

TRAFFIC IMPACT AND SITE ACCESS STUDY - UPDATED

PROPOSED MIXED-USE SITE

Portsmouth, New Hampshire

April 2019

Prepared for

Torrington Properties, Inc.



**Stephen G. Pernaw
& Company, Inc.**

**TRAFFIC IMPACT AND SITE ACCESS STUDY
PROPOSED MIXED-USE SITE
PORTSMOUTH, NEW HAMPSHIRE
April 24, 2019**

INTRODUCTION

On July 18, 2018 this office prepared the report entitled “*Draft Traffic Impact and Site Access Study*” for Torrington Properties, Inc. in order to assess the traffic impacts associated with the proposed residential/commercial development located on the east side of US1 Bypass at the site of the Frank Jones Center; a wedding, event, and conference center in Portsmouth, New Hampshire. Since publication of the draft report, the proposed development has decreased in size (69 fewer dwelling units) and the NHDOT and City of Portsmouth have requested supplemental traffic projections and analyses to better understand the implications of: 1) a possible future extension of Cate Street to the US1 Bypass (across from Borthwick Avenue), and 2) a possible future extension of the US1 Bypass median island through the Cottage Street/Coakley Road intersection (with removal of the traffic signal system).

The purpose of this finalized report entitled “*Traffic Impact and Site Access Study*” is to summarize the data collected, the future traffic projections, the technical analyses and our findings and recommendations relative to traffic operations, capacity, and safety in the study area.

A traffic study “scope” meeting was conducted with the NHDOT and City representatives on April 27, 2018. As a result of that meeting, the analysis periods were identified as the Weekday PM and Saturday Midday peak periods, and the study area was expanded to include several intersections:

- US1 Bypass/Cottage Street/Coakley Road
- US1 Bypass/Borthwick Avenue
- US1 Bypass/Existing Site Driveway (Right-In/Right-Out only)
- Islington Street/Bartlett Street/Pharmacy Driveway
- Bartlett Street/Cate Street
- Bartlett Street/Existing Shared Driveway (Ricci Lumber, Great Rhythm Brewing)
- Cate Street Extension/Proposed Site Driveway A
- Cate Street Extension/Proposed Site Driveway B
- Cate Street Extension/Proposed Site Driveway C

The City also requested: 1) supplemental counts on Woodbury Avenue (at the US1 Bypass Ramps and Franklin Avenue) for planning purposes, and 2) pedestrian and bicycle count data. The NHDOT requested that “lane utilization” be monitored on the US1 Bypass northbound approach to the Cottage Street/Coakley Road signalized intersection, given the upstream influence of the Portsmouth Traffic Circle.

EXECUTIVE SUMMARY

The proposed residential (273 dwellings)/commercial (44 KSF) development will generate approximately 353 (PM) and 444 (SAT) vehicle-trips during the peak hour periods, and the site will be accessible via: 1) the existing right-and/right-out driveway on the Bypass, 2) the existing shared site driveway located across from the Borthwick Avenue signalized intersection, and 3) an internal connection to Cate Street.

With the implementation of the traffic mitigation measures identified in this study, the US1 Bypass intersections at Cottage Street/Coakley Road and Borthwick Avenue/Existing Site Driveway are projected to operate below capacity through 2030 with the proposed development fully occupied.

The possible future extension of Cate Street through the subject site to the US1 Bypass (across from Borthwick Avenue) has the potential to alter the prevailing traffic patterns for some drivers in the study area. The net increases that are anticipated to occur on the Bypass will increase the volume-capacity (v/c) ratio for the overall Cottage Street/Coakley Road intersection from 0.95 to 1.01 during the 2030 PM peak hour. Similarly, the v/c ratio for the Borthwick Avenue/Cate Street Extension intersection will increase from 0.83 to 0.94 in 2030.

The possible future extension of the Bypass median island through the Cottage Street/Coakley Road intersection will eliminate the need for the traffic signal system at this location. However, the added traffic demand at the Borthwick Avenue/Cate Street Extension intersection will increase the v/c ratio from 0.94 to 1.14, resulting in an over-capacity situation by 2030.

PROPOSAL

The subject site currently lies within the Mixed Residential District (G1–Gateway Corridor) on Lots 163-33, 165-2, 172-1, and 173-2. The proposed development involves razing the existing structures and constructing several new residential/commercial buildings that will contain: 250 mid-rise apartments, 23 townhomes, 22 ksf retail/restaurants, and 22 ksf of office space. The proposed development has the potential to implement the City’s long-range plan to realign and extend Cate Street through the subject site to intersect with the US1 Bypass at the Borthwick Avenue signalized intersection. The existing bridge on Cate Street will be converted to a pedestrian-only bridge. A multipurpose path for bikes and pedestrians will be constructed along Hodgson Brook as well as a sidewalk on the development side of the extended roadway. For the purposes of this report only, the possible future roadway is named “Cate Street Extension.”

Vehicular access to the development will continue to be provided via the existing right-in/right-out driveway on the Bypass, as well as three proposed site driveways that will intersect the south side of Cate Street Extension, if this roadway is extended. If not, then there will be an indirect driveway connection to Cate Street.

This report contains short-range and long-range traffic projections and analyses for the six existing and three proposed study area intersections for development Scenario A as shown below:

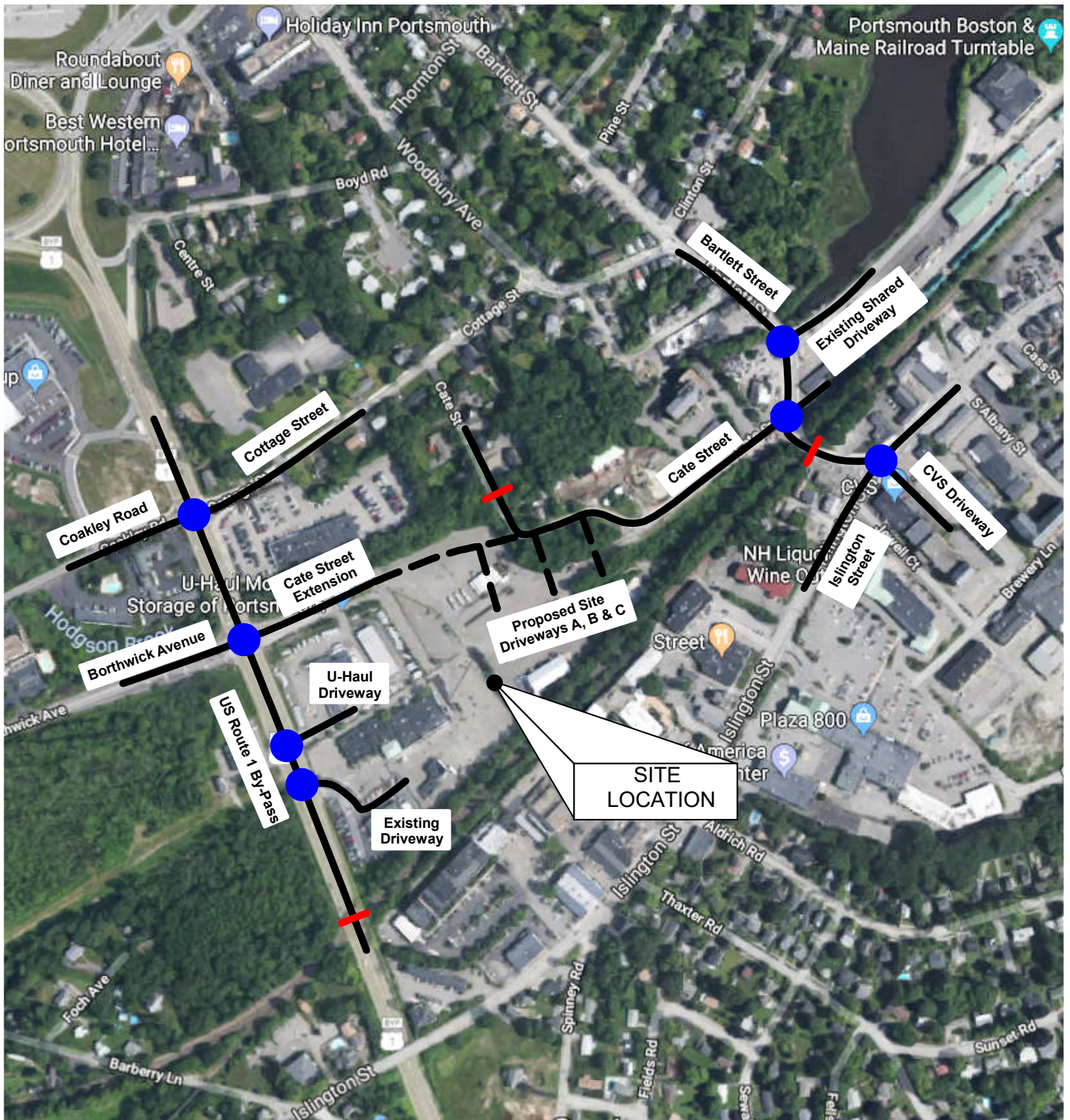
Development Scenario A: Full build-out of the subject site with Cate Street Extension.

