7	9	2	0	18	4	3	1	0	8	2	7	3	0	12	56
Total Volume	14	19	25	0	58	20	28	4	0	52	6	11	9	0	26	8	23	12	0	43	179
% App. Total	24.1	32.8	43.1	0		38.5	53.8	7.7	0		23.1	42.3	34.6	0		18.6	53.5	27.9	0		
PHF	.583	.792	.694	.000	.806	.714	.778	.500	.000	.722	.375	.917	.450	.000	.813	.667	.821	.600	.000	.896	.799



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Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	0	7	1	0	0	1	1	0	0	0	0	0	0	0	0	3	5	18
07:15 AM	0	1	0	0	6	0	0	0	1	3	0	0	0	2	3	0	0	0	4	16	36
07:30 AM	0	0	0	2	7	0	1	0	4	2	0	0	0	2	0	0	0	0	4	4	26
07:45 AM	0	0	0	3	12	0	0	0	1	1	0	0	0	1	1	0	0	0	1	13	33
Total	0	1	0	5	32	1	1	0	7	7	0	0	0	5	4	0	0	0	12	38	113
08:00 AM	0	0	0	2	18	0	0	0	5	2	0	0	0	2	0	0	0	0	6	2	37
08:15 AM	0	0	0	3	13	0	0	0	1	2	0	0	0	1	1	0	0	0	6	9	36
08:30 AM	0	1	0	1	5	0	0	0	0	6	0	0	0	0	2	0	0	0	3	8	26
08:45 AM	0	0	1	4	5	0	0	0	3	2	0	0	0	0	0	0	0	0	6	4	25
Total	0	1	1	10	41	0	0	0	9	12	0	0	0	3	3	0	0	0	21	23	124
Grand Total	0	2	1	15	73	1	1	0	16	19	0	0	0	8	7	0	0	0	33	61	237
Apprch %	0	2.2	1.1	16.5	80.2	2.7	2.7	0	43.2	51.4	0	0	0	53.3	46.7	0	0	0	35.1	64.9	
Total %	0	0.8	0.4	6.3	30.8	0.4	0.4	0	6.8	8	0	0	0	3.4	3	0	0	0	13.9	25.7	

Start Time	Commercial Street From North						Centre Street (Route 60) From East						Commercial Street From South						Centre Street (Route 60) From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:15 AM																									
07:15 AM	0	1	0	0	6	7	0	0	0	1	3	4	0	0	0	2	3	5	0	0	0	4	16	20	36
07:30 AM	0	0	0	2	7	9	0	1	0	4	2	7	0	0	0	2	0	2	0	0	0	4	4	8	26
07:45 AM	0	0	0	3	12	15	0	0	0	1	1	2	0	0	0	1	1	2	0	0	0	1	13	14	33
08:00 AM	0	0	0	2	18	20	0	0	0	5	2	7	0	0	0	2	0	2	0	0	0	6	2	8	37
Total Volume	0	1	0	7	43	51	0	1	0	11	8	20	0	0	0	7	4	11	0	0	0	15	35	50	132
% App. Total	0	2	0	13.7	84.3		0	5	0	55	40		0	0	0	63.6	36.4		0	0	0	30	70		
PHF	.000	.250	.000	.583	.597	.638	.000	.250	.000	.550	.667	.714	.000	.000	.000	.875	.333	.550	.000	.000	.000	.625	.547	.625	.892



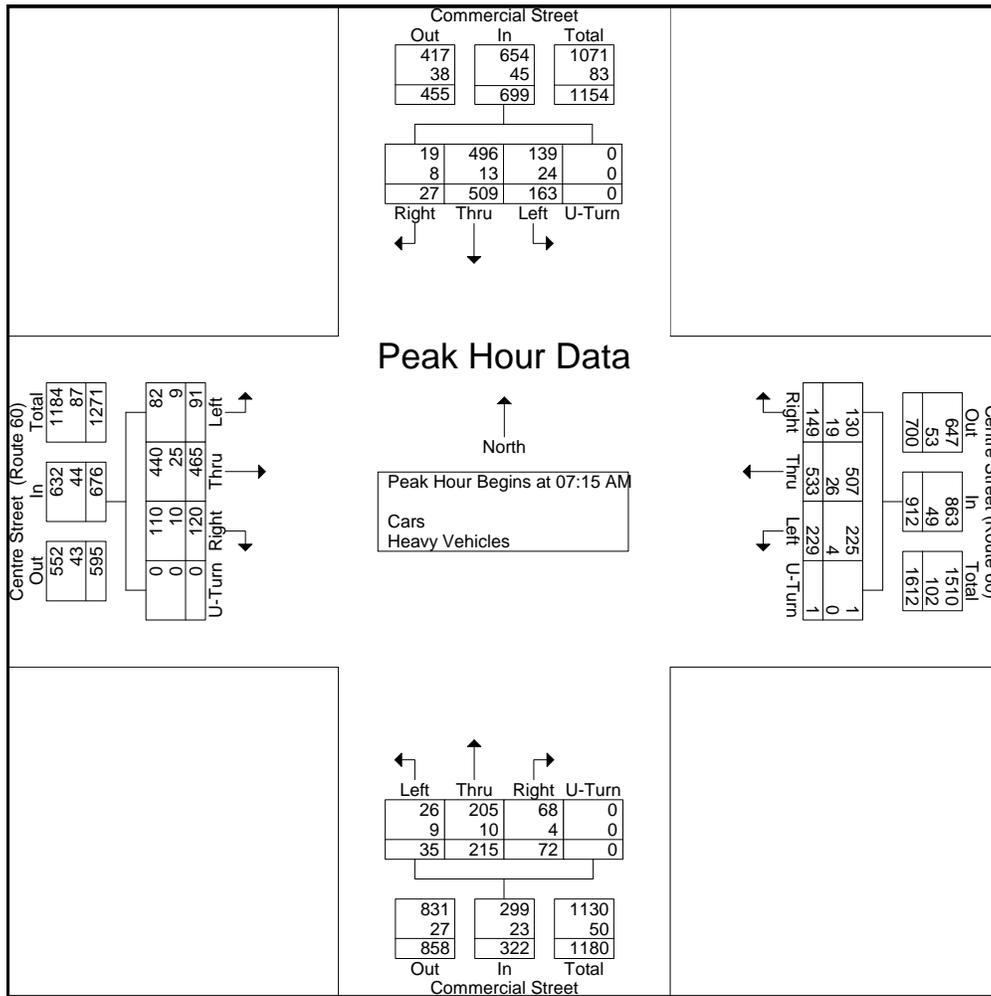
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P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
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N/S: Commercial Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 P
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	4	120	37	0	161	24	135	64	0	223	29	37	5	0	71	27	129	14	0	170	625
07:30 AM	6	126	47	0	179	33	126	44	0	203	14	56	4	0	74	30	131	30	0	191	647
07:45 AM	10	138	33	0	181	50	124	63	0	237	18	62	15	0	95	34	109	29	0	172	685
08:00 AM	7	125	46	0	178	42	148	58	1	249	11	60	11	0	82	29	96	18	0	143	652
Total Volume	27	509	163	0	699	149	533	229	1	912	72	215	35	0	322	120	465	91	0	676	2609
% App. Total	3.9	72.8	23.3	0		16.3	58.4	25.1	0.1		22.4	66.8	10.9	0		17.8	68.8	13.5	0		
PHF	.675	.922	.867	.000	.965	.745	.900	.895	.250	.916	.621	.867	.583	.000	.847	.882	.887	.758	.000	.885	.952
Cars	19	496	139	0	654	130	507	225	1	863	68	205	26	0	299	110	440	82	0	632	2448
% Cars	70.4	97.4	85.3	0	93.6	87.2	95.1	98.3	100	94.6	94.4	95.3	74.3	0	92.9	91.7	94.6	90.1	0	93.5	93.8
Heavy Vehicles	8	13	24	0	45	19	26	4	0	49	4	10	9	0	23	10	25	9	0	44	161
% Heavy Vehicles	29.6	2.6	14.7	0	6.4	12.8	4.9	1.7	0	5.4	5.6	4.7	25.7	0	7.1	8.3	5.4	9.9	0	6.5	6.2





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N/S: Commercial Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 PP
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Commercial Street From North				Centre Street (Route 60) From East				Commercial Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	4	50	39	0	43	136	51	0	32	78	23	0	18	136	23	0	633
04:15 PM	11	35	44	0	34	129	41	1	28	101	26	0	12	134	25	0	621
04:30 PM	8	57	37	0	35	133	45	0	36	79	27	0	12	123	25	0	617
04:45 PM	12	39	49	0	43	135	48	1	43	95	18	0	13	132	38	0	666
Total	35	181	169	0	155	533	185	2	139	353	94	0	55	525	111	0	2537
05:00 PM	5	38	55	0	53	151	58	0	32	114	28	0	14	144	32	0	724
05:15 PM	13	59	48	0	54	137	44	0	29	106	26	0	8	153	29	0	706
05:30 PM	13	64	53	0	48	135	31	2	36	108	27	0	8	146	27	0	698
05:45 PM	8	46	49	0	44	108	44	1	26	105	18	0	18	157	34	0	658
Total	39	207	205	0	199	531	177	3	123	433	99	0	48	600	122	0	2786
Grand Total	74	388	374	0	354	1064	362	5	262	786	193	0	103	1125	233	0	5323
Apprch %	8.9	46.4	44.7	0	19.8	59.6	20.3	0.3	21.1	63.3	15.6	0	7	77	15.9	0	
Total %	1.4	7.3	7	0	6.7	20	6.8	0.1	4.9	14.8	3.6	0	1.9	21.1	4.4	0	
Cars	62	378	329	0	335	1036	355	5	256	778	180	0	97	1104	220	0	5135
% Cars	83.8	97.4	88	0	94.6	97.4	98.1	100	97.7	99	93.3	0	94.2	98.1	94.4	0	96.5
Heavy Vehicles	12	10	45	0	19	28	7	0	6	8	13	0	6	21	13	0	188
% Heavy Vehicles	16.2	2.6	12	0	5.4	2.6	1.9	0	2.3	1	6.7	0	5.8	1.9	5.6	0	3.5

Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	12	39	49	0	100	43	135	48	1	227	43	95	18	0	156	13	132	38	0	183	666
05:00 PM	5	38	55	0	98	53	151	58	0	262	32	114	28	0	174	14	144	32	0	190	724
05:15 PM	13	59	48	0	120	54	137	44	0	235	29	106	26	0	161	8	153	29	0	190	706
05:30 PM	13	64	53	0	130	48	135	31	2	216	36	108	27	0	171	8	146	27	0	181	698
Total Volume	43	200	205	0	448	198	558	181	3	940	140	423	99	0	662	43	575	126	0	744	2794
% App. Total	9.6	44.6	45.8	0		21.1	59.4	19.3	0.3		21.1	63.9	15	0		5.8	77.3	16.9	0		
PHF	.827	.781	.932	.000	.862	.917	.924	.780	.375	.897	.814	.928	.884	.000	.951	.768	.940	.829	.000	.979	.965
Cars	37	193	181	0	411	188	542	179	3	912	138	419	95	0	652	43	566	120	0	729	2704
% Cars	86.0	96.5	88.3	0	91.7	94.9	97.1	98.9	100	97.0	98.6	99.1	96.0	0	98.5	100	98.4	95.2	0	98.0	96.8
Heavy Vehicles	6	7	24	0	37	10	16	2	0	28	2	4	4	0	10	0	9	6	0	15	90
% Heavy Vehicles	14.0	3.5	11.7	0	8.3	5.1	2.9	1.1	0	3.0	1.4	0.9	4.0	0	1.5	0	1.6	4.8	0	2.0	3.2



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Groups Printed- Cars

N/S: Commercial Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 PP
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Start Time	Commercial Street From North				Centre Street (Route 60) From East				Commercial Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	4	49	35	0	43	133	48	0	31	76	20	0	16	132	19	0	606
04:15 PM	7	35	38	0	28	123	40	1	28	101	22	0	11	131	24	0	589
04:30 PM	7	55	33	0	34	132	44	0	35	77	26	0	11	121	25	0	600
04:45 PM	10	38	41	0	42	131	47	1	42	95	17	0	13	131	36	0	644
Total	28	177	147	0	147	519	179	2	136	349	85	0	51	515	104	0	2439
05:00 PM	4	35	48	0	49	144	58	0	32	112	28	0	14	140	30	0	694
05:15 PM	12	58	45	0	53	135	44	0	29	105	23	0	8	152	27	0	691
05:30 PM	11	62	47	0	44	132	30	2	35	107	27	0	8	143	27	0	675
05:45 PM	7	46	42	0	42	106	44	1	24	105	17	0	16	154	32	0	636
Total	34	201	182	0	188	517	176	3	120	429	95	0	46	589	116	0	2696
Grand Total	62	378	329	0	335	1036	355	5	256	778	180	0	97	1104	220	0	5135
Apprch %	8.1	49.2	42.8	0	19.4	59.8	20.5	0.3	21.1	64.1	14.8	0	6.8	77.7	15.5	0	
Total %	1.2	7.4	6.4	0	6.5	20.2	6.9	0.1	5	15.2	3.5	0	1.9	21.5	4.3	0	

Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	10	38	41	0	89	42	131	47	1	221	42	95	17	0	154	13	131	36	0	180	644
05:00 PM	4	35	48	0	87	49	144	58	0	251	32	112	28	0	172	14	140	30	0	184	694
05:15 PM	12	58	45	0	115	53	135	44	0	232	29	105	23	0	157	8	152	27	0	187	691
05:30 PM	11	62	47	0	120	44	132	30	2	208	35	107	27	0	169	8	143	27	0	178	675
Total Volume	37	193	181	0	411	188	542	179	3	912	138	419	95	0	652	43	566	120	0	729	2704
% App. Total	9	47	44	0		20.6	59.4	19.6	0.3		21.2	64.3	14.6	0		5.9	77.6	16.5	0		
PHF	.771	.778	.943	.000	.856	.887	.941	.772	.375	.908	.821	.935	.848	.000	.948	.768	.931	.833	.000	.975	.974



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File Name : 154396 PP
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Commercial Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Commercial Street From North				Centre Street (Route 60) From East				Commercial Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	1	4	0	0	3	3	0	1	2	3	0	2	4	4	0	27
04:15 PM	4	0	6	0	6	6	1	0	0	0	4	0	1	3	1	0	32
04:30 PM	1	2	4	0	1	1	1	0	1	2	1	0	1	2	0	0	17
04:45 PM	2	1	8	0	1	4	1	0	1	0	1	0	0	1	2	0	22
Total	7	4	22	0	8	14	6	0	3	4	9	0	4	10	7	0	98
05:00 PM	1	3	7	0	4	7	0	0	0	2	0	0	0	4	2	0	30
05:15 PM	1	1	3	0	1	2	0	0	0	1	3	0	0	1	2	0	15
05:30 PM	2	2	6	0	4	3	1	0	1	1	0	0	0	3	0	0	23
05:45 PM	1	0	7	0	2	2	0	0	2	0	1	0	2	3	2	0	22
Total	5	6	23	0	11	14	1	0	3	4	4	0	2	11	6	0	90
Grand Total	12	10	45	0	19	28	7	0	6	8	13	0	6	21	13	0	188
Apprch %	17.9	14.9	67.2	0	35.2	51.9	13	0	22.2	29.6	48.1	0	15	52.5	32.5	0	
Total %	6.4	5.3	23.9	0	10.1	14.9	3.7	0	3.2	4.3	6.9	0	3.2	11.2	6.9	0	

Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	4	0	6	0	10	6	6	1	0	13	0	0	4	0	4	1	3	1	0	5	32
04:30 PM	1	2	4	0	7	1	1	1	0	3	1	2	1	0	4	1	2	0	0	3	17
04:45 PM	2	1	8	0	11	1	4	1	0	6	1	0	1	0	2	0	1	2	0	3	22
05:00 PM	1	3	7	0	11	4	7	0	0	11	0	2	0	0	2	0	4	2	0	6	30
Total Volume	8	6	25	0	39	12	18	3	0	33	2	4	6	0	12	2	10	5	0	17	101
% App. Total	20.5	15.4	64.1	0		36.4	54.5	9.1	0		16.7	33.3	50	0		11.8	58.8	29.4	0		
PHF	.500	.500	.781	.000	.886	.500	.643	.750	.000	.635	.500	.500	.375	.000	.750	.500	.625	.625	.000	.708	.789



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N/S: Commercial Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	4	8	0	0	0	0	0	0	0	0	0	0	0	1	0	16	8	37
04:15 PM	0	0	0	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	10	4	23
04:30 PM	0	0	0	6	18	0	0	0	0	0	0	0	0	0	0	0	0	0	20	10	54
04:45 PM	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7	12	33
Total	0	0	0	21	38	0	0	0	0	0	0	0	0	0	0	0	1	0	53	34	147
05:00 PM	0	0	0	6	4	0	0	0	2	4	0	0	0	3	1	0	0	0	15	6	41
05:15 PM	0	1	0	19	6	0	0	0	5	5	0	0	0	5	0	0	0	0	2	6	49
05:30 PM	0	0	1	4	9	0	0	0	5	4	0	0	0	3	6	0	0	0	6	16	54
05:45 PM	0	1	0	5	5	0	0	0	8	4	0	0	0	3	2	0	0	0	10	8	46
Total	0	2	1	34	24	0	0	0	20	17	0	0	0	14	9	0	0	0	33	36	190
Grand Total	0	2	1	55	62	0	0	0	20	17	0	0	0	14	9	0	1	0	86	70	337
Apprch %	0	1.7	0.8	45.8	51.7	0	0	0	54.1	45.9	0	0	0	60.9	39.1	0	0.6	0	54.8	44.6	
Total %	0	0.6	0.3	16.3	18.4	0	0	0	5.9	5	0	0	0	4.2	2.7	0	0.3	0	25.5	20.8	

Start Time	Commercial Street From North						Centre Street (Route 60) From East						Commercial Street From South						Centre Street (Route 60) From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 05:00 PM																									
05:00 PM	0	0	0	6	4	10	0	0	0	2	4	6	0	0	0	3	1	4	0	0	0	15	6	21	41
05:15 PM	0	1	0	19	6	26	0	0	0	5	5	10	0	0	0	5	0	5	0	0	0	2	6	8	49
05:30 PM	0	0	1	4	9	14	0	0	0	5	4	9	0	0	0	3	6	9	0	0	0	6	16	22	54
05:45 PM	0	1	0	5	5	11	0	0	0	8	4	12	0	0	0	3	2	5	0	0	0	10	8	18	46
Total Volume	0	2	1	34	24	61	0	0	0	20	17	37	0	0	0	14	9	23	0	0	0	33	36	69	190
% App. Total	0	3.3	1.6	55.7	39.3		0	0	0	54.1	45.9		0	0	0	60.9	39.1		0	0	0	47.8	52.2		
PHF	.000	.500	.250	.447	.667	.587	.000	.000	.000	.625	.850	.771	.000	.000	.000	.700	.375	.639	.000	.000	.000	.550	.563	.784	.880



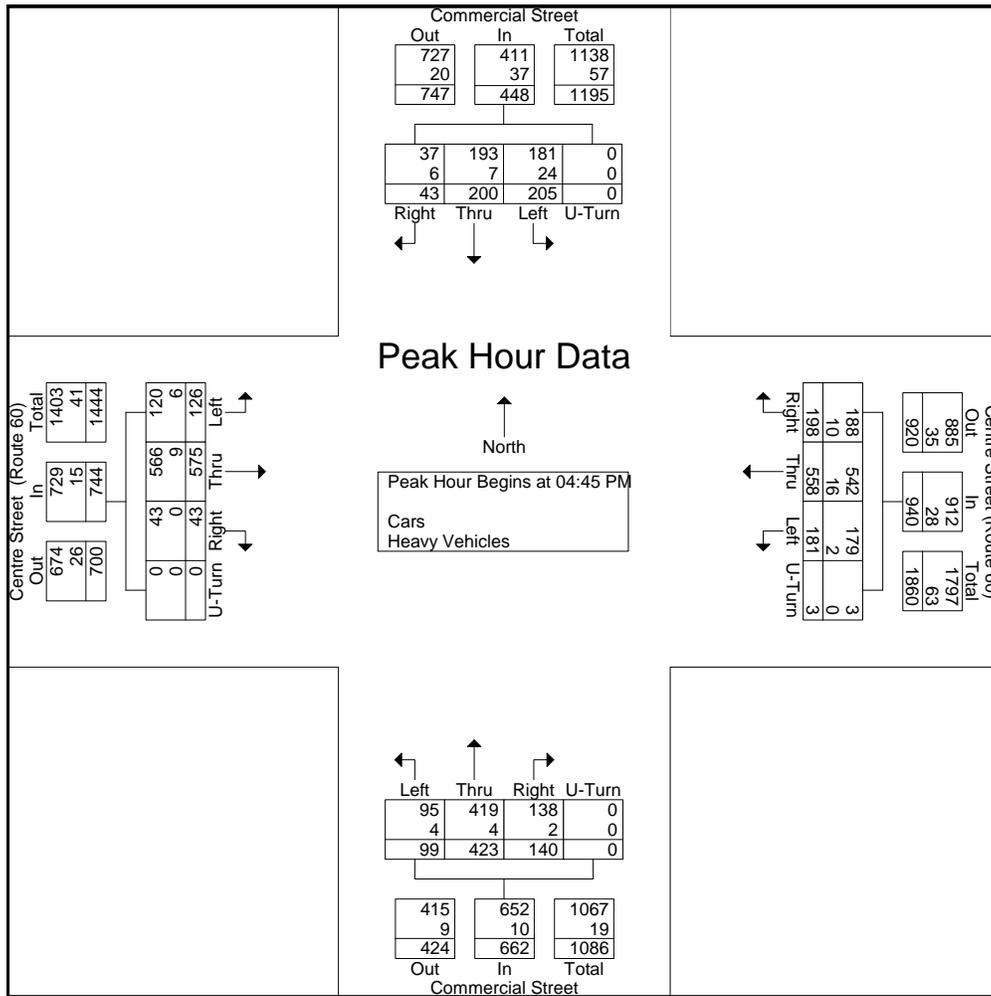
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City, State: Malden, MA
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Start Time	Commercial Street From North					Centre Street (Route 60) From East					Commercial Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	12	39	49	0	100	43	135	48	1	227	43	95	18	0	156	13	132	38	0	183	666
05:00 PM	5	38	55	0	98	53	151	58	0	262	32	114	28	0	174	14	144	32	0	190	724
05:15 PM	13	59	48	0	120	54	137	44	0	235	29	106	26	0	161	8	153	29	0	190	706
05:30 PM	13	64	53	0	130	48	135	31	2	216	36	108	27	0	171	8	146	27	0	181	698
Total Volume	43	200	205	0	448	198	558	181	3	940	140	423	99	0	662	43	575	126	0	744	2794
% App. Total	9.6	44.6	45.8	0		21.1	59.4	19.3	0.3		21.1	63.9	15	0		5.8	77.3	16.9	0		
PHF	.827	.781	.932	.000	.862	.917	.924	.780	.375	.897	.814	.928	.884	.000	.951	.768	.940	.829	.000	.979	.965
Cars	37	193	181	0	411	188	542	179	3	912	138	419	95	0	652	43	566	120	0	729	2704
% Cars	86.0	96.5	88.3	0	91.7	94.9	97.1	98.9	100	97.0	98.6	99.1	96.0	0	98.5	100	98.4	95.2	0	98.0	96.8
Heavy Vehicles	6	7	24	0	37	10	16	2	0	28	2	4	4	0	10	0	9	6	0	15	90
% Heavy Vehicles	14.0	3.5	11.7	0	8.3	5.1	2.9	1.1	0	3.0	1.4	0.9	4.0	0	1.5	0	1.6	4.8	0	2.0	3.2





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File Name : 154396 Q
Site Code : 2015041
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N: Jackson Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Jackson Street From North			Centre Street (Route 60) From East			Centre Street (Route 60) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	5	4	0	9	180	0	149	3	0	350
07:15 AM	7	3	0	15	216	0	179	4	0	424
07:30 AM	9	3	0	13	198	0	184	8	0	415
07:45 AM	8	5	0	14	238	0	133	9	0	407
Total	29	15	0	51	832	0	645	24	0	1596
08:00 AM	9	12	0	25	221	0	134	10	1	412
08:15 AM	14	12	0	20	187	0	144	12	0	389
08:30 AM	15	11	0	16	167	0	150	6	0	365
08:45 AM	9	11	0	11	152	0	154	15	0	352
Total	47	46	0	72	727	0	582	43	1	1518
Grand Total	76	61	0	123	1559	0	1227	67	1	3114
Apprch %	55.5	44.5	0	7.3	92.7	0	94.7	5.2	0.1	
Total %	2.4	2	0	3.9	50.1	0	39.4	2.2	0	
Cars	75	60	0	123	1446	0	1116	66	1	2887
% Cars	98.7	98.4	0	100	92.8	0	91	98.5	100	92.7
Heavy Vehicles	1	1	0	0	113	0	111	1	0	227
% Heavy Vehicles	1.3	1.6	0	0	7.2	0	9	1.5	0	7.3

Start Time	Jackson Street From North				Centre Street (Route 60) From East				Centre Street (Route 60) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	7	3	0	10	15	216	0	231	179	4	0	183	424
07:30 AM	9	3	0	12	13	198	0	211	184	8	0	192	415
07:45 AM	8	5	0	13	14	238	0	252	133	9	0	142	407
08:00 AM	9	12	0	21	25	221	0	246	134	10	1	145	412
Total Volume	33	23	0	56	67	873	0	940	630	31	1	662	1658
% App. Total	58.9	41.1	0		7.1	92.9	0		95.2	4.7	0.2		
PHF	.917	.479	.000	.667	.670	.917	.000	.933	.856	.775	.250	.862	.978
Cars	33	23	0	56	67	817	0	884	576	31	1	608	1548
% Cars	100	100	0	100	100	93.6	0	94.0	91.4	100	100	91.8	93.4
Heavy Vehicles	0	0	0	0	0	56	0	56	54	0	0	54	110
% Heavy Vehicles	0	0	0	0	0	6.4	0	6.0	8.6	0	0	8.2	6.6



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N: Jackson Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Jackson Street From North			Centre Street (Route 60) From East			Centre Street (Route 60) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	5	3	0	9	166	0	135	3	0	321
07:15 AM	7	3	0	15	200	0	162	4	0	391
07:30 AM	9	3	0	13	187	0	171	8	0	391
07:45 AM	8	5	0	14	228	0	124	9	0	388
Total	29	14	0	51	781	0	592	24	0	1491
08:00 AM	9	12	0	25	202	0	119	10	1	378
08:15 AM	13	12	0	20	169	0	130	11	0	355
08:30 AM	15	11	0	16	146	0	133	6	0	327
08:45 AM	9	11	0	11	148	0	142	15	0	336
Total	46	46	0	72	665	0	524	42	1	1396
Grand Total	75	60	0	123	1446	0	1116	66	1	2887
Apprch %	55.6	44.4	0	7.8	92.2	0	94.3	5.6	0.1	
Total %	2.6	2.1	0	4.3	50.1	0	38.7	2.3	0	

Start Time	Jackson Street From North				Centre Street (Route 60) From East				Centre Street (Route 60) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	7	3	0	10	15	200	0	215	162	4	0	166	391
07:30 AM	9	3	0	12	13	187	0	200	171	8	0	179	391
07:45 AM	8	5	0	13	14	228	0	242	124	9	0	133	388
08:00 AM	9	12	0	21	25	202	0	227	119	10	1	130	378
Total Volume	33	23	0	56	67	817	0	884	576	31	1	608	1548
% App. Total	58.9	41.1	0		7.6	92.4	0		94.7	5.1	0.2		
PHF	.917	.479	.000	.667	.670	.896	.000	.913	.842	.775	.250	.849	.990



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N: Jackson Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Jackson Street From North			Centre Street (Route 60) From East			Centre Street (Route 60) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
07:00 AM	0	1	0	0	14	0	14	0	0	29
07:15 AM	0	0	0	0	16	0	17	0	0	33
07:30 AM	0	0	0	0	11	0	13	0	0	24
07:45 AM	0	0	0	0	10	0	9	0	0	19
Total	0	1	0	0	51	0	53	0	0	105
08:00 AM	0	0	0	0	19	0	15	0	0	34
08:15 AM	1	0	0	0	18	0	14	1	0	34
08:30 AM	0	0	0	0	21	0	17	0	0	38
08:45 AM	0	0	0	0	4	0	12	0	0	16
Total	1	0	0	0	62	0	58	1	0	122
Grand Total	1	1	0	0	113	0	111	1	0	227
Apprch %	50	50	0	0	100	0	99.1	0.9	0	
Total %	0.4	0.4	0	0	49.8	0	48.9	0.4	0	

Start Time	Jackson Street From North				Centre Street (Route 60) From East			Centre Street (Route 60) From West				Int. Total	
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn		App. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	0	0	0	0	0	10	0	10	9	0	0	9	19
08:00 AM	0	0	0	0	0	19	0	19	15	0	0	15	34
08:15 AM	1	0	0	1	0	18	0	18	14	1	0	15	34
08:30 AM	0	0	0	0	0	21	0	21	17	0	0	17	38
Total Volume	1	0	0	1	0	68	0	68	55	1	0	56	125
% App. Total	100	0	0	0	0	100	0	0	98.2	1.8	0	0	
PHF	.250	.000	.000	.250	.000	.810	.000	.810	.809	.250	.000	.824	.822



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N: Jackson Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Jackson Street From North				Centre Street (Route 60) From East				Centre Street (Route 60) From West				Int. Total
	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	0	0	2	0	1	0	2	0	0	3	0	8
07:15 AM	0	0	1	10	0	0	5	5	0	0	3	1	25
07:30 AM	0	0	0	4	0	1	4	9	0	0	3	0	21
07:45 AM	0	0	1	11	0	0	1	17	0	0	6	1	37
Total	0	0	2	27	0	2	10	33	0	0	15	2	91
08:00 AM	0	0	0	8	0	0	3	12	1	0	5	1	30
08:15 AM	0	1	0	1	0	0	0	14	0	0	6	3	25
08:30 AM	0	0	2	1	0	1	4	6	0	0	2	1	17
08:45 AM	0	0	3	6	0	0	3	2	1	0	5	2	22
Total	0	1	5	16	0	1	10	34	2	0	18	7	94
Grand Total	0	1	7	43	0	3	20	67	2	0	33	9	185
Apprch %	0	2	13.7	84.3	0	3.3	22.2	74.4	4.5	0	75	20.5	
Total %	0	0.5	3.8	23.2	0	1.6	10.8	36.2	1.1	0	17.8	4.9	

Start Time	Jackson Street From North					Centre Street (Route 60) From East					Centre Street (Route 60) From West					Int. Total
	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 07:15 AM																
07:15 AM	0	0	1	10	11	0	0	5	5	10	0	0	3	1	4	25
07:30 AM	0	0	0	4	4	0	1	4	9	14	0	0	3	0	3	21
07:45 AM	0	0	1	11	12	0	0	1	17	18	0	0	6	1	7	37
08:00 AM	0	0	0	8	8	0	0	3	12	15	1	0	5	1	7	30
Total Volume	0	0	2	33	35	0	1	13	43	57	1	0	17	3	21	113
% App. Total	0	0	5.7	94.3		0	1.8	22.8	75.4		4.8	0	81	14.3		
PHF	.000	.000	.500	.750	.729	.000	.250	.650	.632	.792	.250	.000	.708	.750	.750	.764



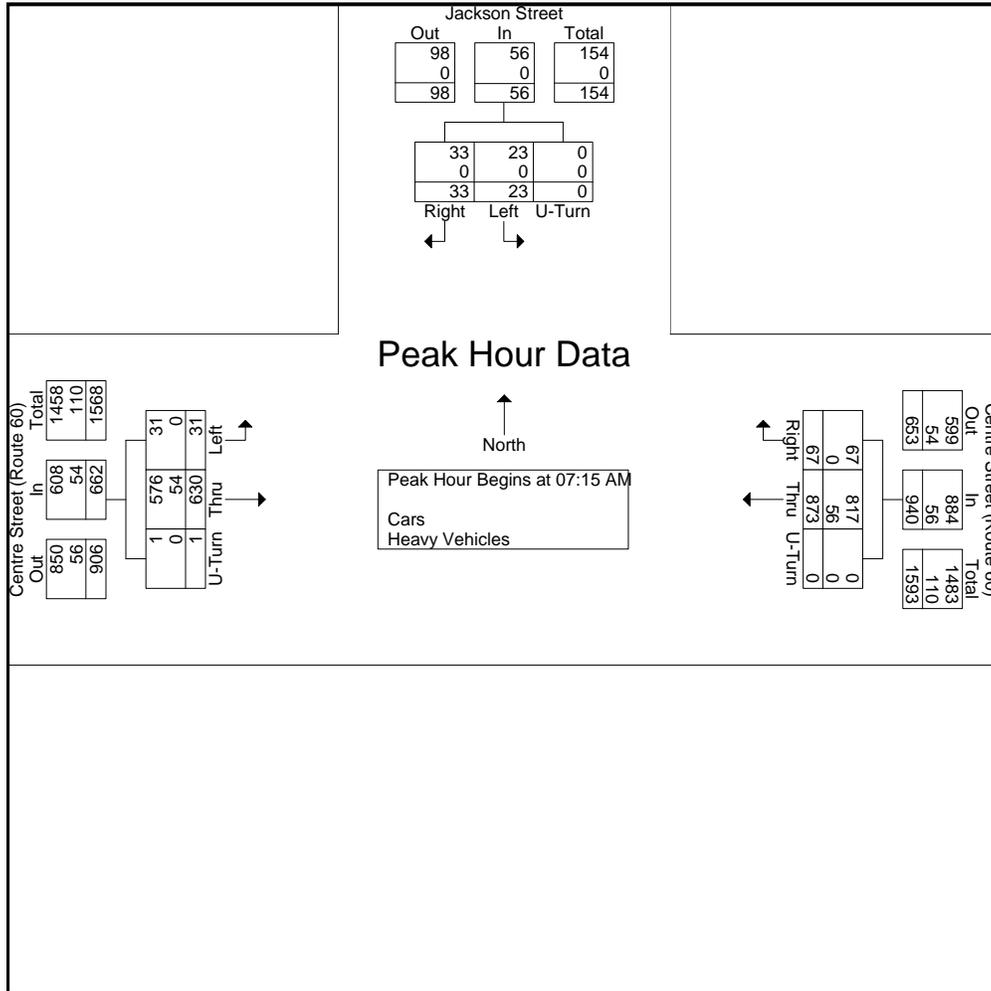
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N: Jackson Street
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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Start Time	Jackson Street From North				Centre Street (Route 60) From East				Centre Street (Route 60) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	7	3	0	10	15	216	0	231	179	4	0	183	424
07:30 AM	9	3	0	12	13	198	0	211	184	8	0	192	415
07:45 AM	8	5	0	13	14	238	0	252	133	9	0	142	407
08:00 AM	9	12	0	21	25	221	0	246	134	10	1	145	412
Total Volume	33	23	0	56	67	873	0	940	630	31	1	662	1658
% App. Total	58.9	41.1	0		7.1	92.9	0		95.2	4.7	0.2		
PHF	.917	.479	.000	.667	.670	.917	.000	.933	.856	.775	.250	.862	.978
Cars	33	23	0	56	67	817	0	884	576	31	1	608	1548
% Cars	100	100	0	100	100	93.6	0	94.0	91.4	100	100	91.8	93.4
Heavy Vehicles	0	0	0	0	0	56	0	56	54	0	0	54	110
% Heavy Vehicles	0	0	0	0	0	6.4	0	6.0	8.6	0	0	8.2	6.6





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N: Jackson Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Jackson Street From North			Centre Street (Route 60) From East			Centre Street (Route 60) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	37	28	0	6	201	0	201	5	0	478
04:15 PM	18	12	0	3	182	0	200	4	0	419
04:30 PM	20	13	0	5	196	0	195	4	0	433
04:45 PM	23	13	0	4	215	0	214	2	0	471
Total	98	66	0	18	794	0	810	15	0	1801
05:00 PM	35	24	0	6	216	0	203	1	1	486
05:15 PM	34	22	0	4	189	1	218	4	0	472
05:30 PM	30	24	0	6	191	0	196	5	1	453
05:45 PM	32	24	0	6	158	0	222	5	0	447
Total	131	94	0	22	754	1	839	15	2	1858
Grand Total	229	160	0	40	1548	1	1649	30	2	3659
Apprch %	58.9	41.1	0	2.5	97.4	0.1	98.1	1.8	0.1	
Total %	6.3	4.4	0	1.1	42.3	0	45.1	0.8	0.1	
Cars	227	156	0	40	1485	1	1579	30	2	3520
% Cars	99.1	97.5	0	100	95.9	100	95.8	100	100	96.2
Heavy Vehicles	2	4	0	0	63	0	70	0	0	139
% Heavy Vehicles	0.9	2.5	0	0	4.1	0	4.2	0	0	3.8

Start Time	Jackson Street From North				Centre Street (Route 60) From East				Centre Street (Route 60) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	23	13	0	36	4	215	0	219	214	2	0	216	471
05:00 PM	35	24	0	59	6	216	0	222	203	1	1	205	486
05:15 PM	34	22	0	56	4	189	1	194	218	4	0	222	472
05:30 PM	30	24	0	54	6	191	0	197	196	5	1	202	453
Total Volume	122	83	0	205	20	811	1	832	831	12	2	845	1882
% App. Total	59.5	40.5	0		2.4	97.5	0.1		98.3	1.4	0.2		
PHF	.871	.865	.000	.869	.833	.939	.250	.937	.953	.600	.500	.952	.968
Cars	120	82	0	202	20	781	1	802	796	12	2	810	1814
% Cars	98.4	98.8	0	98.5	100	96.3	100	96.4	95.8	100	100	95.9	96.4
Heavy Vehicles	2	1	0	3	0	30	0	30	35	0	0	35	68
% Heavy Vehicles	1.6	1.2	0	1.5	0	3.7	0	3.6	4.2	0	0	4.1	3.6



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N: Jackson Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Jackson Street From North			Centre Street (Route 60) From East			Centre Street (Route 60) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	37	26	0	6	191	0	191	5	0	456
04:15 PM	18	11	0	3	172	0	191	4	0	399
04:30 PM	20	13	0	5	188	0	188	4	0	418
04:45 PM	23	13	0	4	207	0	203	2	0	452
Total	98	63	0	18	758	0	773	15	0	1725
05:00 PM	34	23	0	6	206	0	193	1	1	464
05:15 PM	34	22	0	4	184	1	212	4	0	461
05:30 PM	29	24	0	6	184	0	188	5	1	437
05:45 PM	32	24	0	6	153	0	213	5	0	433
Total	129	93	0	22	727	1	806	15	2	1795
Grand Total	227	156	0	40	1485	1	1579	30	2	3520
Apprch %	59.3	40.7	0	2.6	97.3	0.1	98	1.9	0.1	
Total %	6.4	4.4	0	1.1	42.2	0	44.9	0.9	0.1	

Start Time	Jackson Street From North				Centre Street (Route 60) From East				Centre Street (Route 60) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	23	13	0	36	4	207	0	211	203	2	0	205	452
05:00 PM	34	23	0	57	6	206	0	212	193	1	1	195	464
05:15 PM	34	22	0	56	4	184	1	189	212	4	0	216	461
05:30 PM	29	24	0	53	6	184	0	190	188	5	1	194	437
Total Volume	120	82	0	202	20	781	1	802	796	12	2	810	1814
% App. Total	59.4	40.6	0		2.5	97.4	0.1		98.3	1.5	0.2		
PHF	.882	.854	.000	.886	.833	.943	.250	.946	.939	.600	.500	.938	.977