This report also includes supplemental long-range traffic projections and analyses for the two existing signalized intersections on US1 Bypass for the following two cases:

Development Scenario B: Full build-out of the subject site without Cate Street Extension.

Development Scenario C: Full build-out of the subject site with Cate Street Extension and extension of the median island on US1 Bypass through the Cottage/Coakley intersection.

Figure 1 shows the location of the subject site with respect to the area roadway system. Appendix A contains a preliminary concept plan that is the subject of this study.



- = AUTOMATIC TRAFFIC RECORDER LOCATION (NHDOT)
- = INTERSECTION TURNING MOVEMENT COUNT LOCATION



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Figure 1

Site Location

Traffic Impact and Site Access Study, Proposed Multi-Use Site, Portsmouth, New Hampshire

EXISTING CONDITIONS

ROADWAYS

The **US1 Bypass** functions as a four-lane arterial highway with a general north-south orientation in the study area that extends from the Traffic Circle (and points north in Maine), past the subject site, to US1 in Portsmouth. This roadway will provide access to the site via the Borthwick Avenue signalized intersection, as well as via the existing Right-In/Right-Out Site Driveway. The speed limit is posted at 35 mph on the Bypass.

Bartlett Street functions as a local collector road with a general northwest to southeast orientation in the study area; it carries through vehicles between Islington Street and Woodbury Avenue via Dennett Street and Thornton Street. The horizontal alignment of the roadway is curvilinear and the vertical alignment is essentially flat in the study area. A paved sidewalk is present in most places along both sides of the roadway. The speed limit is posted at 20 mph in both directions.

Cate Street functions as a local collector road with a general north to south direction from its origin at Cottage Street to a sharp corner to the left and then an “S”-curve in its alignment heading to the east where it terminates at Bartlett Street. The horizontal alignment of the roadway is curvilinear and the vertical alignment ranges from flat to rolling in the area. There are no paved sidewalks or speed limit signs along Cate Street.

Islington Street functions as an urban arterial roadway with a general southwest to northeast orientation in the study area; it carries through vehicles between NH Route 33 and downtown Portsmouth. The horizontal alignment of the roadway is curvilinear and the vertical alignment is essentially flat in the study area. Islington Street provides access to numerous commercial sites and retail businesses, as well as many residences. A paved sidewalk is present along both sides of the roadway.

INTERSECTIONS

The **US1/Cottage Street/Coakley Road** intersection functions as a typical four-leg intersection that operates under traffic signal control. The approach lanes at this intersection are designated accordingly:

- NB: One exclusive left-turn lane, one exclusive through lane, one shared through-right lane
- SB: One exclusive left-turn lane, one exclusive through lane, one shared through-right lane
- EB: One shared left-through-right lane
- WB: One shared left-through lane, one exclusive right-turn lane

This traffic signal utilizes a fully-actuated controller that operates with three basic signal phases: 1) northbound and southbound left turns, 2) northbound and southbound through-right movements, and 3) the Cottage Street and Coakley Road approaches run concurrently. This controller is programmed to operate with a 120-second (PM) and 110-second (SAT) cycle length during the peak hour periods, and is coordinated with the signal system to the south.

The **US1/Borthwick Avenue** intersection also functions as a typical four-leg intersection that operates under traffic signal control. The approach lanes at this intersection are designated accordingly:

NB: One exclusive left-turn lane, one exclusive through lane, one shared through-right lane
SB: One exclusive left-turn lane, one exclusive through lane, one shared through-right lane
EB: One exclusive left-turn lane, one shared left-through lane, one exclusive right-turn lane
WB: One exclusive left-turn lane, one shared through-right lane

This traffic signal utilizes a fully-actuated controller that operates with four basic signal phases: 1) northbound and southbound left turns, 2) northbound and southbound through-right movements, 3) eastbound departures from Borthwick Avenue and 4) westbound departures from Borthwick Avenue (future Cate Street Extension). This controller is coordinated with the traffic signal system to the north and it is programmed to operate with a 120-second (PM) and 110-second (SAT) cycle length during the peak hour periods.

The **Islington Street/Bartlett Street/Pharmacy Driveway** intersection functions as a four-leg intersection that operates under traffic signal control. The signal heads are currently post-mounted or span wire-mounted. The existing lane configuration at this intersection is delineated as follows:

EB: One shared left-through lane, one exclusive right-turn lane
WB: One shared left-through-right lane
NB: One exclusive left-turn lane, one shared through-right lane
SB: One shared left-through lane, one exclusive right-turn lane

This traffic signal utilizes a fully-actuated controller that operates with three basic signal phases and an exclusive pedestrian phase (when actuated): 1) the Islington Street southbound approach (with permitted left turns) and northbound through-right movements, 2) Islington Street northbound left turns (lagging phase) with northbound through-right movements, and then 3) the Bartlett Street and pharmacy driveway approaches run concurrently. This controller operated with a 90-second average cycle length during both peak hour periods. Three crosswalks are present and extend across the southbound, westbound and eastbound approaches. The exclusive pedestrian phase was utilized only occasionally during the peak hour periods.

The **Bartlett Street/Cate Street** intersection functions as a typical three-leg "T" intersection; however there is an existing parking lot driveway located across from Cate Street that was utilized minimally during the traffic count periods. The Cate Street approach currently operates under STOP sign control. The existing lane configuration at this intersection is delineated as follows:

EB: One shared left-right lane
NB: One shared left-through lane
SB: One shared through-right lane

Although not formally designated with two approach lanes, the Cate Street approach to Bartlett Street is flared to the extent that left and right turning vehicles are able to queue side-by-side on occasion. Crosswalks are not present at this intersection.

The **Bartlett Street/Existing Shared Driveway** intersection functions as a typical three-leg “T” intersection and the Existing Shared Driveway approach operates with no traffic control devices (no stop sign, no pavement markings). The approach lanes are designated accordingly:

WB: One shared left-right lane
NB: One shared through-right lane
SB: One shared left-through lane

The **US1 Bypass/Existing Site Driveway** intersection functions as an atypical three-leg “T” intersection where the use of the site driveway is limited to right-turn arrivals and right-turn departures (due to the median island on the Bypass). The approach lanes are designated accordingly:

WB: One right-turn exit only lane
NB: One exclusive through lane and one shared through-right lane

The **Cate Street Extension/Proposed Site Driveway A, B, & C** intersections will function as typical three-leg “T” intersections with one shared lane on each approach. Each site driveway approach will operate under stop sign control and will be delineated with a short section of four-inch double-yellow centerline and an 18-inch white stop line.

TRAFFIC VOLUMES

Research at the New Hampshire Department of Transportation (NHDOT) revealed that short-term automatic traffic recorder counts were conducted on: 1) US1 Bypass (under B&M railroad) in July-August 2018, 2) Bartlett Street (west of Islington Street) in September 2017, and 3) Cate Street (at Hodgson Brook) in August of 2017. These count stations are located a short distance from the subject site.