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Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Jackson Street From North			Centre Street (Route 60) From East			Centre Street (Route 60) From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
04:00 PM	0	2	0	0	10	0	10	0	0	22
04:15 PM	0	1	0	0	10	0	9	0	0	20
04:30 PM	0	0	0	0	8	0	7	0	0	15
04:45 PM	0	0	0	0	8	0	11	0	0	19
Total	0	3	0	0	36	0	37	0	0	76
05:00 PM	1	1	0	0	10	0	10	0	0	22
05:15 PM	0	0	0	0	5	0	6	0	0	11
05:30 PM	1	0	0	0	7	0	8	0	0	16
05:45 PM	0	0	0	0	5	0	9	0	0	14
Total	2	1	0	0	27	0	33	0	0	63
Grand Total	2	4	0	0	63	0	70	0	0	139
Apprch %	33.3	66.7	0	0	100	0	100	0	0	
Total %	1.4	2.9	0	0	45.3	0	50.4	0	0	

Start Time	Jackson Street From North				Centre Street (Route 60) From East			Centre Street (Route 60) From West				Int. Total	
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn		App. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:00 PM													
04:00 PM	0	2	0	2	0	10	0	10	10	0	0	10	22
04:15 PM	0	1	0	1	0	10	0	10	9	0	0	9	20
04:30 PM	0	0	0	0	0	8	0	8	7	0	0	7	15
04:45 PM	0	0	0	0	0	8	0	8	11	0	0	11	19
Total Volume	0	3	0	3	0	36	0	36	37	0	0	37	76
% App. Total	0	100	0	0	0	100	0	0	100	0	0	0	0
PHF	.000	.375	.000	.375	.000	.900	.000	.900	.841	.000	.000	.841	.864



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File Name : 154396 QQ
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N: Jackson Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Jackson Street From North				Centre Street (Route 60) From East				Centre Street (Route 60) From West				Int. Total
	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	
04:00 PM	1	0	4	1	0	0	10	13	0	0	5	3	37
04:15 PM	0	0	3	1	0	0	14	10	0	0	0	5	33
04:30 PM	0	0	3	6	0	0	14	2	0	0	5	4	34
04:45 PM	0	0	0	0	0	0	9	7	0	0	3	4	23
Total	1	0	10	8	0	0	47	32	0	0	13	16	127
05:00 PM	0	0	1	0	0	0	13	5	1	0	1	4	25
05:15 PM	0	0	1	3	0	0	17	7	1	0	2	6	37
05:30 PM	0	0	0	4	0	0	6	6	0	0	3	4	23
05:45 PM	0	0	3	0	0	0	21	6	0	0	1	3	34
Total	0	0	5	7	0	0	57	24	2	0	7	17	119
Grand Total	1	0	15	15	0	0	104	56	2	0	20	33	246
Apprch %	3.2	0	48.4	48.4	0	0	65	35	3.6	0	36.4	60	
Total %	0.4	0	6.1	6.1	0	0	42.3	22.8	0.8	0	8.1	13.4	

Start Time	Jackson Street From North					Centre Street (Route 60) From East					Centre Street (Route 60) From West					Int. Total
	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 04:00 PM																
04:00 PM	1	0	4	1	6	0	0	10	13	23	0	0	5	3	8	37
04:15 PM	0	0	3	1	4	0	0	14	10	24	0	0	0	5	5	33
04:30 PM	0	0	3	6	9	0	0	14	2	16	0	0	5	4	9	34
04:45 PM	0	0	0	0	0	0	0	9	7	16	0	0	3	4	7	23
Total Volume	1	0	10	8	19	0	0	47	32	79	0	0	13	16	29	127
% App. Total	5.3	0	52.6	42.1		0	0	59.5	40.5		0	0	44.8	55.2		
PHF	.250	.000	.625	.333	.528	.000	.000	.839	.615	.823	.000	.000	.650	.800	.806	.858



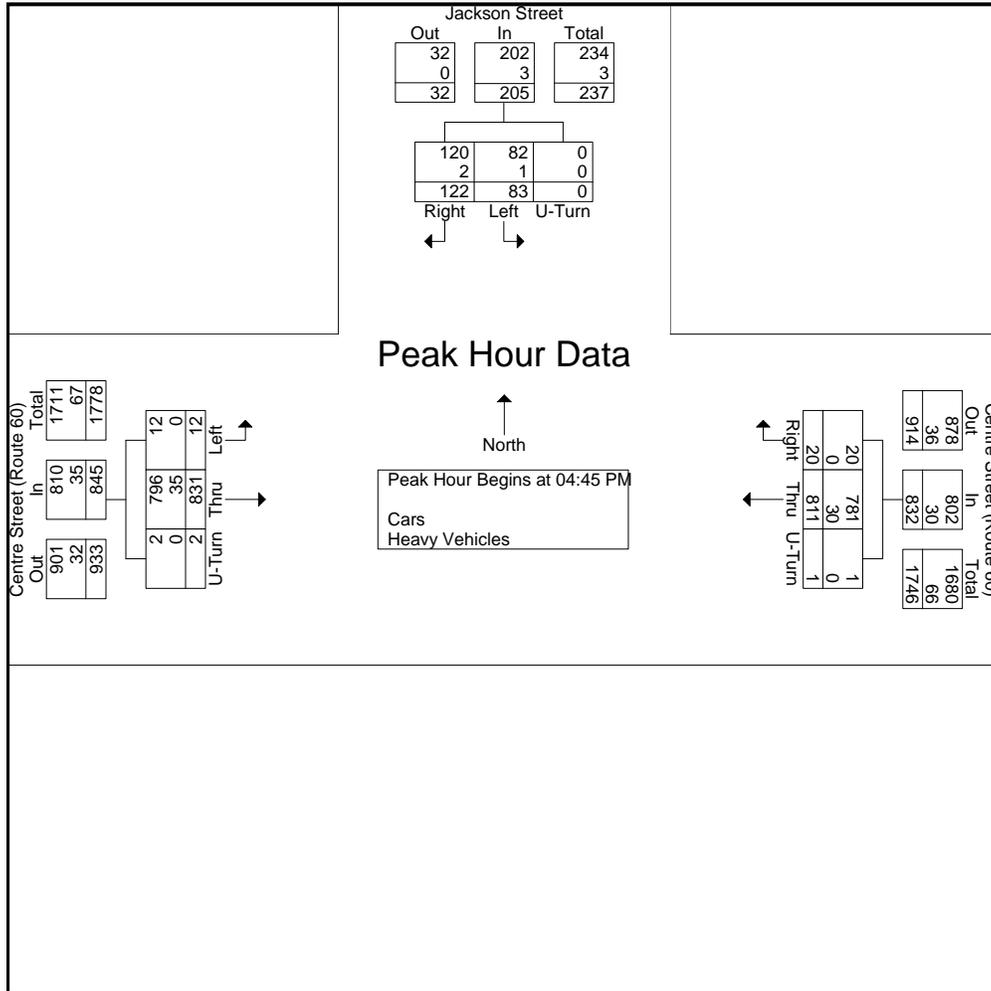
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N: Jackson Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 QQ
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Start Time	Jackson Street From North				Centre Street (Route 60) From East				Centre Street (Route 60) From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	23	13	0	36	4	215	0	219	214	2	0	216	471
05:00 PM	35	24	0	59	6	216	0	222	203	1	1	205	486
05:15 PM	34	22	0	56	4	189	1	194	218	4	0	222	472
05:30 PM	30	24	0	54	6	191	0	197	196	5	1	202	453
Total Volume	122	83	0	205	20	811	1	832	831	12	2	845	1882
% App. Total	59.5	40.5	0		2.4	97.5	0.1		98.3	1.4	0.2		
PHF	.871	.865	.000	.869	.833	.939	.250	.937	.953	.600	.500	.952	.968
Cars	120	82	0	202	20	781	1	802	796	12	2	810	1814
% Cars	98.4	98.8	0	98.5	100	96.3	100	96.4	95.8	100	100	95.9	96.4
Heavy Vehicles	2	1	0	3	0	30	0	30	35	0	0	35	68
% Heavy Vehicles	1.6	1.2	0	1.5	0	3.7	0	3.6	4.2	0	0	4.1	3.6





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File Name : 154396 R
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Main Street From North				Centre Street (Route 60) From East				Main Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	27	71	8	0	5	170	57	0	18	41	11	0	26	91	18	1	544
07:15 AM	44	56	2	0	2	175	58	0	17	63	11	0	17	124	32	0	601
07:30 AM	28	74	7	0	14	170	78	0	23	72	22	0	19	122	38	0	667
07:45 AM	41	65	10	0	25	184	75	0	21	78	32	0	16	87	34	0	668
Total	140	266	27	0	46	699	268	0	79	254	76	0	78	424	122	1	2480
08:00 AM	31	81	7	0	10	216	63	0	21	50	17	0	23	91	29	0	639
08:15 AM	28	65	1	0	14	153	53	0	17	38	16	0	10	88	39	0	522
08:30 AM	44	68	11	1	16	140	60	1	9	46	10	0	23	96	27	0	552
08:45 AM	35	71	5	0	17	125	44	0	16	49	12	0	17	103	32	0	526
Total	138	285	24	1	57	634	220	1	63	183	55	0	73	378	127	0	2239
Grand Total	278	551	51	1	103	1333	488	1	142	437	131	0	151	802	249	1	4719
Apprch %	31.6	62.5	5.8	0.1	5.4	69.2	25.4	0.1	20	61.5	18.5	0	12.6	66.7	20.7	0.1	
Total %	5.9	11.7	1.1	0	2.2	28.2	10.3	0	3	9.3	2.8	0	3.2	17	5.3	0	
Cars	240	536	48	1	94	1289	472	1	136	405	124	0	128	749	205	1	4429
% Cars	86.3	97.3	94.1	100	91.3	96.7	96.7	100	95.8	92.7	94.7	0	84.8	93.4	82.3	100	93.9
Heavy Vehicles	38	15	3	0	9	44	16	0	6	32	7	0	23	53	44	0	290
% Heavy Vehicles	13.7	2.7	5.9	0	8.7	3.3	3.3	0	4.2	7.3	5.3	0	15.2	6.6	17.7	0	6.1

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	44	56	2	0	102	2	175	58	0	235	17	63	11	0	91	17	124	32	0	173	601
07:30 AM	28	74	7	0	109	14	170	78	0	262	23	72	22	0	117	19	122	38	0	179	667
07:45 AM	41	65	10	0	116	25	184	75	0	284	21	78	32	0	131	16	87	34	0	137	668
08:00 AM	31	81	7	0	119	10	216	63	0	289	21	50	17	0	88	23	91	29	0	143	639
Total Volume	144	276	26	0	446	51	745	274	0	1070	82	263	82	0	427	75	424	133	0	632	2575
% App. Total	32.3	61.9	5.8	0	93.7	4.8	69.6	25.6	0	97.1	19.2	61.6	19.2	0	94.4	11.9	67.1	21	0	93.7	94.5
PHF	.818	.852	.650	.000	.937	.510	.862	.878	.000	.926	.891	.843	.641	.000	.815	.815	.855	.875	.000	.883	.964
Cars	120	274	24	0	418	49	726	264	0	1039	78	247	78	0	403	67	397	109	0	573	2433
% Cars	83.3	99.3	92.3	0	93.7	96.1	97.4	96.4	0	97.1	95.1	93.9	95.1	0	94.4	89.3	93.6	82.0	0	90.7	94.5
Heavy Vehicles	24	2	2	0	28	2	19	10	0	31	4	16	4	0	24	8	27	24	0	59	142
% Heavy Vehicles	16.7	0.7	7.7	0	6.3	3.9	2.6	3.6	0	2.9	4.9	6.1	4.9	0	5.6	10.7	6.4	18.0	0	9.3	5.5



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File Name : 154396 R
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

N/S: Main Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Main Street From North				Centre Street (Route 60) From East				Main Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	24	67	7	0	5	162	56	0	18	37	11	0	22	87	12	1	509
07:15 AM	36	56	2	0	2	168	55	0	17	58	10	0	15	116	26	0	561
07:30 AM	25	74	6	0	13	167	73	0	21	68	20	0	16	113	30	0	626
07:45 AM	35	64	9	0	24	179	74	0	21	75	31	0	15	84	32	0	643
Total	120	261	24	0	44	676	258	0	77	238	72	0	68	400	100	1	2339
08:00 AM	24	80	7	0	10	212	62	0	19	46	17	0	21	84	21	0	603
08:15 AM	25	63	1	0	12	145	51	0	16	30	15	0	7	80	33	0	478
08:30 AM	38	66	11	1	15	133	59	1	9	45	9	0	18	87	23	0	515
08:45 AM	33	66	5	0	13	123	42	0	15	46	11	0	14	98	28	0	494
Total	120	275	24	1	50	613	214	1	59	167	52	0	60	349	105	0	2090
Grand Total	240	536	48	1	94	1289	472	1	136	405	124	0	128	749	205	1	4429
Apprch %	29.1	65	5.8	0.1	5.1	69.5	25.4	0.1	20.5	60.9	18.6	0	11.8	69.2	18.9	0.1	
Total %	5.4	12.1	1.1	0	2.1	29.1	10.7	0	3.1	9.1	2.8	0	2.9	16.9	4.6	0	

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	36	56	2	0	94	2	168	55	0	225	17	58	10	0	85	15	116	26	0	157	561
07:30 AM	25	74	6	0	105	13	167	73	0	253	21	68	20	0	109	16	113	30	0	159	626
07:45 AM	35	64	9	0	108	24	179	74	0	277	21	75	31	0	127	15	84	32	0	131	643
08:00 AM	24	80	7	0	111	10	212	62	0	284	19	46	17	0	82	21	84	21	0	126	603
Total Volume	120	274	24	0	418	49	726	264	0	1039	78	247	78	0	403	67	397	109	0	573	2433
% App. Total	28.7	65.6	5.7	0		4.7	69.9	25.4	0		19.4	61.3	19.4	0		11.7	69.3	19	0		
PHF	.833	.856	.667	.000	.941	.510	.856	.892	.000	.915	.929	.823	.629	.000	.793	.798	.856	.852	.000	.901	.946



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File Name : 154396 R
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N/S: Main Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Main Street From North				Centre Street (Route 60) From East				Main Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	3	4	1	0	0	8	1	0	0	4	0	0	4	4	6	0	35
07:15 AM	8	0	0	0	0	7	3	0	0	5	1	0	2	8	6	0	40
07:30 AM	3	0	1	0	1	3	5	0	2	4	2	0	3	9	8	0	41
07:45 AM	6	1	1	0	1	5	1	0	0	3	1	0	1	3	2	0	25
Total	20	5	3	0	2	23	10	0	2	16	4	0	10	24	22	0	141
08:00 AM	7	1	0	0	0	4	1	0	2	4	0	0	2	7	8	0	36
08:15 AM	3	2	0	0	2	8	2	0	1	8	1	0	3	8	6	0	44
08:30 AM	6	2	0	0	1	7	1	0	0	1	1	0	5	9	4	0	37
08:45 AM	2	5	0	0	4	2	2	0	1	3	1	0	3	5	4	0	32
Total	18	10	0	0	7	21	6	0	4	16	3	0	13	29	22	0	149
Grand Total	38	15	3	0	9	44	16	0	6	32	7	0	23	53	44	0	290
Apprch %	67.9	26.8	5.4	0	13	63.8	23.2	0	13.3	71.1	15.6	0	19.2	44.2	36.7	0	
Total %	13.1	5.2	1	0	3.1	15.2	5.5	0	2.1	11	2.4	0	7.9	18.3	15.2	0	

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	7	1	0	0	8	0	4	1	0	5	2	4	0	0	6	2	7	8	0	17	36
08:15 AM	3	2	0	0	5	2	8	2	0	12	1	8	1	0	10	3	8	6	0	17	44
08:30 AM	6	2	0	0	8	1	7	1	0	9	0	1	1	0	2	5	9	4	0	18	37
08:45 AM	2	5	0	0	7	4	2	2	0	8	1	3	1	0	5	3	5	4	0	12	32
Total Volume	18	10	0	0	28	7	21	6	0	34	4	16	3	0	23	13	29	22	0	64	149
% App. Total	64.3	35.7	0	0		20.6	61.8	17.6	0		17.4	69.6	13	0		20.3	45.3	34.4	0		
PHF	.643	.500	.000	.000	.875	.438	.656	.750	.000	.708	.500	.500	.750	.000	.575	.650	.806	.688	.000	.889	.847



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Page No : 1

N/S: Main Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Peds and Bikes

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
07:00 AM	0	1	0	0	0	0	1	0	0	8	0	0	0	2	0	0	0	0	5	0	17
07:15 AM	0	2	0	0	3	0	0	0	0	6	0	0	0	2	0	0	0	0	5	1	19
07:30 AM	0	1	0	2	1	0	0	0	2	1	0	0	0	1	2	0	0	0	5	3	18
07:45 AM	0	0	0	0	3	0	0	0	4	2	0	0	0	2	0	0	0	0	9	1	21
Total	0	4	0	2	7	0	1	0	6	17	0	0	0	7	2	0	0	0	24	5	75
08:00 AM	0	0	0	0	2	0	0	0	2	1	0	0	0	6	1	0	0	0	4	2	18
08:15 AM	0	2	0	0	0	0	0	0	0	3	0	0	0	3	1	0	0	0	4	4	17
08:30 AM	0	1	0	1	1	0	0	0	1	2	0	0	0	0	0	0	0	0	10	7	23
08:45 AM	0	3	0	0	3	0	0	0	0	6	0	0	0	4	0	0	0	0	17	2	35
Total	0	6	0	1	6	0	0	0	3	12	0	0	0	13	2	0	0	0	35	15	93
Grand Total	0	10	0	3	13	0	1	0	9	29	0	0	0	20	4	0	0	0	59	20	168
Apprch %	0	38.5	0	11.5	50	0	2.6	0	23.1	74.4	0	0	0	83.3	16.7	0	0	0	74.7	25.3	
Total %	0	6	0	1.8	7.7	0	0.6	0	5.4	17.3	0	0	0	11.9	2.4	0	0	0	35.1	11.9	

Start Time	Main Street From North						Centre Street (Route 60) From East						Main Street From South						Centre Street (Route 60) From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 08:00 AM																									
08:00 AM	0	0	0	0	2	2	0	0	0	2	1	3	0	0	0	6	1	7	0	0	0	4	2	6	18
08:15 AM	0	2	0	0	0	2	0	0	0	0	3	3	0	0	0	3	1	4	0	0	0	4	4	8	17
08:30 AM	0	1	0	1	1	3	0	0	0	1	2	3	0	0	0	0	0	0	0	0	0	10	7	17	23
08:45 AM	0	3	0	0	3	6	0	0	0	0	6	6	0	0	0	4	0	4	0	0	0	17	2	19	35
Total Volume	0	6	0	1	6	13	0	0	0	3	12	15	0	0	0	13	2	15	0	0	0	35	15	50	93
% App. Total	0	46.2	0	7.7	46.2	0	0	0	20	80	0	0	0	86.7	13.3	0	0	0	70	30					
PHF	.000	.500	.000	.250	.500	.542	.000	.000	.000	.375	.500	.625	.000	.000	.000	.542	.500	.536	.000	.000	.000	.515	.536	.658	.664



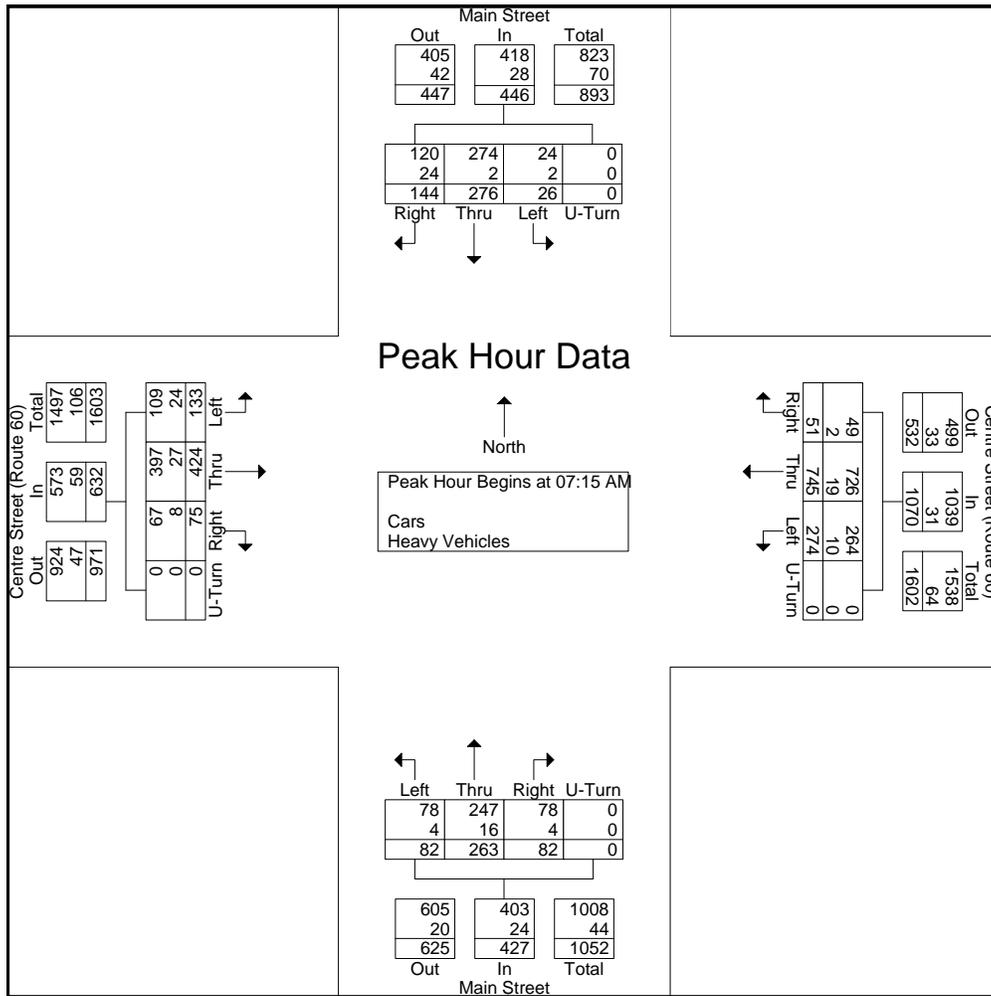
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E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

File Name : 154396 R
Site Code : 2015041
Start Date : 4/29/2015
Page No : 1

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	44	56	2	0	102	2	175	58	0	235	17	63	11	0	91	17	124	32	0	173	601
07:30 AM	28	74	7	0	109	14	170	78	0	262	23	72	22	0	117	19	122	38	0	179	667
07:45 AM	41	65	10	0	116	25	184	75	0	284	21	78	32	0	131	16	87	34	0	137	668
08:00 AM	31	81	7	0	119	10	216	63	0	289	21	50	17	0	88	23	91	29	0	143	639
Total Volume	144	276	26	0	446	51	745	274	0	1070	82	263	82	0	427	75	424	133	0	632	2575
% App. Total	32.3	61.9	5.8	0		4.8	69.6	25.6	0		19.2	61.6	19.2	0		11.9	67.1	21	0		
PHF	.818	.852	.650	.000	.937	.510	.862	.878	.000	.926	.891	.843	.641	.000	.815	.815	.855	.875	.000	.883	.964
Cars	120	274	24	0	418	49	726	264	0	1039	78	247	78	0	403	67	397	109	0	573	2433
% Cars	83.3	99.3	92.3	0	93.7	96.1	97.4	96.4	0	97.1	95.1	93.9	95.1	0	94.4	89.3	93.6	82.0	0	90.7	94.5
Heavy Vehicles	24	2	2	0	28	2	19	10	0	31	4	16	4	0	24	8	27	24	0	59	142
% Heavy Vehicles	16.7	0.7	7.7	0	6.3	3.9	2.6	3.6	0	2.9	4.9	6.1	4.9	0	5.6	10.7	6.4	18.0	0	9.3	5.5





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File Name : 154396 RR
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N/S: Main Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars - Heavy Vehicles

Start Time	Main Street From North				Centre Street (Route 60) From East				Main Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	22	72	5	0	16	112	38	1	37	69	9	0	20	196	53	0	650
04:15 PM	40	72	18	1	11	103	48	0	48	68	18	0	15	163	45	0	650
04:30 PM	29	58	16	0	14	109	33	0	38	74	19	0	17	176	54	0	637
04:45 PM	43	62	13	0	13	126	39	0	46	64	18	0	23	166	51	0	664
Total	134	264	52	1	54	450	158	1	169	275	64	0	75	701	203	0	2601
05:00 PM	30	68	7	0	18	121	40	0	43	58	18	0	13	197	55	0	668
05:15 PM	33	51	10	0	15	113	35	0	54	68	16	0	20	191	45	1	652
05:30 PM	28	64	10	0	17	102	37	0	39	65	16	0	16	183	64	1	642
05:45 PM	41	70	17	0	16	98	41	0	43	73	11	0	14	196	59	0	679
Total	132	253	44	0	66	434	153	0	179	264	61	0	63	767	223	2	2641
Grand Total	266	517	96	1	120	884	311	1	348	539	125	0	138	1468	426	2	5242
Apprch %	30.2	58.8	10.9	0.1	9.1	67.2	23.6	0.1	34.4	53.3	12.4	0	6.8	72.2	20.9	0.1	
Total %	5.1	9.9	1.8	0	2.3	16.9	5.9	0	6.6	10.3	2.4	0	2.6	28	8.1	0	
Cars	241	510	94	1	119	865	308	1	343	514	117	0	122	1442	395	2	5074
% Cars	90.6	98.6	97.9	100	99.2	97.9	99	100	98.6	95.4	93.6	0	88.4	98.2	92.7	100	96.8
Heavy Vehicles	25	7	2	0	1	19	3	0	5	25	8	0	16	26	31	0	168
% Heavy Vehicles	9.4	1.4	2.1	0	0.8	2.1	1	0	1.4	4.6	6.4	0	11.6	1.8	7.3	0	3.2

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	30	68	7	0	105	18	121	40	0	179	43	58	18	0	119	13	197	55	0	265	668
05:15 PM	33	51	10	0	94	15	113	35	0	163	54	68	16	0	138	20	191	45	1	257	652
05:30 PM	28	64	10	0	102	17	102	37	0	156	39	65	16	0	120	16	183	64	1	264	642
05:45 PM	41	70	17	0	128	16	98	41	0	155	43	73	11	0	127	14	196	59	0	269	679
Total Volume	132	253	44	0	429	66	434	153	0	653	179	264	61	0	504	63	767	223	2	1055	2641
% App. Total	30.8	59	10.3	0		10.1	66.5	23.4	0		35.5	52.4	12.1	0		6	72.7	21.1	0.2		
PHF	.805	.904	.647	.000	.838	.917	.897	.933	.000	.912	.829	.904	.847	.000	.913	.788	.973	.871	.500	.980	.972
Cars	121	248	44	0	413	65	424	152	0	641	177	253	58	0	488	55	756	206	2	1019	2561
% Cars	91.7	98.0	100	0	96.3	98.5	97.7	99.3	0	98.2	98.9	95.8	95.1	0	96.8	87.3	98.6	92.4	100	96.6	97.0
Heavy Vehicles	11	5	0	0	16	1	10	1	0	12	2	11	3	0	16	8	11	17	0	36	80
% Heavy Vehicles	8.3	2.0	0	0	3.7	1.5	2.3	0.7	0	1.8	1.1	4.2	4.9	0	3.2	12.7	1.4	7.6	0	3.4	3.0



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Page No : 1

N/S: Main Street
E/W: Centre Street (Route 60)
City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Cars

Start Time	Main Street From North				Centre Street (Route 60) From East				Main Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	21	71	5	0	16	108	37	1	37	67	8	0	19	189	49	0	628
04:15 PM	33	72	16	1	11	99	48	0	47	63	17	0	13	160	41	0	621
04:30 PM	27	57	16	0	14	109	33	0	37	71	18	0	15	174	50	0	621
04:45 PM	39	62	13	0	13	125	38	0	45	60	16	0	20	163	49	0	643
Total	120	262	50	1	54	441	156	1	166	261	59	0	67	686	189	0	2513
05:00 PM	28	68	7	0	18	116	40	0	43	55	17	0	11	193	50	0	646
05:15 PM	31	49	10	0	15	111	35	0	53	66	16	0	18	189	42	1	636
05:30 PM	24	63	10	0	16	99	36	0	38	60	15	0	14	183	60	1	619
05:45 PM	38	68	17	0	16	98	41	0	43	72	10	0	12	191	54	0	660
Total	121	248	44	0	65	424	152	0	177	253	58	0	55	756	206	2	2561
Grand Total	241	510	94	1	119	865	308	1	343	514	117	0	122	1442	395	2	5074
Apprch %	28.5	60.3	11.1	0.1	9.2	66.9	23.8	0.1	35.2	52.8	12	0	6.2	73.5	20.1	0.1	
Total %	4.7	10.1	1.9	0	2.3	17	6.1	0	6.8	10.1	2.3	0	2.4	28.4	7.8	0	

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
05:00 PM	28	68	7	0	103	18	116	40	0	174	43	55	17	0	115	11	193	50	0	254	646
05:15 PM	31	49	10	0	90	15	111	35	0	161	53	66	16	0	135	18	189	42	1	250	636
05:30 PM	24	63	10	0	97	16	99	36	0	151	38	60	15	0	113	14	183	60	1	258	619
05:45 PM	38	68	17	0	123	16	98	41	0	155	43	72	10	0	125	12	191	54	0	257	660
Total Volume	121	248	44	0	413	65	424	152	0	641	177	253	58	0	488	55	756	206	2	1019	2561
% App. Total	29.3	60	10.7	0		10.1	66.1	23.7	0		36.3	51.8	11.9	0		5.4	74.2	20.2	0.2		
PHF	.796	.912	.647	.000	.839	.903	.914	.927	.000	.921	.835	.878	.853	.000	.904	.764	.979	.858	.500	.987	.970

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM



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City, State: Malden, MA
Client: Howard Stein-Hudson/ K. Pyke

Groups Printed- Heavy Vehicles

Start Time	Main Street From North				Centre Street (Route 60) From East				Main Street From South				Centre Street (Route 60) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	1	1	0	0	0	4	1	0	0	2	1	0	1	7	4	0	22
04:15 PM	7	0	2	0	0	4	0	0	1	5	1	0	2	3	4	0	29
04:30 PM	2	1	0	0	0	0	0	0	1	3	1	0	2	2	4	0	16
04:45 PM	4	0	0	0	0	1	1	0	1	4	2	0	3	3	2	0	21
Total	14	2	2	0	0	9	2	0	3	14	5	0	8	15	14	0	88
05:00 PM	2	0	0	0	0	5	0	0	0	3	1	0	2	4	5	0	22
05:15 PM	2	2	0	0	0	2	0	0	1	2	0	0	2	2	3	0	16
05:30 PM	4	1	0	0	1	3	1	0	1	5	1	0	2	0	4	0	23
05:45 PM	3	2	0	0	0	0	0	0	0	1	1	0	2	5	5	0	19
Total	11	5	0	0	1	10	1	0	2	11	3	0	8	11	17	0	80
Grand Total	25	7	2	0	1	19	3	0	5	25	8	0	16	26	31	0	168
Apprch %	73.5	20.6	5.9	0	4.3	82.6	13	0	13.2	65.8	21.1	0	21.9	35.6	42.5	0	
Total %	14.9	4.2	1.2	0	0.6	11.3	1.8	0	3	14.9	4.8	0	9.5	15.5	18.5	0	

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	1	1	0	0	2	0	4	1	0	5	0	2	1	0	3	1	7	4	0	12	22
04:15 PM	7	0	2	0	9	0	4	0	0	4	1	5	1	0	7	2	3	4	0	9	29
04:30 PM	2	1	0	0	3	0	0	0	0	0	1	3	1	0	5	2	2	4	0	8	16
04:45 PM	4	0	0	0	4	0	1	1	0	2	1	4	2	0	7	3	3	2	0	8	21
Total Volume	14	2	2	0	18	0	9	2	0	11	3	14	5	0	22	8	15	14	0	37	88
% App. Total	77.8	11.1	11.1	0		0	81.8	18.2	0		13.6	63.6	22.7	0		21.6	40.5	37.8	0		
PHF	.500	.500	.250	.000	.500	.000	.563	.500	.000	.550	.750	.700	.625	.000	.786	.667	.536	.875	.000	.771	.759



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Groups Printed- Peds and Bikes

Start Time	Main Street From North					Centre Street (Route 60) From East					Main Street From South					Centre Street (Route 60) From West					Int. Total
	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	
04:00 PM	0	0	0	0	0	0	0	0	5	2	0	0	0	1	5	0	1	1	9	11	35
04:15 PM	0	0	0	2	4	0	0	0	8	5	0	0	0	6	5	0	0	0	3	6	39
04:30 PM	0	0	0	0	2	0	0	0	10	1	1	1	0	5	3	0	0	0	8	9	40
04:45 PM	0	0	0	2	1	0	0	0	4	1	0	0	0	3	1	0	0	0	6	6	24
Total	0	0	0	4	7	0	0	0	27	9	1	1	0	15	14	0	1	1	26	32	138
05:00 PM	0	0	0	1	1	0	0	0	0	4	1	1	0	1	3	0	0	0	0	7	19
05:15 PM	0	0	1	1	3	0	0	0	1	3	1	3	0	2	4	0	0	0	5	5	29
05:30 PM	0	0	0	4	1	0	0	0	6	1	0	1	0	9	6	0	0	0	6	3	37
05:45 PM	0	0	0	1	0	0	0	0	6	5	0	1	0	2	7	0	0	0	7	6	35
Total	0	0	1	7	5	0	0	0	13	13	2	6	0	14	20	0	0	0	18	21	120
Grand Total	0	0	1	11	12	0	0	0	40	22	3	7	0	29	34	0	1	1	44	53	258
Apprch %	0	0	4.2	45.8	50	0	0	0	64.5	35.5	4.1	9.6	0	39.7	46.6	0	1	1	44.4	53.5	
Total %	0	0	0.4	4.3	4.7	0	0	0	15.5	8.5	1.2	2.7	0	11.2	13.2	0	0.4	0.4	17.1	20.5	

Start Time	Main Street From North						Centre Street (Route 60) From East						Main Street From South						Centre Street (Route 60) From West						Int. Total
	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 04:00 PM																									
04:00 PM	0	0	0	0	0	0	0	0	0	5	2	7	0	0	0	1	5	6	0	1	1	9	11	22	35
04:15 PM	0	0	0	2	4	6	0	0	0	8	5	13	0	0	0	6	5	11	0	0	0	3	6	9	39
04:30 PM	0	0	0	0	2	2	0	0	0	10	1	11	1	1	0	5	3	10	0	0	0	8	9	17	40
04:45 PM	0	0	0	2	1	3	0	0	0	4	1	5	0	0	0	3	1	4	0	0	0	6	6	12	24
Total Volume	0	0	0	4	7	11	0	0	0	27	9	36	1	1	0	15	14	31	0	1	1	26	32	60	138
% App. Total	0	0	0	36.4	63.6		0	0	0	75	25		3.2	3.2	0	48.4	45.2		0	1.7	1.7	43.3	53.3		
PHF	.000	.000	.000	.500	.438	.458	.000	.000	.000	.675	.450	.692	.250	.250	.000	.625	.700	.705	.000	.250	.250	.722	.727	.682	.863



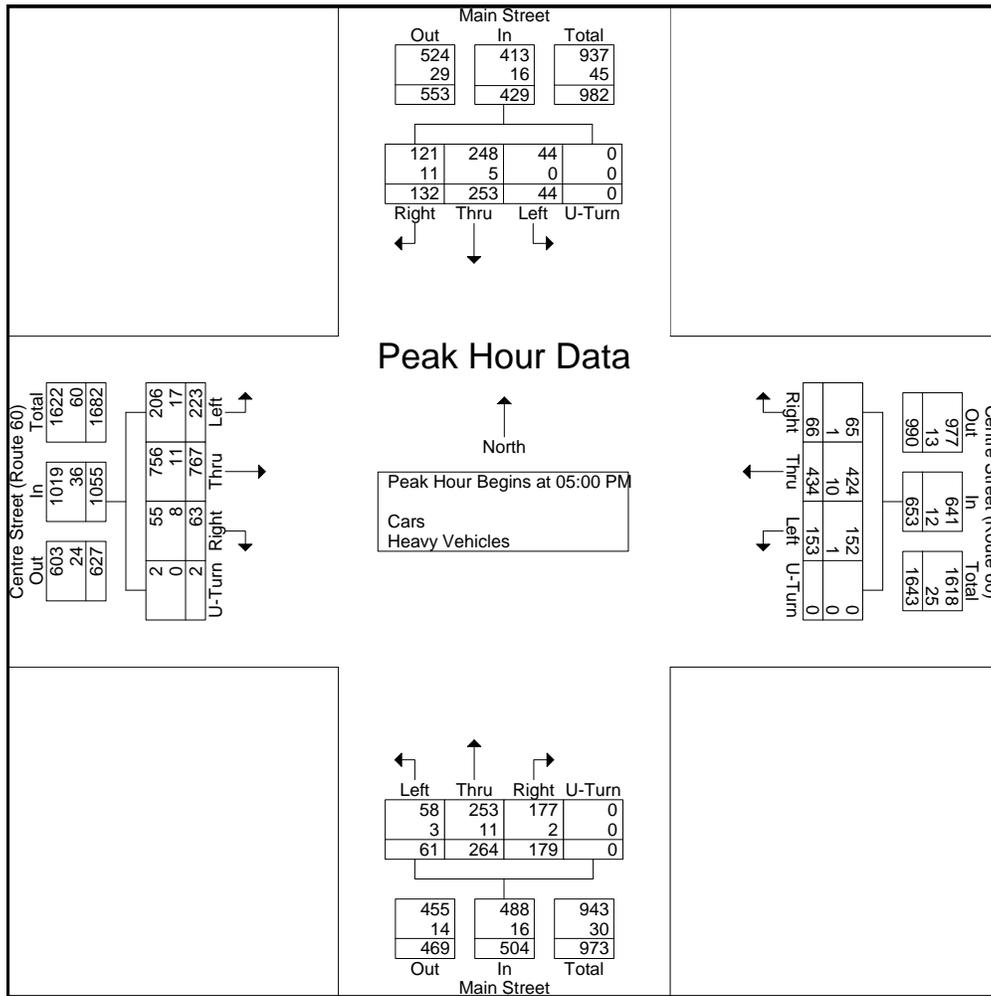
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	30	68	7	0	105	18	121	40	0	179	43	58	18	0	119	13	197	55	0	265	668
05:15 PM	33	51	10	0	94	15	113	35	0	163	54	68	16	0	138	20	191	45	1	257	652
05:30 PM	28	64	10	0	102	17	102	37	0	156	39	65	16	0	120	16	183	64	1	264	642
05:45 PM	41	70	17	0	128	16	98	41	0	155	43	73	11	0	127	14	196	59	0	269	679
Total Volume	132	253	44	0	429	66	434	153	0	653	179	264	61	0	504	63	767	223	2	1055	2641
% App. Total	30.8	59	10.3	0		10.1	66.5	23.4	0		35.5	52.4	12.1	0		6	72.7	21.1	0.2		
PHF	.805	.904	.647	.000	.838	.917	.897	.933	.000	.912	.829	.904	.847	.000	.913	.788	.973	.871	.500	.980	.972
Cars	121	248	44	0	413	65	424	152	0	641	177	253	58	0	488	55	756	206	2	1019	2561
% Cars	91.7	98.0	100	0	96.3	98.5	97.7	99.3	0	98.2	98.9	95.8	95.1	0	96.8	87.3	98.6	92.4	100	96.6	97.0
Heavy Vehicles	11	5	0	0	16	1	10	1	0	12	2	11	3	0	16	8	11	17	0	36	80
% Heavy Vehicles	8.3	2.0	0	0	3.7	1.5	2.3	0.7	0	1.8	1.1	4.2	4.9	0	3.2	12.7	1.4	7.6	0	3.4	3.0