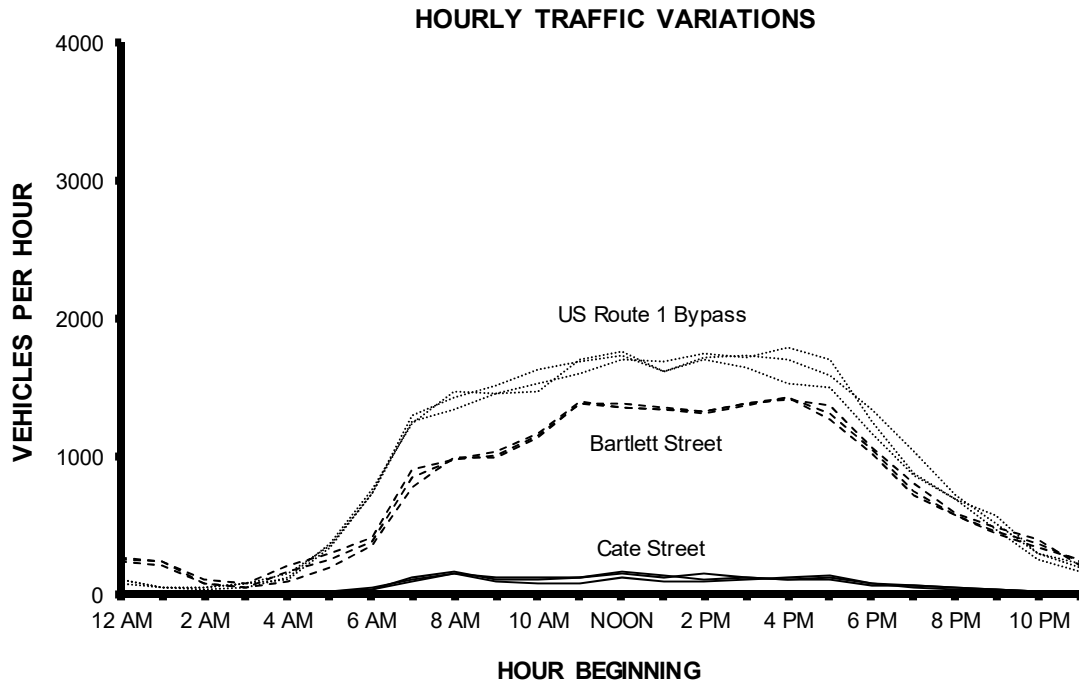
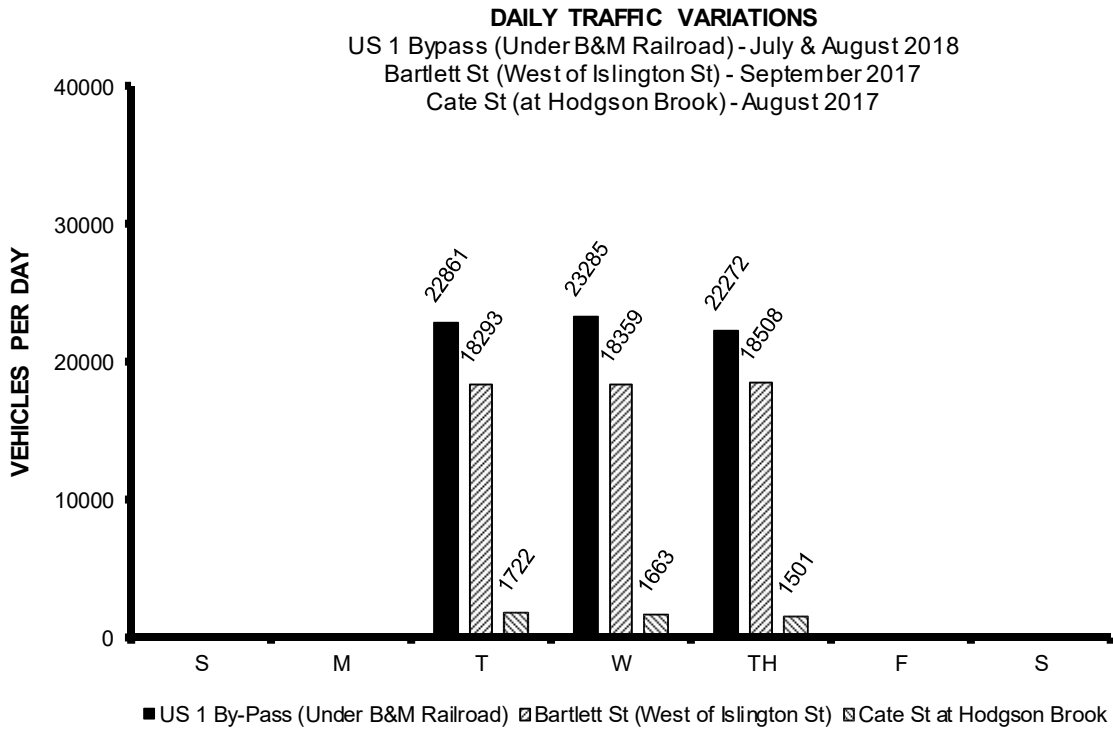
The NHDOT data shows that the US1 Bypass carried an Annual Average Daily Traffic (AADT) volume of 18,997 vehicles per day (vpd) in 2018. Similarly, Bartlett Street carried an AADT volume of 16,742 vpd and Cate Street carried 1,448 vpd in 2018. Data from the automatic traffic recorder counts is summarized graphically on Page 9 and shows the daily and hourly variations in traffic demand in the study area. Except for Cate Street, the hourly rate of traffic flow reached peak levels during the weekday evening commuter period. Appendix B contains a summary of the NHDOT count data.

To establish current travel patterns and traffic volumes in the study area, Pernaw & Company, Inc. conducted simultaneous turning movement and vehicle classification counts at the six existing study area intersections on Thursday, May 24th from 3:00 to 6:00 PM and on Saturday, May 26 from 11:00 AM to 3:00 PM. The new 2018 balanced count data for the study area intersections is summarized on Figure 3A & 3B. Several facts and conclusions are evident from this data.

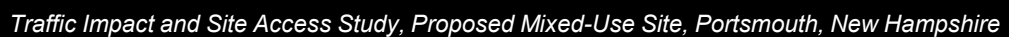
- The highest traffic hour for the overall study area system occurred from 4:30 to 5:30 PM at which time the volume of traffic on the Bypass ranged from 2,117 vehicles south of the site to 2,273 vehicles north of Cottage Street (total both directions). The majority traveled in the northbound direction on the Bypass during this peak hour. During this same hour, Islington Street and Bartlett Street accommodated over 1,100 vehicles. Cate Street (west of Bartlett Street) carried 151 vehicles, Borthwick Avenue carried 587 vehicles (west of US1 Bypass), and Cottage Street carried 496 vehicles.
- On Saturday the highest traffic hour for the overall study area system occurred from 11:45 AM to 12:45 PM and the roadway volumes were found to be lower than during the weekday PM peak hour. The traffic volume on the Bypass ranged from 1,752 to 1,844 vehicles per hour, Islington Street and Bartlett Street generally carried fewer than 1,000 vehicles (except 1,007 vehicles were observed on Islington Street north of Bartlett Street). Cate Street (west of Bartlett Street) carried 76 vehicles, Borthwick Avenue carried 257 vehicles (west of US1 Bypass), and Cottage Street carried 305 vehicles.
- The section of Borthwick Avenue east of US1 Bypass (where Cate Street will be extended to) carried only 33 (PM) and 40 (SAT) vehicles during the peak hour periods, primarily due to the U-Haul business.
- Truck traffic accounted for approximately 2-3% (PM) and 1% (SAT) of the traffic flow during the peak hour periods at the study area intersections.

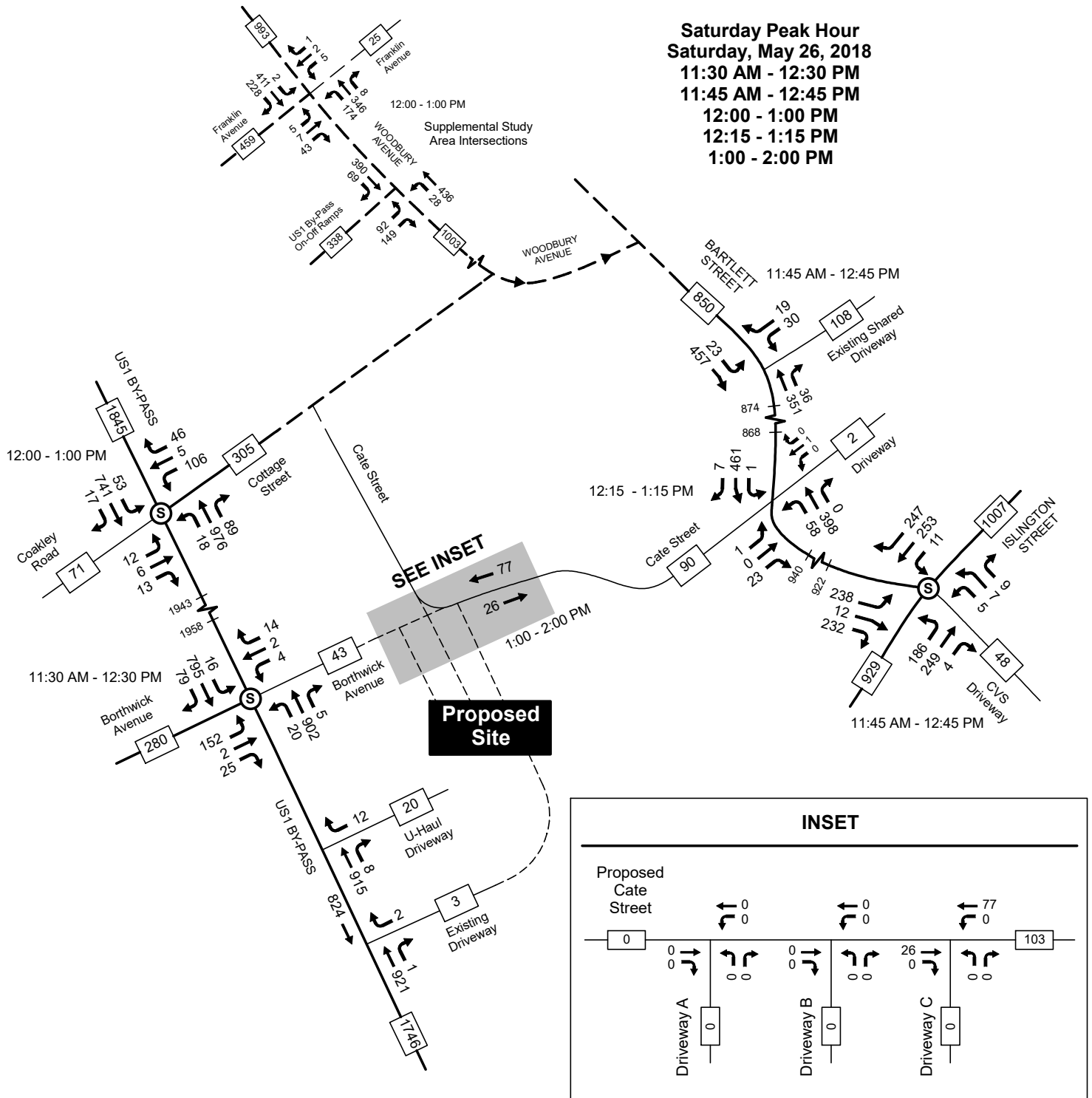
- Pedestrian activity was monitored at the study area intersections and was found to be highest at the Islington Street/Bartlett Street intersection with 49 pedestrians observed during the PM peak hour. The Bartlett Street/Cate Street intersection accommodated 17 pedestrians and there 15 pedestrians observed at the Bartlett Street/Shared Driveway. Pedestrian activity at the two study area intersections on US1 Bypass was nil during the PM peak hour. Comparable pedestrian volumes occurred during the Saturday midday peak hour.

Figure 2A (PM) and Figure 2B (SAT) summarize the raw turning movement count data for each study area intersection and its individual peak hour. Figure 3A (PM) and Figure 3B (SAT) summarize the turning movement volumes for the overall “system” peak hour. The detail sheets summarizing the intersection turning movement count data are included in Appendix C. The pedestrian count data is included in Appendix D.



Source: NHDOT Counter Stations 82379042, 82379052, and 82379111





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Figure 2B

2018 Existing Traffic Volumes - Saturday Peak Hour

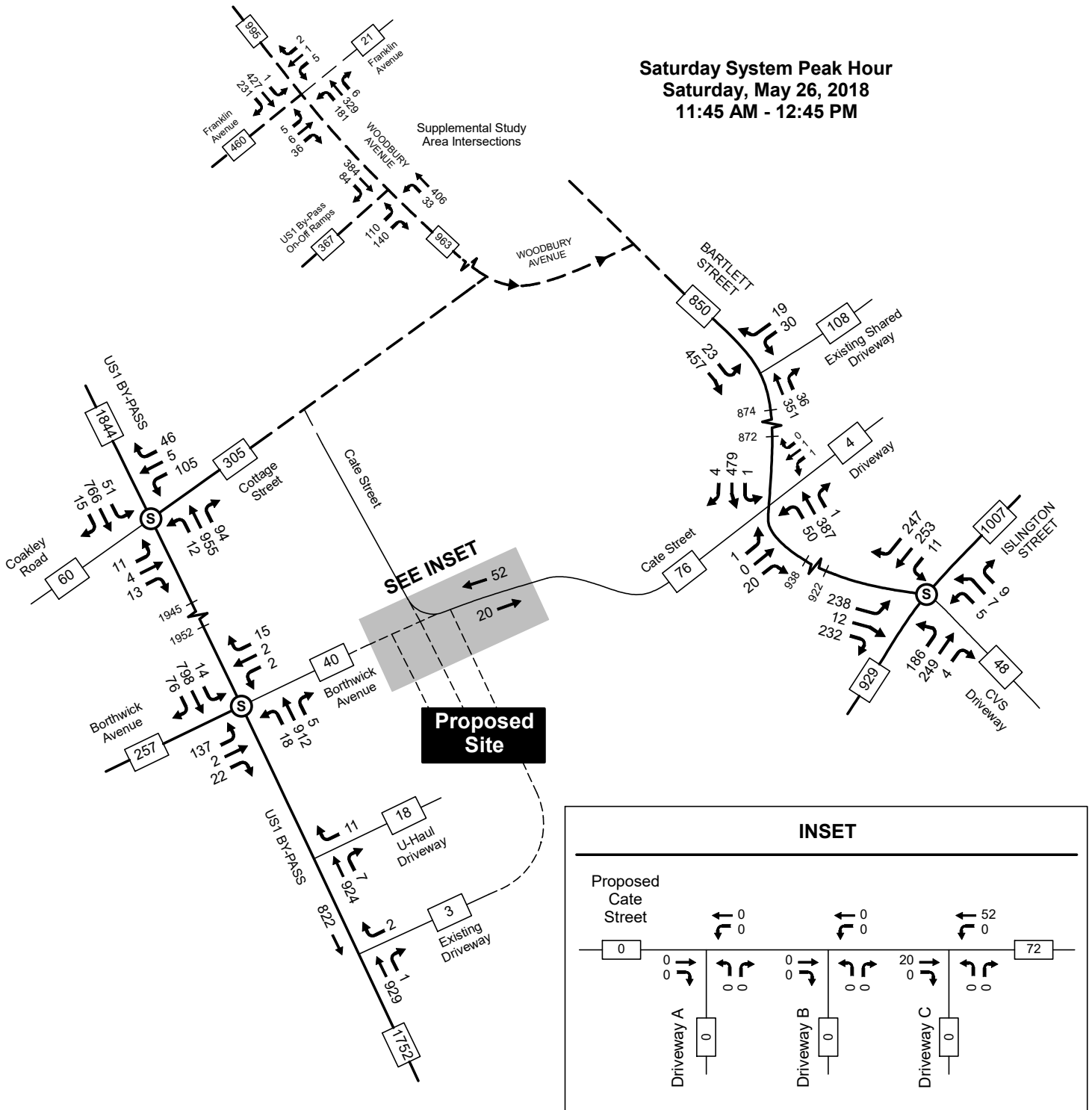
Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire



2018 Existing Traffic Volumes - PM System Peak Hour

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

Saturday System Peak Hour
Saturday, May 26, 2018
11:45 AM - 12:45 PM



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Figure 3B

2018 Existing Traffic Volumes - Saturday System Peak Hour

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

NO-BUILD TRAFFIC VOLUMES

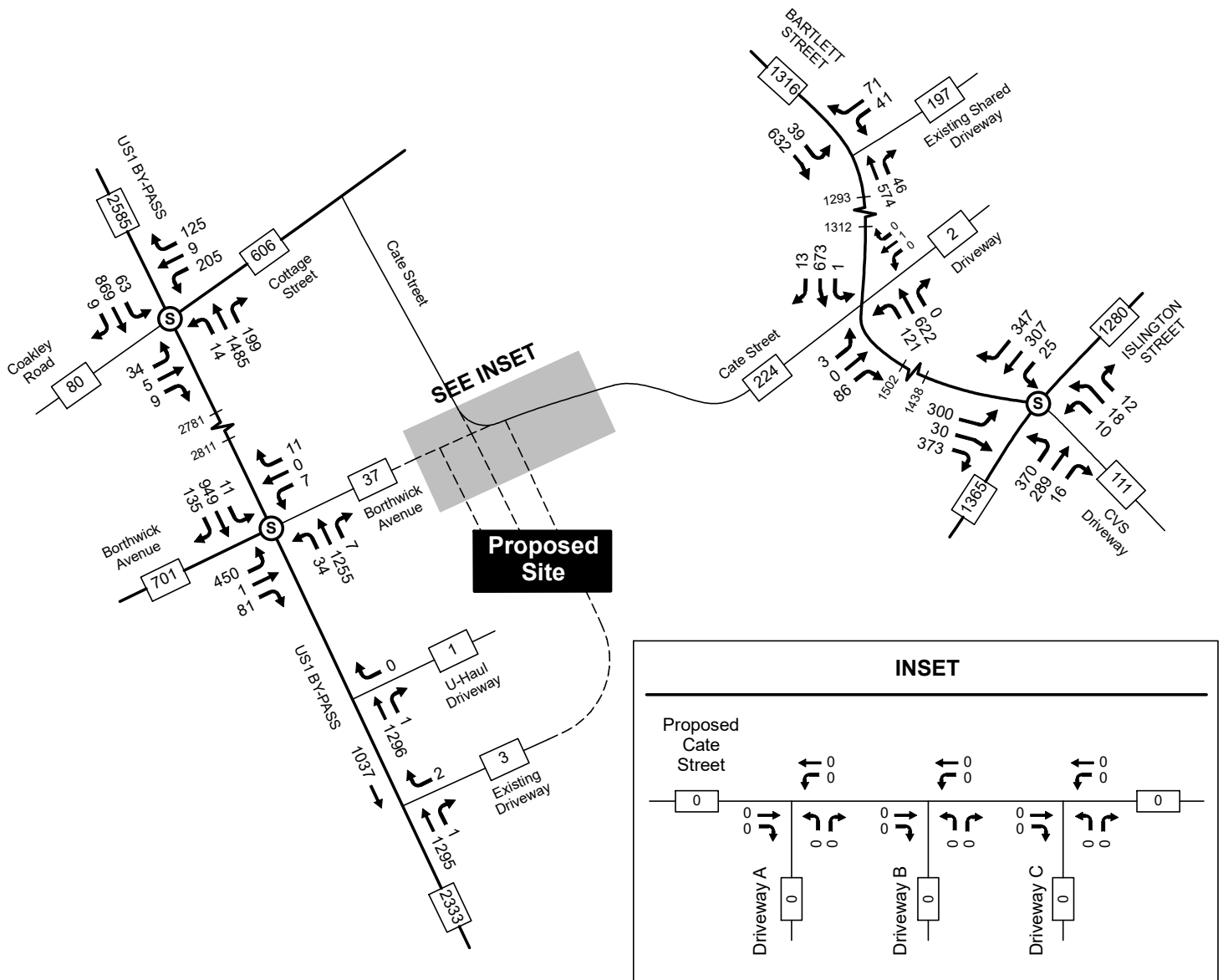
In order to identify the net impact that the proposed residential/commercial development will have in the study area, future traffic projections with and without the proposed development are necessary. The future traffic projections without the proposed development are referred to as “No-Build” traffic projections.