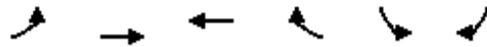


Intersection LOS/Synchro Reports

HCM Unsignalized Intersection Capacity Analysis

1: Pleasant Street (Route 60)/Centre Street (Route 60) & Pleasant Street

8/31/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑			↗
Volume (veh/h)	0	720	447	0	0	196
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.93	0.87	0.92	0.92	0.85
Hourly flow rate (vph)	0	774	514	0	0	231
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		131	239			
pX, platoon unblocked	0.77				0.77	0.77
vC, conflicting volume	514				901	514
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	225				725	225
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				100	61
cM capacity (veh/h)	1048				282	590

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	387	387	514	231
Volume Left	0	0	0	0
Volume Right	0	0	0	231
cSH	1700	1700	1700	590
Volume to Capacity	0.23	0.23	0.30	0.39
Queue Length 95th (ft)	0	0	0	46
Control Delay (s)	0.0	0.0	0.0	15.0
Lane LOS				B
Approach Delay (s)	0.0		0.0	15.0
Approach LOS				B

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization	42.3%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

2: Pearl Street/Pleasant St. Park & Pleasant Street

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Volume (veh/h)	0	0	0	172	339	7	125	12	0	0	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.84	0.84	0.84	0.84	0.84	0.84	0.38	0.38	0.38
Hourly flow rate (vph)	0	0	0	205	404	8	149	14	0	0	3	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)	795											
pX, platoon unblocked												
vC, conflicting volume	412	0			824			821	0	824	817	408
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	412	0			824			821	0	824	817	408
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	3.3
p0 queue free %	100	87			43			95	100	100	99	99
cM capacity (veh/h)	1147	1623			260			270	1085	253	272	643

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	617	163	8
Volume Left	205	149	0
Volume Right	8	0	5
cSH	1623	261	442
Volume to Capacity	0.13	0.63	0.02
Queue Length 95th (ft)	11	95	1
Control Delay (s)	3.3	39.4	13.3
Lane LOS	A	E	B
Approach Delay (s)	3.3	39.4	13.3
Approach LOS		E	B

Intersection Summary			
Average Delay		10.9	
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		

Timings

3: Pearl Street & Centre Street (Route 60)

8/31/2015

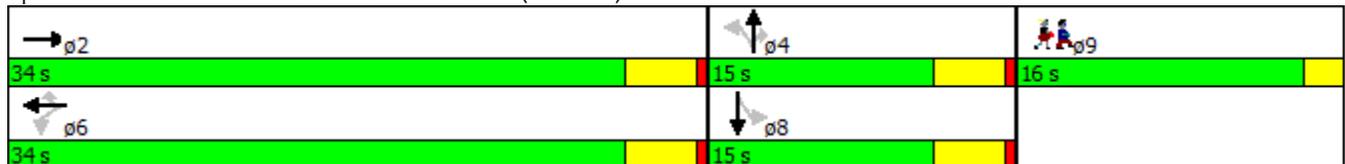


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	ø9
Lane Configurations	↑↑		↑	↗		↖	↗		↕	
Volume (vph)	672	20	427	81	20	49	75	26	148	
Turn Type	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	2		6			4			8	9
Permitted Phases		6		6	4		4	8		
Detector Phase	2	6	6	6	4	4	4	8	8	
Switch Phase										
Minimum Initial (s)	2.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	7.0
Minimum Split (s)	15.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (s)	34.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (%)	52.3%	52.3%	52.3%	52.3%	23.1%	23.1%	23.1%	23.1%	23.1%	25%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	4.0		4.0	4.0		4.0	4.0		4.0	
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	None	None	None						
Act Effect Green (s)	30.4		30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio	0.49		0.49	0.49		0.18	0.18		0.18	
v/c Ratio	0.46		0.67	0.12		0.25	0.23		0.61	
Control Delay	12.3		18.3	3.0		26.0	8.5		35.1	
Queue Delay	0.0		0.0	0.0		0.0	0.0		0.0	
Total Delay	12.3		18.3	3.0		26.0	8.5		35.1	
LOS	B		B	A		C	A		D	
Approach Delay	12.3		16.0			16.8			35.1	
Approach LOS	B		B			B			D	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 16.5	Intersection LOS: B
Intersection Capacity Utilization 61.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Pearl Street & Centre Street (Route 60)



Queues

3: Pearl Street & Centre Street (Route 60)

8/31/2015



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	766	559	101	75	82	195
v/c Ratio	0.46	0.67	0.12	0.25	0.23	0.61
Control Delay	12.3	18.3	3.0	26.0	8.5	35.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	18.3	3.0	26.0	8.5	35.1
Queue Length 50th (ft)	102	168	0	26	0	73
Queue Length 95th (ft)	146	227	17	60	33	#152
Internal Link Dist (ft)	159	9		329		66
Turn Bay Length (ft)						
Base Capacity (vph)	1671	836	830	304	349	318
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.46	0.67	0.12	0.25	0.23	0.61

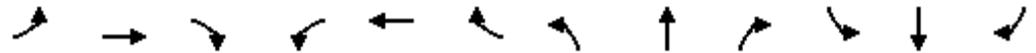
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Pearl Street & Centre Street (Route 60)

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↑		↑	↑		↑↑	
Volume (vph)	0	672	48	20	427	81	20	49	75	26	148	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00	
Frt		0.99			1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00			1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3384			1777	1583		1873	1568		1868	
Flt Permitted		1.00			0.95	1.00		0.89	1.00		0.94	
Satd. Flow (perm)		3384			1700	1583		1688	1568		1763	
Peak-hour factor, PHF	0.94	0.94	0.94	0.80	0.80	0.80	0.92	0.92	0.92	0.76	0.92	0.92
Adj. Flow (vph)	0	715	51	25	534	101	22	53	82	34	161	0
RTOR Reduction (vph)	0	8	0	0	0	52	0	0	67	0	0	0
Lane Group Flow (vph)	0	758	0	0	559	49	0	75	15	0	195	0
Heavy Vehicles (%)	2%	6%	0%	0%	7%	2%	0%	0%	3%	0%	1%	0%
Turn Type		NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases				6		6	4		4	8		
Actuated Green, G (s)		30.4			30.4	30.4		11.1	11.1		11.1	
Effective Green, g (s)		30.4			30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio		0.49			0.49	0.49		0.18	0.18		0.18	
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		1656			832	774		301	280		315	
v/s Ratio Prot		0.22										
v/s Ratio Perm					c0.33	0.03		0.04	0.01		c0.11	
v/c Ratio		0.46			0.67	0.06		0.25	0.05		0.62	
Uniform Delay, d1		10.4			12.1	8.4		21.9	21.1		23.5	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		0.9			4.3	0.2		2.0	0.4		3.6	
Delay (s)		11.3			16.4	8.5		23.9	21.5		27.1	
Level of Service		B			B	A		C	C		C	
Approach Delay (s)		11.3			15.2			22.6			27.1	
Approach LOS		B			B			C			C	

Intersection Summary

HCM 2000 Control Delay	15.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Timings

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015



Lane Group	EBL	EBR	NBL	NBT	SBT	ø3
Lane Configurations						
Volume (vph)	17	300	100	152	516	
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	3
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0	6.0	10.0	10.0	8.0
Minimum Split (s)	12.0	12.0	10.0	20.0	20.0	17.0
Total Split (s)	13.0	13.0	10.0	50.0	40.0	17.0
Total Split (%)	16.3%	16.3%	12.5%	62.5%	50.0%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead		Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes
Recall Mode	Max	Max	Max	C-Max	C-Max	Ped
Act Effect Green (s)	9.0	9.0		45.0	35.0	
Actuated g/C Ratio	0.11	0.11		0.56	0.44	
v/c Ratio	0.12	0.74		0.22	0.49	
Control Delay	33.7	14.5		8.8	15.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	33.7	14.5		8.8	15.7	
LOS	C	B		A	B	
Approach Delay	15.6			8.8	15.7	
Approach LOS	B			A	B	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 14.3
 Intersection LOS: B
 Intersection Capacity Utilization 46.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 4: Commercial Street/Florence Street & Pleasant Street



Queues

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	22	357	271	717
v/c Ratio	0.12	0.74	0.22	0.49
Control Delay	33.7	14.5	8.8	15.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	33.7	14.5	8.8	15.7
Queue Length 50th (ft)	10	0	31	115
Queue Length 95th (ft)	29	58	49	164
Internal Link Dist (ft)	597		294	439
Turn Bay Length (ft)	60			
Base Capacity (vph)	186	485	1244	1463
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.12	0.74	0.22	0.49

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015



Movement	EBU	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations							
Volume (vph)	2	17	300	100	152	516	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	15	11	12
Total Lost time (s)		4.0	4.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		0.95	0.95	
Frbp, ped/bikes		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.96	
Flt Protected		0.95	1.00		0.98	1.00	
Satd. Flow (prot)		1655	1501		3361	3250	
Flt Permitted		0.95	1.00		0.60	1.00	
Satd. Flow (perm)		1655	1501		2069	3250	
Peak-hour factor, PHF	0.84	0.84	0.84	0.93	0.93	0.96	0.96
Adj. Flow (vph)	2	20	357	108	163	538	179
RTOR Reduction (vph)	0	0	317	0	0	41	0
Lane Group Flow (vph)	0	22	40	0	271	677	0
Confl. Peds. (#/hr)							3
Heavy Vehicles (%)	0%	6%	4%	8%	9%	3%	2%
Parking (#/hr)					5		
Turn Type	Perm	Prot	Perm	pm+pt	NA	NA	
Protected Phases		4		5	2	6	
Permitted Phases	4		4	2			
Actuated Green, G (s)		9.0	9.0		45.0	35.0	
Effective Green, g (s)		9.0	9.0		45.0	35.0	
Actuated g/C Ratio		0.11	0.11		0.56	0.44	
Clearance Time (s)		4.0	4.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		186	168		1260	1421	
v/s Ratio Prot					c0.02	c0.21	
v/s Ratio Perm		0.01	c0.03		0.10		
v/c Ratio		0.12	0.24		0.22	0.48	
Uniform Delay, d1		31.9	32.4		8.7	16.0	
Progression Factor		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.3	3.3		0.4	1.1	
Delay (s)		33.2	35.7		9.1	17.1	
Level of Service		C	D		A	B	
Approach Delay (s)		35.6			9.1	17.1	
Approach LOS		D			A	B	
Intersection Summary							
HCM 2000 Control Delay			20.7		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.31				
Actuated Cycle Length (s)			80.0		Sum of lost time (s)		15.0
Intersection Capacity Utilization			46.5%		ICU Level of Service		A
Analysis Period (min)			15				
c Critical Lane Group							

Timings

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015

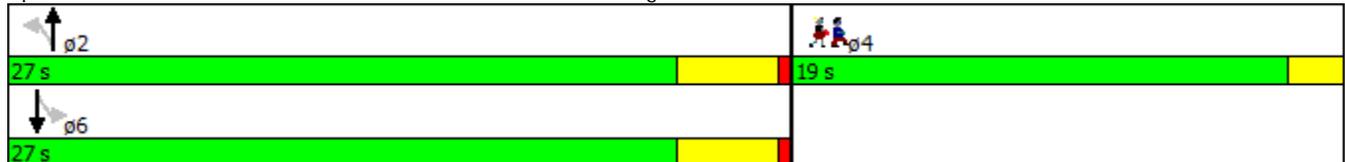


Lane Group	NBL	NBT	SBL	SBT	ø4
Lane Configurations		↔↔		↔↔	
Volume (vph)	79	290	185	611	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	4
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.0	27.0	27.0	27.0	19.0
Total Split (s)	27.0	27.0	27.0	27.0	19.0
Total Split (%)	58.7%	58.7%	58.7%	58.7%	41%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Ped
Act Effect Green (s)		23.0		23.0	
Actuated g/C Ratio		0.50		0.50	
v/c Ratio		0.44		0.68	
Control Delay		6.4		12.0	
Queue Delay		0.0		0.0	
Total Delay		6.4		12.0	
LOS		A		B	
Approach Delay		6.4		12.0	
Approach LOS		A		B	

Intersection Summary

Cycle Length: 46	
Actuated Cycle Length: 46	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 9.8	Intersection LOS: A
Intersection Capacity Utilization 44.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Commercial Street & MBTA Drive/Exchange Street



Queues

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015

	↑	↓
Lane Group	NBT	SBT
Lane Group Flow (vph)	564	878
v/c Ratio	0.44	0.68
Control Delay	6.4	12.0
Queue Delay	0.0	0.0
Total Delay	6.4	12.0
Queue Length 50th (ft)	30	81
Queue Length 95th (ft)	56	133
Internal Link Dist (ft)	230	294
Turn Bay Length (ft)		
Base Capacity (vph)	1292	1292
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.44	0.68
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015

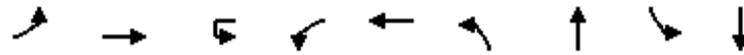


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								↕			↕	
Volume (vph)	0	0	0	0	0	0	79	290	144	185	611	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	13	13	13
Total Lost time (s)								4.0			4.0	
Lane Util. Factor								0.95			0.95	
Frt								0.96			1.00	
Flt Protected								0.99			0.99	
Satd. Flow (prot)								3172			3594	
Flt Permitted								0.76			0.71	
Satd. Flow (perm)								2425			2576	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	0	0	0	87	319	158	199	657	22
RTOR Reduction (vph)	0	0	0	0	0	0	0	79	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	485	0	0	874	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	14%	1%	0%	3%	0%
Turn Type							Perm	NA		Perm	NA	
Protected Phases								2			6	
Permitted Phases							2			6		
Actuated Green, G (s)								23.0			23.0	
Effective Green, g (s)								23.0			23.0	
Actuated g/C Ratio								0.50			0.50	
Clearance Time (s)								4.0			4.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)								1212			1288	
v/s Ratio Prot												
v/s Ratio Perm								0.20			c0.34	
v/c Ratio								0.40			0.68	
Uniform Delay, d1								7.2			8.7	
Progression Factor								1.00			1.00	
Incremental Delay, d2								1.0			2.9	
Delay (s)								8.2			11.6	
Level of Service								A			B	
Approach Delay (s)		0.0			0.0			8.2			11.6	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			10.3					HCM 2000 Level of Service			B	
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			46.0					Sum of lost time (s)		6.0		
Intersection Capacity Utilization			44.5%					ICU Level of Service		A		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015

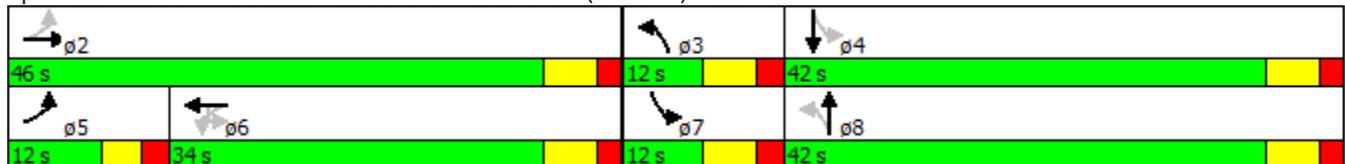


Lane Group	EBL	EBT	WBU	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↶	↶↷		↷	↶↷		↶↷		↶↷
Volume (vph)	119	451	1	225	491	40	224	168	509
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2			6	3	8	7	4
Permitted Phases	2		6	6		8		4	
Detector Phase	5	2	6	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	6.0	10.0	10.0	10.0	10.0	6.0	8.0	6.0	8.0
Minimum Split (s)	11.0	20.0	20.0	20.0	20.0	12.0	27.0	12.0	27.0
Total Split (s)	12.0	46.0	34.0	34.0	34.0	12.0	42.0	12.0	42.0
Total Split (%)	12.0%	46.0%	34.0%	34.0%	34.0%	12.0%	42.0%	12.0%	42.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	6.0		6.0	6.0		6.0		6.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes						
Recall Mode	None	Max	Max	Max	Max	None	None	None	None
Act Effect Green (s)	41.2	40.2		28.2	28.2		25.3		25.3
Actuated g/C Ratio	0.53	0.52		0.36	0.36		0.33		0.33
v/c Ratio	0.43	0.37		0.99	0.63		0.49		0.79
Control Delay	15.5	12.1		85.0	22.8		20.7		30.2
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.2
Total Delay	15.5	12.1		85.0	22.8		20.7		30.4
LOS	B	B		F	C		C		C
Approach Delay		12.7			38.7		20.7		30.4
Approach LOS		B			D		C		C

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 77.6	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 27.3	Intersection LOS: C
Intersection Capacity Utilization 80.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Commercial Street & Centre Street (Route 60)/Centre Street



Queues

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	132	630	254	741	379	724
v/c Ratio	0.43	0.37	0.99	0.63	0.49	0.79
Control Delay	15.5	12.1	85.0	22.8	20.7	30.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	15.5	12.1	85.0	22.8	20.7	30.4
Queue Length 50th (ft)	30	83	120	142	68	162
Queue Length 95th (ft)	74	150	#300	233	100	224
Internal Link Dist (ft)		581		625	814	230
Turn Bay Length (ft)	140		310			
Base Capacity (vph)	306	1706	256	1183	1101	1307
Starvation Cap Reductn	0	0	0	0	0	118
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.37	0.99	0.63	0.34	0.61

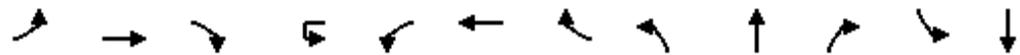
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	119	451	116	1	225	491	168	40	224	62	168	509
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	10	12	12	12	11	12	12	16
Total Lost time (s)	5.0	6.0			6.0	6.0			6.0			6.0
Lane Util. Factor	1.00	0.95			1.00	0.95			0.95			0.95
Frbp, ped/bikes	1.00	0.99			1.00	0.98			0.99			1.00
Flpb, ped/bikes	1.00	1.00			0.98	1.00			1.00			0.99
Frt	1.00	0.97			1.00	0.96			0.97			0.99
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.99
Satd. Flow (prot)	1555	3270			1632	3192			3106			3693
Flt Permitted	0.23	1.00			0.41	1.00			0.75			0.75
Satd. Flow (perm)	375	3270			709	3192			2332			2808
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.89	0.86	0.86	0.86	0.98	0.98
Adj. Flow (vph)	132	501	129	1	253	552	189	47	260	72	171	519
RTOR Reduction (vph)	0	18	0	0	0	30	0	0	24	0	0	4
Lane Group Flow (vph)	132	612	0	0	254	711	0	0	355	0	0	720
Confl. Peds. (#/hr)	48		31		31		48	43		33	33	
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	8%	0%	1%	5%	10%	20%	5%	5%	16%	3%
Turn Type	pm+pt	NA		Perm	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	5	2				6		3	8		7	4
Permitted Phases	2			6	6			8			4	
Actuated Green, G (s)	40.2	40.2			28.2	28.2			25.3			25.3
Effective Green, g (s)	40.2	40.2			28.2	28.2			25.3			25.3
Actuated g/C Ratio	0.52	0.52			0.36	0.36			0.33			0.33
Clearance Time (s)	5.0	6.0			6.0	6.0			6.0			6.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0			3.0
Lane Grp Cap (vph)	301	1696			257	1161			761			916
v/s Ratio Prot	0.04	c0.19				0.22						
v/s Ratio Perm	0.19				c0.36				0.15			c0.26
v/c Ratio	0.44	0.36			0.99	0.61			0.47			0.79
Uniform Delay, d1	11.1	11.0			24.5	20.2			20.7			23.6
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	1.0	0.6			53.2	2.4			0.5			4.5
Delay (s)	12.1	11.6			77.7	22.6			21.2			28.1
Level of Service	B	B			E	C			C			C
Approach Delay (s)		11.7				36.7			21.2			28.1
Approach LOS		B				D			C			C

Intersection Summary

HCM 2000 Control Delay	25.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	77.5	Sum of lost time (s)	21.0
Intersection Capacity Utilization	80.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015

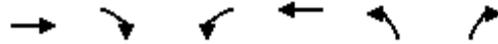


Movement	SBR
Lane Configurations	
Volume (vph)	33
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	34
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	43
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	33%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

7: Abbott Street & Pleasant Street

8/31/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	6	115	7	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.81	0.81	0.25	0.92
Hourly flow rate (vph)	0	12	142	9	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			12		293	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			12		293	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			91		100	100
cM capacity (veh/h)			1620		641	1091

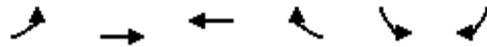
Direction, Lane #	EB 1	WB 1
Volume Total	12	151
Volume Left	0	142
Volume Right	12	0
cSH	1700	1620
Volume to Capacity	0.01	0.09
Queue Length 95th (ft)	0	7
Control Delay (s)	0.0	7.0
Lane LOS		A
Approach Delay (s)	0.0	7.0
Approach LOS		

Intersection Summary			
Average Delay		6.5	
Intersection Capacity Utilization	16.7%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

8: Exchange Street & Abbott Street

8/31/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑			↘	
Volume (veh/h)	0	286	0	0	121	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.92	0.92	0.82	0.82
Hourly flow rate (vph)	0	340	0	0	148	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		361				
pX, platoon unblocked						
vC, conflicting volume	0				340	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				340	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				78	100
cM capacity (veh/h)	1636				660	1091
Direction, Lane #	EB 1	SB 1				
Volume Total	340	148				
Volume Left	0	148				
Volume Right	0	0				
cSH	1700	660				
Volume to Capacity	0.20	0.22				
Queue Length 95th (ft)	0	21				
Control Delay (s)	0.0	12.0				
Lane LOS		B				
Approach Delay (s)	0.0	12.0				
Approach LOS		B				
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			28.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

9: Jackson Street & Exchange Street

8/31/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔					↔
Volume (veh/h)	166	241	0	0	0	20
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.92	0.92	0.71	0.71
Hourly flow rate (vph)	193	280	0	0	0	28
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	609			1123		
pX, platoon unblocked						
vC, conflicting volume			473		333	333
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			473		333	333
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			1099		666	713

Direction, Lane #	EB 1	NB 1
Volume Total	473	28
Volume Left	0	0
Volume Right	280	28
cSH	1700	713
Volume to Capacity	0.28	0.04
Queue Length 95th (ft)	0	3
Control Delay (s)	0.0	10.3
Lane LOS		B
Approach Delay (s)	0.0	10.3
Approach LOS		B

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization	33.5%	ICU Level of Service	A
Analysis Period (min)	15		

Timings
16: Main Street

8/31/2015



Lane Group	NBL	NBT	SBU	SBT	ø9
Lane Configurations		↕↕		↕↕	
Volume (vph)	114	361	4	410	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	9
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	19.0
Total Split (s)	84.0	84.0	84.0	84.0	19.0
Total Split (%)	81.6%	81.6%	81.6%	81.6%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)		80.0		80.0	
Actuated g/C Ratio		0.78		0.78	
v/c Ratio		0.30		0.24	
Control Delay		3.8		2.6	
Queue Delay		2.2		0.8	
Total Delay		6.0		3.4	
LOS		A		A	
Approach Delay		6.0		3.4	
Approach LOS		A		A	

Intersection Summary

Cycle Length: 103
 Actuated Cycle Length: 103
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTU, Start of Green
 Natural Cycle: 40
 Control Type: Pretimed
 Maximum v/c Ratio: 0.30
 Intersection Signal Delay: 4.6
 Intersection LOS: A
 Intersection Capacity Utilization 35.8%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 16: Main Street



Queues
16: Main Street

8/31/2015



Lane Group	NBT	SBT
Lane Group Flow (vph)	572	611
v/c Ratio	0.30	0.24
Control Delay	3.8	2.6
Queue Delay	2.2	0.8
Total Delay	6.0	3.4
Queue Length 50th (ft)	46	34
Queue Length 95th (ft)	57	48
Internal Link Dist (ft)	132	223
Turn Bay Length (ft)		
Base Capacity (vph)	1896	2553
Starvation Cap Reductn	1147	1557
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.76	0.61
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

16: Main Street

8/31/2015



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations				↕↕		↕↔	
Volume (vph)	0	0	114	361	4	410	136
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0	
Lane Util. Factor				0.95		0.95	
Flt				1.00		0.96	
Flt Protected				0.99		1.00	
Satd. Flow (prot)				3497		3407	
Flt Permitted				0.69		0.95	
Satd. Flow (perm)				2440		3247	
Peak-hour factor, PHF	0.92	0.92	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	0	0	137	435	4	456	151
RTOR Reduction (vph)	0	0	0	0	0	31	0
Lane Group Flow (vph)	0	0	0	572	0	580	0
Turn Type			Perm	NA	Perm	NA	
Protected Phases				2		6	
Permitted Phases			2		6		
Actuated Green, G (s)				80.0		80.0	
Effective Green, g (s)				80.0		80.0	
Actuated g/C Ratio				0.78		0.78	
Clearance Time (s)				4.0		4.0	
Lane Grp Cap (vph)				1895		2521	
v/s Ratio Prot							
v/s Ratio Perm				c0.23		0.18	
v/c Ratio				0.30		0.23	
Uniform Delay, d1				3.4		3.1	
Progression Factor				1.00		1.00	
Incremental Delay, d2				0.4		0.2	
Delay (s)				3.8		3.3	
Level of Service				A		A	
Approach Delay (s)	0.0			3.8		3.3	
Approach LOS	A			A		A	

Intersection Summary

HCM 2000 Control Delay	3.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	103.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	35.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Timings

17: Main Street & Exchange Street/Irving Street

8/31/2015

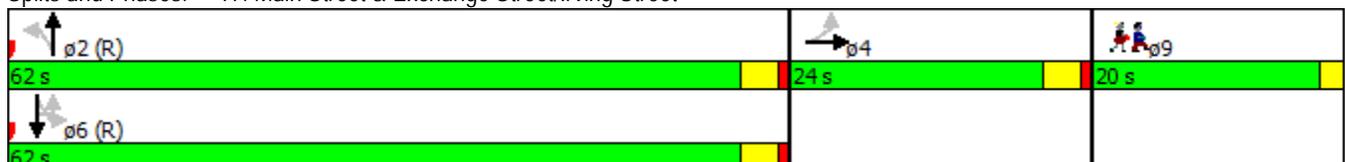


Lane Group	EBT	NBT	SBU	SBL	SBT	ø9
Lane Configurations	↔	↔			↔	
Volume (vph)	11	417	2	8	401	
Turn Type	NA	NA	Perm	Perm	NA	
Protected Phases	4	2			6	9
Permitted Phases			6	6		
Detector Phase	4	2	6	6	6	
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	12.0	14.0	14.0	14.0	14.0	20.0
Total Split (s)	24.0	62.0	62.0	62.0	62.0	20.0
Total Split (%)	22.6%	58.5%	58.5%	58.5%	58.5%	19%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	20.0	58.0			58.0	
Actuated g/C Ratio	0.19	0.55			0.55	
v/c Ratio	0.31	0.31			0.27	
Control Delay	31.7	13.4			13.3	
Queue Delay	0.0	6.9			3.8	
Total Delay	31.7	20.3			17.1	
LOS	C	C			B	
Approach Delay	31.7	20.3			17.1	
Approach LOS	C	C			B	

Intersection Summary

Cycle Length: 106
 Actuated Cycle Length: 106
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.31
 Intersection Signal Delay: 20.2
 Intersection LOS: C
 Intersection Capacity Utilization 31.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 17: Main Street & Exchange Street/Irving Street



Queues

17: Main Street & Exchange Street/Irving Street

8/31/2015



Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	120	555	457
v/c Ratio	0.31	0.31	0.27
Control Delay	31.7	13.4	13.3
Queue Delay	0.0	6.9	3.8
Total Delay	31.7	20.3	17.1
Queue Length 50th (ft)	55	101	82
Queue Length 95th (ft)	100	116	113
Internal Link Dist (ft)	239	139	132
Turn Bay Length (ft)			
Base Capacity (vph)	388	1774	1697
Starvation Cap Reductn	0	1159	1133
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.90	0.81
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

17: Main Street & Exchange Street/Irving Street

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations		↕						↕				↕
Volume (vph)	52	11	38	0	0	0	0	417	27	2	8	401
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	11
Total Lost time (s)		4.0						4.0				4.0
Lane Util. Factor		1.00						0.95				0.95
Frt		0.95						0.99				1.00
Flt Protected		0.97						1.00				1.00
Satd. Flow (prot)		1951						3235				3293
Flt Permitted		0.97						1.00				0.94
Satd. Flow (perm)		1951						3235				3101
Peak-hour factor, PHF	0.84	0.84	0.84	0.25	0.25	0.25	0.80	0.80	0.80	0.90	0.90	0.90
Adj. Flow (vph)	62	13	45	0	0	0	0	521	34	2	9	446
RTOR Reduction (vph)	0	20	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	100	0	0	0	0	0	550	0	0	0	457
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	0%	11%	4%	0%	0%	6%
Turn Type	Perm	NA						NA		Perm	Perm	NA
Protected Phases		4						2				6
Permitted Phases	4						2			6	6	
Actuated Green, G (s)		20.0						58.0				58.0
Effective Green, g (s)		20.0						58.0				58.0
Actuated g/C Ratio		0.19						0.55				0.55
Clearance Time (s)		4.0						4.0				4.0
Lane Grp Cap (vph)		368						1770				1696
v/s Ratio Prot								c0.17				
v/s Ratio Perm		0.05										0.15
v/c Ratio		0.27						0.31				0.27
Uniform Delay, d1		36.8						13.1				12.7
Progression Factor		1.00						1.00				1.00
Incremental Delay, d2		1.8						0.5				0.4
Delay (s)		38.6						13.6				13.1
Level of Service		D						B				B
Approach Delay (s)		38.6			0.0			13.6				13.1
Approach LOS		D			A			B				B

Intersection Summary

HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Main Street & Exchange Street/Irving Street

8/31/2015

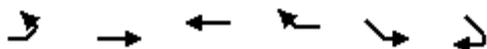


Movement	SBR
Lane Configurations	
Volume (vph)	0
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

22: Pleasant Street & Elm Street

8/31/2015

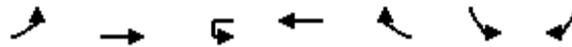


Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations			↔			
Volume (veh/h)	0	0	196	269	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	213	292	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			927			
pX, platoon unblocked						
vC, conflicting volume	505				359	359
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	505				359	359
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1059				639	685
Direction, Lane #	WB 1					
Volume Total	505					
Volume Left	0					
Volume Right	292					
cSH	1700					
Volume to Capacity	0.30					
Queue Length 95th (ft)	0					
Control Delay (s)	0.0					
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	30.1%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

1: Pleasant Street (Route 60)/Centre Street (Route 60) & Pleasant Street

9/1/2015



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations		↑↑		↑			↗
Volume (veh/h)	0	776	2	512	0	0	162
Sign Control		Free		Free		Yield	
Grade		0%		0%		0%	
Peak Hour Factor	0.94	0.94	0.90	0.90	0.90	0.82	0.82
Hourly flow rate (vph)	0	826	0	569	0	0	198
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None		None			
Median storage (veh)							
Upstream signal (ft)				239			
pX, platoon unblocked	0.77		0.00			0.77	0.77
vC, conflicting volume	569		0			982	569
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	299		0			831	299
tC, single (s)	4.1		0.0			6.8	7.0
tC, 2 stage (s)							
tF (s)	2.2		0.0			3.5	3.4
p0 queue free %	100		0			100	63
cM capacity (veh/h)	987		0			242	532

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	413	413	569	198
Volume Left	0	0	0	0
Volume Right	0	0	0	198
cSH	1700	1700	1700	532
Volume to Capacity	0.24	0.24	0.33	0.37
Queue Length 95th (ft)	0	0	0	43
Control Delay (s)	0.0	0.0	0.0	15.7
Lane LOS				C
Approach Delay (s)	0.0		0.0	15.7
Approach LOS				C

Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization		43.8%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

2: Pearl Street/Pleasant Street Park & Pleasant Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Volume (veh/h)	0	0	0	120	233	7	205	35	4	0	6	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.84	0.84	0.84	0.50	0.50	0.50
Hourly flow rate (vph)	0	0	0	135	262	8	244	42	5	0	12	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)	795											
pX, platoon unblocked												
vC, conflicting volume	270	0			555			539	0	561	535	266
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	270	0			555			539	0	561	535	266
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	3.3
p0 queue free %	100	92			39			90	100	100	97	98
cM capacity (veh/h)	1294	1630			398			414	1091	380	417	778

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	404	290	26
Volume Left	135	244	0
Volume Right	8	5	14
cSH	1630	404	555
Volume to Capacity	0.08	0.72	0.05
Queue Length 95th (ft)	7	138	4
Control Delay (s)	3.0	33.6	11.8
Lane LOS	A	D	B
Approach Delay (s)	3.0	33.6	11.8
Approach LOS		D	B

Intersection Summary		
Average Delay		15.6
Intersection Capacity Utilization	46.1%	ICU Level of Service
Analysis Period (min)		15
A		

Timings

3: Pearl Street & Centre Street (Route 60)/Centre Street

9/1/2015

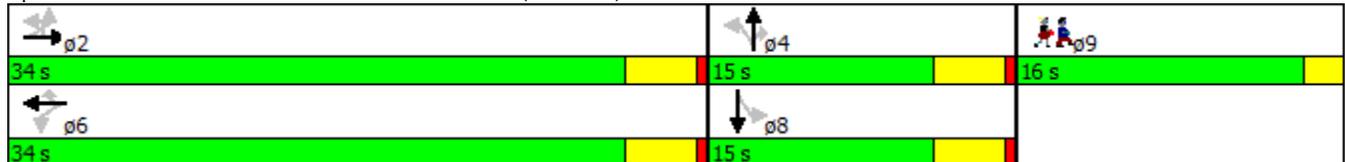


Lane Group	EBU	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	ø9
Lane Configurations			↑↑		↑	↑		↑	↑		↑	
Volume (vph)	1	2	747	1	495	140	18	102	76	53	70	
Turn Type	Perm	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases			2		6			4			8	9
Permitted Phases	2	2		6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	2.0	2.0	2.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (%)	52.3%	52.3%	52.3%	52.3%	52.3%	52.3%	23.1%	23.1%	23.1%	23.1%	23.1%	25%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)			0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)			4.0		4.0	4.0		4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	None	None	None								
Act Effect Green (s)			30.4		30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio			0.49		0.49	0.49		0.18	0.18		0.18	
v/c Ratio			0.51		0.61	0.18		0.50	0.27		0.69	
Control Delay			13.0		16.4	2.7		30.7	8.2		43.2	
Queue Delay			0.0		0.0	0.0		0.0	0.0		0.0	
Total Delay			13.0		16.4	2.7		30.7	8.2		43.2	
LOS			B		B	A		C	A		D	
Approach Delay			13.0		13.4			22.0			43.2	
Approach LOS			B		B			C			D	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 16.9	Intersection LOS: B
Intersection Capacity Utilization 47.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Pearl Street & Centre Street (Route 60)/Centre Street



Queues

3: Pearl Street & Centre Street (Route 60)/Centre Street

9/1/2015



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	836	557	157	162	103	169
v/c Ratio	0.51	0.61	0.18	0.50	0.27	0.69
Control Delay	13.0	16.4	2.7	30.7	8.2	43.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	16.4	2.7	30.7	8.2	43.2
Queue Length 50th (ft)	116	160	0	59	0	64
Queue Length 95th (ft)	165	255	26	90	23	#105
Internal Link Dist (ft)	159	9		329		66
Turn Bay Length (ft)						
Base Capacity (vph)	1639	914	858	322	375	245
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.61	0.18	0.50	0.27	0.69

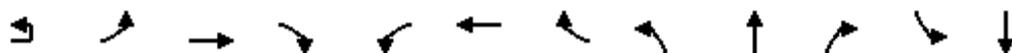
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Pearl Street & Centre Street (Route 60)/Centre Street

9/1/2015



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑	↑		↑	↑		↑
Volume (vph)	1	2	747	28	1	495	140	18	102	76	53	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0			4.0	4.0		4.0	4.0		4.0
Lane Util. Factor			0.95			1.00	1.00		1.00	1.00		1.00
Frt			0.99			1.00	0.85		1.00	0.85		1.00
Flt Protected			1.00			1.00	1.00		0.99	1.00		0.98
Satd. Flow (prot)			3485			1863	1583		1870	1615		1849
Flt Permitted			0.95			1.00	1.00		0.95	1.00		0.72
Satd. Flow (perm)			3324			1861	1583		1789	1615		1363
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.89	0.89	0.89	0.74	0.74	0.74	0.73	0.73
Adj. Flow (vph)	1	2	803	30	1	556	157	24	138	103	73	96
RTOR Reduction (vph)	0	0	4	0	0	0	80	0	0	85	0	0
Lane Group Flow (vph)	0	0	832	0	0	557	77	0	162	18	0	169
Heavy Vehicles (%)	0%	0%	3%	4%	0%	2%	2%	0%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6			4			8
Permitted Phases	2	2			6		6	4		4		8
Actuated Green, G (s)			30.4			30.4	30.4		11.1	11.1		11.1
Effective Green, g (s)			30.4			30.4	30.4		11.1	11.1		11.1
Actuated g/C Ratio			0.49			0.49	0.49		0.18	0.18		0.18
Clearance Time (s)			4.0			4.0	4.0		4.0	4.0		4.0
Vehicle Extension (s)			3.0			3.0	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)			1627			911	774		319	288		243
v/s Ratio Prot												
v/s Ratio Perm			0.25			0.30	0.05		0.09	0.01		0.12
v/c Ratio			0.51			0.61	0.10		0.51	0.06		0.70
Uniform Delay, d1			10.8			11.5	8.5		23.0	21.2		23.9
Progression Factor			1.00			1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2			1.2			3.1	0.3		5.7	0.4		8.4
Delay (s)			11.9			14.6	8.8		28.7	21.6		32.3
Level of Service			B			B	A		C	C		C
Approach Delay (s)			11.9			13.3			26.0			32.3
Approach LOS			B			B			C			C

Intersection Summary

HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Pearl Street & Centre Street (Route 60)/Centre Street

9/1/2015

Movement	SBR
Lane Configurations	
Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.73
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Timings

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Lane Group	EBL	EBR	NBL	NBT	SBT	ø3
Lane Configurations						
Volume (vph)	23	226	204	377	211	
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	3
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0	4.0	10.0	10.0	8.0
Minimum Split (s)	12.0	12.0	8.0	15.0	15.0	17.0
Total Split (s)	13.0	13.0	8.0	52.0	44.0	17.0
Total Split (%)	15.9%	15.9%	9.8%	63.4%	53.7%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead		Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes
Recall Mode	Max	Max	Max	C-Max	C-Max	Ped
Act Effect Green (s)	9.0	9.0		47.0	39.0	
Actuated g/C Ratio	0.11	0.11		0.57	0.48	
v/c Ratio	0.14	0.66		0.43	0.22	
Control Delay	35.0	13.9		10.6	8.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	35.0	13.9		10.6	8.6	
LOS	C	B		B	A	
Approach Delay	15.9			10.6	8.6	
Approach LOS	B			B	A	

Intersection Summary

Cycle Length: 82

Actuated Cycle Length: 82

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 11.2

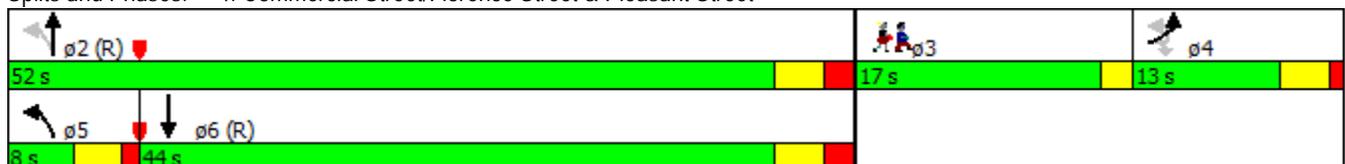
Intersection LOS: B

Intersection Capacity Utilization 44.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Commercial Street/Florence Street & Pleasant Street



Queues

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	26	254	646	344
v/c Ratio	0.14	0.66	0.43	0.22
Control Delay	35.0	13.9	10.6	8.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	35.0	13.9	10.6	8.6
Queue Length 50th (ft)	12	0	83	33
Queue Length 95th (ft)	35	66	114	57
Internal Link Dist (ft)	597		294	439
Turn Bay Length (ft)	60			
Base Capacity (vph)	191	386	1488	1555
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.14	0.66	0.43	0.22

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	23	226	204	377	211	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	15	11	12
Total Lost time (s)	4.0	4.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.95	
Flt Protected	0.95	1.00		0.98	1.00	
Satd. Flow (prot)	1745	1459		3635	3143	
Flt Permitted	0.95	1.00		0.68	1.00	
Satd. Flow (perm)	1745	1459		2525	3143	
Peak-hour factor, PHF	0.89	0.89	0.90	0.90	0.92	0.92
Adj. Flow (vph)	26	254	227	419	229	115
RTOR Reduction (vph)	0	226	0	0	60	0
Lane Group Flow (vph)	26	28	0	646	284	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	0%	7%	0%	1%	6%	2%
Parking (#/hr)				5		
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	9.0	9.0		47.0	39.0	
Effective Green, g (s)	9.0	9.0		47.0	39.0	
Actuated g/C Ratio	0.11	0.11		0.57	0.48	
Clearance Time (s)	4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	191	160		1501	1494	
v/s Ratio Prot	0.01			c0.02	0.09	
v/s Ratio Perm		c0.02		c0.23		
v/c Ratio	0.14	0.17		0.43	0.19	
Uniform Delay, d1	33.0	33.1		9.9	12.4	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.5	2.4		0.9	0.3	
Delay (s)	34.5	35.5		10.8	12.7	
Level of Service	C	D		B	B	
Approach Delay (s)	35.4			10.8	12.7	
Approach LOS	D			B	B	

Intersection Summary

HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

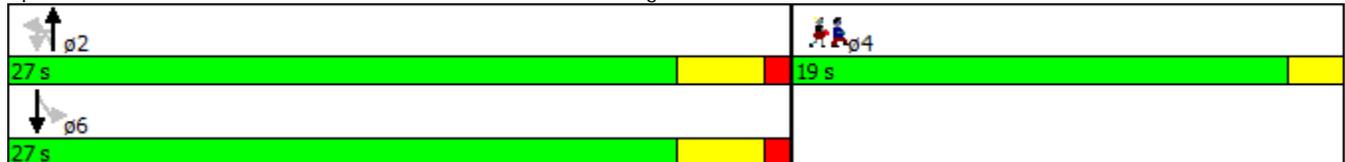


Lane Group	NBU	NBL	NBT	SBL	SBT	ø4
Lane Configurations			↔↔		↔↔	
Volume (vph)	4	75	581	66	362	
Turn Type	Perm	Perm	NA	Perm	NA	
Protected Phases			2		6	4
Permitted Phases	2	2		6		
Detector Phase	2	2	2	6	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	19.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0	19.0
Total Split (%)	58.7%	58.7%	58.7%	58.7%	58.7%	41%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)			0.0		0.0	
Total Lost Time (s)			4.0		4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Max	Ped
Act Effect Green (s)			23.0		23.0	
Actuated g/C Ratio			0.50		0.50	
v/c Ratio			0.60		0.36	
Control Delay			9.8		7.8	
Queue Delay			0.0		0.0	
Total Delay			9.8		7.8	
LOS			A		A	
Approach Delay			9.8		7.8	
Approach LOS			A		A	

Intersection Summary

Cycle Length: 46	
Actuated Cycle Length: 46	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 9.1	Intersection LOS: A
Intersection Capacity Utilization 41.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Commercial Street & MBTA Drive/Exchange Street



Queues

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015



Lane Group	NBT	SBT
Lane Group Flow (vph)	847	503
v/c Ratio	0.60	0.36
Control Delay	9.8	7.8
Queue Delay	0.0	0.0
Total Delay	9.8	7.8
Queue Length 50th (ft)	68	37
Queue Length 95th (ft)	113	59
Internal Link Dist (ft)	230	294
Turn Bay Length (ft)		
Base Capacity (vph)	1400	1413
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.60	0.36
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	
Lane Configurations									↑↑			↑↑	
Volume (vph)	0	0	0	0	0	0	4	75	581	119	66	362	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	12	12	12	13	13	
Total Lost time (s)									4.0			4.0	
Lane Util. Factor									0.95			0.95	
Frt									0.98			1.00	
Flt Protected									0.99			0.99	
Satd. Flow (prot)									3173			3601	
Flt Permitted									0.86			0.78	
Satd. Flow (perm)									2736			2818	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	
Adj. Flow (vph)	0	0	0	0	0	0	4	82	632	129	76	416	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	32	0	0	4	
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	815	0	0	500	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	14%	1%	0%	3%	
Turn Type							Perm	Perm	NA		Perm	NA	
Protected Phases									2			6	
Permitted Phases							2	2			6		
Actuated Green, G (s)									23.0			23.0	
Effective Green, g (s)									23.0			23.0	
Actuated g/C Ratio									0.50			0.50	
Clearance Time (s)									4.0			4.0	
Vehicle Extension (s)									3.0			3.0	
Lane Grp Cap (vph)									1368			1409	
v/s Ratio Prot													
v/s Ratio Perm									c0.30			0.18	
v/c Ratio									0.60			0.35	
Uniform Delay, d1									8.2			7.0	
Progression Factor									1.00			1.00	
Incremental Delay, d2									1.9			0.7	
Delay (s)									10.1			7.7	
Level of Service									B			A	
Approach Delay (s)		0.0			0.0				10.1			7.7	
Approach LOS		A			A				B			A	
Intersection Summary													
HCM 2000 Control Delay			9.2									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.34										
Actuated Cycle Length (s)			46.0									Sum of lost time (s)	6.0
Intersection Capacity Utilization			41.1%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

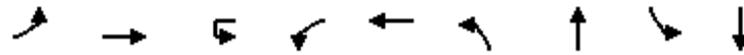


Movement	SBR
Lane Configurations	
Volume (vph)	10
Ideal Flow (vphpl)	1900
Lane Width	13
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	11
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Timings

6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015

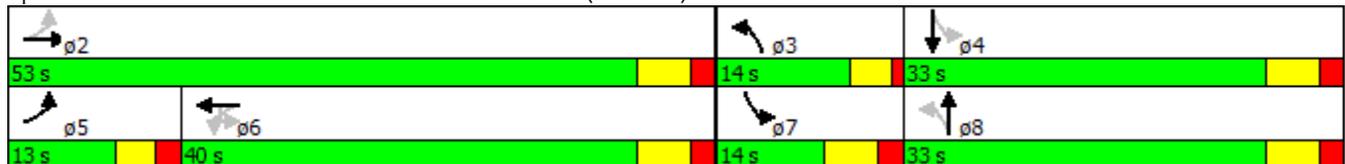


Lane Group	EBL	EBT	WBU	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	125	600	3	177	531	99	444	205	207
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2			6	3	8	7	4
Permitted Phases	2		6	6		8		4	
Detector Phase	5	2	6	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	6.0	10.0	10.0	10.0	10.0	6.0	8.0	8.0	8.0
Minimum Split (s)	11.0	20.0	20.0	20.0	20.0	10.0	20.0	14.0	27.0
Total Split (s)	13.0	53.0	40.0	40.0	40.0	14.0	33.0	14.0	33.0
Total Split (%)	13.0%	53.0%	40.0%	40.0%	40.0%	14.0%	33.0%	14.0%	33.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.0		6.0	6.0		6.0	6.0	6.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes						
Recall Mode	None	Max	Max	Max	Max	None	Ped	None	Ped
Act Effct Green (s)	48.0	47.0		34.3	34.3		27.0	41.0	41.0
Actuated g/C Ratio	0.48	0.47		0.34	0.34		0.27	0.41	0.41
v/c Ratio	0.60	0.44		0.93	0.75		0.98	1.13	0.36
Control Delay	26.6	18.6		80.1	32.1		65.0	126.9	21.3
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	2.6
Total Delay	26.6	18.6		80.1	32.1		65.0	126.9	23.9
LOS	C	B		F	C		E	F	C
Approach Delay		19.9			41.5		65.0		70.7
Approach LOS		B			D		E		E

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 100	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 45.9	Intersection LOS: D
Intersection Capacity Utilization 81.8%	ICU Level of Service D
Analysis Period (min) 15	

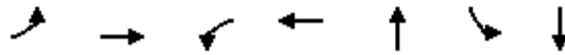
Splits and Phases: 6: Commercial Street & Centre Street (Route 60)/Centre Street



Queues

6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	136	704	206	844	708	236	283
v/c Ratio	0.60	0.44	0.93	0.75	0.98	1.13	0.36
Control Delay	26.6	18.6	80.1	32.1	65.0	126.9	21.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	2.6
Total Delay	26.6	18.6	80.1	32.1	65.0	126.9	23.9
Queue Length 50th (ft)	48	150	126	232	227	~116	118
Queue Length 95th (ft)	85	198	#258	292	#354	#256	176
Internal Link Dist (ft)		581		625	814		230
Turn Bay Length (ft)	140		310				
Base Capacity (vph)	230	1585	221	1119	722	209	791
Starvation Cap Reductn	0	0	0	0	0	0	383
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.44	0.93	0.75	0.98	1.13	0.69

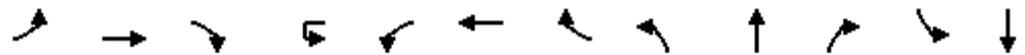
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	125	600	48	3	177	531	204	99	444	123	205	207
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	10	12	12	12	11	12	12	16
Total Lost time (s)	5.0	6.0			6.0	6.0			6.0		6.0	6.0
Lane Util. Factor	1.00	0.95			1.00	0.95			0.95		1.00	1.00
Frbp, ped/bikes	1.00	0.99			1.00	0.97			0.98		1.00	0.98
Flpb, ped/bikes	1.00	1.00			0.96	1.00			0.99		1.00	1.00
Frt	1.00	0.99			1.00	0.96			0.97		1.00	0.98
Flt Protected	0.95	1.00			0.95	1.00			0.99		0.95	1.00
Satd. Flow (prot)	1560	3360			1599	3150			3065		1556	1919
Flt Permitted	0.16	1.00			0.38	1.00			0.84		0.16	1.00
Satd. Flow (perm)	262	3360			646	3150			2587		265	1919
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.87	0.94	0.94	0.94	0.87	0.87
Adj. Flow (vph)	136	652	52	3	203	610	234	105	472	131	236	238
RTOR Reduction (vph)	0	6	0	0	0	40	0	0	22	0	0	5
Lane Group Flow (vph)	136	698	0	0	206	804	0	0	686	0	236	278
Confl. Peds. (#/hr)	48		31		31		48	43		33	33	
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	8%	0%	1%	5%	10%	20%	5%	5%	16%	3%
Turn Type	pm+pt	NA		Perm	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	5	2				6		3	8		7	4
Permitted Phases	2			6	6			8			4	
Actuated Green, G (s)	47.0	47.0			34.3	34.3			27.0		41.0	41.0
Effective Green, g (s)	47.0	47.0			34.3	34.3			27.0		41.0	41.0
Actuated g/C Ratio	0.47	0.47			0.34	0.34			0.27		0.41	0.41
Clearance Time (s)	5.0	6.0			6.0	6.0			6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	223	1579			221	1080			698		211	786
v/s Ratio Prot	c0.05	0.21				0.26					c0.09	0.14
v/s Ratio Perm	0.24				c0.32				0.27		c0.37	
v/c Ratio	0.61	0.44			0.93	0.74			0.98		1.12	0.35
Uniform Delay, d1	18.2	17.7			31.7	29.0			36.3		25.3	20.4
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	4.7	0.9			45.1	4.7			29.6		97.4	0.3
Delay (s)	22.9	18.6			76.9	33.6			65.9		122.7	20.6
Level of Service	C	B			E	C			E		F	C
Approach Delay (s)		19.3				42.1			65.9			67.0
Approach LOS		B				D			E			E

Intersection Summary			
HCM 2000 Control Delay	45.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.03		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	23.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: Commercial Street & Centre Street (Route 60)/Centre Street

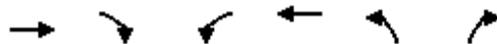
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Movement	SBR
Lane Configurations	
Volume (vph)	39
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	45
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	43
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	33%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

7: Abbott Street & Pleasant Street

9/1/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	5	65	2	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.80	0.80	0.25	0.92
Hourly flow rate (vph)	0	8	81	2	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			8	165	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			8	165	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			95	100	100	
cM capacity (veh/h)			1606	788	1091	

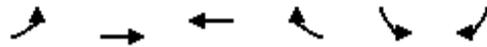
Direction, Lane #	EB 1	WB 1
Volume Total	8	84
Volume Left	0	81
Volume Right	8	0
cSH	1700	1606
Volume to Capacity	0.00	0.05
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	7.2
Lane LOS		A
Approach Delay (s)	0.0	7.2
Approach LOS		

Intersection Summary			
Average Delay		6.5	
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

8: Exchange Street & Abbott Street

9/1/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑			↘	
Volume (veh/h)	0	196	0	0	70	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	0	236	0	0	93	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		361				
pX, platoon unblocked						
vC, conflicting volume	0				236	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				236	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				88	100
cM capacity (veh/h)	1636				752	1091

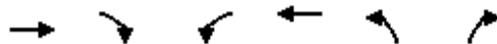
Direction, Lane #	EB 1	SB 1
Volume Total	236	93
Volume Left	0	93
Volume Right	0	0
cSH	1700	752
Volume to Capacity	0.14	0.12
Queue Length 95th (ft)	0	11
Control Delay (s)	0.0	10.5
Lane LOS		B
Approach Delay (s)	0.0	10.5
Approach LOS		B

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization	20.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

9: Jackson Street & Exchange Street

9/1/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔					↔
Volume (veh/h)	166	100	0	0	0	74
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.81	0.81	0.92	0.92	0.84	0.84
Hourly flow rate (vph)	205	123	0	0	0	88
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	609			1123		
pX, platoon unblocked						
vC, conflicting volume			328		267	267
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			328		267	267
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			1243		727	774

Direction, Lane #	EB 1	NB 1
Volume Total	328	88
Volume Left	0	0
Volume Right	123	88
cSH	1700	774
Volume to Capacity	0.19	0.11
Queue Length 95th (ft)	0	10
Control Delay (s)	0.0	10.2
Lane LOS		B
Approach Delay (s)	0.0	10.2
Approach LOS		B

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)		15	

Timings

16: Main Street & Pleasant Street

9/1/2015



Lane Group	NBL	NBT	SBU	SBT	ø9
Lane Configurations		↕↕		↕↕	
Volume (vph)	128	556	6	328	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	9
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	19.0
Total Split (s)	84.0	84.0	84.0	84.0	19.0
Total Split (%)	81.6%	81.6%	81.6%	81.6%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)		80.0		80.0	
Actuated g/C Ratio		0.78		0.78	
v/c Ratio		0.38		0.21	
Control Delay		4.3		2.5	
Queue Delay		3.3		0.6	
Total Delay		7.6		3.1	
LOS		A		A	
Approach Delay		7.6		3.1	
Approach LOS		A		A	

Intersection Summary

Cycle Length: 103
 Actuated Cycle Length: 103
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTU, Start of Green
 Natural Cycle: 40
 Control Type: Pretimed
 Maximum v/c Ratio: 0.38
 Intersection Signal Delay: 5.7
 Intersection LOS: A
 Intersection Capacity Utilization 38.1%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 16: Main Street & Pleasant Street



Queues

16: Main Street & Pleasant Street

9/1/2015

	↑	↓
Lane Group	NBT	SBT
Lane Group Flow (vph)	752	524
v/c Ratio	0.38	0.21
Control Delay	4.3	2.5
Queue Delay	3.3	0.6
Total Delay	7.6	3.1
Queue Length 50th (ft)	66	29
Queue Length 95th (ft)	88	36
Internal Link Dist (ft)	128	227
Turn Bay Length (ft)		
Base Capacity (vph)	1989	2490
Starvation Cap Reductn	1112	1500
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.86	0.53
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

16: Main Street & Pleasant Street

9/1/2015



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations				↕↕		↕↕	
Volume (vph)	0	0	128	556	6	328	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0	
Lane Util. Factor				0.95		0.95	
Frt				1.00		0.97	
Flt Protected				0.99		1.00	
Satd. Flow (prot)				3425		3347	
Flt Permitted				0.74		0.95	
Satd. Flow (perm)				2560		3171	
Peak-hour factor, PHF	0.92	0.92	0.91	0.91	0.82	0.82	0.82
Adj. Flow (vph)	0	0	141	611	7	400	117
RTOR Reduction (vph)	0	0	0	0	0	26	0
Lane Group Flow (vph)	0	0	0	752	0	498	0
Heavy Vehicles (%)	2%	2%	2%	5%	0%	4%	5%
Turn Type			Perm	NA	Perm	NA	
Protected Phases				2		6	
Permitted Phases			2		6		
Actuated Green, G (s)				80.0		80.0	
Effective Green, g (s)				80.0		80.0	
Actuated g/C Ratio				0.78		0.78	
Clearance Time (s)				4.0		4.0	
Lane Grp Cap (vph)				1988		2462	
v/s Ratio Prot							
v/s Ratio Perm				0.29		0.16	
v/c Ratio				0.38		0.20	
Uniform Delay, d1				3.6		3.0	
Progression Factor				1.00		1.00	
Incremental Delay, d2				0.5		0.2	
Delay (s)				4.2		3.2	
Level of Service				A		A	
Approach Delay (s)	0.0			4.2		3.2	
Approach LOS	A			A		A	

Intersection Summary

HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	103.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

17: Main Street & Exchange Street/Irving Street

9/1/2015

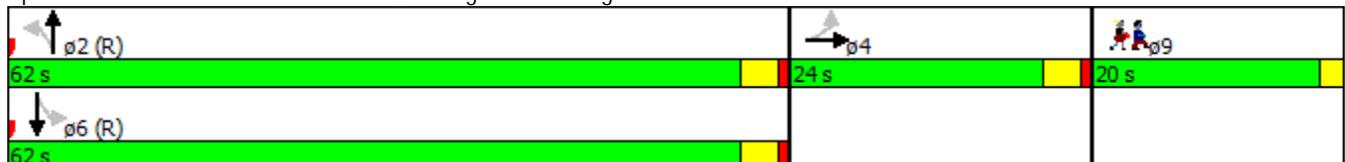


Lane Group	EBT	NBT	SBL	SBT	ø9
Lane Configurations	↔	↔		↔	
Volume (vph)	2	539	6	322	
Turn Type	NA	NA	Perm	NA	
Protected Phases	4	2		6	9
Permitted Phases			6		
Detector Phase	4	2	6	6	
Switch Phase					
Minimum Initial (s)	8.0	10.0	10.0	10.0	4.0
Minimum Split (s)	12.0	14.0	14.0	14.0	20.0
Total Split (s)	24.0	62.0	62.0	62.0	20.0
Total Split (%)	22.6%	58.5%	58.5%	58.5%	19%
Yellow Time (s)	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)	20.0	58.0		58.0	
Actuated g/C Ratio	0.19	0.55		0.55	
v/c Ratio	0.80	0.30		0.24	
Control Delay	52.8	13.4		13.0	
Queue Delay	0.0	8.5		3.0	
Total Delay	52.8	21.9		16.0	
LOS	D	C		B	
Approach Delay	52.8	21.9		16.0	
Approach LOS	D	C		B	

Intersection Summary

Cycle Length: 106
 Actuated Cycle Length: 106
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 27.4
 Intersection LOS: C
 Intersection Capacity Utilization 37.2%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 17: Main Street & Exchange Street/Irving Street



Queues

17: Main Street & Exchange Street/Irving Street

9/1/2015



Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	315	589	416
v/c Ratio	0.80	0.30	0.24
Control Delay	52.8	13.4	13.0
Queue Delay	0.0	8.5	3.0
Total Delay	52.8	21.9	16.0
Queue Length 50th (ft)	186	107	73
Queue Length 95th (ft)	#264	142	87
Internal Link Dist (ft)	239	139	128
Turn Bay Length (ft)			
Base Capacity (vph)	396	1969	1720
Starvation Cap Reductn	0	1334	1174
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.80	0.93	0.76

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

17: Main Street & Exchange Street/Irving Street

9/1/2015

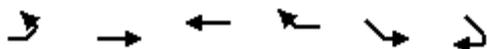


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↕						↕			↕			
Volume (vph)	147	2	113	0	0	0	0	539	15	6	322	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	12	16	12	12	12	12	12	12	12	12	11	12		
Total Lost time (s)		4.0						4.0			4.0			
Lane Util. Factor		1.00						0.95			0.95			
Frt		0.94						1.00			1.00			
Flt Protected		0.97						1.00			1.00			
Satd. Flow (prot)		1961						3595			3323			
Flt Permitted		0.97						1.00			0.94			
Satd. Flow (perm)		1961						3595			3142			
Peak-hour factor, PHF	0.83	0.83	0.83	0.25	0.25	0.25	0.94	0.94	0.94	0.79	0.79	0.79		
Adj. Flow (vph)	177	2	136	0	0	0	0	573	16	8	408	0		
RTOR Reduction (vph)	0	26	0	0	0	0	0	2	0	0	0	0		
Lane Group Flow (vph)	0	289	0	0	0	0	0	587	0	0	416	0		
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	5%	0%	0%	0%	5%	0%		
Turn Type	Perm	NA						NA		Perm	NA			
Protected Phases		4						2			6			
Permitted Phases	4						2			6				
Actuated Green, G (s)		20.0						58.0			58.0			
Effective Green, g (s)		20.0						58.0			58.0			
Actuated g/C Ratio		0.19						0.55			0.55			
Clearance Time (s)		4.0						4.0			4.0			
Lane Grp Cap (vph)		370						1967			1719			
v/s Ratio Prot								c0.16						
v/s Ratio Perm		0.15									0.13			
v/c Ratio		0.78						0.30			0.24			
Uniform Delay, d1		40.9						13.0			12.5			
Progression Factor		1.00						1.00			1.00			
Incremental Delay, d2		15.1						0.4			0.3			
Delay (s)		56.0						13.4			12.9			
Level of Service		E						B			B			
Approach Delay (s)		56.0			0.0			13.4			12.9			
Approach LOS		E			A			B			B			
Intersection Summary														
HCM 2000 Control Delay			23.4									HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio			0.34											
Actuated Cycle Length (s)			106.0								10.0		Sum of lost time (s)	
Intersection Capacity Utilization			37.2%										ICU Level of Service	A
Analysis Period (min)			15											
c Critical Lane Group														

HCM Unsignalized Intersection Capacity Analysis

22: Pleasant Street & Elm Street

9/1/2015

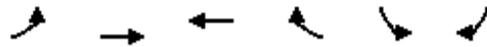


Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations			↔			
Volume (veh/h)	0	0	162	284	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	176	309	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			888			
pX, platoon unblocked						
vC, conflicting volume	485				330	330
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	485				330	330
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1078				664	711
Direction, Lane #	WB 1					
Volume Total	485					
Volume Left	0					
Volume Right	309					
cSH	1700					
Volume to Capacity	0.29					
Queue Length 95th (ft)	0					
Control Delay (s)	0.0					
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			29.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

1: Pleasant Street (Route 60)/Centre Street (Route 60) & Pleasant Street

9/1/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑			↗
Volume (veh/h)	0	778	526	0	0	206
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.93	0.87	0.92	0.92	0.85
Hourly flow rate (vph)	0	837	605	0	0	242
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		131	239			
pX, platoon unblocked	0.70				0.70	0.70
vC, conflicting volume	605				1023	605
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	229				823	229
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				100	55
cM capacity (veh/h)	952				223	534

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	418	418	605	242
Volume Left	0	0	0	0
Volume Right	0	0	0	242
cSH	1700	1700	1700	534
Volume to Capacity	0.25	0.25	0.36	0.45
Queue Length 95th (ft)	0	0	0	59
Control Delay (s)	0.0	0.0	0.0	17.2
Lane LOS				C
Approach Delay (s)	0.0		0.0	17.2
Approach LOS				C

Intersection Summary				
Average Delay			2.5	
Intersection Capacity Utilization		47.1%		ICU Level of Service
Analysis Period (min)		15		A

HCM Unsignalized Intersection Capacity Analysis

2: Pearl Street/Pleasant St. Park & Pleasant Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations					↔			↔			↔		
Volume (veh/h)	0	0	0	181	356	7	131	13	0	0	1	2	
Sign Control		Free			Free			Stop			Stop		
Grade		0%			0%			0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.84	0.84	0.84	0.84	0.84	0.84	0.38	0.38	0.38	
Hourly flow rate (vph)	0	0	0	215	424	8	156	15	0	0	3	5	
Pedestrians													
Lane Width (ft)													
Walking Speed (ft/s)													
Percent Blockage													
Right turn flare (veh)													
Median type	None			None									
Median storage (veh)													
Upstream signal (ft)	795												
pX, platoon unblocked													
vC, conflicting volume	432	0			866			863	0	867	859	428	
vC1, stage 1 conf vol													
vC2, stage 2 conf vol													
vCu, unblocked vol	432	0			866			863	0	867	859	428	
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)													
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	3.3	
p0 queue free %	100	87			36			94	100	100	99	99	
cM capacity (veh/h)	1127	1623			242			254	1085	234	255	627	
Direction, Lane #													
	WB 1	NB 1	SB 1										
Volume Total	648	171	8										
Volume Left	215	156	0										
Volume Right	8	0	5										
cSH	1623	243	422										
Volume to Capacity	0.13	0.71	0.02										
Queue Length 95th (ft)	11	118	1										
Control Delay (s)	3.4	48.9	13.7										
Lane LOS	A	E	B										
Approach Delay (s)	3.4	48.9	13.7										
Approach LOS		E	B										
Intersection Summary													
Average Delay	12.9												
Intersection Capacity Utilization	50.4%			ICU Level of Service					A				
Analysis Period (min)	15												

Timings

3: Pearl Street & Centre Street (Route 60)

9/1/2015

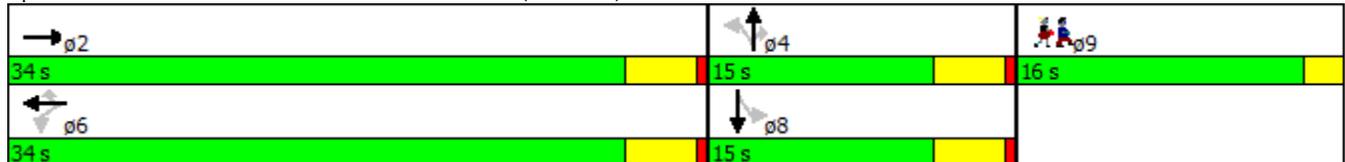


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	ø9
Lane Configurations	↑↑		↑	↗		↖	↗		↕	
Volume (vph)	727	21	505	85	21	51	79	27	156	
Turn Type	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	2		6			4			8	9
Permitted Phases		6		6	4		4	8		
Detector Phase	2	6	6	6	4	4	4	8	8	
Switch Phase										
Minimum Initial (s)	2.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	7.0
Minimum Split (s)	15.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (s)	34.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (%)	52.3%	52.3%	52.3%	52.3%	23.1%	23.1%	23.1%	23.1%	23.1%	25%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	4.0		4.0	4.0		4.0	4.0		4.0	
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	None	None	None						
Act Effect Green (s)	30.4		30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio	0.49		0.49	0.49		0.18	0.18		0.18	
v/c Ratio	0.49		0.79	0.13		0.26	0.24		0.65	
Control Delay	12.7		23.8	3.0		26.3	8.4		37.0	
Queue Delay	0.0		0.0	0.0		0.0	0.0		0.0	
Total Delay	12.7		23.8	3.0		26.3	8.4		37.0	
LOS	B		C	A		C	A		D	
Approach Delay	12.7		20.9			16.9			37.0	
Approach LOS	B		C			B			D	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 18.8	Intersection LOS: B
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 3: Pearl Street & Centre Street (Route 60)



Queues

3: Pearl Street & Centre Street (Route 60)

9/1/2015



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	826	657	106	78	86	206
v/c Ratio	0.49	0.79	0.13	0.26	0.24	0.65
Control Delay	12.7	23.8	3.0	26.3	8.4	37.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	23.8	3.0	26.3	8.4	37.0
Queue Length 50th (ft)	113	216	0	27	0	78
Queue Length 95th (ft)	161	288	17	62	33	#165
Internal Link Dist (ft)	159	9		329		66
Turn Bay Length (ft)						
Base Capacity (vph)	1671	835	832	298	352	317
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.79	0.13	0.26	0.24	0.65

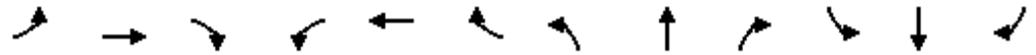
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Pearl Street & Centre Street (Route 60)

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↗		↖	↗		↖	
Volume (vph)	0	727	50	21	505	85	21	51	79	27	156	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00	
Frt		0.99			1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00			1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3385			1777	1583		1872	1568		1868	
Flt Permitted		1.00			0.96	1.00		0.87	1.00		0.93	
Satd. Flow (perm)		3385			1701	1583		1657	1568		1760	
Peak-hour factor, PHF	0.94	0.94	0.94	0.80	0.80	0.80	0.92	0.92	0.92	0.76	0.92	0.92
Adj. Flow (vph)	0	773	53	26	631	106	23	55	86	36	170	0
RTOR Reduction (vph)	0	7	0	0	0	54	0	0	71	0	0	0
Lane Group Flow (vph)	0	819	0	0	657	52	0	78	15	0	206	0
Heavy Vehicles (%)	2%	6%	0%	0%	7%	2%	0%	0%	3%	0%	1%	0%
Turn Type		NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases				6		6	4		4	8		
Actuated Green, G (s)		30.4			30.4	30.4		11.1	11.1		11.1	
Effective Green, g (s)		30.4			30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio		0.49			0.49	0.49		0.18	0.18		0.18	
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		1657			832	774		296	280		314	
v/s Ratio Prot		0.24										
v/s Ratio Perm					c0.39	0.03		0.05	0.01		c0.12	
v/c Ratio		0.49			0.79	0.07		0.26	0.05		0.66	
Uniform Delay, d1		10.7			13.2	8.4		22.0	21.1		23.7	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		1.1			7.5	0.2		2.2	0.4		4.9	
Delay (s)		11.7			20.7	8.5		24.1	21.5		28.6	
Level of Service		B			C	A		C	C		C	
Approach Delay (s)		11.7			19.0			22.8			28.6	
Approach LOS		B			B			C			C	

Intersection Summary

HCM 2000 Control Delay	17.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	66.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Timings

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Lane Group	EBL	EBR	NBL	NBT	SBT	ø3
Lane Configurations						
Volume (vph)	18	315	105	170	549	
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	3
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0	6.0	10.0	10.0	8.0
Minimum Split (s)	12.0	12.0	10.0	20.0	20.0	17.0
Total Split (s)	23.0	23.0	10.0	40.0	30.0	17.0
Total Split (%)	28.8%	28.8%	12.5%	50.0%	37.5%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead		Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes
Recall Mode	Max	Max	Max	C-Max	C-Max	Ped
Act Effect Green (s)	19.0	19.0		35.0	25.0	
Actuated g/C Ratio	0.24	0.24		0.44	0.31	
v/c Ratio	0.06	0.58		0.33	0.72	
Control Delay	24.2	7.2		15.1	27.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	24.2	7.2		15.1	27.1	
LOS	C	A		B	C	
Approach Delay	8.2			15.1	27.1	
Approach LOS	A			B	C	

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 19.5

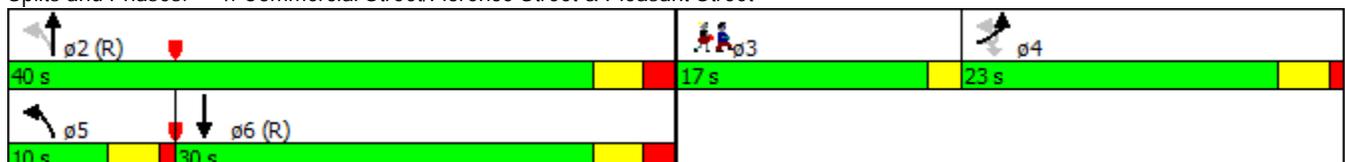
Intersection LOS: B

Intersection Capacity Utilization 48.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Commercial Street/Florence Street & Pleasant Street



Queues

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	23	375	296	761
v/c Ratio	0.06	0.58	0.33	0.72
Control Delay	24.2	7.2	15.1	27.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	24.2	7.2	15.1	27.1
Queue Length 50th (ft)	9	0	46	163
Queue Length 95th (ft)	25	50	71	227
Internal Link Dist (ft)	597		294	439
Turn Bay Length (ft)	60			
Base Capacity (vph)	392	642	904	1055
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.06	0.58	0.33	0.72

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Movement	EBU	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations							
Volume (vph)	2	18	315	105	170	549	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	12	15	11	12
Total Lost time (s)		4.0	4.0		5.0	5.0	
Lane Util. Factor		1.00	1.00		0.95	0.95	
Frbp, ped/bikes		1.00	1.00		1.00	0.99	
Flpb, ped/bikes		1.00	1.00		1.00	1.00	
Frt		1.00	0.85		1.00	0.96	
Flt Protected		0.95	1.00		0.98	1.00	
Satd. Flow (prot)		1654	1501		3363	3250	
Flt Permitted		0.95	1.00		0.54	1.00	
Satd. Flow (perm)		1654	1501		1851	3250	
Peak-hour factor, PHF	0.84	0.84	0.84	0.93	0.93	0.96	0.96
Adj. Flow (vph)	2	21	375	113	183	572	189
RTOR Reduction (vph)	0	0	286	0	0	40	0
Lane Group Flow (vph)	0	23	89	0	296	721	0
Confl. Peds. (#/hr)							3
Heavy Vehicles (%)	0%	6%	4%	8%	9%	3%	2%
Parking (#/hr)					5		
Turn Type	Perm	Prot	Perm	pm+pt	NA	NA	
Protected Phases		4		5	2	6	
Permitted Phases	4		4	2			
Actuated Green, G (s)		19.0	19.0		35.0	25.0	
Effective Green, g (s)		19.0	19.0		35.0	25.0	
Actuated g/C Ratio		0.24	0.24		0.44	0.31	
Clearance Time (s)		4.0	4.0		5.0	5.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		392	356		923	1015	
v/s Ratio Prot					c0.02	c0.22	
v/s Ratio Perm		0.01	c0.06		0.12		
v/c Ratio		0.06	0.25		0.32	0.71	
Uniform Delay, d1		23.6	24.7		14.7	24.3	
Progression Factor		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3	1.7		0.9	4.2	
Delay (s)		23.9	26.4		15.6	28.5	
Level of Service		C	C		B	C	
Approach Delay (s)		26.3			15.6	28.5	
Approach LOS		C			B	C	
Intersection Summary							
HCM 2000 Control Delay			25.3		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.38				
Actuated Cycle Length (s)			80.0		Sum of lost time (s)		15.0
Intersection Capacity Utilization			48.0%		ICU Level of Service		A
Analysis Period (min)			15				
c	Critical Lane Group						

Timings

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

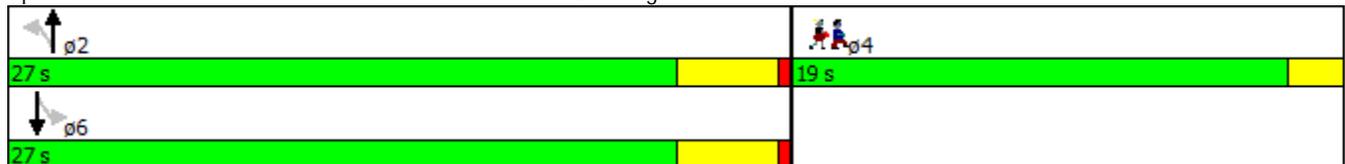


Lane Group	NBL	NBT	SBL	SBT	ø4
Lane Configurations		↕↕		↕↕	
Volume (vph)	83	315	195	648	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	4
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.0	27.0	27.0	27.0	19.0
Total Split (s)	27.0	27.0	27.0	27.0	19.0
Total Split (%)	58.7%	58.7%	58.7%	58.7%	41%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Ped
Act Effect Green (s)		23.0		23.0	
Actuated g/C Ratio		0.50		0.50	
v/c Ratio		0.48		0.74	
Control Delay		6.7		13.9	
Queue Delay		0.0		0.0	
Total Delay		6.7		13.9	
LOS		A		B	
Approach Delay		6.7		13.9	
Approach LOS		A		B	

Intersection Summary

Cycle Length: 46	
Actuated Cycle Length: 46	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 11.0	Intersection LOS: B
Intersection Capacity Utilization 47.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Commercial Street & MBTA Drive/Exchange Street



Queues

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

	↑	↓
Lane Group	NBT	SBT
Lane Group Flow (vph)	616	930
v/c Ratio	0.48	0.74
Control Delay	6.7	13.9
Queue Delay	0.0	0.0
Total Delay	6.7	13.9
Queue Length 50th (ft)	33	91
Queue Length 95th (ft)	62	151
Internal Link Dist (ft)	230	294
Turn Bay Length (ft)		
Base Capacity (vph)	1287	1250
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.74
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

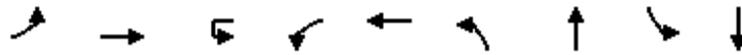


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								↕			↕	
Volume (vph)	0	0	0	0	0	0	83	315	163	195	648	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	13	13	13
Total Lost time (s)								4.0			4.0	
Lane Util. Factor								0.95			0.95	
Frt								0.96			1.00	
Flt Protected								0.99			0.99	
Satd. Flow (prot)								3169			3594	
Flt Permitted								0.75			0.69	
Satd. Flow (perm)								2397			2494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	0	0	0	91	346	179	210	697	23
RTOR Reduction (vph)	0	0	0	0	0	0	0	90	0	0	4	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	527	0	0	926	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	14%	1%	0%	3%	0%
Turn Type							Perm	NA		Perm	NA	
Protected Phases								2			6	
Permitted Phases							2			6		
Actuated Green, G (s)								23.0			23.0	
Effective Green, g (s)								23.0			23.0	
Actuated g/C Ratio								0.50			0.50	
Clearance Time (s)								4.0			4.0	
Vehicle Extension (s)								3.0			3.0	
Lane Grp Cap (vph)								1198			1247	
v/s Ratio Prot												
v/s Ratio Perm								0.22			c0.37	
v/c Ratio								0.44			0.74	
Uniform Delay, d1								7.4			9.1	
Progression Factor								1.00			1.00	
Incremental Delay, d2								1.2			4.0	
Delay (s)								8.5			13.2	
Level of Service								A			B	
Approach Delay (s)		0.0			0.0			8.5			13.2	
Approach LOS		A			A			A			B	
Intersection Summary												
HCM 2000 Control Delay			11.3								HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			46.0								Sum of lost time (s)	6.0
Intersection Capacity Utilization			47.2%								ICU Level of Service	A
Analysis Period (min)			15									
c Critical Lane Group												