The No-Build traffic volumes for 2020 and 2030 are summarized schematically on Figures 4 through 7. These projections are based on the May 2018 traffic volumes, a 1-percent annual background traffic growth rate (compounded annually) to account for normal growth in the area, and peak-month seasonal adjustment factors of 1.07 (PM) and 1.08 (SAT).

The No-Build projections also account for five other pending development projects that were identified at the “scope meeting.”

- Proposed Multi-Family Development – 31-unit townhouse development on Cate Street
- Proposed Office Development – 50,000 sf office building off of Borthwick Avenue
- Proposed Apartments – 92-unit apartment development at 145 Brewery Lane
- Proposed Mixed-Use Development – Mixed-use development at 110 Brewery Lane
- Proposed Residential Development – 120 dwellings off Bartlett Street (Clipper Traders)

The No-Build traffic projections are intended to reflect worst-case, peak-month, peak-hour conditions. Calculations pertaining to the derivation of the annual background traffic growth rate and the seasonal adjustment factors are contained in Appendix E. Appendix F contains the diagrams for the five other development projects.



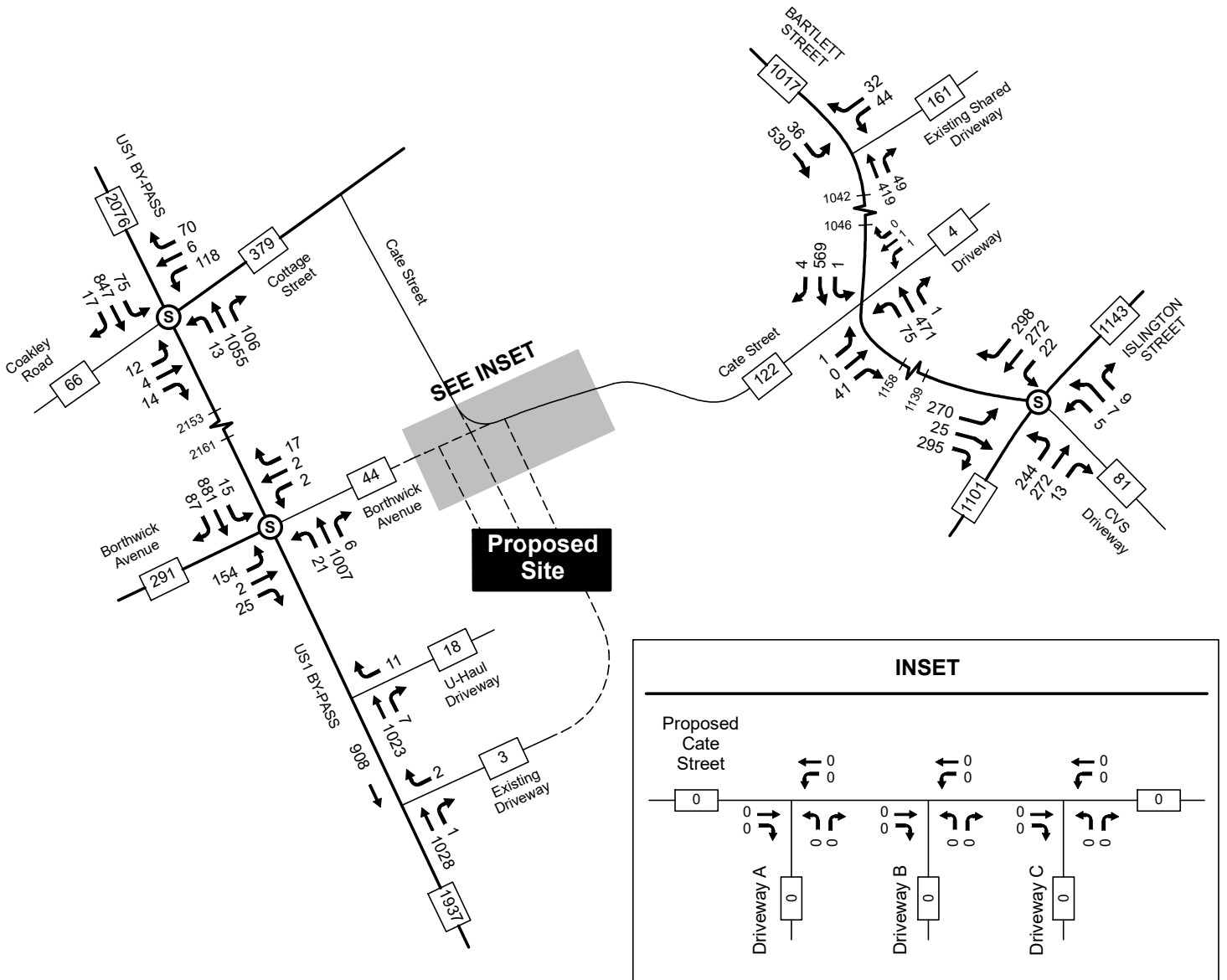
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Figure 4

2020 No-Build Traffic Volumes - PM Peak Hour

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire



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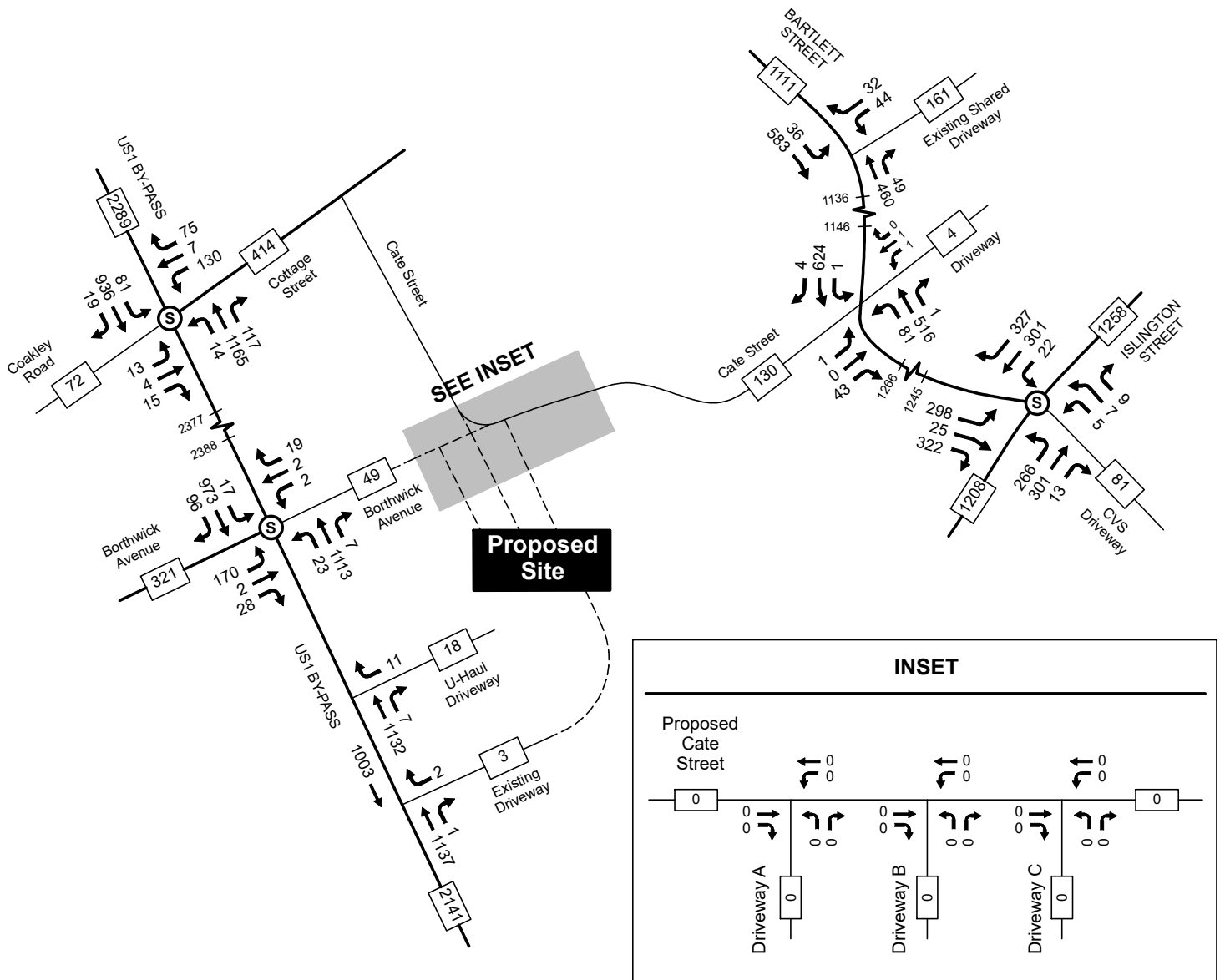