Timings

6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015

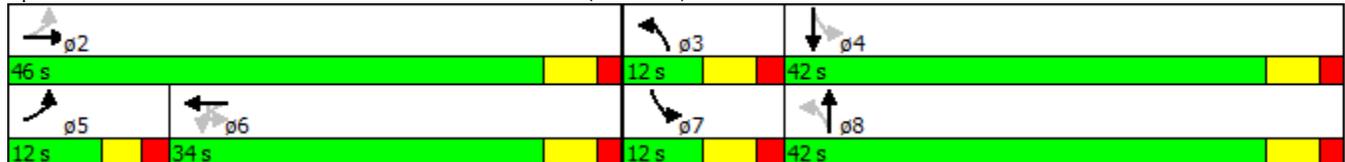


Lane Group	EBL	EBT	WBU	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	132	487	1	245	572	42	250	177	541
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2			6	3	8	7	4
Permitted Phases	2		6	6		8		4	
Detector Phase	5	2	6	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	6.0	10.0	10.0	10.0	10.0	6.0	8.0	6.0	8.0
Minimum Split (s)	11.0	20.0	20.0	20.0	20.0	12.0	27.0	12.0	27.0
Total Split (s)	12.0	46.0	34.0	34.0	34.0	12.0	42.0	12.0	42.0
Total Split (%)	12.0%	46.0%	34.0%	34.0%	34.0%	12.0%	42.0%	12.0%	42.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	6.0		6.0	6.0		6.0		6.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes						
Recall Mode	None	Max	Max	Max	Max	None	Ped	None	Ped
Act Effct Green (s)	41.2	40.2		28.2	28.2		27.4		27.4
Actuated g/C Ratio	0.52	0.50		0.35	0.35		0.34		0.34
v/c Ratio	0.56	0.41		1.16	0.73		0.51		0.82
Control Delay	21.6	13.4		138.3	26.9		21.0		31.5
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.4
Total Delay	21.6	13.4		138.3	26.9		21.0		31.9
LOS	C	B		F	C		C		C
Approach Delay		14.9			54.4		21.0		31.9
Approach LOS		B			D		C		C

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 79.7	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.16	
Intersection Signal Delay: 34.0	Intersection LOS: C
Intersection Capacity Utilization 84.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Commercial Street & Centre Street (Route 60)/Centre Street



Queues

6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	147	677	276	842	417	769
v/c Ratio	0.56	0.41	1.16	0.73	0.51	0.82
Control Delay	21.6	13.4	138.3	26.9	21.0	31.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.4
Total Delay	21.6	13.4	138.3	26.9	21.0	31.9
Queue Length 50th (ft)	36	97	~164	178	77	178
Queue Length 95th (ft)	#92	169	#343	283	111	245
Internal Link Dist (ft)		581		625	814	230
Turn Bay Length (ft)	140		310			
Base Capacity (vph)	261	1666	238	1155	1062	1239
Starvation Cap Reductn	0	0	0	0	0	137
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.41	1.16	0.73	0.39	0.70

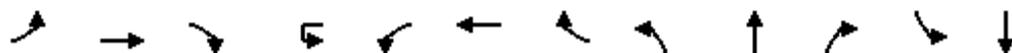
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	132	487	122	1	245	572	177	42	250	66	177	541
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	10	12	12	12	11	12	12	16
Total Lost time (s)	5.0	6.0			6.0	6.0			6.0			6.0
Lane Util. Factor	1.00	0.95			1.00	0.95			0.95			0.95
Frbp, ped/bikes	1.00	0.99			1.00	0.98			0.99			1.00
Flpb, ped/bikes	1.00	1.00			0.98	1.00			1.00			0.99
Frt	1.00	0.97			1.00	0.96			0.97			0.99
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.99
Satd. Flow (prot)	1560	3272			1634	3208			3114			3695
Flt Permitted	0.18	1.00			0.39	1.00			0.74			0.73
Satd. Flow (perm)	289	3272			678	3208			2310			2730
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.89	0.86	0.86	0.86	0.98	0.98
Adj. Flow (vph)	147	541	136	1	275	643	199	49	291	77	181	552
RTOR Reduction (vph)	0	18	0	0	0	26	0	0	22	0	0	4
Lane Group Flow (vph)	147	659	0	0	276	816	0	0	395	0	0	765
Confl. Peds. (#/hr)	48		31		31		48	43		33	33	
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	8%	0%	1%	5%	10%	20%	5%	5%	16%	3%
Turn Type	pm+pt	NA		Perm	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	5	2				6		3	8		7	4
Permitted Phases	2			6	6			8			4	
Actuated Green, G (s)	40.2	40.2			28.2	28.2			27.4			27.4
Effective Green, g (s)	40.2	40.2			28.2	28.2			27.4			27.4
Actuated g/C Ratio	0.51	0.51			0.35	0.35			0.34			0.34
Clearance Time (s)	5.0	6.0			6.0	6.0			6.0			6.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0			3.0
Lane Grp Cap (vph)	257	1652			240	1136			795			939
v/s Ratio Prot	c0.05	0.20				0.25						
v/s Ratio Perm	0.24				c0.41				0.17			c0.28
v/c Ratio	0.57	0.40			1.15	0.72			0.50			0.81
Uniform Delay, d1	12.9	12.2			25.7	22.3			20.6			23.8
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	3.1	0.7			104.6	3.9			0.5			5.5
Delay (s)	16.0	12.9			130.3	26.2			21.1			29.3
Level of Service	B	B			F	C			C			C
Approach Delay (s)		13.5				51.9			21.1			29.3
Approach LOS		B				D			C			C

Intersection Summary

HCM 2000 Control Delay	32.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	79.6	Sum of lost time (s)	21.0
Intersection Capacity Utilization	84.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015

Movement	SBR
Lane Configurations	
Volume (vph)	35
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	36
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	43
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	33%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

7: Abbott Street & Pleasant Street

9/1/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	6	134	7	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.81	0.81	0.25	0.92
Hourly flow rate (vph)	0	12	165	9	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			12	340	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			12	340	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			90	100	100	
cM capacity (veh/h)			1620	593	1091	

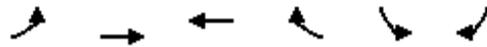
Direction, Lane #	EB 1	WB 1
Volume Total	12	174
Volume Left	0	165
Volume Right	12	0
cSH	1700	1620
Volume to Capacity	0.01	0.10
Queue Length 95th (ft)	0	9
Control Delay (s)	0.0	7.1
Lane LOS		A
Approach Delay (s)	0.0	7.1
Approach LOS		

Intersection Summary			
Average Delay		6.7	
Intersection Capacity Utilization	17.8%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

8: Exchange Street & Abbott Street

9/1/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑			↘	
Volume (veh/h)	0	314	0	0	140	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.92	0.92	0.82	0.82
Hourly flow rate (vph)	0	374	0	0	171	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		361				
pX, platoon unblocked						
vC, conflicting volume	0				374	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				374	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				73	100
cM capacity (veh/h)	1636				631	1091

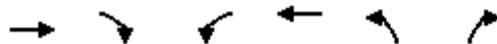
Direction, Lane #	EB 1	SB 1
Volume Total	374	171
Volume Left	0	171
Volume Right	0	0
cSH	1700	631
Volume to Capacity	0.22	0.27
Queue Length 95th (ft)	0	27
Control Delay (s)	0.0	12.8
Lane LOS		B
Approach Delay (s)	0.0	12.8
Approach LOS		B

Intersection Summary			
Average Delay		4.0	
Intersection Capacity Utilization		30.9%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

9: Jackson Street & Exchange Street

9/1/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔					↔
Volume (veh/h)	196	258	0	0	0	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.92	0.92	0.71	0.71
Hourly flow rate (vph)	228	300	0	0	0	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	609			1123		
pX, platoon unblocked						
vC, conflicting volume			528		378	378
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			528		378	378
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	94
cM capacity (veh/h)			1049		628	673

Direction, Lane #	EB 1	NB 1
Volume Total	528	38
Volume Left	0	0
Volume Right	300	38
cSH	1700	673
Volume to Capacity	0.31	0.06
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	10.7
Lane LOS		B
Approach Delay (s)	0.0	10.7
Approach LOS		B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		

Timings
16: Main Street

9/1/2015



Lane Group	NBL	NBT	SBU	SBT	ø9
Lane Configurations		↕↕		↕↕	
Volume (vph)	135	394	4	441	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	9
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	19.0
Total Split (s)	84.0	84.0	84.0	84.0	19.0
Total Split (%)	81.6%	81.6%	81.6%	81.6%	18%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)		80.0		80.0	
Actuated g/C Ratio		0.78		0.78	
v/c Ratio		0.35		0.26	
Control Delay		4.2		2.6	
Queue Delay		1.9		1.1	
Total Delay		6.0		3.7	
LOS		A		A	
Approach Delay		6.0		3.7	
Approach LOS		A		A	

Intersection Summary

Cycle Length: 103
 Actuated Cycle Length: 103
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTU, Start of Green
 Natural Cycle: 40
 Control Type: Pretimed
 Maximum v/c Ratio: 0.35
 Intersection Signal Delay: 4.8
 Intersection LOS: A
 Intersection Capacity Utilization 39.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 16: Main Street

ø2 (R) 84 s	ø6 (R) 84 s	ø9 19 s
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Queues
16: Main Street

9/1/2015

	↑	↓
Lane Group	NBT	SBT
Lane Group Flow (vph)	638	675
v/c Ratio	0.35	0.26
Control Delay	4.2	2.6
Queue Delay	1.9	1.1
Total Delay	6.0	3.7
Queue Length 50th (ft)	54	37
Queue Length 95th (ft)	66	52
Internal Link Dist (ft)	157	198
Turn Bay Length (ft)		
Base Capacity (vph)	1800	2551
Starvation Cap Reductn	963	1561
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.76	0.68
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

16: Main Street

9/1/2015



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations				↕↕		↕↕	
Volume (vph)	0	0	135	394	4	441	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0	
Lane Util. Factor				0.95		0.95	
Frt				1.00		0.96	
Flt Protected				0.99		1.00	
Satd. Flow (prot)				3495		3396	
Flt Permitted				0.65		0.95	
Satd. Flow (perm)				2318		3236	
Peak-hour factor, PHF	0.92	0.92	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	0	0	163	475	4	490	181
RTOR Reduction (vph)	0	0	0	0	0	36	0
Lane Group Flow (vph)	0	0	0	638	0	639	0
Turn Type			Perm	NA	Perm	NA	
Protected Phases				2		6	
Permitted Phases			2		6		
Actuated Green, G (s)				80.0		80.0	
Effective Green, g (s)				80.0		80.0	
Actuated g/C Ratio				0.78		0.78	
Clearance Time (s)				4.0		4.0	
Lane Grp Cap (vph)				1800		2513	
v/s Ratio Prot							
v/s Ratio Perm				c0.28		0.20	
v/c Ratio				0.35		0.25	
Uniform Delay, d1				3.5		3.2	
Progression Factor				1.00		1.00	
Incremental Delay, d2				0.5		0.2	
Delay (s)				4.1		3.4	
Level of Service				A		A	
Approach Delay (s)	0.0			4.1		3.4	
Approach LOS	A			A		A	

Intersection Summary

HCM 2000 Control Delay	3.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	103.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Timings

17: Main Street & Exchange Street/Irving Street

9/1/2015



Lane Group	EBT	NBT	SBU	SBL	SBT	ø9
Lane Configurations	↔	↔			↔	
Volume (vph)	12	453	2	8	431	
Turn Type	NA	NA	Perm	Perm	NA	
Protected Phases	4	2			6	9
Permitted Phases			6	6		
Detector Phase	4	2	6	6	6	
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	12.0	14.0	14.0	14.0	14.0	20.0
Total Split (s)	28.0	58.0	58.0	58.0	58.0	20.0
Total Split (%)	26.4%	54.7%	54.7%	54.7%	54.7%	19%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	24.0	54.0			54.0	
Actuated g/C Ratio	0.23	0.51			0.51	
v/c Ratio	0.37	0.36			0.31	
Control Delay	30.4	16.2			15.8	
Queue Delay	0.0	16.2			3.3	
Total Delay	30.4	32.4			19.1	
LOS	C	C			B	
Approach Delay	30.4	32.4			19.1	
Approach LOS	C	C			B	

Intersection Summary

Cycle Length: 106
 Actuated Cycle Length: 106
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.37
 Intersection Signal Delay: 27.0
 Intersection LOS: C
 Intersection Capacity Utilization 34.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 17: Main Street & Exchange Street/Irving Street

ø2 (R) 58 s	ø4 28 s	ø9 20 s
ø6 (R) 58 s		

Queues

17: Main Street & Exchange Street/Irving Street

9/1/2015



Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	171	601	490
v/c Ratio	0.37	0.36	0.31
Control Delay	30.4	16.2	15.8
Queue Delay	0.0	16.2	3.3
Total Delay	30.4	32.4	19.1
Queue Length 50th (ft)	78	122	97
Queue Length 95th (ft)	129	140	133
Internal Link Dist (ft)	239	139	157
Turn Bay Length (ft)			
Base Capacity (vph)	463	1652	1578
Starvation Cap Reductn	0	1041	966
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.37	0.98	0.80
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

17: Main Street & Exchange Street/Irving Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations		↕						↕				↕
Volume (vph)	70	12	62	0	0	0	0	453	28	2	8	431
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	11
Total Lost time (s)		4.0						4.0				4.0
Lane Util. Factor		1.00						0.95				0.95
Frt		0.94						0.99				1.00
Flt Protected		0.98						1.00				1.00
Satd. Flow (prot)		1936						3236				3293
Flt Permitted		0.98						1.00				0.94
Satd. Flow (perm)		1936						3236				3099
Peak-hour factor, PHF	0.84	0.84	0.84	0.25	0.25	0.25	0.80	0.80	0.80	0.90	0.90	0.90
Adj. Flow (vph)	83	14	74	0	0	0	0	566	35	2	9	479
RTOR Reduction (vph)	0	26	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	145	0	0	0	0	0	597	0	0	0	490
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	0%	11%	4%	0%	0%	6%
Turn Type	Perm	NA						NA		Perm	Perm	NA
Protected Phases		4						2				6
Permitted Phases	4						2		6	6		
Actuated Green, G (s)		24.0						54.0				54.0
Effective Green, g (s)		24.0						54.0				54.0
Actuated g/C Ratio		0.23						0.51				0.51
Clearance Time (s)		4.0						4.0				4.0
Lane Grp Cap (vph)		438						1648				1578
v/s Ratio Prot								c0.18				
v/s Ratio Perm		0.08										0.16
v/c Ratio		0.33						0.36				0.31
Uniform Delay, d1		34.3						15.6				15.2
Progression Factor		1.00						1.00				1.00
Incremental Delay, d2		2.0						0.6				0.5
Delay (s)		36.3						16.3				15.7
Level of Service		D						B				B
Approach Delay (s)		36.3			0.0			16.3				15.7
Approach LOS		D			A			B				B

Intersection Summary

HCM 2000 Control Delay	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 17: Main Street & Exchange Street/Irving Street

9/1/2015

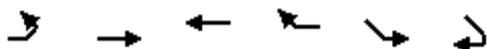


Movement	SBR
Lane Configurations	
Volume (vph)	0
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

22: Pleasant Street & Elm Street

9/1/2015

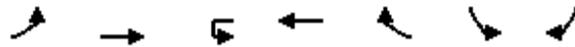


Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations			↔			
Volume (veh/h)	0	0	206	283	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	224	308	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			949			
pX, platoon unblocked						
vC, conflicting volume	532				378	378
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	532				378	378
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1036				624	669
Direction, Lane #	WB 1					
Volume Total	532					
Volume Left	0					
Volume Right	308					
cSH	1700					
Volume to Capacity	0.31					
Queue Length 95th (ft)	0					
Control Delay (s)	0.0					
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	31.5%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

1: Pleasant Street (Route 60)/Centre Street (Route 60) & Pleasant Street

9/1/2015



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations		↑↑		↑			↗
Volume (veh/h)	0	910	2	599	0	0	170
Sign Control		Free		Free		Yield	
Grade		0%		0%		0%	
Peak Hour Factor	0.94	0.94	0.90	0.90	0.90	0.82	0.82
Hourly flow rate (vph)	0	968	0	666	0	0	207
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None		None			
Median storage (veh)							
Upstream signal (ft)		131		239			
pX, platoon unblocked	0.71		0.00			0.71	0.71
vC, conflicting volume	666		0			1150	666
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	328		0			1008	328
tC, single (s)	4.1		0.0			6.8	7.0
tC, 2 stage (s)							
tF (s)	2.2		0.0			3.5	3.4
p0 queue free %	100		0			100	56
cM capacity (veh/h)	885		0			171	467

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	484	484	666	207
Volume Left	0	0	0	0
Volume Right	0	0	0	207
cSH	1700	1700	1700	467
Volume to Capacity	0.28	0.28	0.39	0.44
Queue Length 95th (ft)	0	0	0	56
Control Delay (s)	0.0	0.0	0.0	18.7
Lane LOS				C
Approach Delay (s)	0.0		0.0	18.7
Approach LOS				C

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization		48.8%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis

2: Pearl Street/Pleasant Street Park & Pleasant Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Volume (veh/h)	0	0	0	126	245	7	215	37	4	0	6	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.84	0.84	0.84	0.50	0.50	0.50
Hourly flow rate (vph)	0	0	0	142	275	8	256	44	5	0	12	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)	795											
pX, platoon unblocked												
vC, conflicting volume	283	0			582			566	0	589	562	279
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	283	0			582			566	0	589	562	279
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	3.3
p0 queue free %	100	91			33			89	100	100	97	98
cM capacity (veh/h)	1279	1630			380			398	1091	360	400	764

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	425	305	26
Volume Left	142	256	0
Volume Right	8	5	14
cSH	1630	386	538
Volume to Capacity	0.09	0.79	0.05
Queue Length 95th (ft)	7	169	4
Control Delay (s)	3.0	41.4	12.0
Lane LOS	A	E	B
Approach Delay (s)	3.0	41.4	12.0
Approach LOS		E	B

Intersection Summary		
Average Delay		18.8
Intersection Capacity Utilization	47.7%	ICU Level of Service
Analysis Period (min)		15
A		

Timings

3: Pearl Street & Centre Street (Route 60)/Centre Street

9/1/2015

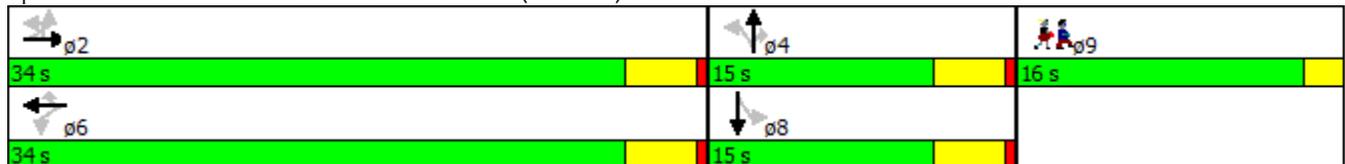


Lane Group	EBU	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	ø9
Lane Configurations			↑↑		↑	↑		↑	↑		↑	
Volume (vph)	1	2	879	1	581	147	19	107	80	56	74	
Turn Type	Perm	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases			2		6			4			8	9
Permitted Phases	2	2		6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	2.0	2.0	2.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (%)	52.3%	52.3%	52.3%	52.3%	52.3%	52.3%	23.1%	23.1%	23.1%	23.1%	23.1%	25%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)			0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)			4.0		4.0	4.0		4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	None	None	None								
Act Effect Green (s)			30.4		30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio			0.49		0.49	0.49		0.18	0.18		0.18	
v/c Ratio			0.60		0.72	0.19		0.53	0.28		0.76	
Control Delay			14.3		19.6	2.7		31.6	8.1		50.5	
Queue Delay			0.3		0.0	0.0		0.0	0.0		0.0	
Total Delay			14.6		19.6	2.7		31.6	8.1		50.5	
LOS			B		B	A		C	A		D	
Approach Delay			14.6		16.2			22.5			50.5	
Approach LOS			B		B			C			D	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 51.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Pearl Street & Centre Street (Route 60)/Centre Street



Queues

3: Pearl Street & Centre Street (Route 60)/Centre Street

9/1/2015



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	979	654	165	171	108	178
v/c Ratio	0.60	0.72	0.19	0.53	0.28	0.76
Control Delay	14.3	19.6	2.7	31.6	8.1	50.5
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	14.6	19.6	2.7	31.6	8.1	50.5
Queue Length 50th (ft)	145	203	0	63	0	69
Queue Length 95th (ft)	204	#325	27	95	23	#118
Internal Link Dist (ft)	159	9		329		66
Turn Bay Length (ft)						
Base Capacity (vph)	1638	914	862	320	380	233
Starvation Cap Reductn	214	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.72	0.19	0.53	0.28	0.76

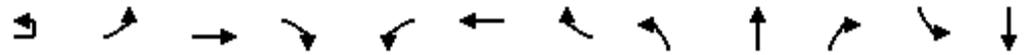
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Pearl Street & Centre Street (Route 60)/Centre Street

9/1/2015



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑	↑		↑	↑		↑
Volume (vph)	1	2	879	29	1	581	147	19	107	80	56	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0			4.0	4.0		4.0	4.0		4.0
Lane Util. Factor			0.95			1.00	1.00		1.00	1.00		1.00
Frt			1.00			1.00	0.85		1.00	0.85		1.00
Flt Protected			1.00			1.00	1.00		0.99	1.00		0.98
Satd. Flow (prot)			3487			1863	1583		1870	1615		1849
Flt Permitted			0.95			1.00	1.00		0.94	1.00		0.69
Satd. Flow (perm)			3326			1861	1583		1777	1615		1296
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.89	0.89	0.89	0.74	0.74	0.74	0.73	0.73
Adj. Flow (vph)	1	2	945	31	1	653	165	26	145	108	77	101
RTOR Reduction (vph)	0	0	4	0	0	0	84	0	0	89	0	0
Lane Group Flow (vph)	0	0	975	0	0	654	81	0	171	19	0	178
Heavy Vehicles (%)	0%	0%	3%	4%	0%	2%	2%	0%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6			4			8
Permitted Phases	2	2			6		6	4		4	8	
Actuated Green, G (s)			30.4			30.4	30.4		11.1	11.1		11.1
Effective Green, g (s)			30.4			30.4	30.4		11.1	11.1		11.1
Actuated g/C Ratio			0.49			0.49	0.49		0.18	0.18		0.18
Clearance Time (s)			4.0			4.0	4.0		4.0	4.0		4.0
Vehicle Extension (s)			3.0			3.0	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)			1628			911	774		317	288		231
v/s Ratio Prot												
v/s Ratio Perm			0.29			0.35	0.05		0.10	0.01		0.14
v/c Ratio			0.60			0.72	0.10		0.54	0.07		0.77
Uniform Delay, d1			11.4			12.5	8.5		23.2	21.2		24.3
Progression Factor			1.00			1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2			1.6			4.8	0.3		6.4	0.4		14.6
Delay (s)			13.1			17.3	8.8		29.6	21.6		38.9
Level of Service			B			B	A		C	C		D
Approach Delay (s)			13.1			15.6			26.5			38.9
Approach LOS			B			B			C			D

Intersection Summary

HCM 2000 Control Delay	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Pearl Street & Centre Street (Route 60)/Centre Street

9/1/2015

Movement	SBR
Lane Configurations	
Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.73
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Timings

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Lane Group	EBL	EBR	NBL	NBT	SBT	ø3
Lane Configurations						
Volume (vph)	24	238	214	417	234	
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	3
Permitted Phases		4	2			
Detector Phase	4	4	5	2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0	4.0	10.0	10.0	8.0
Minimum Split (s)	12.0	12.0	8.0	15.0	15.0	17.0
Total Split (s)	24.0	24.0	8.0	41.0	33.0	17.0
Total Split (%)	29.3%	29.3%	9.8%	50.0%	40.2%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	4.0		5.0	5.0	
Lead/Lag	Lag	Lag	Lead		Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes
Recall Mode	Max	Max	Max	C-Max	C-Max	Ped
Act Effect Green (s)	20.0	20.0		36.0	28.0	
Actuated g/C Ratio	0.24	0.24		0.44	0.34	
v/c Ratio	0.06	0.48		0.63	0.33	
Control Delay	24.4	6.7		20.3	15.0	
Queue Delay	0.0	0.0		2.7	0.0	
Total Delay	24.4	6.7		23.1	15.0	
LOS	C	A		C	B	
Approach Delay	8.4			23.1	15.0	
Approach LOS	A			C	B	

Intersection Summary

Cycle Length: 82

Actuated Cycle Length: 82

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 17.7

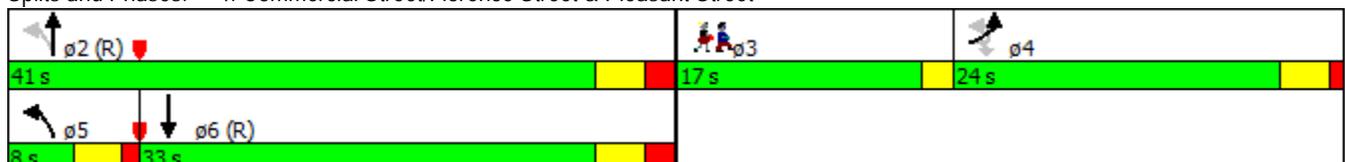
Intersection LOS: B

Intersection Capacity Utilization 46.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 4: Commercial Street/Florence Street & Pleasant Street



Queues

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	27	267	701	375
v/c Ratio	0.06	0.48	0.63	0.33
Control Delay	24.4	6.7	20.3	15.0
Queue Delay	0.0	0.0	2.7	0.0
Total Delay	24.4	6.7	23.1	15.0
Queue Length 50th (ft)	11	0	126	51
Queue Length 95th (ft)	30	55	172	85
Internal Link Dist (ft)	597		294	439
Turn Bay Length (ft)	60			
Base Capacity (vph)	425	557	1109	1144
Starvation Cap Reductn	0	0	286	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.06	0.48	0.85	0.33

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	24	238	214	417	234	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	15	11	12
Total Lost time (s)	4.0	4.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		0.95	0.95	
Frbp, ped/bikes	1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	
Frt	1.00	0.85		1.00	0.95	
Flt Protected	0.95	1.00		0.98	1.00	
Satd. Flow (prot)	1745	1459		3637	3147	
Flt Permitted	0.95	1.00		0.66	1.00	
Satd. Flow (perm)	1745	1459		2426	3147	
Peak-hour factor, PHF	0.89	0.89	0.90	0.90	0.92	0.92
Adj. Flow (vph)	27	267	238	463	254	121
RTOR Reduction (vph)	0	202	0	0	70	0
Lane Group Flow (vph)	27	65	0	701	305	0
Confl. Peds. (#/hr)						3
Heavy Vehicles (%)	0%	7%	0%	1%	6%	2%
Parking (#/hr)				5		
Turn Type	Prot	Perm	pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		4	2			
Actuated Green, G (s)	20.0	20.0		36.0	28.0	
Effective Green, g (s)	20.0	20.0		36.0	28.0	
Actuated g/C Ratio	0.24	0.24		0.44	0.34	
Clearance Time (s)	4.0	4.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	425	355		1124	1074	
v/s Ratio Prot	0.02			c0.03	0.10	
v/s Ratio Perm		c0.04		c0.24		
v/c Ratio	0.06	0.18		0.62	0.28	
Uniform Delay, d1	23.8	24.5		17.8	19.7	
Progression Factor	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.3	1.1		2.6	0.7	
Delay (s)	24.1	25.7		20.4	20.4	
Level of Service	C	C		C	C	
Approach Delay (s)	25.5			20.4	20.4	
Approach LOS	C			C	C	

Intersection Summary

HCM 2000 Control Delay	21.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	46.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

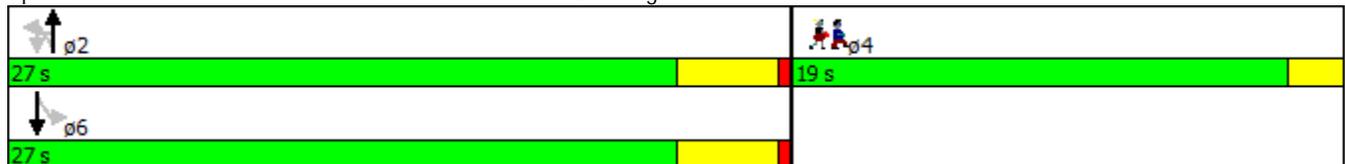


Lane Group	NBU	NBL	NBT	SBL	SBT	ø4
Lane Configurations			↔↔		↔↔	
Volume (vph)	4	79	632	76	383	
Turn Type	Perm	Perm	NA	Perm	NA	
Protected Phases			2		6	4
Permitted Phases	2	2		6		
Detector Phase	2	2	2	6	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	19.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0	19.0
Total Split (%)	58.7%	58.7%	58.7%	58.7%	58.7%	41%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)			0.0		0.0	
Total Lost Time (s)			4.0		4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Max	Ped
Act Effect Green (s)			23.0		23.0	
Actuated g/C Ratio			0.50		0.50	
v/c Ratio			0.70		0.41	
Control Delay			11.0		8.3	
Queue Delay			0.0		0.0	
Total Delay			11.0		8.3	
LOS			B		A	
Approach Delay			11.0		8.3	
Approach LOS			B		A	

Intersection Summary

Cycle Length: 46	
Actuated Cycle Length: 46	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 10.1	Intersection LOS: B
Intersection Capacity Utilization 45.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Commercial Street & MBTA Drive/Exchange Street



Queues

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

	↑	↓
Lane Group	NBT	SBT
Lane Group Flow (vph)	989	540
v/c Ratio	0.70	0.41
Control Delay	11.0	8.3
Queue Delay	0.0	0.0
Total Delay	11.0	8.3
Queue Length 50th (ft)	82	41
Queue Length 95th (ft)	137	65
Internal Link Dist (ft)	230	294
Turn Bay Length (ft)		
Base Capacity (vph)	1418	1331
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.70	0.41
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	
Lane Configurations									↑↑			↑↑	
Volume (vph)	0	0	0	0	0	0	4	79	632	195	76	383	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	12	12	12	13	13	
Total Lost time (s)									4.0			4.0	
Lane Util. Factor									0.95			0.95	
Frt									0.97			1.00	
Flt Protected									1.00			0.99	
Satd. Flow (prot)									3163			3599	
Flt Permitted									0.86			0.73	
Satd. Flow (perm)									2728			2656	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	
Adj. Flow (vph)	0	0	0	0	0	0	4	86	687	212	87	440	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	54	0	0	4	
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	936	0	0	536	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	14%	1%	0%	3%	
Turn Type							Perm	Perm	NA		Perm	NA	
Protected Phases									2			6	
Permitted Phases							2	2			6		
Actuated Green, G (s)									23.0			23.0	
Effective Green, g (s)									23.0			23.0	
Actuated g/C Ratio									0.50			0.50	
Clearance Time (s)									4.0			4.0	
Vehicle Extension (s)									3.0			3.0	
Lane Grp Cap (vph)									1364			1328	
v/s Ratio Prot													
v/s Ratio Perm									0.34			0.20	
v/c Ratio									0.69			0.40	
Uniform Delay, d1									8.8			7.2	
Progression Factor									1.00			1.00	
Incremental Delay, d2									2.8			0.9	
Delay (s)									11.6			8.1	
Level of Service									B			A	
Approach Delay (s)		0.0			0.0				11.6			8.1	
Approach LOS		A			A				B			A	
Intersection Summary													
HCM 2000 Control Delay			10.4									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.39										
Actuated Cycle Length (s)			46.0									Sum of lost time (s)	6.0
Intersection Capacity Utilization			45.9%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

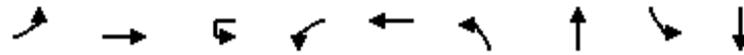


Movement	SBR
Lane Configurations	
Volume (vph)	11
Ideal Flow (vphpl)	1900
Lane Width	13
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	13
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Timings

6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015

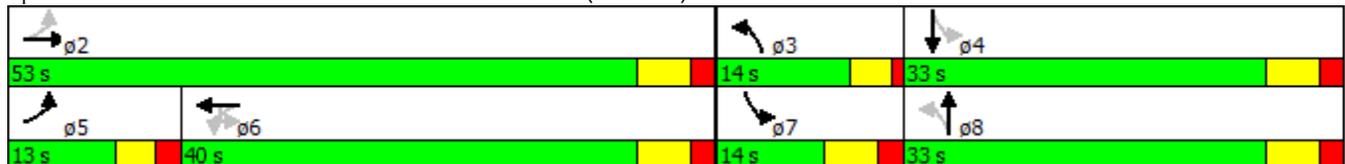


Lane Group	EBL	EBT	WBU	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↶	↶↷		↶	↶↷		↶↷	↶	↷
Volume (vph)	178	675	3	196	619	104	511	215	221
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2			6	3	8	7	4
Permitted Phases	2		6	6		8		4	
Detector Phase	5	2	6	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	6.0	10.0	10.0	10.0	10.0	6.0	8.0	8.0	8.0
Minimum Split (s)	11.0	20.0	20.0	20.0	20.0	10.0	20.0	14.0	27.0
Total Split (s)	13.0	53.0	40.0	40.0	40.0	14.0	33.0	14.0	33.0
Total Split (%)	13.0%	53.0%	40.0%	40.0%	40.0%	14.0%	33.0%	14.0%	33.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	-2.0	0.0
Total Lost Time (s)	5.0	6.0		6.0	6.0		6.0	4.0	6.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes						
Recall Mode	None	Max	Max	Max	Max	None	None	None	None
Act Effct Green (s)	48.0	47.0		34.0	34.0		27.0	43.0	41.0
Actuated g/C Ratio	0.48	0.47		0.34	0.34		0.27	0.43	0.41
v/c Ratio	0.98	0.50		1.12	0.86		1.10	1.09	0.38
Control Delay	82.4	19.4		133.7	38.5		99.3	110.1	21.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	3.0
Total Delay	82.4	19.4		133.7	38.5		99.3	110.1	24.7
LOS	F	B		F	D		F	F	C
Approach Delay		31.8			56.8		99.3		63.2
Approach LOS		C			E		F		E

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 100	
Natural Cycle: 100	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 60.5	Intersection LOS: E
Intersection Capacity Utilization 90.6%	ICU Level of Service E
Analysis Period (min) 15	

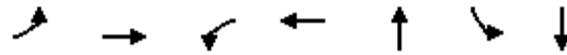
Splits and Phases: 6: Commercial Street & Centre Street (Route 60)/Centre Street



Queues

6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015



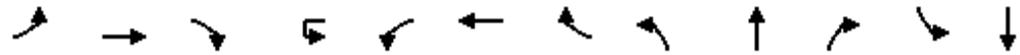
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	193	788	228	957	798	247	301
v/c Ratio	0.98	0.50	1.12	0.86	1.10	1.09	0.38
Control Delay	82.4	19.4	133.7	38.5	99.3	110.1	21.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	3.0
Total Delay	82.4	19.4	133.7	38.5	99.3	110.1	24.7
Queue Length 50th (ft)	74	174	~168	282	~298	~128	127
Queue Length 95th (ft)	#217	227	#302	349	#421	#269	188
Internal Link Dist (ft)		581		625	814		230
Turn Bay Length (ft)	140		310				
Base Capacity (vph)	197	1587	203	1111	724	227	793
Starvation Cap Reductn	0	0	0	0	0	0	380
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.50	1.12	0.86	1.10	1.09	0.73

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis
 6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	178	675	50	3	196	619	214	104	511	134	215	221
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	10	12	12	12	11	12	12	16
Total Lost time (s)	5.0	6.0			6.0	6.0			6.0		4.0	6.0
Lane Util. Factor	1.00	0.95			1.00	0.95			0.95		1.00	1.00
Frbp, ped/bikes	1.00	0.99			1.00	0.97			0.99		1.00	0.98
Flpb, ped/bikes	1.00	1.00			0.96	1.00			0.99		1.00	1.00
Frt	1.00	0.99			1.00	0.96			0.97		1.00	0.98
Flt Protected	0.95	1.00			0.95	1.00			0.99		0.95	1.00
Satd. Flow (prot)	1560	3366			1606	3171			3077		1556	1922
Flt Permitted	0.11	1.00			0.35	1.00			0.84		0.14	1.00
Satd. Flow (perm)	181	3366			598	3171			2600		222	1922
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.87	0.94	0.94	0.94	0.87	0.87
Adj. Flow (vph)	193	734	54	3	225	711	246	111	544	143	247	254
RTOR Reduction (vph)	0	5	0	0	0	34	0	0	21	0	0	5
Lane Group Flow (vph)	193	783	0	0	228	923	0	0	777	0	247	296
Confl. Peds. (#/hr)	48		31		31		48	43		33	33	
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	8%	0%	1%	5%	10%	20%	5%	5%	16%	3%
Turn Type	pm+pt	NA		Perm	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	5	2				6		3	8		7	4
Permitted Phases	2			6	6			8			4	
Actuated Green, G (s)	47.0	47.0			34.0	34.0			27.0		41.0	41.0
Effective Green, g (s)	47.0	47.0			34.0	34.0			27.0		43.0	41.0
Actuated g/C Ratio	0.47	0.47			0.34	0.34			0.27		0.43	0.41
Clearance Time (s)	5.0	6.0			6.0	6.0			6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	195	1582			203	1078			702		228	788
v/s Ratio Prot	c0.08	0.23				0.29					c0.11	0.15
v/s Ratio Perm	0.39				c0.38				0.30		c0.36	
v/c Ratio	0.99	0.49			1.12	0.86			1.11		1.08	0.38
Uniform Delay, d1	22.5	18.3			33.0	30.7			36.5		23.0	20.6
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	60.8	1.1			100.2	8.7			67.0		83.6	0.3
Delay (s)	83.3	19.4			133.2	39.5			103.5		106.6	20.9
Level of Service	F	B			F	D			F		F	C
Approach Delay (s)		32.0				57.5			103.5			59.5
Approach LOS		C				E			F			E

Intersection Summary			
HCM 2000 Control Delay	61.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: Commercial Street & Centre Street (Route 60)/Centre Street

9/1/2015

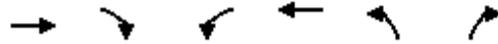


Movement	SBR
Lane Configurations	
Volume (vph)	41
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	47
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	43
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	33%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

7: Abbott Street & Pleasant Street

9/1/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	5	128	2	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.80	0.80	0.25	0.92
Hourly flow rate (vph)	0	8	160	2	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			8		322	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			8		322	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		100	100
cM capacity (veh/h)			1606		608	1091

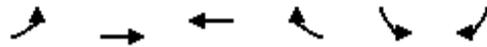
Direction, Lane #	EB 1	WB 1
Volume Total	8	162
Volume Left	0	160
Volume Right	8	0
cSH	1700	1606
Volume to Capacity	0.00	0.10
Queue Length 95th (ft)	0	8
Control Delay (s)	0.0	7.4
Lane LOS		A
Approach Delay (s)	0.0	7.4
Approach LOS		

Intersection Summary			
Average Delay		7.0	
Intersection Capacity Utilization	17.2%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

8: Exchange Street & Abbott Street

9/1/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑			↙	
Volume (veh/h)	0	285	0	0	134	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	0	343	0	0	179	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		361				
pX, platoon unblocked						
vC, conflicting volume	0				343	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				343	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				73	100
cM capacity (veh/h)	1636				653	1091

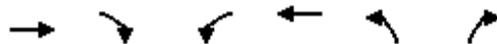
Direction, Lane #	EB 1	SB 1
Volume Total	343	179
Volume Left	0	179
Volume Right	0	0
cSH	1700	653
Volume to Capacity	0.20	0.27
Queue Length 95th (ft)	0	28
Control Delay (s)	0.0	12.6
Lane LOS		B
Approach Delay (s)	0.0	12.6
Approach LOS		B

Intersection Summary			
Average Delay		4.3	
Intersection Capacity Utilization	29.1%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

9: Jackson Street & Exchange Street

9/1/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻					↻
Volume (veh/h)	166	100	0	0	0	74
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.81	0.81	0.92	0.92	0.84	0.84
Hourly flow rate (vph)	205	123	0	0	0	88
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	609			1123		
pX, platoon unblocked						
vC, conflicting volume			328		267	267
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			328		267	267
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	89
cM capacity (veh/h)			1243		727	774

Direction, Lane #	EB 1	NB 1
Volume Total	328	88
Volume Left	0	0
Volume Right	123	88
cSH	1700	774
Volume to Capacity	0.19	0.11
Queue Length 95th (ft)	0	10
Control Delay (s)	0.0	10.2
Lane LOS		B
Approach Delay (s)	0.0	10.2
Approach LOS		B

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)		15	

Timings

16: Main Street & Pleasant Street

9/1/2015



Lane Group	NBL	NBT	SBU	SBT	ø9
Lane Configurations		↕↕		↕↕	
Volume (vph)	189	599	6	351	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	9
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	19.0
Total Split (s)	84.0	84.0	84.0	84.0	19.0
Total Split (%)	81.6%	81.6%	81.6%	81.6%	18%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)		80.0		80.0	
Actuated g/C Ratio		0.78		0.78	
v/c Ratio		0.49		0.26	
Control Delay		5.2		2.3	
Queue Delay		5.8		0.6	
Total Delay		11.0		3.0	
LOS		B		A	
Approach Delay		11.0		3.0	
Approach LOS		B		A	

Intersection Summary

Cycle Length: 103
 Actuated Cycle Length: 103
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTU, Start of Green
 Natural Cycle: 45
 Control Type: Pretimed
 Maximum v/c Ratio: 0.49
 Intersection Signal Delay: 7.6
 Intersection LOS: A
 Intersection Capacity Utilization 43.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 16: Main Street & Pleasant Street

ø2 (R) 84 s	ø6 (R) 84 s	ø9 19 s
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Queues

16: Main Street & Pleasant Street

9/1/2015



Lane Group	NBT	SBT
Lane Group Flow (vph)	866	637
v/c Ratio	0.49	0.26
Control Delay	5.2	2.3
Queue Delay	5.8	0.6
Total Delay	11.0	3.0
Queue Length 50th (ft)	86	31
Queue Length 95th (ft)	118	38
Internal Link Dist (ft)	128	227
Turn Bay Length (ft)		
Base Capacity (vph)	1771	2469
Starvation Cap Reductn	835	1390
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.93	0.59
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

16: Main Street & Pleasant Street

9/1/2015



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations				↑↑		↑↑	
Volume (vph)	0	0	189	599	6	351	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0	
Lane Util. Factor				0.95		0.95	
Frt				1.00		0.95	
Flt Protected				0.99		1.00	
Satd. Flow (prot)				3421		3296	
Flt Permitted				0.66		0.95	
Satd. Flow (perm)				2283		3122	
Peak-hour factor, PHF	0.92	0.92	0.91	0.91	0.82	0.82	0.82
Adj. Flow (vph)	0	0	208	658	7	428	202
RTOR Reduction (vph)	0	0	0	0	0	45	0
Lane Group Flow (vph)	0	0	0	866	0	592	0
Heavy Vehicles (%)	2%	2%	2%	5%	0%	4%	5%
Turn Type			Perm	NA	Perm	NA	
Protected Phases				2		6	
Permitted Phases			2		6		
Actuated Green, G (s)				80.0		80.0	
Effective Green, g (s)				80.0		80.0	
Actuated g/C Ratio				0.78		0.78	
Clearance Time (s)				4.0		4.0	
Lane Grp Cap (vph)				1773		2424	
v/s Ratio Prot							
v/s Ratio Perm				0.38		0.19	
v/c Ratio				0.49		0.24	
Uniform Delay, d1				4.1		3.2	
Progression Factor				1.00		1.00	
Incremental Delay, d2				1.0		0.2	
Delay (s)				5.1		3.4	
Level of Service				A		A	
Approach Delay (s)	0.0			5.1		3.4	
Approach LOS	A			A		A	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	103.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

17: Main Street & Exchange Street/Irving Street

9/1/2015

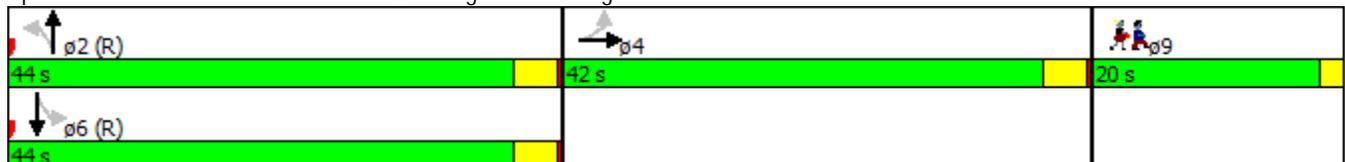


Lane Group	EBT	NBT	SBL	SBT	ø9
Lane Configurations	↔	↔		↔	
Volume (vph)	2	620	6	344	
Turn Type	NA	NA	Perm	NA	
Protected Phases	4	2		6	9
Permitted Phases			6		
Detector Phase	4	2	6	6	
Switch Phase					
Minimum Initial (s)	8.0	10.0	10.0	10.0	4.0
Minimum Split (s)	12.0	14.0	14.0	14.0	20.0
Total Split (s)	42.0	44.0	44.0	44.0	20.0
Total Split (%)	39.6%	41.5%	41.5%	41.5%	19%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)	38.0	40.0		40.0	
Actuated g/C Ratio	0.36	0.38		0.38	
v/c Ratio	0.52	0.50		0.37	
Control Delay	26.5	26.8		25.1	
Queue Delay	0.0	53.6		11.6	
Total Delay	26.5	80.3		36.7	
LOS	C	F		D	
Approach Delay	26.5	80.3		36.7	
Approach LOS	C	F		D	

Intersection Summary

Cycle Length: 106
 Actuated Cycle Length: 106
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 53.8
 Intersection LOS: D
 Intersection Capacity Utilization 42.7%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 17: Main Street & Exchange Street/Irving Street



Queues

17: Main Street & Exchange Street/Irving Street

9/1/2015



Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	381	677	443
v/c Ratio	0.52	0.50	0.37
Control Delay	26.5	26.8	25.1
Queue Delay	0.0	53.6	11.6
Total Delay	26.5	80.3	36.7
Queue Length 50th (ft)	177	182	113
Queue Length 95th (ft)	239	236	133
Internal Link Dist (ft)	239	139	128
Turn Bay Length (ft)			
Base Capacity (vph)	730	1358	1183
Starvation Cap Reductn	0	807	710
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.52	1.23	0.94

Intersection Summary

HCM Signalized Intersection Capacity Analysis

17: Main Street & Exchange Street/Irving Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Volume (vph)	169	2	145	0	0	0	0	620	16	6	344	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	11	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.94						1.00			1.00	
Flt Protected		0.97						1.00			1.00	
Satd. Flow (prot)		1957						3596			3323	
Flt Permitted		0.97						1.00			0.94	
Satd. Flow (perm)		1957						3596			3136	
Peak-hour factor, PHF	0.83	0.83	0.83	0.25	0.25	0.25	0.94	0.94	0.94	0.79	0.79	0.79
Adj. Flow (vph)	204	2	175	0	0	0	0	660	17	8	435	0
RTOR Reduction (vph)	0	29	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	352		0	0	0	0	675	0	0	443	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	5%	0%	0%	0%	5%	0%
Turn Type	Perm	NA						NA			Perm	NA
Protected Phases		4						2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)		38.0						40.0			40.0	
Effective Green, g (s)		38.0						40.0			40.0	
Actuated g/C Ratio		0.36						0.38			0.38	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		701						1356			1183	
v/s Ratio Prot								c0.19				
v/s Ratio Perm		0.18									0.14	
v/c Ratio		0.50						0.50			0.37	
Uniform Delay, d1		26.6						25.3			23.9	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.6						1.3			0.9	
Delay (s)		29.2						26.6			24.8	
Level of Service		C						C			C	
Approach Delay (s)		29.2			0.0			26.6			24.8	
Approach LOS		C			A			C			C	

Intersection Summary

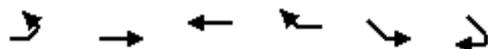
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

22: Pleasant Street & Elm Street

9/1/2015

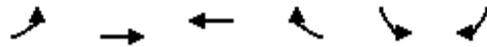


Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations			↔			
Volume (veh/h)	0	0	170	298	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	185	324	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			898			
pX, platoon unblocked						
vC, conflicting volume	509				347	347
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	509				347	347
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1056				650	696
Direction, Lane #	WB 1					
Volume Total	509					
Volume Left	0					
Volume Right	324					
cSH	1700					
Volume to Capacity	0.30					
Queue Length 95th (ft)	0					
Control Delay (s)	0.0					
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	30.6%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

1: Pleasant Street (Route 60)/Centre Street (Route 60) & Pleasant Street

8/31/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑			↗
Volume (veh/h)	0	786	450	0	0	303
Sign Control		Free	Free		Yield	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.93	0.87	0.92	0.92	0.85
Hourly flow rate (vph)	0	845	517	0	0	356
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		131	239			
pX, platoon unblocked	0.77				0.77	0.77
vC, conflicting volume	517				940	517
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				774	227
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				100	39
cM capacity (veh/h)	1045				262	587

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	423	423	517	356
Volume Left	0	0	0	0
Volume Right	0	0	0	356
cSH	1700	1700	1700	587
Volume to Capacity	0.25	0.25	0.30	0.61
Queue Length 95th (ft)	0	0	0	102
Control Delay (s)	0.0	0.0	0.0	20.1
Lane LOS				C
Approach Delay (s)	0.0		0.0	20.1
Approach LOS				C

Intersection Summary				
Average Delay			4.2	
Intersection Capacity Utilization		49.1%		ICU Level of Service
Analysis Period (min)		15		A

HCM Unsignalized Intersection Capacity Analysis

2: Pearl Street/Pleasant St. Park & Pleasant Street

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔			↔			↔	
Volume (veh/h)	0	0	0	181	453	7	131	13	0	0	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.84	0.84	0.84	0.84	0.84	0.84	0.38	0.38	0.38
Hourly flow rate (vph)	0	0	0	215	539	8	156	15	0	0	3	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)	795											
pX, platoon unblocked												
vC, conflicting volume	548	0			981			979	0	982	974	543
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	548	0			981			979	0	982	974	543
tC, single (s)	4.1	4.1			7.1			6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2	2.2			3.5			4.0	3.3	3.5	4.0	3.3
p0 queue free %	100	87			23			93	100	100	99	99
cM capacity (veh/h)	1022	1623			201			217	1085	194	218	539

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	763	171	8
Volume Left	215	156	0
Volume Right	8	0	5
cSH	1623	203	362
Volume to Capacity	0.13	0.85	0.02
Queue Length 95th (ft)	11	157	2
Control Delay (s)	3.2	77.2	15.2
Lane LOS	A	F	C
Approach Delay (s)	3.2	77.2	15.2
Approach LOS		F	C

Intersection Summary		
Average Delay		16.8
Intersection Capacity Utilization	55.5%	ICU Level of Service
Analysis Period (min)		15
		B

Timings

3: Pearl Street & Centre Street (Route 60)

8/31/2015

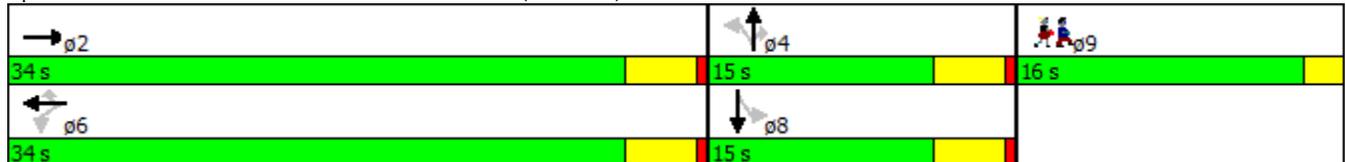


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	ø9
Lane Configurations	↑↑		↑	↗		↖	↗		↕	
Volume (vph)	735	21	429	85	21	51	79	27	156	
Turn Type	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	2		6			4			8	9
Permitted Phases		6		6	4		4	8		
Detector Phase	2	6	6	6	4	4	4	8	8	
Switch Phase										
Minimum Initial (s)	2.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	7.0
Minimum Split (s)	15.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (s)	34.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (%)	52.3%	52.3%	52.3%	52.3%	23.1%	23.1%	23.1%	23.1%	23.1%	25%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)	4.0		4.0	4.0		4.0	4.0		4.0	
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	Max	None	None	None						
Act Effect Green (s)	30.4		30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio	0.49		0.49	0.49		0.18	0.18		0.18	
v/c Ratio	0.50		0.68	0.13		0.26	0.24		0.65	
Control Delay	12.8		18.7	3.0		26.3	8.4		37.0	
Queue Delay	0.2		0.0	0.0		0.0	0.0		0.0	
Total Delay	13.0		18.7	3.0		26.3	8.4		37.0	
LOS	B		B	A		C	A		D	
Approach Delay	13.0		16.2			16.9			37.0	
Approach LOS	B		B			B			D	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 17.1	Intersection LOS: B
Intersection Capacity Utilization 62.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Pearl Street & Centre Street (Route 60)



Queues

3: Pearl Street & Centre Street (Route 60)

8/31/2015



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	835	562	106	78	86	206
v/c Ratio	0.50	0.68	0.13	0.26	0.24	0.65
Control Delay	12.8	18.7	3.0	26.3	8.4	37.0
Queue Delay	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	18.7	3.0	26.3	8.4	37.0
Queue Length 50th (ft)	115	170	0	27	0	78
Queue Length 95th (ft)	163	231	17	62	33	#165
Internal Link Dist (ft)	159	9		329		66
Turn Bay Length (ft)						
Base Capacity (vph)	1671	830	832	298	352	317
Starvation Cap Reductn	249	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.68	0.13	0.26	0.24	0.65

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Pearl Street & Centre Street (Route 60)

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑	↑		↑	↑		↑↑	
Volume (vph)	0	735	50	21	429	85	21	51	79	27	156	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Lane Util. Factor		0.95			1.00	1.00		1.00	1.00		1.00	
Frt		0.99			1.00	0.85		1.00	0.85		1.00	
Flt Protected		1.00			1.00	1.00		0.99	1.00		0.99	
Satd. Flow (prot)		3385			1777	1583		1872	1568		1868	
Flt Permitted		1.00			0.95	1.00		0.87	1.00		0.93	
Satd. Flow (perm)		3385			1688	1583		1657	1568		1760	
Peak-hour factor, PHF	0.94	0.94	0.94	0.80	0.80	0.80	0.92	0.92	0.92	0.76	0.92	0.92
Adj. Flow (vph)	0	782	53	26	536	106	23	55	86	36	170	0
RTOR Reduction (vph)	0	7	0	0	0	54	0	0	71	0	0	0
Lane Group Flow (vph)	0	828	0	0	562	52	0	78	15	0	206	0
Heavy Vehicles (%)	2%	6%	0%	0%	7%	2%	0%	0%	3%	0%	1%	0%
Turn Type		NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases				6		6	4		4	8		
Actuated Green, G (s)		30.4			30.4	30.4		11.1	11.1		11.1	
Effective Green, g (s)		30.4			30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio		0.49			0.49	0.49		0.18	0.18		0.18	
Clearance Time (s)		4.0			4.0	4.0		4.0	4.0		4.0	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)		1657			826	774		296	280		314	
v/s Ratio Prot		0.24										
v/s Ratio Perm					c0.33	0.03		0.05	0.01		c0.12	
v/c Ratio		0.50			0.68	0.07		0.26	0.05		0.66	
Uniform Delay, d1		10.7			12.1	8.4		22.0	21.1		23.7	
Progression Factor		1.00			1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2		1.1			4.5	0.2		2.2	0.4		4.9	
Delay (s)		11.8			16.6	8.5		24.1	21.5		28.6	
Level of Service		B			B	A		C	C		C	
Approach Delay (s)		11.8			15.3			22.8			28.6	
Approach LOS		B			B			C			C	

Intersection Summary

HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Timings

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015

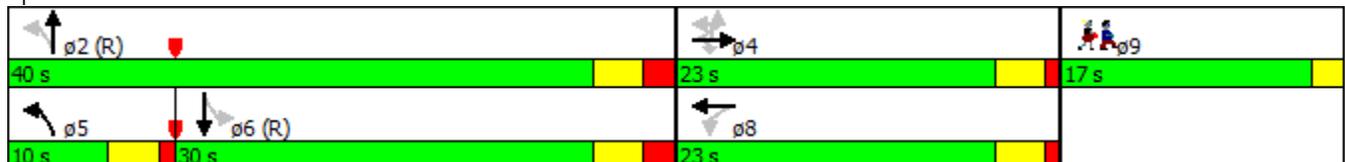


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø9
Lane Configurations			↕	↕		↕		↕		↕	
Volume (vph)	2	18	91	224	25	202	105	170	66	484	
Turn Type	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases			4			8	5	2		6	9
Permitted Phases	4	4		4	8		2		6		
Detector Phase	4	4	4	4	8	8	5	2	6	6	
Switch Phase											
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	10.0	10.0	10.0	8.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	10.0	20.0	20.0	20.0	17.0
Total Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	10.0	40.0	30.0	30.0	17.0
Total Split (%)	28.8%	28.8%	28.8%	28.8%	28.8%	28.8%	12.5%	50.0%	37.5%	37.5%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)			0.0	0.0		0.0		0.0		0.0	
Total Lost Time (s)			4.0	4.0		4.0		5.0		5.0	
Lead/Lag							Lead		Lag	Lag	
Lead-Lag Optimize?							Yes		Yes	Yes	
Recall Mode	Max	Max	Max	Max	None	None	Max	C-Max	C-Max	C-Max	Ped
Act Effect Green (s)			19.0	19.0		19.0		35.0		25.0	
Actuated g/C Ratio			0.24	0.24		0.24		0.44		0.31	
v/c Ratio			0.30	0.48		0.61		0.34		0.72	
Control Delay			27.5	6.7		33.9		14.6		29.0	
Queue Delay			0.0	0.0		0.0		0.0		0.0	
Total Delay			27.5	6.7		33.9		14.6		29.0	
LOS			C	A		C		B		C	
Approach Delay			13.2			33.9		14.6		29.0	
Approach LOS			B			C		B		C	

Intersection Summary

Cycle Length: 80
 Actuated Cycle Length: 80
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 23.1
 Intersection LOS: C
 Intersection Capacity Utilization 57.2%
 ICU Level of Service B
 Analysis Period (min) 15

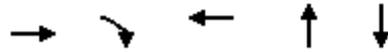
Splits and Phases: 4: Commercial Street/Florence Street & Pleasant Street



Queues

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015



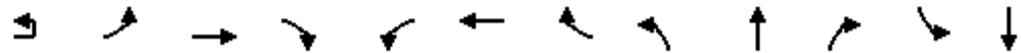
Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	122	267	258	320	655
v/c Ratio	0.30	0.48	0.61	0.34	0.72
Control Delay	27.5	6.7	33.9	14.6	29.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	27.5	6.7	33.9	14.6	29.0
Queue Length 50th (ft)	50	0	114	48	146
Queue Length 95th (ft)	97	44	190	74	208
Internal Link Dist (ft)	597		267	294	439
Turn Bay Length (ft)					
Base Capacity (vph)	405	560	425	945	910
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.30	0.48	0.61	0.34	0.72

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations			↕	↕		↕			↕			↕
Volume (vph)	2	18	91	224	25	202	10	105	170	22	66	484
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	12	12	12	12	15	12	12	11
Total Lost time (s)			4.0	4.0		4.0			5.0			5.0
Lane Util. Factor			1.00	1.00		1.00			0.95			0.95
Frbp, ped/bikes			1.00	1.00		1.00			1.00			1.00
Flpb, ped/bikes			1.00	1.00		1.00			1.00			1.00
Frt			1.00	0.85		0.99			0.99			0.98
Flt Protected			0.99	1.00		0.99			0.98			0.99
Satd. Flow (prot)			1834	1501		1842			3345			3306
Flt Permitted			0.92	1.00		0.96			0.57			0.86
Satd. Flow (perm)			1706	1501		1782			1943			2873
Peak-hour factor, PHF	0.84	0.84	0.92	0.84	0.92	0.92	0.92	0.93	0.93	0.92	0.92	0.96
Adj. Flow (vph)	2	21	99	267	27	220	11	113	183	24	72	504
RTOR Reduction (vph)	0	0	0	204	0	2	0	0	7	0	0	13
Lane Group Flow (vph)	0	0	122	63	0	256	0	0	313	0	0	642
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	0%	6%	2%	4%	2%	2%	2%	8%	9%	2%	2%	3%
Parking (#/hr)									5			
Turn Type	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA
Protected Phases			4			8		5	2			6
Permitted Phases	4	4		4	8			2			6	
Actuated Green, G (s)			19.0	19.0		19.0			35.0			25.0
Effective Green, g (s)			19.0	19.0		19.0			35.0			25.0
Actuated g/C Ratio			0.24	0.24		0.24			0.44			0.31
Clearance Time (s)			4.0	4.0		4.0			5.0			5.0
Vehicle Extension (s)			3.0	3.0		3.0			3.0			3.0
Lane Grp Cap (vph)			405	356		423			955			897
v/s Ratio Prot									c0.02			
v/s Ratio Perm			0.07	0.04		c0.14			0.12			c0.22
v/c Ratio			0.30	0.18		0.60			0.33			0.72
Uniform Delay, d1			25.0	24.3		27.2			14.8			24.4
Progression Factor			1.00	1.00		1.00			1.00			1.00
Incremental Delay, d2			1.9	1.1		2.4			0.9			4.9
Delay (s)			27.0	25.4		29.6			15.7			29.2
Level of Service			C	C		C			B			C
Approach Delay (s)			25.9			29.6			15.7			29.2
Approach LOS			C			C			B			C
Intersection Summary												
HCM 2000 Control Delay			25.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			80.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			57.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis
 4: Commercial Street/Florence Street & Pleasant Street

8/31/2015

Movement	SBR
Lane Configurations	
Volume (vph)	76
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	79
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Heavy Vehicles (%)	2%
Parking (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Timings

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015

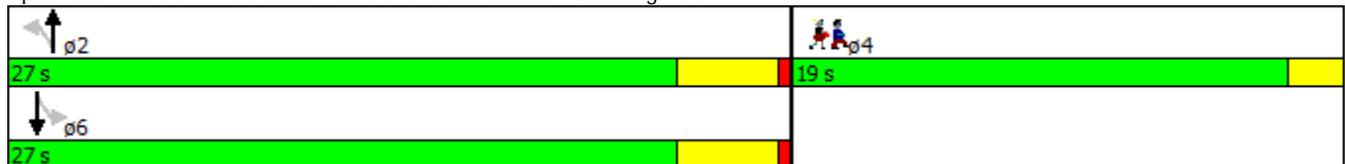


Lane Group	NBL	NBT	SBL	SBT	ø4
Lane Configurations		↔↔		↔↔	
Volume (vph)	83	337	39	673	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	4
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.0	27.0	27.0	27.0	19.0
Total Split (s)	27.0	27.0	27.0	27.0	19.0
Total Split (%)	58.7%	58.7%	58.7%	58.7%	41%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Ped
Act Effect Green (s)		23.0		23.0	
Actuated g/C Ratio		0.50		0.50	
v/c Ratio		0.47		0.48	
Control Delay		6.9		8.7	
Queue Delay		0.0		0.0	
Total Delay		6.9		8.7	
LOS		A		A	
Approach Delay		6.9		8.7	
Approach LOS		A		A	

Intersection Summary

Cycle Length: 46	
Actuated Cycle Length: 46	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 7.9	Intersection LOS: A
Intersection Capacity Utilization 43.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Commercial Street & MBTA Drive/Exchange Street



Queues

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015

	↑	↓
Lane Group	NBT	SBT
Lane Group Flow (vph)	624	789
v/c Ratio	0.47	0.48
Control Delay	6.9	8.7
Queue Delay	0.0	0.0
Total Delay	6.9	8.7
Queue Length 50th (ft)	36	63
Queue Length 95th (ft)	66	98
Internal Link Dist (ft)	230	294
Turn Bay Length (ft)		
Base Capacity (vph)	1317	1639
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.47	0.48
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015

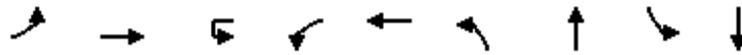


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								TT			TT		
Volume (vph)	0	0	0	0	0	0	83	337	148	39	673	21	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	12	12	13	13	13	
Total Lost time (s)								4.0			4.0		
Lane Util. Factor								0.95			0.95		
Frt								0.96			1.00		
Flt Protected								0.99			1.00		
Satd. Flow (prot)								3172			3605		
Flt Permitted								0.78			0.90		
Satd. Flow (perm)								2478			3269		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.93	0.93	0.93	
Adj. Flow (vph)	0	0	0	0	0	0	91	370	163	42	724	23	
RTOR Reduction (vph)	0	0	0	0	0	0	0	78	0	0	5	0	
Lane Group Flow (vph)	0	0	0	0	0	0	0	547	0	0	785	0	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	14%	1%	0%	3%	0%	
Turn Type								Perm	NA		Perm	NA	
Protected Phases									2			6	
Permitted Phases								2		6			
Actuated Green, G (s)									23.0			23.0	
Effective Green, g (s)									23.0			23.0	
Actuated g/C Ratio									0.50			0.50	
Clearance Time (s)									4.0			4.0	
Vehicle Extension (s)									3.0			3.0	
Lane Grp Cap (vph)									1239			1634	
v/s Ratio Prot													
v/s Ratio Perm									0.22			c0.24	
v/c Ratio									0.44			0.48	
Uniform Delay, d1									7.4			7.6	
Progression Factor									1.00			1.00	
Incremental Delay, d2									1.1			1.0	
Delay (s)									8.5			8.6	
Level of Service									A			A	
Approach Delay (s)		0.0			0.0				8.5			8.6	
Approach LOS		A			A				A			A	
Intersection Summary													
HCM 2000 Control Delay			8.6									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.28										
Actuated Cycle Length (s)			46.0									Sum of lost time (s)	6.0
Intersection Capacity Utilization			43.5%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Timings

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015

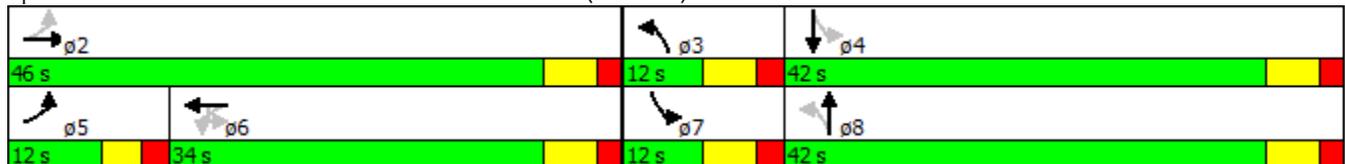


Lane Group	EBL	EBT	WBU	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Volume (vph)	137	490	1	224	496	42	251	177	566
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2			6	3	8	7	4
Permitted Phases	2		6	6		8		4	
Detector Phase	5	2	6	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	6.0	10.0	10.0	10.0	10.0	6.0	8.0	6.0	8.0
Minimum Split (s)	11.0	20.0	20.0	20.0	20.0	12.0	22.0	12.0	27.0
Total Split (s)	12.0	46.0	34.0	34.0	34.0	12.0	42.0	12.0	42.0
Total Split (%)	12.0%	46.0%	34.0%	34.0%	34.0%	12.0%	42.0%	12.0%	42.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0
Total Lost Time (s)	5.0	6.0		6.0	6.0		6.0		6.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes						
Recall Mode	None	Max	Max	Max	Max	None	Ped	None	Ped
Act Effct Green (s)	41.2	40.2		28.1	28.1		27.9		27.9
Actuated g/C Ratio	0.51	0.50		0.35	0.35		0.35		0.35
v/c Ratio	0.53	0.41		1.08	0.66		0.51		0.83
Control Delay	19.7	13.7		110.9	24.8		21.0		31.8
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.6
Total Delay	19.7	13.7		110.9	24.8		21.0		32.4
LOS	B	B		F	C		C		C
Approach Delay		14.8			46.4		21.0		32.4
Approach LOS		B			D		C		C

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 80.2	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.08	
Intersection Signal Delay: 30.7	Intersection LOS: C
Intersection Capacity Utilization 85.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Commercial Street & Centre Street (Route 60)/Centre Street



Queues

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015



Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	152	680	253	757	418	795
v/c Ratio	0.53	0.41	1.08	0.66	0.51	0.83
Control Delay	19.7	13.7	110.9	24.8	21.0	31.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.6
Total Delay	19.7	13.7	110.9	24.8	21.0	32.4
Queue Length 50th (ft)	39	100	~143	154	78	186
Queue Length 95th (ft)	87	170	#312	244	112	255
Internal Link Dist (ft)		581		625	814	230
Turn Bay Length (ft)	140		310			
Base Capacity (vph)	285	1654	235	1142	1045	1241
Starvation Cap Reductn	0	0	0	0	0	154
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.41	1.08	0.66	0.40	0.73

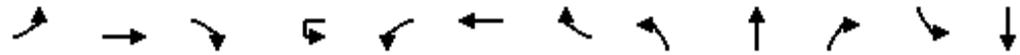
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	137	490	122	1	224	496	178	42	251	66	177	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	10	12	12	12	11	12	12	16
Total Lost time (s)	5.0	6.0			6.0	6.0			6.0			6.0
Lane Util. Factor	1.00	0.95			1.00	0.95			0.95			0.95
Frbp, ped/bikes	1.00	0.99			1.00	0.98			0.99			1.00
Flpb, ped/bikes	1.00	1.00			0.98	1.00			1.00			0.99
Frt	1.00	0.97			1.00	0.96			0.97			0.99
Flt Protected	0.95	1.00			0.95	1.00			0.99			0.99
Satd. Flow (prot)	1556	3273			1634	3181			3119			3707
Flt Permitted	0.21	1.00			0.39	1.00			0.73			0.73
Satd. Flow (perm)	350	3273			676	3181			2288			2750
Peak-hour factor, PHF	0.90	0.90	0.90	0.89	0.89	0.89	0.89	0.86	0.86	0.86	0.98	0.98
Adj. Flow (vph)	152	544	136	1	252	557	200	49	292	77	181	578
RTOR Reduction (vph)	0	18	0	0	0	33	0	0	22	0	0	4
Lane Group Flow (vph)	152	662	0	0	253	724	0	0	396	0	0	791
Confl. Peds. (#/hr)	48		31		31		48	43		33	33	
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	8%	0%	1%	5%	10%	20%	5%	5%	16%	3%
Turn Type	pm+pt	NA		Perm	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	5	2				6		3	8		7	4
Permitted Phases	2			6	6			8			4	
Actuated Green, G (s)	40.2	40.2			28.2	28.2			27.9			27.9
Effective Green, g (s)	40.2	40.2			28.2	28.2			27.9			27.9
Actuated g/C Ratio	0.50	0.50			0.35	0.35			0.35			0.35
Clearance Time (s)	5.0	6.0			6.0	6.0			6.0			6.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0			3.0
Lane Grp Cap (vph)	281	1642			237	1119			796			957
v/s Ratio Prot	c0.05	0.20				0.23						
v/s Ratio Perm	0.22				c0.37				0.17			c0.29
v/c Ratio	0.54	0.40			1.07	0.65			0.50			0.83
Uniform Delay, d1	12.6	12.5			25.9	21.8			20.6			23.9
Progression Factor	1.00	1.00			1.00	1.00			1.00			1.00
Incremental Delay, d2	2.1	0.7			77.5	2.9			0.5			5.9
Delay (s)	14.7	13.2			103.4	24.7			21.1			29.8
Level of Service	B	B			F	C			C			C
Approach Delay (s)		13.5				44.4			21.1			29.8
Approach LOS		B				D			C			C

Intersection Summary

HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	80.1	Sum of lost time (s)	21.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015



Movement	SBR
Lane Configurations	
Volume (vph)	35
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.98
Adj. Flow (vph)	36
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	43
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	33%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

7: Abbott Street & Pleasant Street

8/31/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations		↗		↖		
Volume (veh/h)	0	184	101	234	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.50	0.50	0.81	0.81	0.25	0.92
Hourly flow rate (vph)	0	368	125	289	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	347					
pX, platoon unblocked						
vC, conflicting volume			368		538	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			368		538	0
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		100	100
cM capacity (veh/h)			1202		455	1091

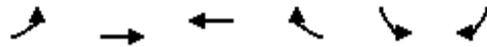
Direction, Lane #	EB 1	WB 1
Volume Total	368	414
Volume Left	0	125
Volume Right	368	0
cSH	1700	1202
Volume to Capacity	0.22	0.10
Queue Length 95th (ft)	0	9
Control Delay (s)	0.0	3.2
Lane LOS		A
Approach Delay (s)	0.0	3.2
Approach LOS		

Intersection Summary			
Average Delay		1.7	
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

8: Exchange Street & Abbott Street

8/31/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑			↙	
Volume (veh/h)	0	142	0	0	304	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.92	0.92	0.82	0.82
Hourly flow rate (vph)	0	169	0	0	371	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		361				
pX, platoon unblocked						
vC, conflicting volume	0				169	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				169	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				55	100
cM capacity (veh/h)	1636				826	1091

Direction, Lane #	EB 1	SB 1
Volume Total	169	371
Volume Left	0	371
Volume Right	0	0
cSH	1700	826
Volume to Capacity	0.10	0.45
Queue Length 95th (ft)	0	59
Control Delay (s)	0.0	12.9
Lane LOS		B
Approach Delay (s)	0.0	12.9
Approach LOS		B

Intersection Summary			
Average Delay		8.8	
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

9: Jackson Street & Exchange Street

8/31/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻					↻
Volume (veh/h)	207	239	0	0	0	27
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.92	0.92	0.71	0.71
Hourly flow rate (vph)	241	278	0	0	0	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	609			1123		
pX, platoon unblocked						
vC, conflicting volume			519		380	380
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			519		380	380
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	94
cM capacity (veh/h)			1058		626	672

Direction, Lane #	EB 1	NB 1
Volume Total	519	38
Volume Left	0	0
Volume Right	278	38
cSH	1700	672
Volume to Capacity	0.31	0.06
Queue Length 95th (ft)	0	4
Control Delay (s)	0.0	10.7
Lane LOS		B
Approach Delay (s)	0.0	10.7
Approach LOS		B

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization	35.5%	ICU Level of Service	A
Analysis Period (min)	15		

Timings

16: Main Street & Pleasant Street

8/31/2015



Lane Group	NBL	NBT	SBU	SBT	ø9
Lane Configurations		↑↑		↑↑	
Volume (vph)	138	399	4	382	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	9
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	19.0
Total Split (s)	84.0	84.0	84.0	84.0	19.0
Total Split (%)	81.6%	81.6%	81.6%	81.6%	18%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)		80.0		80.0	
Actuated g/C Ratio		0.78		0.78	
v/c Ratio		0.38		0.32	
Control Delay		4.4		2.0	
Queue Delay		2.0		1.1	
Total Delay		6.3		3.1	
LOS		A		A	
Approach Delay		6.3		3.1	
Approach LOS		A		A	

Intersection Summary

Cycle Length: 103
 Actuated Cycle Length: 103
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTU, Start of Green
 Natural Cycle: 40
 Control Type: Pretimed
 Maximum v/c Ratio: 0.38
 Intersection Signal Delay: 4.6
 Intersection LOS: A
 Intersection Capacity Utilization 42.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 16: Main Street & Pleasant Street

ø2 (R) 84 s	ø6 (R) 84 s	ø9 19 s
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Queues

16: Main Street & Pleasant Street

8/31/2015



Lane Group	NBT	SBT
Lane Group Flow (vph)	647	794
v/c Ratio	0.38	0.32
Control Delay	4.4	2.0
Queue Delay	2.0	1.1
Total Delay	6.3	3.1
Queue Length 50th (ft)	56	30
Queue Length 95th (ft)	70	45
Internal Link Dist (ft)	157	198
Turn Bay Length (ft)		
Base Capacity (vph)	1707	2520
Starvation Cap Reductn	870	1410
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.77	0.72
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

16: Main Street & Pleasant Street

8/31/2015



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations				↕↕		↕↔	
Volume (vph)	0	0	138	399	4	382	329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0	
Lane Util. Factor				0.95		0.95	
Frt				1.00		0.93	
Flt Protected				0.99		1.00	
Satd. Flow (prot)				3494		3294	
Flt Permitted				0.62		0.95	
Satd. Flow (perm)				2197		3140	
Peak-hour factor, PHF	0.92	0.92	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	0	0	166	481	4	424	366
RTOR Reduction (vph)	0	0	0	0	0	82	0
Lane Group Flow (vph)	0	0	0	647	0	712	0
Turn Type			Perm	NA	Perm	NA	
Protected Phases				2		6	
Permitted Phases			2		6		
Actuated Green, G (s)				80.0		80.0	
Effective Green, g (s)				80.0		80.0	
Actuated g/C Ratio				0.78		0.78	
Clearance Time (s)				4.0		4.0	
Lane Grp Cap (vph)				1706		2438	
v/s Ratio Prot							
v/s Ratio Perm				c0.29		0.23	
v/c Ratio				0.38		0.29	
Uniform Delay, d1				3.6		3.3	
Progression Factor				1.00		1.00	
Incremental Delay, d2				0.6		0.3	
Delay (s)				4.3		3.6	
Level of Service				A		A	
Approach Delay (s)	0.0			4.3		3.6	
Approach LOS	A			A		A	

Intersection Summary

HCM 2000 Control Delay	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	103.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Timings

17: Main Street & Exchange Street/Irving Street

8/31/2015

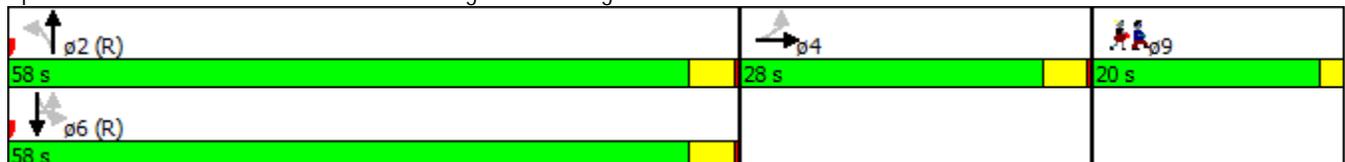


Lane Group	EBT	NBT	SBU	SBL	SBT	ø9
Lane Configurations	↔	↔			↔	
Volume (vph)	12	456	2	8	372	
Turn Type	NA	NA	Perm	Perm	NA	
Protected Phases	4	2			6	9
Permitted Phases			6	6		
Detector Phase	4	2	6	6	6	
Switch Phase						
Minimum Initial (s)	8.0	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	12.0	14.0	14.0	14.0	14.0	20.0
Total Split (s)	28.0	58.0	58.0	58.0	58.0	20.0
Total Split (%)	26.4%	54.7%	54.7%	54.7%	54.7%	19%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	24.0	54.0			54.0	
Actuated g/C Ratio	0.23	0.51			0.51	
v/c Ratio	0.39	0.37			0.27	
Control Delay	31.0	16.2			15.4	
Queue Delay	0.0	16.9			2.2	
Total Delay	31.0	33.1			17.6	
LOS	C	C			B	
Approach Delay	31.0	33.1			17.6	
Approach LOS	C	C			B	