Figure 5

2020 No-Build Traffic Volumes - Saturday Peak Hour

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire





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Figure 7

2030 No-Build Traffic Volumes - Saturday Peak Hour

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

SITE GENERATED TRAFFIC

In estimating the quantity of vehicle-trips that will be produced by the proposed residential/commercial development, Pernaw & Company, Inc. considered the standardized trip-generation rates and equations published by the Institute of Transportation Engineers (ITE)¹. In this case the number of dwelling units and the gross floor area of the commercial space were used as the independent variables.

Based upon ITE Land Use Codes (LUC) 220 & 221 – Multi-Family Housing (Low-Rise and Mid-Rise, respectively), the residential portion of the development is expected to generate approximately 123 (PM) and 128 (SAT) vehicle-trips during the peak hour periods. Trips that are generated by residences are considered to be “new” trips to the study area (primary trips).

Based on several ITE LUC (for restaurants, retail and offices), the commercial portion of the development is expected to generate approximately 230 (PM) and 316 (SAT) vehicle-trips during the peak hour periods. Restaurants and retail trips are comprised of both primary trips and “pass-by” trips which are drawn from the existing traffic stream on US1 Bypass.

Table 1 summarizes the results of the trip generation analysis and shows that the overall site will generate approximately 353 (PM) and 444 (SAT) vehicle-trips during the peak hour periods. This table also shows the breakdown between the primary trips and the pass by trips.

In mixed-use developments it is reasonable to expect some interaction will occur between certain compatible uses; i.e. some residents and office employees may utilize the eating establishments (and retail use) in the commercial building rather than traveling off-site. According to NCHRP 684 guidelines, approximately 76 of the 353 PM trips (22%) could be subtracted from the trip estimate for the overall site to account for “internal” trips. To introduce conservativeness into the subsequent analyses, the Build traffic projections do not reflect any such “credit” for internal trips. Appendix G contains the derivation of the trip generation estimates.

¹ Institute of Transportation Engineers, *Trip Generation*, tenth edition (Washington, D.C., 2017).

Table 1

Trip Generation Summary

	Residential (273 Dwellings)		Commercial Building (44,000 sf)					Trip Composition	
	Apartments ¹	Townhomes ²	Office ³	Restaurant ⁴	Cafe ⁵	Retail ⁶	Food/Beer Hall ⁷	Site Total	Pass-By Trips ⁸
Weekday PM Peak Hour									
Entering	65 veh	10 veh	4 veh	42 veh	31 veh	9 veh	37 veh	156 veh	42 veh
Exiting	42 veh	9 veh	23 veh	26 veh	26 veh	10 veh	22 veh	113 veh	42 veh
Total	107 trips	16 trips	27 trips	68 trips	57 trips	19 trips	59 trips	269 trips	84 trips
Saturday Peak Hour									
Entering	55 veh	8 veh	6 veh	40 veh	75 veh	12 veh	34 veh	167 veh	63 veh
Exiting	57 veh	8 veh	6 veh	38 veh	61 veh	11 veh	33 veh	151 veh	63 veh
Total	112 trips	16 trips	12 trips	78 trips	136 trips	23 trips	67 trips	318 trips	126 trips
								198 veh 155 veh 353 trips	
								230 veh 214 veh 444 trips	

¹ ITE Land Use Code 221 - Multifamily Housing (Mid-Rise) 250 Dwelling Units

² ITE Land Use Code 220 - Multifamily Housing (Low-Rise) 23 Dwelling Units

³ ITE Land Use Code 710 - General Office Building (approximate gross floor area = 22,000 sf)

⁴ ITE Land Use Code 932 - High-Turnover (Sit-Down) Restaurant (approximate gross floor area = 7,000 sf)

⁵ ITE Land Use Code 930 - Fast Casual Restaurant (approximate gross floor area = 4,000 sf)

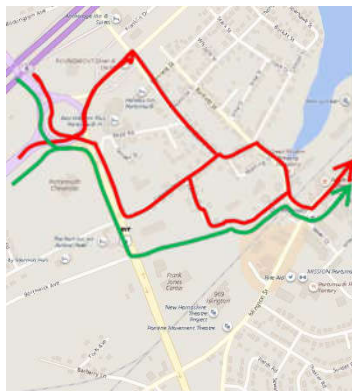
⁶ ITE Land Use Code 820 - Shopping Center (approximate gross floor area = 5,000 sf)

⁷ ITE Land Use Code 932 - High-Turnover (Sit-Down) Restaurant (approximate gross floor area = 6,000 sf)

⁸ ITE Handbook: LUC 932 = 43%, LUC 820 = 34% (PM) and 26% (SAT)

TRAFFIC DIVERSION

It is important to note that this development project will result in two separate and distinct impacts; the first being due to “site generated traffic” (the distribution of primary trips throughout the study area) and the second due “traffic diversion” as a result of the new connection to US1 Bypass (aka: Cate Street Extension). Providing this new connection has the potential to alter the prevailing travel patterns for some drivers in the study area (non-site traffic). Both traffic increases and decreases will occur in the study area as certain drivers will divert from their existing travel route to use the new roadway (depending upon the driver’s origin/destination). The diagrams below illustrate several examples where traffic diversion is expected to occur.



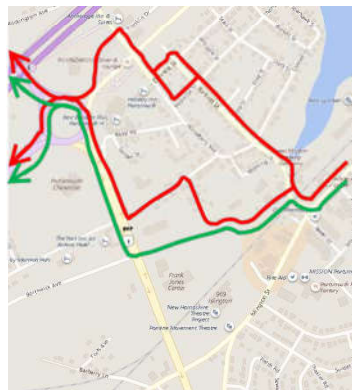
Trip Diversion Pattern 1 – (Traffic Circle area to Islington Street-NB)

Current travel routes (red):

- Traffic Circle to Woodbury- Bartlett-Islington NB.
- Traffic Circle to US1Byp-Cottage-Woodbury-Bartlett-Islington NB.
- Traffic Circle to US1Byp-Cottage-Cate-Islington NB.

Future travel routes (green):

- Traffic Circle to US1Byp-Cate St. Extension-Bartlett-Islington NB



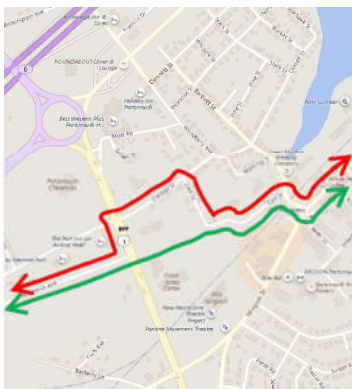
Trip Diversion Pattern 2 – (Islington Street SB to Traffic Circle area)

Current travel routes (red):

- Islington SB to Bartlett-Thornton/Dennett-Woodbury-Franklin.
- Islington SB to Bartlett-Cate-Cottage-US1Byp.

Future travel routes (green):

- Islington SB to Bartlett-Cate-Cate St. Extension-US1Byp.



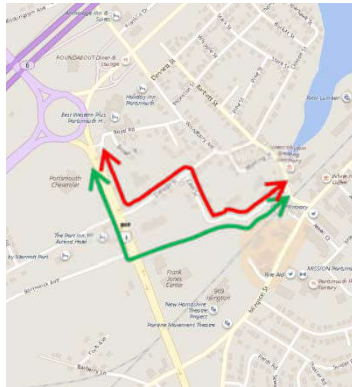
Trip Diversion Pattern 3 – (Borthwick Avenue to/from Islington Street)

Current travel routes (red):

- Islington SB to Bartlett-Cate-Cottage-US1Byp-Borthwick.
- Borthwick to US1Byp-Cottage-Cate-Bartlett-Islington.