Intersection Summary

Cycle Length: 106
 Actuated Cycle Length: 106
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.39
 Intersection Signal Delay: 27.3
 Intersection LOS: C
 Intersection Capacity Utilization 33.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 17: Main Street & Exchange Street/Irving Street



Queues

17: Main Street & Exchange Street/Irving Street

8/31/2015



Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	182	605	424
v/c Ratio	0.39	0.37	0.27
Control Delay	31.0	16.2	15.4
Queue Delay	0.0	16.9	2.2
Total Delay	31.0	33.1	17.6
Queue Length 50th (ft)	85	123	82
Queue Length 95th (ft)	137	140	114
Internal Link Dist (ft)	239	139	157
Turn Bay Length (ft)			
Base Capacity (vph)	464	1652	1575
Starvation Cap Reductn	0	1039	987
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.99	0.72
Intersection Summary			

HCM Signalized Intersection Capacity Analysis

17: Main Street & Exchange Street/Irving Street

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations		↕						↕				↕
Volume (vph)	75	12	66	0	0	0	0	456	28	2	8	372
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	12	11
Total Lost time (s)		4.0						4.0				4.0
Lane Util. Factor		1.00						0.95				0.95
Frt		0.94						0.99				1.00
Flt Protected		0.98						1.00				1.00
Satd. Flow (prot)		1935						3236				3293
Flt Permitted		0.98						1.00				0.94
Satd. Flow (perm)		1935						3236				3093
Peak-hour factor, PHF	0.84	0.84	0.84	0.25	0.25	0.25	0.80	0.80	0.80	0.90	0.90	0.90
Adj. Flow (vph)	89	14	79	0	0	0	0	570	35	2	9	413
RTOR Reduction (vph)	0	26	0	0	0	0	0	4	0	0	0	0
Lane Group Flow (vph)	0	156		0	0	0	0	601	0	0	0	424
Heavy Vehicles (%)	2%	0%	3%	0%	0%	0%	0%	11%	4%	0%	0%	6%
Turn Type	Perm	NA						NA		Perm	Perm	NA
Protected Phases		4						2				6
Permitted Phases	4						2			6	6	
Actuated Green, G (s)		24.0						54.0				54.0
Effective Green, g (s)		24.0						54.0				54.0
Actuated g/C Ratio		0.23						0.51				0.51
Clearance Time (s)		4.0						4.0				4.0
Lane Grp Cap (vph)		438						1648				1575
v/s Ratio Prot								c0.19				
v/s Ratio Perm		0.08										0.14
v/c Ratio		0.36						0.36				0.27
Uniform Delay, d1		34.5						15.7				14.8
Progression Factor		1.00						1.00				1.00
Incremental Delay, d2		2.2						0.6				0.4
Delay (s)		36.7						16.3				15.2
Level of Service		D						B				B
Approach Delay (s)		36.7			0.0			16.3				15.2
Approach LOS		D			A			B				B

Intersection Summary

HCM 2000 Control Delay	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

17: Main Street & Exchange Street/Irving Street

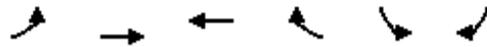
8/31/2015



Movement	SBR
Lane Configurations	
Volume (vph)	0
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis
 20: Exchange Street & Site Driveway

8/31/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		4			4	
Volume (veh/h)	11	88	0	0	32	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	96	0	0	35	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		191				
pX, platoon unblocked						
vC, conflicting volume	0				120	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				120	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	100
cM capacity (veh/h)	1623				870	1085

Direction, Lane #	EB 1	SB 1
Volume Total	108	35
Volume Left	12	35
Volume Right	0	0
cSH	1623	870
Volume to Capacity	0.01	0.04
Queue Length 95th (ft)	1	3
Control Delay (s)	0.9	9.3
Lane LOS	A	A
Approach Delay (s)	0.9	9.3
Approach LOS		A

Intersection Summary			
Average Delay		2.9	
Intersection Capacity Utilization	15.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis

21: Abbott Street & Site Driveway

8/31/2015

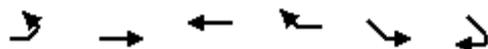


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	29	0	0	285	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	32	0	0	310	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	315	315	321			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	315	315	321			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	678	725	1239			
Direction, Lane #	EB 1	SB 1				
Volume Total	32	321				
Volume Left	0	0				
Volume Right	32	11				
cSH	725	1700				
Volume to Capacity	0.04	0.19				
Queue Length 95th (ft)	3	0				
Control Delay (s)	10.2	0.0				
Lane LOS	B					
Approach Delay (s)	10.2	0.0				
Approach LOS	B					
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			25.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

22: Pleasant Street & Elm Street

8/31/2015

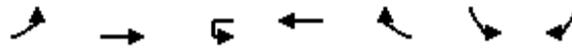


Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations			↰			
Volume (veh/h)	0	0	303	283	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	329	308	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			908			
pX, platoon unblocked						
vC, conflicting volume	637				483	483
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	637				483	483
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	947				542	583
Direction, Lane #	WB 1					
Volume Total	637					
Volume Left	0					
Volume Right	308					
cSH	1700					
Volume to Capacity	0.37					
Queue Length 95th (ft)	0					
Control Delay (s)	0.0					
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	36.6%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis

1: Pleasant Street (Route 60)/Centre Street (Route 60) & Pleasant Street

8/31/2015



Movement	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations		↑↑		↑			↑
Volume (veh/h)	0	939	2	532	0	0	258
Sign Control		Free		Free		Yield	
Grade		0%		0%		0%	
Peak Hour Factor	0.94	0.94	0.90	0.90	0.90	0.82	0.82
Hourly flow rate (vph)	0	999	0	591	0	0	315
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type		None		None			
Median storage (veh)							
Upstream signal (ft)		131		239			
pX, platoon unblocked	0.75		0.00			0.75	0.75
vC, conflicting volume	591		0			1091	591
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	285		0			953	285
tC, single (s)	4.1		0.0			6.8	7.0
tC, 2 stage (s)							
tF (s)	2.2		0.0			3.5	3.4
p0 queue free %	100		0			100	40
cM capacity (veh/h)	964		0			195	524

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	499	499	591	315
Volume Left	0	0	0	0
Volume Right	0	0	0	315
cSH	1700	1700	1700	524
Volume to Capacity	0.29	0.29	0.35	0.60
Queue Length 95th (ft)	0	0	0	98
Control Delay (s)	0.0	0.0	0.0	21.7
Lane LOS				C
Approach Delay (s)	0.0		0.0	21.7
Approach LOS				C

Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		50.8%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis

2: Pearl Street/Pleasant Street Park & Pleasant Street

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations					↔			↔			↔			
Volume (veh/h)	0	0	0	126	333	7	215	37	4	0	6	7		
Sign Control		Free			Free			Stop			Stop			
Grade		0%			0%			0%			0%			
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.84	0.84	0.84	0.50	0.50	0.50		
Hourly flow rate (vph)	0	0	0	142	374	8	256	44	5	0	12	14		
Pedestrians														
Lane Width (ft)														
Walking Speed (ft/s)														
Percent Blockage														
Right turn flare (veh)														
Median type	None				None									
Median storage (veh)														
Upstream signal (ft)					795									
pX, platoon unblocked	0.96						0.96	0.96				0.96	0.96	0.96
vC, conflicting volume	382	0						681	665	0	688	661	378	
vC1, stage 1 conf vol														
vC2, stage 2 conf vol														
vCu, unblocked vol	336	0						648	631	0	655	627	332	
tC, single (s)	4.1	4.1						7.1	6.5	6.2	7.1	6.5	6.2	
tC, 2 stage (s)														
tF (s)	2.2	2.2						3.5	4.0	3.3	3.5	4.0	3.3	
p0 queue free %	100	91						22	87	100	100	97	98	
cM capacity (veh/h)	1175	1630						328	352	1091	309	353	686	
Direction, Lane #	WB 1	NB 1	SB 1											
Volume Total	524	305	26											
Volume Left	142	256	0											
Volume Right	8	5	14											
cSH	1630	335	478											
Volume to Capacity	0.09	0.91	0.05											
Queue Length 95th (ft)	7	224	4											
Control Delay (s)	2.6	64.6	13.0											
Lane LOS	A	F	B											
Approach Delay (s)	2.6	64.6	13.0											
Approach LOS		F	B											
Intersection Summary														
Average Delay	25.1													
Intersection Capacity Utilization	52.3%			ICU Level of Service			A							
Analysis Period (min)	15													

Timings

3: Pearl Street & Centre Street (Route 60)/Centre Street

8/31/2015

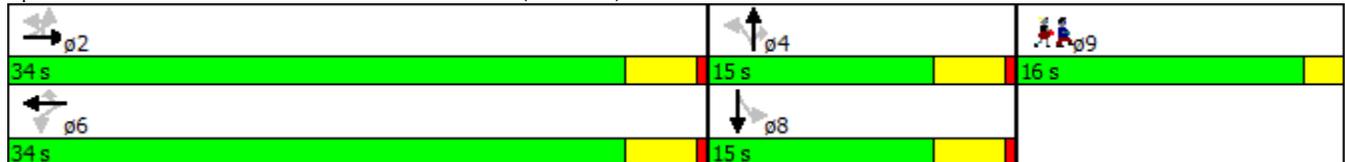


Lane Group	EBU	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	ø9
Lane Configurations			↑↑		↑	↑		↑	↑		↑	
Volume (vph)	1	2	908	1	541	147	19	107	80	56	74	
Turn Type	Perm	Perm	NA	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases			2		6			4			8	9
Permitted Phases	2	2		6		6	4		4	8		
Detector Phase	2	2	2	6	6	6	4	4	4	8	8	
Switch Phase												
Minimum Initial (s)	2.0	2.0	2.0	10.0	10.0	10.0	8.0	8.0	8.0	8.0	8.0	7.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (s)	34.0	34.0	34.0	34.0	34.0	34.0	15.0	15.0	15.0	15.0	15.0	16.0
Total Split (%)	52.3%	52.3%	52.3%	52.3%	52.3%	52.3%	23.1%	23.1%	23.1%	23.1%	23.1%	25%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)			0.0		0.0	0.0		0.0	0.0		0.0	
Total Lost Time (s)			4.0		4.0	4.0		4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	None	None	None								
Act Effect Green (s)			30.4		30.4	30.4		11.1	11.1		11.1	
Actuated g/C Ratio			0.49		0.49	0.49		0.18	0.18		0.18	
v/c Ratio			0.62		0.67	0.19		0.53	0.28		0.76	
Control Delay			14.6		17.8	2.7		31.6	8.1		50.5	
Queue Delay			0.4		0.0	0.0		0.0	0.0		0.0	
Total Delay			15.0		17.8	2.7		31.6	8.1		50.5	
LOS			B		B	A		C	A		D	
Approach Delay			15.0		14.6			22.5			50.5	
Approach LOS			B		B			C			D	

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 61.8	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 51.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Pearl Street & Centre Street (Route 60)/Centre Street



Queues

3: Pearl Street & Centre Street (Route 60)/Centre Street

8/31/2015



Lane Group	EBT	WBT	WBR	NBT	NBR	SBT
Lane Group Flow (vph)	1010	609	165	171	108	178
v/c Ratio	0.62	0.67	0.19	0.53	0.28	0.76
Control Delay	14.6	17.8	2.7	31.6	8.1	50.5
Queue Delay	0.4	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	17.8	2.7	31.6	8.1	50.5
Queue Length 50th (ft)	152	183	0	63	0	69
Queue Length 95th (ft)	213	290	27	95	23	#118
Internal Link Dist (ft)	159	9		329		66
Turn Bay Length (ft)						
Base Capacity (vph)	1638	914	862	320	380	233
Starvation Cap Reductn	211	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.67	0.19	0.53	0.28	0.76

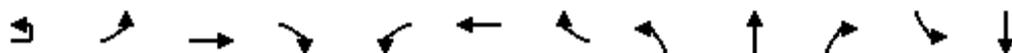
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Pearl Street & Centre Street (Route 60)/Centre Street

8/31/2015



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations			↑↑			↑	↑		↑	↑		↑
Volume (vph)	1	2	908	29	1	541	147	19	107	80	56	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.0			4.0	4.0		4.0	4.0		4.0
Lane Util. Factor			0.95			1.00	1.00		1.00	1.00		1.00
Frt			1.00			1.00	0.85		1.00	0.85		1.00
Flt Protected			1.00			1.00	1.00		0.99	1.00		0.98
Satd. Flow (prot)			3487			1863	1583		1870	1615		1849
Flt Permitted			0.95			1.00	1.00		0.94	1.00		0.69
Satd. Flow (perm)			3327			1861	1583		1777	1615		1296
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.89	0.89	0.89	0.74	0.74	0.74	0.73	0.73
Adj. Flow (vph)	1	2	976	31	1	608	165	26	145	108	77	101
RTOR Reduction (vph)	0	0	3	0	0	0	84	0	0	89	0	0
Lane Group Flow (vph)	0	0	1007	0	0	609	81	0	171	19	0	178
Heavy Vehicles (%)	0%	0%	3%	4%	0%	2%	2%	0%	1%	0%	0%	1%
Turn Type	Perm	Perm	NA		Perm	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases			2			6			4			8
Permitted Phases	2	2			6		6	4		4		8
Actuated Green, G (s)			30.4			30.4	30.4		11.1	11.1		11.1
Effective Green, g (s)			30.4			30.4	30.4		11.1	11.1		11.1
Actuated g/C Ratio			0.49			0.49	0.49		0.18	0.18		0.18
Clearance Time (s)			4.0			4.0	4.0		4.0	4.0		4.0
Vehicle Extension (s)			3.0			3.0	3.0		3.0	3.0		3.0
Lane Grp Cap (vph)			1628			911	774		317	288		231
v/s Ratio Prot												
v/s Ratio Perm			0.30			0.33	0.05		0.10	0.01		0.14
v/c Ratio			0.62			0.67	0.10		0.54	0.07		0.77
Uniform Delay, d1			11.6			12.0	8.5		23.2	21.2		24.3
Progression Factor			1.00			1.00	1.00		1.00	1.00		1.00
Incremental Delay, d2			1.8			3.9	0.3		6.4	0.4		14.6
Delay (s)			13.4			15.9	8.8		29.6	21.6		38.9
Level of Service			B			B	A		C	C		D
Approach Delay (s)			13.4			14.4			26.5			38.9
Approach LOS			B			B			C			D

Intersection Summary

HCM 2000 Control Delay	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	62.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 3: Pearl Street & Centre Street (Route 60)/Centre Street

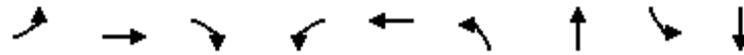
8/31/2015

Movement	SBR
Lane Configurations	
Volume (vph)	0
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.73
Adj. Flow (vph)	0
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Timings

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015

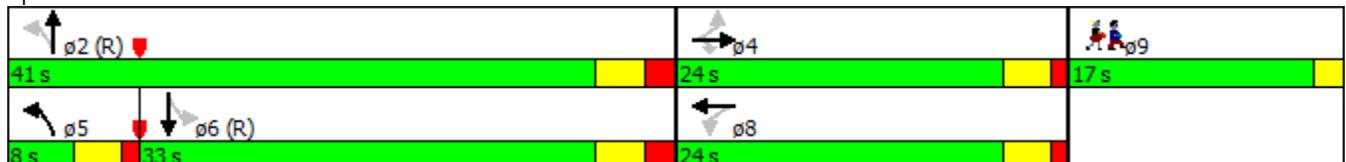


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø9
Lane Configurations		↕	↗		↕		↕↕		↕↕	
Volume (vph)	24	0	218	28	168	214	417	9	233	
Turn Type	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases		4			8	5	2		6	9
Permitted Phases	4		4	8		2		6		
Detector Phase	4	4	4	8	8	5	2	6	6	
Switch Phase										
Minimum Initial (s)	8.0	8.0	8.0	4.0	4.0	4.0	10.0	10.0	10.0	8.0
Minimum Split (s)	12.0	12.0	12.0	20.0	20.0	8.0	15.0	15.0	15.0	17.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0	8.0	41.0	33.0	33.0	17.0
Total Split (%)	29.3%	29.3%	29.3%	29.3%	29.3%	9.8%	50.0%	40.2%	40.2%	21%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0	
Total Lost Time (s)		4.0	4.0		4.0		5.0		5.0	
Lead/Lag						Lead		Lag	Lag	
Lead-Lag Optimize?						Yes		Yes	Yes	
Recall Mode	Max	Max	Max	None	None	Max	C-Max	C-Max	C-Max	Ped
Act Effect Green (s)		20.0	20.0		20.0		36.0		28.0	
Actuated g/C Ratio		0.24	0.24		0.24		0.44		0.34	
v/c Ratio		0.12	0.45		0.51		0.64		0.29	
Control Delay		26.0	6.7		31.3		20.1		19.3	
Queue Delay		0.0	0.0		0.0		2.6		0.0	
Total Delay		26.0	6.7		31.3		22.7		19.3	
LOS		C	A		C		C		B	
Approach Delay		8.6			31.3		22.7		19.3	
Approach LOS		A			C		C		B	

Intersection Summary

Cycle Length: 82
 Actuated Cycle Length: 82
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.64
 Intersection Signal Delay: 20.8
 Intersection LOS: C
 Intersection Capacity Utilization 56.6%
 ICU Level of Service B
 Analysis Period (min) 15

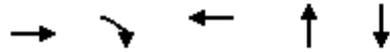
Splits and Phases: 4: Commercial Street/Florence Street & Pleasant Street



Queues

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015



Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	27	245	224	742	297
v/c Ratio	0.12	0.45	0.51	0.64	0.29
Control Delay	26.0	6.7	31.3	20.1	19.3
Queue Delay	0.0	0.0	0.0	2.6	0.0
Total Delay	26.0	6.7	31.3	22.7	19.3
Queue Length 50th (ft)	11	0	98	134	53
Queue Length 95th (ft)	32	53	167	182	85
Internal Link Dist (ft)	597		267	294	439
Turn Bay Length (ft)					
Base Capacity (vph)	219	541	437	1168	1039
Starvation Cap Reductn	0	0	0	297	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.45	0.51	0.85	0.29

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Volume (vph)	24	0	218	28	168	10	214	417	38	9	233	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	12	12	12	12	15	12	12	11	12
Total Lost time (s)		4.0	4.0		4.0			5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frbp, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.99			0.99			0.98	
Flt Protected		0.95	1.00		0.99			0.98			1.00	
Satd. Flow (prot)		1805	1459		1838			3607			3239	
Flt Permitted		0.47	1.00		0.96			0.70			0.93	
Satd. Flow (perm)		901	1459		1783			2562			3006	
Peak-hour factor, PHF	0.89	0.92	0.89	0.92	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	245	30	183	11	238	463	41	10	253	34
RTOR Reduction (vph)	0	0	185	0	2	0	0	5	0	0	13	0
Lane Group Flow (vph)	0	27	60	0	222	0	0	737	0	0	284	0
Confl. Peds. (#/hr)												3
Heavy Vehicles (%)	0%	2%	7%	2%	2%	2%	0%	1%	2%	2%	6%	2%
Parking (#/hr)								5				
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		20.0	20.0		20.0			36.0			28.0	
Effective Green, g (s)		20.0	20.0		20.0			36.0			28.0	
Actuated g/C Ratio		0.24	0.24		0.24			0.44			0.34	
Clearance Time (s)		4.0	4.0		4.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		219	355		434			1175			1026	
v/s Ratio Prot								c0.03				
v/s Ratio Perm		0.03	0.04		c0.12			c0.24			0.09	
v/c Ratio		0.12	0.17		0.51			0.63			0.28	
Uniform Delay, d1		24.2	24.4		26.8			17.8			19.6	
Progression Factor		1.00	1.00		1.00			1.00			1.00	
Incremental Delay, d2		1.2	1.0		1.0			2.5			0.7	
Delay (s)		25.3	25.5		27.8			20.3			20.3	
Level of Service		C	C		C			C			C	
Approach Delay (s)		25.5			27.8			20.3			20.3	
Approach LOS		C			C			C			C	

Intersection Summary

HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	82.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Timings

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015

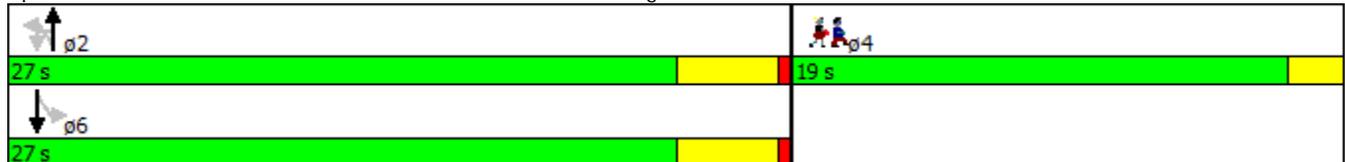


Lane Group	NBU	NBL	NBT	SBL	SBT	ø4
Lane Configurations			↔↔		↔↔	
Volume (vph)	4	79	670	55	411	
Turn Type	Perm	Perm	NA	Perm	NA	
Protected Phases			2		6	4
Permitted Phases	2	2		6		
Detector Phase	2	2	2	6	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	19.0
Total Split (s)	27.0	27.0	27.0	27.0	27.0	19.0
Total Split (%)	58.7%	58.7%	58.7%	58.7%	58.7%	41%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)			0.0		0.0	
Total Lost Time (s)			4.0		4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	Max	Max	Max	Max	Max	Ped
Act Effect Green (s)			23.0		23.0	
Actuated g/C Ratio			0.50		0.50	
v/c Ratio			0.73		0.38	
Control Delay			11.9		8.0	
Queue Delay			0.0		0.0	
Total Delay			11.9		8.0	
LOS			B		A	
Approach Delay			11.9		8.0	
Approach LOS			B		A	

Intersection Summary

Cycle Length: 46	
Actuated Cycle Length: 46	
Natural Cycle: 50	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 10.5	Intersection LOS: B
Intersection Capacity Utilization 47.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 5: Commercial Street & MBTA Drive/Exchange Street



Queues

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015



Lane Group	NBT	SBT
Lane Group Flow (vph)	1040	548
v/c Ratio	0.73	0.38
Control Delay	11.9	8.0
Queue Delay	0.0	0.0
Total Delay	11.9	8.0
Queue Length 50th (ft)	90	41
Queue Length 95th (ft)	150	65
Internal Link Dist (ft)	230	294
Turn Bay Length (ft)		
Base Capacity (vph)	1421	1432
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.73	0.38
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	
Lane Configurations									↕↕			↕↕	
Volume (vph)	0	0	0	0	0	0	4	79	670	204	55	411	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	12	12	12	13	13	
Total Lost time (s)									4.0			4.0	
Lane Util. Factor									0.95			0.95	
Frt									0.97			1.00	
Flt Protected									1.00			0.99	
Satd. Flow (prot)									3162			3603	
Flt Permitted									0.86			0.79	
Satd. Flow (perm)									2735			2857	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	
Adj. Flow (vph)	0	0	0	0	0	0	4	86	728	222	63	472	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	54	0	0	4	
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	987	0	0	545	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	14%	1%	0%	3%	
Turn Type							Perm	Perm	NA		Perm	NA	
Protected Phases									2			6	
Permitted Phases							2	2			6		
Actuated Green, G (s)									23.0			23.0	
Effective Green, g (s)									23.0			23.0	
Actuated g/C Ratio									0.50			0.50	
Clearance Time (s)									4.0			4.0	
Vehicle Extension (s)									3.0			3.0	
Lane Grp Cap (vph)									1367			1428	
v/s Ratio Prot													
v/s Ratio Perm									c0.36			0.19	
v/c Ratio									0.72			0.38	
Uniform Delay, d1									9.0			7.1	
Progression Factor									1.00			1.00	
Incremental Delay, d2									3.3			0.8	
Delay (s)									12.3			7.9	
Level of Service									B			A	
Approach Delay (s)		0.0			0.0				12.3			7.9	
Approach LOS		A			A				B			A	
Intersection Summary													
HCM 2000 Control Delay			10.8									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			46.0									Sum of lost time (s)	6.0
Intersection Capacity Utilization			47.4%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

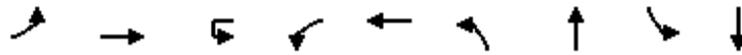
8/31/2015

Movement	SBR
Lane Configurations	
Volume (vph)	11
Ideal Flow (vphpl)	1900
Lane Width	13
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	13
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Timings

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015

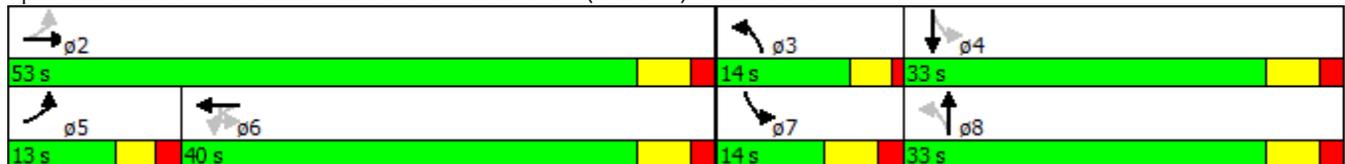


Lane Group	EBL	EBT	WBU	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations	↶	↶↷		↷	↶↷		↶↷	↶	↷
Volume (vph)	205	677	3	173	552	104	519	215	249
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2			6	3	8	7	4
Permitted Phases	2		6	6		8		4	
Detector Phase	5	2	6	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	6.0	10.0	10.0	10.0	10.0	6.0	8.0	8.0	8.0
Minimum Split (s)	11.0	20.0	20.0	20.0	20.0	10.0	20.0	14.0	27.0
Total Split (s)	13.0	53.0	40.0	40.0	40.0	14.0	33.0	14.0	33.0
Total Split (%)	13.0%	53.0%	40.0%	40.0%	40.0%	14.0%	33.0%	14.0%	33.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	-2.0	0.0
Total Lost Time (s)	5.0	6.0		6.0	6.0		6.0	4.0	6.0
Lead/Lag	Lead		Lag	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes		Yes						
Recall Mode	None	Max	Max	Max	Max	None	None	None	None
Act Effect Green (s)	48.0	47.0		34.0	34.0		27.0	43.0	41.0
Actuated g/C Ratio	0.48	0.47		0.34	0.34		0.27	0.43	0.41
v/c Ratio	1.05	0.50		1.00	0.81		1.12	1.10	0.42
Control Delay	96.7	19.4		99.2	34.4		105.5	115.4	22.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	4.1
Total Delay	96.7	19.4		99.2	34.4		105.5	115.4	26.6
LOS	F	B		F	C		F	F	C
Approach Delay		36.5			46.3		105.5		64.4
Approach LOS		D			D		F		E

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 100	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.12	
Intersection Signal Delay: 60.1	Intersection LOS: E
Intersection Capacity Utilization 92.4%	ICU Level of Service F
Analysis Period (min) 15	

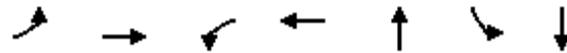
Splits and Phases: 6: Commercial Street & Centre Street (Route 60)/Centre Street



Queues

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015



Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	223	790	202	895	806	247	333
v/c Ratio	1.05	0.50	1.00	0.81	1.12	1.10	0.42
Control Delay	96.7	19.4	99.2	34.4	105.5	115.4	22.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	4.1
Total Delay	96.7	19.4	99.2	34.4	105.5	115.4	26.6
Queue Length 50th (ft)	~94	174	127	251	~306	~132	144
Queue Length 95th (ft)	#243	227	#262	314	#429	#272	209
Internal Link Dist (ft)		581		625	814		230
Turn Bay Length (ft)	140		310				
Base Capacity (vph)	213	1587	202	1110	720	224	799
Starvation Cap Reductn	0	0	0	0	0	0	378
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.50	1.00	0.81	1.12	1.10	0.79

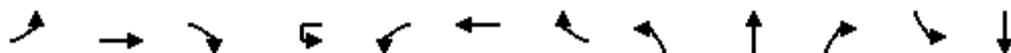
Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015



Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	205	677	50	3	173	552	227	104	519	134	215	249
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	12	12	12	10	12	12	12	11	12	12	16
Total Lost time (s)	5.0	6.0			6.0	6.0			6.0		4.0	6.0
Lane Util. Factor	1.00	0.95			1.00	0.95			0.95		1.00	1.00
Frbp, ped/bikes	1.00	0.99			1.00	0.97			0.99		1.00	0.99
Flpb, ped/bikes	1.00	1.00			0.96	1.00			0.99		1.00	1.00
Frt	1.00	0.99			1.00	0.96			0.97		1.00	0.98
Flt Protected	0.95	1.00			0.95	1.00			0.99		0.95	1.00
Satd. Flow (prot)	1560	3366			1607	3136			3081		1556	1937
Flt Permitted	0.14	1.00			0.35	1.00			0.83		0.13	1.00
Satd. Flow (perm)	222	3366			597	3136			2582		215	1937
Peak-hour factor, PHF	0.92	0.92	0.92	0.87	0.87	0.87	0.87	0.94	0.94	0.94	0.87	0.87
Adj. Flow (vph)	223	736	54	3	199	634	261	111	552	143	247	286
RTOR Reduction (vph)	0	5	0	0	0	45	0	0	20	0	0	5
Lane Group Flow (vph)	223	785	0	0	202	850	0	0	786	0	247	328
Confl. Peds. (#/hr)	48		31		31		48	43		33	33	
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	8%	5%	8%	0%	1%	5%	10%	20%	5%	5%	16%	3%
Turn Type	pm+pt	NA		Perm	Perm	NA		pm+pt	NA		pm+pt	NA
Protected Phases	5	2				6		3	8		7	4
Permitted Phases	2			6	6			8			4	
Actuated Green, G (s)	47.0	47.0			34.0	34.0			27.0		41.0	41.0
Effective Green, g (s)	47.0	47.0			34.0	34.0			27.0		43.0	41.0
Actuated g/C Ratio	0.47	0.47			0.34	0.34			0.27		0.43	0.41
Clearance Time (s)	5.0	6.0			6.0	6.0			6.0		6.0	6.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0		3.0	3.0
Lane Grp Cap (vph)	211	1582			202	1066			697		226	794
v/s Ratio Prot	c0.08	0.23				0.27					c0.11	0.17
v/s Ratio Perm	c0.41				0.34				0.30		c0.36	
v/c Ratio	1.06	0.50			1.00	0.80			1.13		1.09	0.41
Uniform Delay, d1	21.2	18.3			33.0	29.9			36.5		23.5	21.0
Progression Factor	1.00	1.00			1.00	1.00			1.00		1.00	1.00
Incremental Delay, d2	77.8	1.1			63.3	6.2			74.7		86.9	0.4
Delay (s)	98.9	19.4			96.3	36.1			111.2		110.4	21.3
Level of Service	F	B			F	D			F		F	C
Approach Delay (s)		36.9				47.2			111.2			59.3
Approach LOS		D				D			F			E

Intersection Summary

HCM 2000 Control Delay	61.0	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
 6: Commercial Street & Centre Street (Route 60)/Centre Street

8/31/2015



Movement	SBR
Lane Configurations	
Volume (vph)	41
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	47
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	43
Confl. Bikes (#/hr)	
Heavy Vehicles (%)	33%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

7: Abbott Street & Pleasant Street

8/31/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	66	106	198	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.63	0.63	0.80	0.80	0.25	0.92
Hourly flow rate (vph)	0	105	132	248	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	347					
pX, platoon unblocked						
vC, conflicting volume			105	512	0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			105	512	0	
tC, single (s)			4.1	6.4	6.2	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			91	100	100	
cM capacity (veh/h)			1480	478	1091	

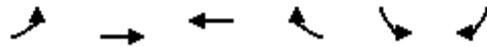
Direction, Lane #	EB 1	WB 1
Volume Total	105	380
Volume Left	0	132
Volume Right	105	0
cSH	1700	1480
Volume to Capacity	0.06	0.09
Queue Length 95th (ft)	0	7
Control Delay (s)	0.0	3.2
Lane LOS		A
Approach Delay (s)	0.0	3.2
Approach LOS		

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization	27.0%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

8: Exchange Street & Abbott Street

8/31/2015



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑			↙	
Volume (veh/h)	0	256	0	0	168	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.83	0.83	0.92	0.92	0.75	0.75
Hourly flow rate (vph)	0	308	0	0	224	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)		361				
pX, platoon unblocked						
vC, conflicting volume	0				308	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0				308	0
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				67	100
cM capacity (veh/h)	1636				684	1091

Direction, Lane #	EB 1	SB 1
Volume Total	308	224
Volume Left	0	224
Volume Right	0	0
cSH	1700	684
Volume to Capacity	0.18	0.33
Queue Length 95th (ft)	0	36
Control Delay (s)	0.0	12.8
Lane LOS		B
Approach Delay (s)	0.0	12.8
Approach LOS		B

Intersection Summary			
Average Delay		5.4	
Intersection Capacity Utilization	29.4%		ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis

9: Jackson Street & Exchange Street

8/31/2015



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↻					↻
Volume (veh/h)	307	116	0	0	0	89
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.81	0.81	0.92	0.92	0.84	0.84
Hourly flow rate (vph)	379	143	0	0	0	106
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	609			1123		
pX, platoon unblocked						
vC, conflicting volume			522		451	451
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			522		451	451
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	83
cM capacity (veh/h)			1054		570	611

Direction, Lane #	EB 1	NB 1
Volume Total	522	106
Volume Left	0	0
Volume Right	143	106
cSH	1700	611
Volume to Capacity	0.31	0.17
Queue Length 95th (ft)	0	16
Control Delay (s)	0.0	12.1
Lane LOS		B
Approach Delay (s)	0.0	12.1
Approach LOS		B

Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)		15	

Timings

16: Main Street & Pleasant Street

8/31/2015



Lane Group	NBL	NBT	SBU	SBT	ø9
Lane Configurations		↕↕		↕↕	
Volume (vph)	201	607	6	307	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	9
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	4.0
Minimum Split (s)	20.0	20.0	20.0	20.0	19.0
Total Split (s)	84.0	84.0	84.0	84.0	19.0
Total Split (%)	81.6%	81.6%	81.6%	81.6%	18%
Yellow Time (s)	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)		80.0		80.0	
Actuated g/C Ratio		0.78		0.78	
v/c Ratio		0.53		0.31	
Control Delay		5.7		1.9	
Queue Delay		7.0		0.7	
Total Delay		12.7		2.6	
LOS		B		A	
Approach Delay		12.7		2.6	
Approach LOS		B		A	

Intersection Summary

Cycle Length: 103
 Actuated Cycle Length: 103
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTU, Start of Green
 Natural Cycle: 50
 Control Type: Pretimed
 Maximum v/c Ratio: 0.53
 Intersection Signal Delay: 8.1
 Intersection LOS: A
 Intersection Capacity Utilization 47.6%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 16: Main Street & Pleasant Street



Queues

16: Main Street & Pleasant Street

8/31/2015



Lane Group	NBT	SBT
Lane Group Flow (vph)	888	747
v/c Ratio	0.53	0.31
Control Delay	5.7	1.9
Queue Delay	7.0	0.7
Total Delay	12.7	2.6
Queue Length 50th (ft)	93	26
Queue Length 95th (ft)	129	34
Internal Link Dist (ft)	128	227
Turn Bay Length (ft)		
Base Capacity (vph)	1678	2440
Starvation Cap Reductn	736	1265
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.94	0.64
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

16: Main Street & Pleasant Street

8/31/2015



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations				↑↑		↑↑	
Volume (vph)	0	0	201	607	6	307	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		4.0	
Lane Util. Factor				0.95		0.95	
Frt				1.00		0.93	
Flt Protected				0.99		1.00	
Satd. Flow (prot)				3420		3201	
Flt Permitted				0.62		0.95	
Satd. Flow (perm)				2160		3035	
Peak-hour factor, PHF	0.92	0.92	0.91	0.91	0.82	0.82	0.82
Adj. Flow (vph)	0	0	221	667	7	374	366
RTOR Reduction (vph)	0	0	0	0	0	82	0
Lane Group Flow (vph)	0	0	0	888	0	665	0
Heavy Vehicles (%)	2%	2%	2%	5%	0%	4%	5%
Turn Type			Perm	NA	Perm	NA	
Protected Phases				2		6	
Permitted Phases			2		6		
Actuated Green, G (s)				80.0		80.0	
Effective Green, g (s)				80.0		80.0	
Actuated g/C Ratio				0.78		0.78	
Clearance Time (s)				4.0		4.0	
Lane Grp Cap (vph)				1677		2357	
v/s Ratio Prot							
v/s Ratio Perm				0.41		0.22	
v/c Ratio				0.53		0.28	
Uniform Delay, d1				4.4		3.3	
Progression Factor				1.00		1.00	
Incremental Delay, d2				1.2		0.3	
Delay (s)				5.6		3.6	
Level of Service				A		A	
Approach Delay (s)	0.0			5.6		3.6	
Approach LOS	A			A		A	

Intersection Summary			
HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	103.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

17: Main Street & Exchange Street/Irving Street

8/31/2015



Lane Group	EBT	NBT	SBL	SBT	ø9
Lane Configurations	↔	↕		↕	
Volume (vph)	2	632	6	300	
Turn Type	NA	NA	Perm	NA	
Protected Phases	4	2		6	9
Permitted Phases			6		
Detector Phase	4	2	6	6	
Switch Phase					
Minimum Initial (s)	8.0	10.0	10.0	10.0	4.0
Minimum Split (s)	12.0	14.0	14.0	14.0	20.0
Total Split (s)	42.0	44.0	44.0	44.0	20.0
Total Split (%)	39.6%	41.5%	41.5%	41.5%	19%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	Max	Max	Max	Max	Max
Act Effect Green (s)	38.0	40.0		40.0	
Actuated g/C Ratio	0.36	0.38		0.38	
v/c Ratio	0.55	0.51		0.33	
Control Delay	27.2	26.9		24.4	
Queue Delay	0.0	53.5		5.9	
Total Delay	27.2	80.4		30.3	
LOS	C	F		C	
Approach Delay	27.2	80.4		30.3	
Approach LOS	C	F		C	

Intersection Summary

Cycle Length: 106
 Actuated Cycle Length: 106
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 60
 Control Type: Pretimed
 Maximum v/c Ratio: 0.55
 Intersection Signal Delay: 52.9
 Intersection LOS: D
 Intersection Capacity Utilization 43.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 17: Main Street & Exchange Street/Irving Street

 ø2 (R) 44 s	 ø4 42 s	 ø9 20 s
 ø6 (R) 44 s		

Queues

17: Main Street & Exchange Street/Irving Street

8/31/2015



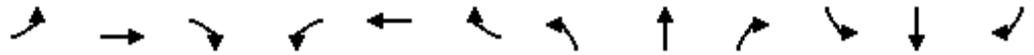
Lane Group	EBT	NBT	SBT
Lane Group Flow (vph)	398	689	388
v/c Ratio	0.55	0.51	0.33
Control Delay	27.2	26.9	24.4
Queue Delay	0.0	53.5	5.9
Total Delay	27.2	80.4	30.3
Queue Length 50th (ft)	188	185	97
Queue Length 95th (ft)	252	242	117
Internal Link Dist (ft)	239	139	128
Turn Bay Length (ft)			
Base Capacity (vph)	730	1358	1181
Starvation Cap Reductn	0	804	724
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.55	1.24	0.85