Future travel routes (green):

- Islington SB to Bartlett-Cate-Cate St. Extension-Borthwick.
- Borthwick to Cate St. Extension-Cate-Bartlett-Islington.



Trip Diversion Pattern 4 – (US1Byp.to/from Cate Street)

Current travel routes (red):

- US1Byp. to Cottage-Cate.
- Cate to Cottage-US1Byp.

Future travel routes (green):

- US1Byp to Cate St. Extension-Cate.
- Cate to Cate St. Extension-US1Byp.



Trip Diversion Pattern 5 – (Traffic Circle area to/from Shared Driveway)

Current travel routes (red):

- Shared Driveway to Bartlett-Thornton/ Dennett-Woodbury-Franklin-Traffic Circle.
- Traffic Circle to Woodbury-Thornton/Dennett-Woodbury-Shared Driveway.

Future travel routes (green):

- Shared Driveway to Bartlett-Cate-Cate St. Extension-US1Byp.
- US1Byp. to Cate St. Extension-Cate-Bartlett-Shared Driveway.

It should be noted that traffic diversion will occur under Development Scenarios A and C (with Cate Street Extension), but not under Development Scenario B (no Cate Street Extension).

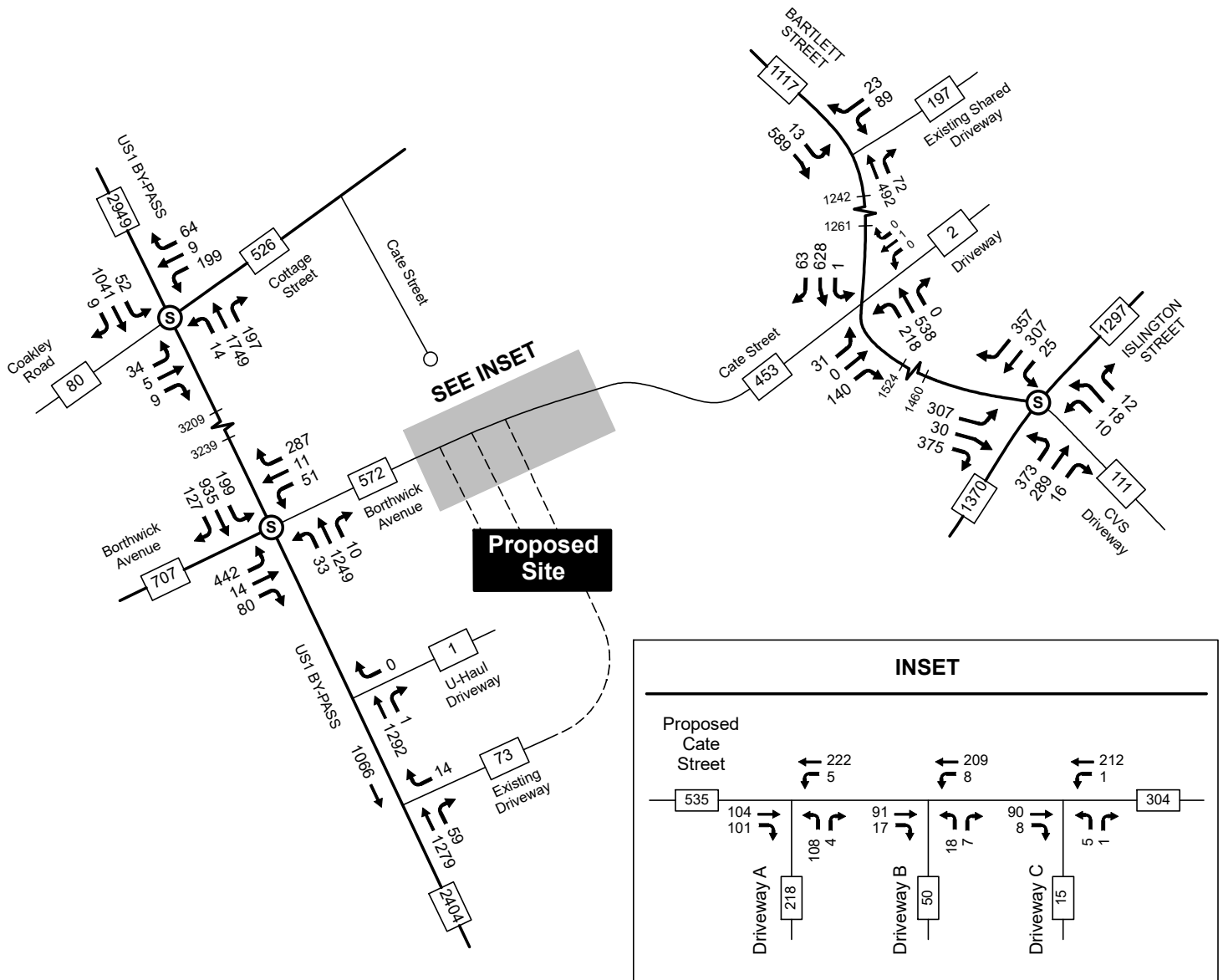
BUILD TRAFFIC PROJECTIONS

In order to identify the net impact that site traffic will have in the study area, future traffic projections with and without the proposed development are necessary. The future traffic projections with both the proposed residential/commercial units in full operation and the Cate Street Extension in place are referred to as “Build” traffic projections.

The Build traffic volume projections for 2020 and 2030 with site traffic and the Cate Street Extension (Scenario A) are summarized schematically on Figures 8 through 11. These projections are based on the No-Build projections, the trip generation estimates contained in Table 1, the anticipated traffic diversion patterns described earlier, and the expectation that the primary trips will be distributed in the following manner:

To/From Gateway:	Commercial Distribution	Residential Distribution
Gateway A - US1 Bypass (South)	21%	34%
Gateway B - Borthwick Avenue (West)	2%	3%
Gateway C - Coakley Road (West)	0%	0%
Gateway D - US1 Bypass (North)	71%	51%
Gateway E - Bartlett Street (North)	1%	1%
Gateway F - Islington Street (Northeast)	4%	9%
Gateway G - Islington Street (Southwest)	1%	2%
Total	100%	100%

These percentages were based on an analysis of area wide travel patterns from the U.S. Census Bureau - Center for Economic Studies, as well as our knowledge of the local area (see Appendix G). The pass-by trips were distributed in proportion to the approach volumes observed at the US1 Bypass/Borthwick Avenue intersection.



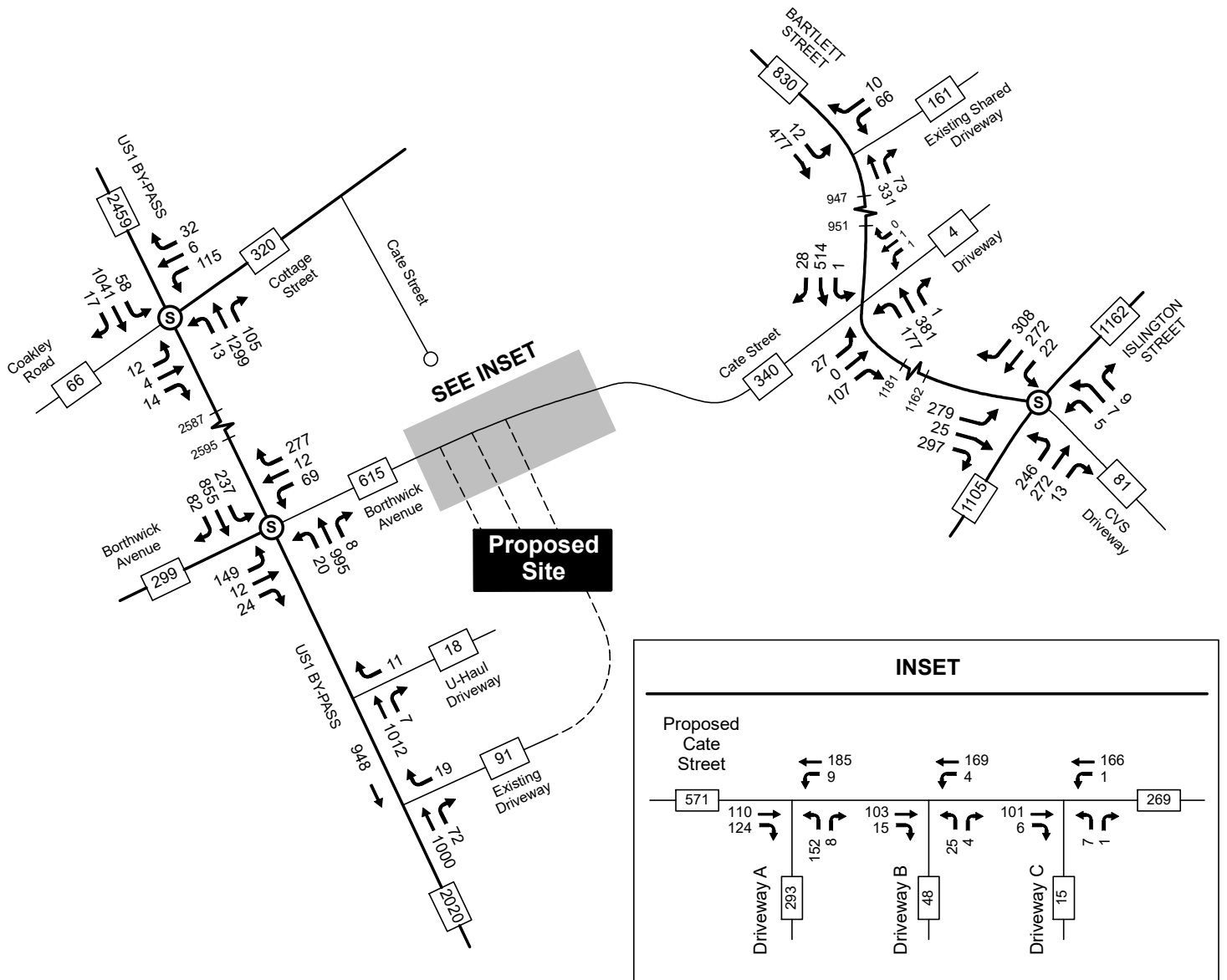
Scenario A = Proposed Development with Cate Street Extension