Intersection Summary

HCM Signalized Intersection Capacity Analysis

17: Main Street & Exchange Street/Irving Street

8/31/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕						↕			↕	
Volume (vph)	177	2	152	0	0	0	0	632	16	6	300	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	16	12	12	12	12	12	12	12	12	11	12
Total Lost time (s)		4.0						4.0			4.0	
Lane Util. Factor		1.00						0.95			0.95	
Frt		0.94						1.00			1.00	
Flt Protected		0.97						1.00			1.00	
Satd. Flow (prot)		1957						3597			3323	
Flt Permitted		0.97						1.00			0.94	
Satd. Flow (perm)		1957						3597			3130	
Peak-hour factor, PHF	0.83	0.83	0.83	0.25	0.25	0.25	0.94	0.94	0.94	0.79	0.79	0.79
Adj. Flow (vph)	213	2	183	0	0	0	0	672	17	8	380	0
RTOR Reduction (vph)	0	29	0	0	0	0	0	2	0	0	0	0
Lane Group Flow (vph)	0	369		0	0	0	0	687	0	0	388	
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	5%	0%	0%	0%	5%	0%
Turn Type	Perm	NA						NA			Perm	NA
Protected Phases		4						2			6	
Permitted Phases	4						2			6		
Actuated Green, G (s)		38.0						40.0			40.0	
Effective Green, g (s)		38.0						40.0			40.0	
Actuated g/C Ratio		0.36						0.38			0.38	
Clearance Time (s)		4.0						4.0			4.0	
Lane Grp Cap (vph)		701						1357			1181	
v/s Ratio Prot								c0.19				
v/s Ratio Perm		0.19									0.12	
v/c Ratio		0.53						0.51			0.33	
Uniform Delay, d1		26.9						25.4			23.5	
Progression Factor		1.00						1.00			1.00	
Incremental Delay, d2		2.8						1.4			0.7	
Delay (s)		29.7						26.8			24.2	
Level of Service		C						C			C	
Approach Delay (s)		29.7			0.0			26.8			24.2	
Approach LOS		C			A			C			C	

Intersection Summary

HCM 2000 Control Delay	26.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	106.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Timings

21: Abbott Street & Site Driveway

8/31/2015

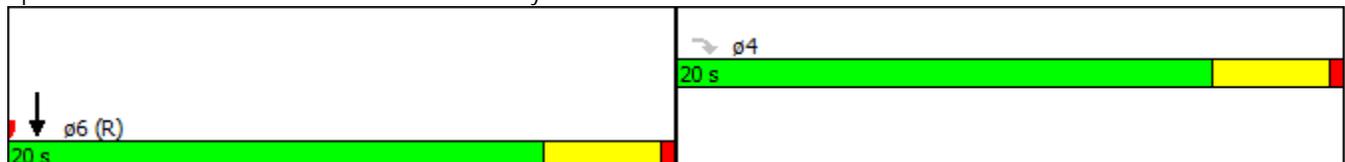


Lane Group	EBR	SBT
Lane Configurations	↗	↘
Volume (vph)	29	133
Turn Type	Perm	NA
Protected Phases		6
Permitted Phases	4	
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	4.0	4.0
Minimum Split (s)	20.0	20.0
Total Split (s)	20.0	20.0
Total Split (%)	50.0%	50.0%
Yellow Time (s)	3.5	3.5
All-Red Time (s)	0.5	0.5
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	4.0	4.0
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	Max	Max
Act Effct Green (s)	16.0	16.0
Actuated g/C Ratio	0.40	0.40
v/c Ratio	0.03	0.25
Control Delay	0.1	7.4
Queue Delay	0.0	0.0
Total Delay	0.1	7.4
LOS	A	A
Approach Delay		7.4
Approach LOS		A

Intersection Summary

Cycle Length: 40
 Actuated Cycle Length: 40
 Offset: 0 (0%), Referenced to phase 2: and 6:SBT, Start of Green
 Natural Cycle: 40
 Control Type: Pretimed
 Maximum v/c Ratio: 0.25
 Intersection Signal Delay: 6.3
 Intersection LOS: A
 Intersection Capacity Utilization 19.4%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 21: Abbott Street & Site Driveway



Queues

21: Abbott Street & Site Driveway

8/31/2015



Lane Group	EBR	SBT
Lane Group Flow (vph)	32	187
v/c Ratio	0.03	0.25
Control Delay	0.1	7.4
Queue Delay	0.0	0.0
Total Delay	0.1	7.4
Queue Length 50th (ft)	0	20
Queue Length 95th (ft)	0	48
Internal Link Dist (ft)		85
Turn Bay Length (ft)		
Base Capacity (vph)	1056	748
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.03	0.25
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

21: Abbott Street & Site Driveway

8/31/2015



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗			↘	
Volume (vph)	0	29	0	0	133	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	
Lane Util. Factor		1.00			1.00	
Frt		0.86			0.97	
Flt Protected		1.00			1.00	
Satd. Flow (prot)		1611			1806	
Flt Permitted		1.00			1.00	
Satd. Flow (perm)		1611			1806	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	32	0	0	145	42
RTOR Reduction (vph)	0	19	0	0	25	0
Lane Group Flow (vph)	0	13	0	0	162	0
Turn Type		Perm			NA	
Protected Phases					6	
Permitted Phases		4				
Actuated Green, G (s)		16.0			16.0	
Effective Green, g (s)		16.0			16.0	
Actuated g/C Ratio		0.40			0.40	
Clearance Time (s)		4.0			4.0	
Lane Grp Cap (vph)		644			722	
v/s Ratio Prot					c0.09	
v/s Ratio Perm		c0.01				
v/c Ratio		0.02			0.22	
Uniform Delay, d1		7.3			7.9	
Progression Factor		1.00			1.00	
Incremental Delay, d2		0.1			0.7	
Delay (s)		7.3			8.6	
Level of Service		A			A	
Approach Delay (s)	7.3			0.0	8.6	
Approach LOS	A			A	A	

Intersection Summary

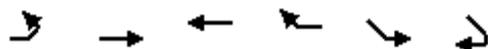
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.12		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	19.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

22: Pleasant Street & Elm Street

8/31/2015



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations			↔			
Volume (veh/h)	0	0	258	298	0	0
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	280	324	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			908			
pX, platoon unblocked						
vC, conflicting volume	604				442	442
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604				442	442
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	973				573	615
Direction, Lane #	WB 1					
Volume Total	604					
Volume Left	0					
Volume Right	324					
cSH	1700					
Volume to Capacity	0.36					
Queue Length 95th (ft)	0					
Control Delay (s)	0.0					
Lane LOS						
Approach Delay (s)	0.0					
Approach LOS						
Intersection Summary						
Average Delay	0.0					
Intersection Capacity Utilization	35.2%		ICU Level of Service		A	
Analysis Period (min)	15					

Timings

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015

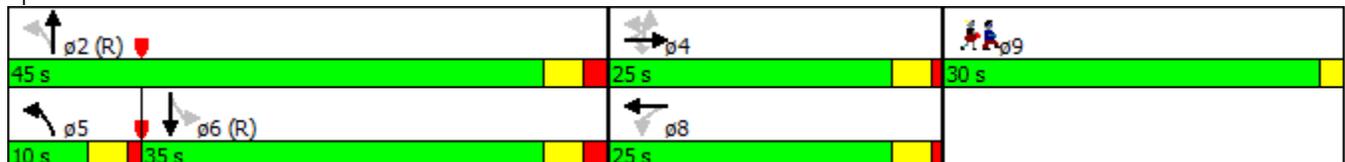


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	ø9
Lane Configurations			↕	↕		↕		↕↔		↕↔	
Volume (vph)	2	18	91	224	25	202	105	170	66	484	
Turn Type	Perm	Perm	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA	
Protected Phases			4			8	5	2		6	9
Permitted Phases	4	4		4	8		2		6		
Detector Phase	4	4	4	4	8	8	5	2	6	6	
Switch Phase											
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	8.0	6.0	10.0	10.0	10.0	8.0
Minimum Split (s)	12.0	12.0	12.0	12.0	12.0	12.0	10.0	20.0	20.0	20.0	30.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	10.0	45.0	35.0	35.0	30.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%	25.0%	10.0%	45.0%	35.0%	35.0%	30%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)			0.0	0.0		0.0		0.0		0.0	
Total Lost Time (s)			4.0	4.0		4.0		5.0		5.0	
Lead/Lag							Lead		Lag	Lag	
Lead-Lag Optimize?							Yes		Yes	Yes	
Recall Mode	Max	Max	Max	Max	None	None	Max	C-Max	C-Max	C-Max	Ped
Act Effect Green (s)			21.0	21.0		21.0		40.0		30.0	
Actuated g/C Ratio			0.21	0.21		0.21		0.40		0.30	
v/c Ratio			0.36	0.51		0.69		0.39		0.75	
Control Delay			37.3	8.0		46.9		17.6		37.4	
Queue Delay			0.0	0.0		0.0		0.0		0.0	
Total Delay			37.3	8.0		46.9		17.6		37.4	
LOS			D	A		D		B		D	
Approach Delay			17.2			46.9		17.6		37.4	
Approach LOS			B			D		B		D	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.75
 Intersection Signal Delay: 30.2
 Intersection LOS: C
 Intersection Capacity Utilization 57.2%
 ICU Level of Service B
 Analysis Period (min) 15

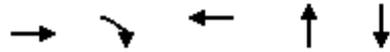
Splits and Phases: 4: Commercial Street/Florence Street & Pleasant Street



Queues

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



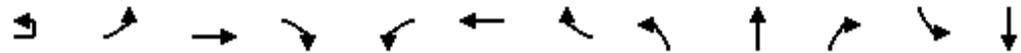
Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	122	267	258	320	655
v/c Ratio	0.36	0.51	0.69	0.39	0.75
Control Delay	37.3	8.0	46.9	17.6	37.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	8.0	46.9	17.6	37.4
Queue Length 50th (ft)	67	0	152	67	193
Queue Length 95th (ft)	121	50	239	99	262
Internal Link Dist (ft)	597		267	294	439
Turn Bay Length (ft)					
Base Capacity (vph)	340	526	375	814	868
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.36	0.51	0.69	0.39	0.75

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations			↕	↕		↕			↕			↕
Volume (vph)	2	18	91	224	25	202	10	105	170	22	66	484
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	12	12	12	12	15	12	12	11
Total Lost time (s)			4.0	4.0		4.0			5.0			5.0
Lane Util. Factor			1.00	1.00		1.00			0.95			0.95
Frbp, ped/bikes			1.00	1.00		1.00			1.00			1.00
Flpb, ped/bikes			1.00	1.00		1.00			1.00			1.00
Frt			1.00	0.85		0.99			0.99			0.98
Flt Protected			0.99	1.00		0.99			0.98			0.99
Satd. Flow (prot)			1834	1501		1842			3345			3306
Flt Permitted			0.88	1.00		0.96			0.54			0.86
Satd. Flow (perm)			1621	1501		1779			1832			2857
Peak-hour factor, PHF	0.84	0.84	0.92	0.84	0.92	0.92	0.92	0.93	0.93	0.92	0.92	0.96
Adj. Flow (vph)	2	21	99	267	27	220	11	113	183	24	72	504
RTOR Reduction (vph)	0	0	0	211	0	2	0	0	6	0	0	11
Lane Group Flow (vph)	0	0	122	56	0	256	0	0	314	0	0	645
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	0%	6%	2%	4%	2%	2%	2%	8%	9%	2%	2%	3%
Parking (#/hr)									5			
Turn Type	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA
Protected Phases			4			8		5	2			6
Permitted Phases	4	4		4	8			2			6	
Actuated Green, G (s)			21.0	21.0		21.0			40.0			30.0
Effective Green, g (s)			21.0	21.0		21.0			40.0			30.0
Actuated g/C Ratio			0.21	0.21		0.21			0.40			0.30
Clearance Time (s)			4.0	4.0		4.0			5.0			5.0
Vehicle Extension (s)			3.0	3.0		3.0			3.0			3.0
Lane Grp Cap (vph)			340	315		373			823			857
v/s Ratio Prot									c0.02			
v/s Ratio Perm			0.08	0.04		c0.14			0.13			c0.23
v/c Ratio			0.36	0.18		0.69			0.38			0.75
Uniform Delay, d1			33.7	32.4		36.5			21.2			31.6
Progression Factor			1.00	1.00		1.00			0.83			1.00
Incremental Delay, d2			2.9	1.2		5.2			1.2			6.0
Delay (s)			36.7	33.7		41.7			18.9			37.7
Level of Service			D	C		D			B			D
Approach Delay (s)			34.6			41.7			18.9			37.7
Approach LOS			C			D			B			D
Intersection Summary												
HCM 2000 Control Delay			33.9			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			15.0			
Intersection Capacity Utilization			57.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015

Movement	SBR
Lane Configurations	
Volume (vph)	76
Ideal Flow (vphpl)	1900
Lane Width	12
Total Lost time (s)	
Lane Util. Factor	
Frbp, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.96
Adj. Flow (vph)	79
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	3
Heavy Vehicles (%)	2%
Parking (#/hr)	
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Timings

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

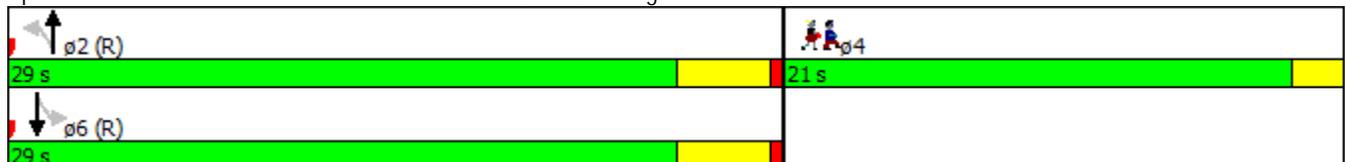


Lane Group	NBL	NBT	SBL	SBT	ø4
Lane Configurations		↕↕		↕↕	
Volume (vph)	83	337	39	673	
Turn Type	Perm	NA	Perm	NA	
Protected Phases		2		6	4
Permitted Phases	2		6		
Detector Phase	2	2	6	6	
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.0	27.0	27.0	27.0	21.0
Total Split (s)	29.0	29.0	29.0	29.0	21.0
Total Split (%)	58.0%	58.0%	58.0%	58.0%	42%
Yellow Time (s)	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)		0.0		0.0	
Total Lost Time (s)		4.0		4.0	
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	C-Max	C-Max	Ped
Act Effect Green (s)		25.0		25.0	
Actuated g/C Ratio		0.50		0.50	
v/c Ratio		0.48		0.48	
Control Delay		7.6		5.2	
Queue Delay		0.0		0.0	
Total Delay		7.6		5.2	
LOS		A		A	
Approach Delay		7.6		5.2	
Approach LOS		A		A	

Intersection Summary

Cycle Length: 50
 Actuated Cycle Length: 50
 Offset: 9 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 6.3
 Intersection LOS: A
 Intersection Capacity Utilization 43.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 5: Commercial Street & MBTA Drive/Exchange Street



Queues

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

	↑	↓
Lane Group	NBT	SBT
Lane Group Flow (vph)	624	789
v/c Ratio	0.48	0.48
Control Delay	7.6	5.2
Queue Delay	0.0	0.0
Total Delay	7.6	5.2
Queue Length 50th (ft)	41	38
Queue Length 95th (ft)	74	96
Internal Link Dist (ft)	230	294
Turn Bay Length (ft)		
Base Capacity (vph)	1304	1636
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.48	0.48
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

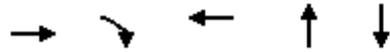


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↕			↕		
Volume (vph)	0	0	0	0	0	0	83	337	148	39	673	21	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	12	12	13	13	13	
Total Lost time (s)								4.0			4.0		
Lane Util. Factor								0.95			0.95		
Frt								0.96			1.00		
Flt Protected								0.99			1.00		
Satd. Flow (prot)								3172			3605		
Flt Permitted								0.77			0.90		
Satd. Flow (perm)								2466			3265		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91	0.93	0.93	0.93	
Adj. Flow (vph)	0	0	0	0	0	0	91	370	163	42	724	23	
RTOR Reduction (vph)	0	0	0	0	0	0	0	71	0	0	4	0	
Lane Group Flow (vph)	0	0	0	0	0	0	0	553	0	0	785	0	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	0%	14%	1%	0%	3%	0%	
Turn Type								Perm	NA		Perm	NA	
Protected Phases									2			6	
Permitted Phases								2		6			
Actuated Green, G (s)									25.0			25.0	
Effective Green, g (s)									25.0			25.0	
Actuated g/C Ratio									0.50			0.50	
Clearance Time (s)									4.0			4.0	
Vehicle Extension (s)									3.0			3.0	
Lane Grp Cap (vph)									1233			1632	
v/s Ratio Prot													
v/s Ratio Perm									0.22			c0.24	
v/c Ratio									0.45			0.48	
Uniform Delay, d1									8.1			8.2	
Progression Factor									1.00			0.54	
Incremental Delay, d2									1.2			0.7	
Delay (s)									9.2			5.2	
Level of Service									A			A	
Approach Delay (s)		0.0			0.0				9.2			5.2	
Approach LOS		A			A				A			A	
Intersection Summary													
HCM 2000 Control Delay			7.0									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.27										
Actuated Cycle Length (s)			50.0									Sum of lost time (s)	6.0
Intersection Capacity Utilization			43.5%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

Queues

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



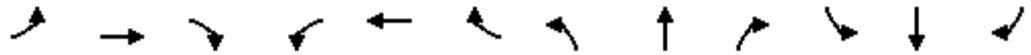
Lane Group	EBT	EBR	WBT	NBT	SBT
Lane Group Flow (vph)	27	245	224	742	297
v/c Ratio	0.17	0.49	0.60	0.71	0.31
Control Delay	35.5	8.1	42.9	19.2	25.3
Queue Delay	0.0	0.0	0.0	0.8	0.0
Total Delay	35.5	8.1	42.9	20.1	25.3
Queue Length 50th (ft)	14	0	129	140	70
Queue Length 95th (ft)	39	60	208	171	106
Internal Link Dist (ft)	597		267	294	439
Turn Bay Length (ft)					
Base Capacity (vph)	163	499	375	1048	970
Starvation Cap Reductn	0	0	0	104	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.17	0.49	0.60	0.79	0.31

Intersection Summary

HCM Signalized Intersection Capacity Analysis

4: Commercial Street/Florence Street & Pleasant Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗		↕			↕			↕	↗
Volume (vph)	24	0	218	28	168	10	214	417	38	9	233	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	11	12	12	12	12	15	12	12	11	12
Total Lost time (s)		4.0	4.0		4.0			5.0			5.0	
Lane Util. Factor		1.00	1.00		1.00			0.95			0.95	
Frbp, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Flpb, ped/bikes		1.00	1.00		1.00			1.00			1.00	
Frt		1.00	0.85		0.99			0.99			0.98	
Flt Protected		0.95	1.00		0.99			0.98			1.00	
Satd. Flow (prot)		1805	1459		1838			3607			3239	
Flt Permitted		0.41	1.00		0.96			0.69			0.93	
Satd. Flow (perm)		779	1459		1780			2528			3003	
Peak-hour factor, PHF	0.89	0.92	0.89	0.92	0.92	0.92	0.90	0.90	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	0	245	30	183	11	238	463	41	10	253	34
RTOR Reduction (vph)	0	0	194	0	2	0	0	4	0	0	10	0
Lane Group Flow (vph)	0	27	51	0	222	0	0	738	0	0	287	0
Confl. Peds. (#/hr)												3
Heavy Vehicles (%)	0%	2%	7%	2%	2%	2%	0%	1%	2%	2%	6%	2%
Parking (#/hr)								5				
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)		21.0	21.0		21.0			40.0			32.0	
Effective Green, g (s)		21.0	21.0		21.0			40.0			32.0	
Actuated g/C Ratio		0.21	0.21		0.21			0.40			0.32	
Clearance Time (s)		4.0	4.0		4.0			5.0			5.0	
Vehicle Extension (s)		3.0	3.0		3.0			3.0			3.0	
Lane Grp Cap (vph)		163	306		373			1054			960	
v/s Ratio Prot								c0.03				
v/s Ratio Perm		0.03	0.04		c0.12			c0.25			0.10	
v/c Ratio		0.17	0.17		0.60			0.70			0.30	
Uniform Delay, d1		32.3	32.3		35.7			25.0			25.6	
Progression Factor		1.00	1.00		1.00			0.67			1.00	
Incremental Delay, d2		2.2	1.2		2.6			2.6			0.8	
Delay (s)		34.5	33.5		38.2			19.3			26.4	
Level of Service		C	C		D			B			C	
Approach Delay (s)		33.6			38.2			19.3			26.4	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM 2000 Control Delay			26.0								HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			100.0								Sum of lost time (s)	15.0
Intersection Capacity Utilization			56.6%								ICU Level of Service	B
Analysis Period (min)			15									
c	Critical Lane Group											

Timings

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015

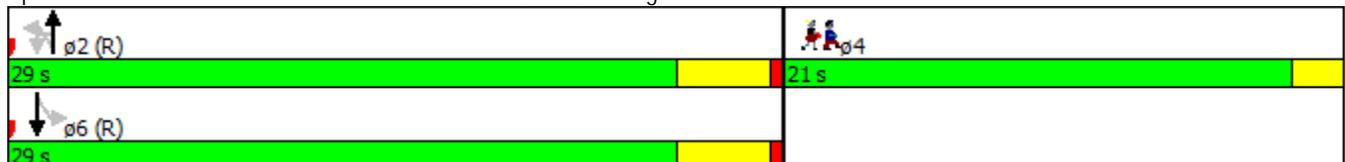


Lane Group	NBU	NBL	NBT	SBL	SBT	ø4
Lane Configurations			↔↔		↔↔	
Volume (vph)	4	79	670	55	411	
Turn Type	Perm	Perm	NA	Perm	NA	
Protected Phases			2		6	4
Permitted Phases	2	2		6		
Detector Phase	2	2	2	6	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	27.0	27.0	27.0	27.0	27.0	21.0
Total Split (s)	29.0	29.0	29.0	29.0	29.0	21.0
Total Split (%)	58.0%	58.0%	58.0%	58.0%	58.0%	42%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	2.0
All-Red Time (s)	0.5	0.5	0.5	0.5	0.5	0.0
Lost Time Adjust (s)			0.0		0.0	
Total Lost Time (s)			4.0		4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	Ped
Act Effect Green (s)			25.0		25.0	
Actuated g/C Ratio			0.50		0.50	
v/c Ratio			0.74		0.38	
Control Delay			12.8		5.7	
Queue Delay			0.1		0.0	
Total Delay			12.9		5.7	
LOS			B		A	
Approach Delay			12.9		5.7	
Approach LOS			B		A	

Intersection Summary

Cycle Length: 50
 Actuated Cycle Length: 50
 Offset: 49 (98%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 10.4
 Intersection LOS: B
 Intersection Capacity Utilization 47.4%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 5: Commercial Street & MBTA Drive/Exchange Street



Queues

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015



Lane Group	NBT	SBT
Lane Group Flow (vph)	1040	548
v/c Ratio	0.74	0.38
Control Delay	12.8	5.7
Queue Delay	0.1	0.0
Total Delay	12.9	5.7
Queue Length 50th (ft)	102	37
Queue Length 95th (ft)	166	47
Internal Link Dist (ft)	230	294
Turn Bay Length (ft)		
Base Capacity (vph)	1413	1425
Starvation Cap Reductn	38	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.76	0.38
Intersection Summary		

HCM Signalized Intersection Capacity Analysis

5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT	
Lane Configurations									↑↑			↑↑	
Volume (vph)	0	0	0	0	0	0	4	79	670	204	55	411	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	12	12	12	12	12	12	12	12	12	13	13	
Total Lost time (s)									4.0			4.0	
Lane Util. Factor									0.95			0.95	
Frt									0.97			1.00	
Flt Protected									1.00			0.99	
Satd. Flow (prot)									3162			3603	
Flt Permitted									0.86			0.79	
Satd. Flow (perm)									2728			2845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.87	0.87	
Adj. Flow (vph)	0	0	0	0	0	0	4	86	728	222	63	472	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	49	0	0	4	
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	991	0	0	545	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	0%	14%	1%	0%	3%	
Turn Type							Perm	Perm	NA		Perm	NA	
Protected Phases									2			6	
Permitted Phases							2	2			6		
Actuated Green, G (s)									25.0			25.0	
Effective Green, g (s)									25.0			25.0	
Actuated g/C Ratio									0.50			0.50	
Clearance Time (s)									4.0			4.0	
Vehicle Extension (s)									3.0			3.0	
Lane Grp Cap (vph)									1364			1422	
v/s Ratio Prot													
v/s Ratio Perm									0.36			0.19	
v/c Ratio									0.73			0.38	
Uniform Delay, d1									9.8			7.7	
Progression Factor									1.00			0.64	
Incremental Delay, d2									3.4			0.7	
Delay (s)									13.2			5.7	
Level of Service									B			A	
Approach Delay (s)		0.0			0.0				13.2			5.7	
Approach LOS		A			A				B			A	
Intersection Summary													
HCM 2000 Control Delay			10.6									HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.41										
Actuated Cycle Length (s)			50.0									Sum of lost time (s)	6.0
Intersection Capacity Utilization			47.4%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis
 5: Commercial Street & MBTA Drive/Exchange Street

9/1/2015



Movement	SBR
Lane Configurations	
Volume (vph)	11
Ideal Flow (vphpl)	1900
Lane Width	13
Total Lost time (s)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.87
Adj. Flow (vph)	13
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Heavy Vehicles (%)	0%
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	



Crash Data



Trip Generation

Jefferson at Malden Center (Government Center Redevelopment)

Trip Generation

HOWARD STEIN HUDSON ASSOCIATES

12-Aug-15

Land Use	Size	Category	Trip Rates (Trips/ksf or unit)	Unadjusted Vehicle Trips	Internal trips	Pass-by %	Less capture trips	Assumed national vehicle occupancy rate ¹	Converted to Person trips	Transit Share ²	Transit Trips	Walk/Bike/ Other Share ²	Walk/ Bike/ Other Trips	Vehicle Share ²	Total Vehicle Person Trips	Auto ³ Person Trips	Assumed local auto occupancy rate for autos ³	Total Adjusted Auto Trips	
Daily Peak Hour																			
Police Station relocation																			-520
																			-260
																			-260
Apartment ⁴	315	Total	6.65	2,094	0%	0%	2,094	1.87	3,916	24%	940	15%	588	61%	2,388	2,388	1.87	1,278	
	units	In	3.33	1,047	0%	0%	1,047	1.87	1,959	24%	470	15%	294	61%	1,195	1,195	1.87	639	
		Out	3.33	1,047	0%	0%	1,047	1.87	1,957	24%	470	15%	294	61%	1,194	1,194	1.87	639	
Retail ⁵	21.7	Total	42.70	928	0%	0%	928	2.20	2,042	10%	204	20%	408	70%	1,430	1,430	2.2	650	
	KSF	In	21.35	464	0%	0%	464	2.20	1,021	10%	102	20%	204	70%	715	715	2.20	325	
		Out	21.35	464	0%	0%	464	2.20	1,021	10%	102	20%	204	70%	715	715	2.20	325	
Total		Total		3,022					5,958		1,144		996		3,818			1,408	
		In		1,511					2,980		572		498		1,910			704	
		Out		1,511					2,978		572		498		1,908			704	
AM Peak Hour																			
Police Station relocation																			-40
																			-9
																			-31
Apartment ⁴	315	Total	0.51	161	0%	0%	161	1.87	300		162		12		126	126	1.87	67	
	units	In	0.10	32	0%	0%	32	1.87	60	54%	32	4%	2	42%	25	25	1.87	13	
		Out	0.41	129	0%	0%	129	1.87	240	54%	130	4%	10	42%	101	101	1.87	54	
Retail ⁵	21.7	Total	0.96	21	0%	0%	21	2.20	46		5		9		33	33	2.20	15	
	KSF	In	0.53	11	0%	0%	11	2.20	25	10%	3	20%	5	70%	18	18	2.20	8	
		Out	0.43	9	0%	0%	9	2.20	21	10%	2	20%	4	70%	15	15	2.20	7	
Total		Total		182					346		167		21		159			42	
		In		44					85		35		7		43			13	
		Out		138					261		132		14		116			30	
PM Peak Hour																			
Police Station relocation																			-19
																			-7
																			-12
Apartment ⁴	315	Total	0.62	195	0%	0%	195	1.87	365		197		14		154	154	1.87	82	
	units	In	0.40	127	0%	0%	127	1.87	237	54%	128	4%	9	42%	100	100	1.87	53	
		Out	0.22	68	0%	0%	68	1.87	128	54%	69	4%	5	42%	54	54	1.87	29	
Retail ⁵	21.7	Total	3.71	81	0%	0%	81	2.20	177		18		35		124	124	2.20	56	
	KSF	In	1.78	39	0%	0%	39	2.20	85	10%	9	20%	17	70%	60	60	2.20	27	
		Out	1.93	42	0%	0%	42	2.20	92	10%	9	20%	18	70%	64	64	2.20	29	
Total		Total		276					542		215		49		278			120	
		In		166					322		137		26		160			74	
		Out		110					220		78		23		118			46	

1. Peak Hour AVO: 2009 National vehicle occupancy rates - 1.13:home to work; 1.84: family/personal business; 1.78: shopping; 2.2 social/recreational
Daily AVO based on weighted average of trip type. On a daily basis 31% of trips are work related and the remaining 69% of trips are related to family/personal
business, shopping and social/recreational activities. Weighted = 0.31 x 1.13 + 0.69 x 2.2 = 1.87

2. Peak hour mode shares for residential use based on 2013 American Community Survey data for Census Tract 3413 and on recent studies in the Malden Center area.
The peak hour mode shares reflect primarily work trips. On a daily basis, however, only 31% of trips are work related. The remaining 69% of trips are related
to family/personal business, shopping and social/recreation activities. Therefore, a weighted average of the peak hour mode shares was calculated to estimate
daily mode shares. auto = 61%, Transit = 24%; and walk/bike = 15%. Peak hour mode shares for retail use are adopted from other Malden area traffic studies.

3. Local vehicle occupancy rates based on 2009 National vehicle occupancy rates.

4. ITE Trip Generation Rate, 9th Edition, LUC 220 (Apartment), average rate

5. ITE Trip Generation Rate, 9th Edition, LUC 820 (Shopping Center), average rate

Vehicle trip generation for Malden Police Station

HOWARD STEIN HUDSON
6-Aug-15

A		B		C		D											E		F			
Hour		Employee commute trips (excluding patrol)		Patrol officers - commute trip		Patrol officers - patrol trips											Civilian walk-in reports		Grand total			
						out of station sector	1st call trip - back to station	1st call trip - back to sector	2nd call trip - back to station	2nd call trip - back to sector	3rd call trip - back to station	3rd call trip - back to sector	3rd call trip - back to sector after 3rd	trip - back out to sector (assume no return to sector)	final trip back to station	total	total	12 per day via vehicle		in	out	total
		in	out	in	out	out	in	out	in	out	in	out	in	out	in	in	out	in	out	in	out	total
0:00	1:00		6		13	7	2	2	2	2	2	2	1			7	13			7	32	39
1:00	2:00						2	2	2	2	2	2	1			7	6			7	6	13
2:00	3:00						2	2	2	2	2	2	1			7	6			7	6	13
3:00	4:00						2	2	2	2	2	2	1			7	6			7	6	13
4:00	5:00	1					2	2	2	2	2	2	1			7	6			8	6	14
5:00	6:00	2					2	2	2	2	2	2	1			7	6			9	6	15
6:00	7:00	6					2	2	2	2	2	2	1			7	6			13	6	19
7:00	8:00	18		15			1	1	1	1	1	1		7	10	3		1	1	44	4	48
8:00	9:00	1	5	4	7	15	1	1	1	1	1	1			3	18		1	1	9	31	40
9:00	10:00					4	1	1	1	1	1	1			3	7		1	1	4	8	12
10:00	11:00						1	1	1	1	1	1			3	3		1	1	4	4	8
11:00	12:00	1		1			1	1	1	1	1	1			3	3		1	1	6	4	10
12:00	13:00					1	1	1	1	1	1	1			3	4		1	1	4	5	9
13:00	14:00		1				1	1	1	1	1	1			3	3		1	1	4	5	9
14:00	15:00	3	1	1			2	2	2	2	2	2		10	16	6		1	1	21	8	29
15:00	16:00	6	6	13		1	2	2	2	2	2	2			11	7		1	1	31	14	45
16:00	17:00		20		15	13	2	2	2	2	2	2			6	19		1	1	7	55	62
17:00	18:00		0		5		2	2	2	2	2	2			6	6		1	1	7	12	19
18:00	19:00						2	2	2	2	2	2			6	6		1	1	7	7	14
19:00	20:00						2	2	2	2	2	2			6	6				6	6	12
20:00	21:00						2	2	2	2	2	2			6	6				6	6	12
21:00	22:00						2	2	2	2	2	2	1		7	6				7	6	13
22:00	23:00						2	2	2	2	2	2	1	1	8	6				8	6	14
23:00	0:00	5	4	7	1		2	2	2	2	2	2	1	8	15	6				27	11	38
Daily		43	43	41	41	41	41	41	41	41	41	10	31		164	164		12	12	260	260	520

Compiled by E. Peart based on meeting with Chief Cronin.

- A time of day
- B MPD employees (non-patrol officers). Includes captain, civilian employees, sergeants, lieutenants, and cadets. Based on daily MPD schedule obtained from Chief.
- C MPD patrol officers. Based on daily MPD schedule obtained from Chief.
- D Patrol officers activities, while on duty: These trips are made in squad cars to different sectors of the City. On average, about 130 calls per day. Assume each patrol officer has squad car and returns to Station to complete report. C
- E Chief cited 800 calls over 6 day period. Assuming, 800/6 = about 130 per day. Assume fewer calls midday. Assume patrol officer returns to station to fill out report.
- F Sum of all vehicle trips in and out on a daily basis.

1 As part of the Project's trip generation process, the police station trips were reassigned to reflect the new police station location. This resulted in removing most police trips from the study area intersections. Police trips associated with the study peak hour (not the police station peak hour) were removed from the study area volumes.



Malden City Hall Employee Survey

Survey Date	What is your home ZIP code?	As a Malden City Hall employee, how many hours do you work per week?	On a typical day, what time do you arrive at work at Malden City Hall?	On a typical day, what time do you leave for the day?	Do your commute times vary from day to day? If yes, please explain.	Do your commute times vary from day to day? If yes, please explain. - Explanation	On a typical day, how do you commute to and from Malden City Hall?	On a typical day, how do you commute to and from Malden City Hall?	Do you typically carpool to work at Malden City Hall? If so, how many people, including yourself, are typically in your carpool?	# of people in carpool, including yourself	Where do you typically park?	How much do you typically pay per day to park in the Malden Center area on workdays? Enter 0 if you typically use a key card for a garage	What mode of public transportation do you primarily use to get to work at Malden City Hall? If you use multiple modes, choose whichever you use for the longest leg of your trip.	What mode of public transportation do you primarily use to get to work at Malden City Hall? If you use multiple modes, choose whichever you use for the longest leg of your trip. - Other (please specify)	Do you currently hold an MBTA monthly pass?	Where do you typically park your bike?
07/31/2015	01940	35	10:00 AM	3:00 PM	No		Personal automobile		No, I drive alone.		City Hall Garage	n/a				
07/31/2015	02474	40	6:30 AM	3:30 PM	No		Personal automobile		No, I drive alone.		City Hall Garage	0				
07/31/2015	02149	19	9:45 AM	2:00 PM	Yes	Monday- Thursday, I start work at 10am. Mon.-Wed. I leave at 2pm. Thursdays I leave at 1pm. and on Fridays I work 8am-12pm	Public transportation									
07/31/2015	01902	40	7:25 AM	3:35 PM	No		Personal automobile		No, I drive alone.		Jackson Street Garage	0				
07/31/2015	02148	40	7:30 AM	3:30 PM	No		Personal automobile		No, I drive alone.		Jackson Street Garage	0				
07/31/2015	02148	40	7:30 AM	3:30 PM	No		Personal automobile		No, I drive alone.		Jackson Street Garage	0				
07/31/2015	01906	40	7:00 AM	4:30 PM	Yes	With traffic	Personal automobile		No, I drive alone.		City Hall Garage	0				
07/31/2015	01890	21	8:00 AM	7:00 PM	Yes	depending upon traffic...Fridays in summer it only takes 15 minutes :)	Personal automobile		No, I drive alone.		Jackson Street Garage	0				
07/31/2015	02148	35	7:45 AM	4:00 PM	Yes	School traffic	Personal automobile		No, I drive alone.		Jackson Street Garage	0				
07/31/2015	01833	40	8:00 AM	5:00 PM	No		Personal automobile		No, I drive alone.		City Hall Garage	0				
07/31/2015	02144	40	8:00 AM	4:00 PM	No		Personal automobile		No, I drive alone.		Jackson Street Garage	0				
08/01/2015	02148	40	8:00 AM		No		Personal automobile		No, I drive alone.		City Hall Garage	0				
08/03/2015	02148	50	7:30 AM	7:30 PM	No		Personal automobile		No, I drive alone.		City Hall Garage	0				
08/03/2015	02155	50	7:00 AM	5:00 PM	Yes	I attend numerous meeting outside the building this requires me to come and go at various times	Personal automobile		No, I drive alone.		City Hall Garage	0				
08/03/2015	02148	25	9:00 AM	2:00 PM	No		Personal automobile		No, I drive alone.		Jackson Street Garage	0				
08/03/2015	02148	25	9:00 AM	2:00 PM	No		Personal automobile		No, I drive alone.		Jackson Street Garage	0				
08/03/2015	02148	35	7:50 AM	4:00 PM	Yes	TRAFFIC	Personal automobile		No, I drive alone.		City Hall Garage	0				
08/03/2015	02176	25	8:30 AM	2:00 PM	Yes	Court Appearances, depositions, etc	Personal automobile		No, I drive alone.		City Hall Garage	N/A				
08/03/2015	01940	40	7:30 AM	4:00 PM	Yes	traffic	Personal automobile		No, I drive alone.		City Hall Garage	0				
08/03/2015	02148	40	8:00 AM	6:00 AM	Yes	Depending on meetings and visiting various employee locations. Also come in during weekends.	Personal automobile		No, I drive alone.		City Hall Garage	0				
08/03/2015	02148	37	7:00 AM	3:30 PM	No		Personal automobile		No, I drive alone.		City Hall Garage	0				
08/03/2015	02148	35	8:00 AM	4:00 PM	No	walk to work	Walking									
08/03/2015	02148	35	7:45 AM	5:00 PM	Yes	For no apparent reason, some days it takes longer to get to City Hall	Personal automobile		No, I drive alone.		City Hall Garage	0				
08/04/2015	02148	15	6:30 AM	11:00 AM	No		Personal automobile		No, I drive alone.		City Hall Garage	0				
08/04/2015	02148	15	8:00 AM	4:00 PM	No		Personal automobile		No, I drive alone.		Jackson Street Garage	0				
08/04/2015	02148	35	8:00 AM	4:00 PM	No		Personal automobile		No, I drive alone.		City Hall Garage	0				
08/04/2015	01867	40	7:00 AM	4:00 PM	No		Personal automobile		No, I drive alone.		City Hall Garage	0				
08/05/2015	01773	35	9:00 AM	5:30 PM	Yes	depends on traffic	Personal automobile		No, I drive alone.		City Hall Garage	0				
08/07/2015	01890	35	8:00 AM	4:00 PM	Yes		Personal automobile		No, I drive alone.		Jackson Street Garage	0				



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