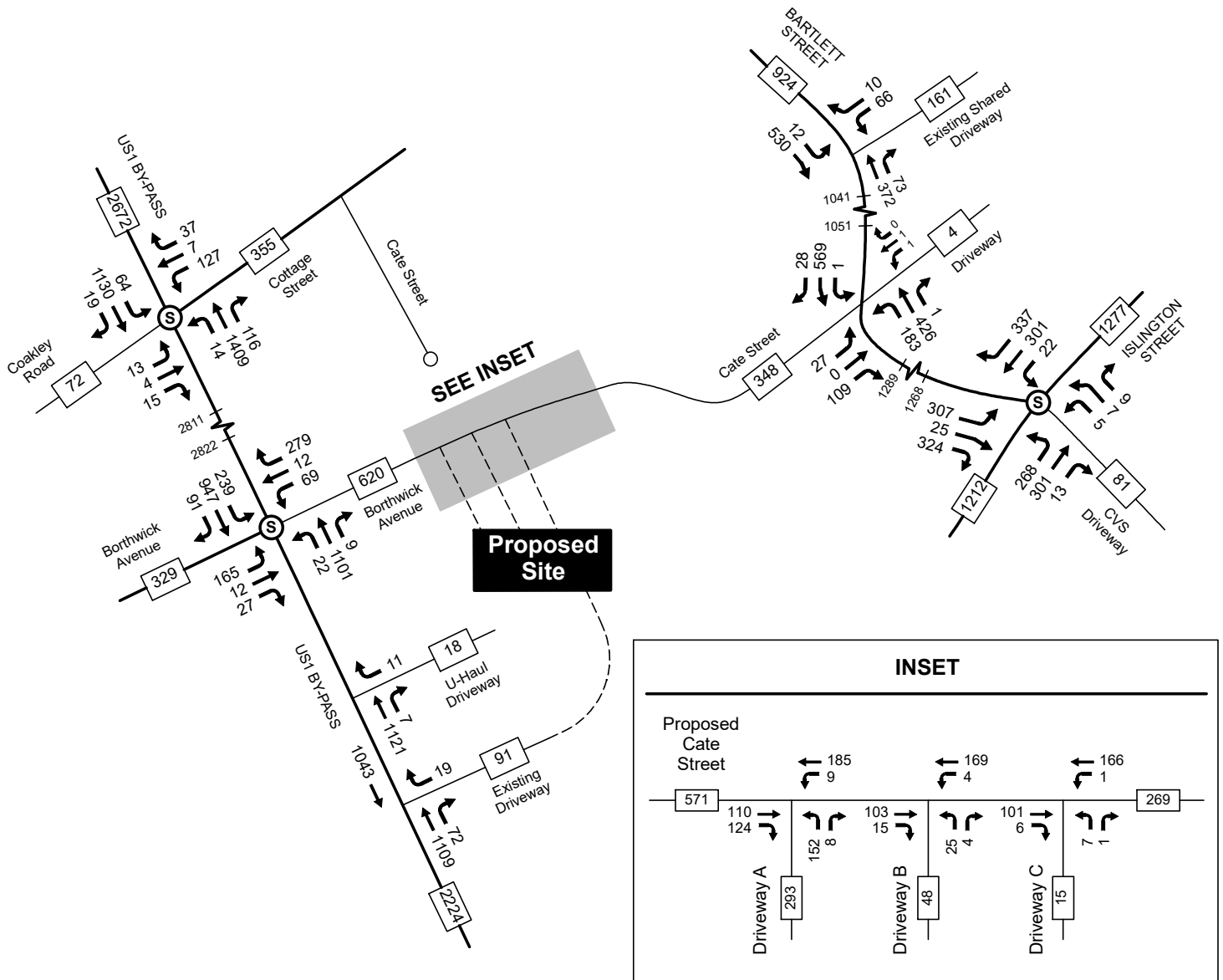
Figure 8

2020 Build Traffic Volumes - PM Peak Hour (Scenario A)

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire







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Scenario A = Proposed Development with Cate Street Extension



Figure 11

2030 Build Traffic Volumes - Saturday Peak Hour (Scenario A)

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

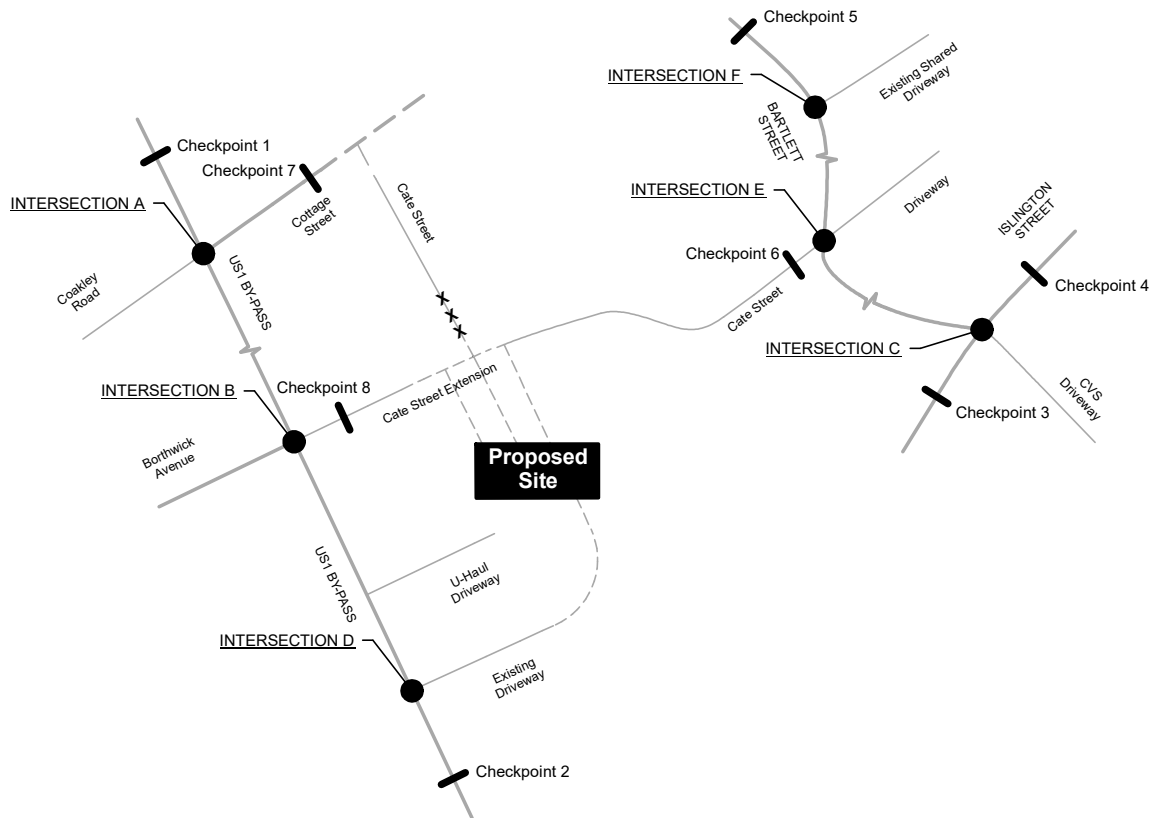
IMPACT SUMMARY – DEVELOPMENT SCENARIO A

The net impact that the proposed residential/commercial development will have on area roadway and intersection traffic volumes within the study area with Development Scenario A can be determined by comparing the No-Build traffic projections with the Build projections. A comparison for the two 2020 peak hour cases is summarized on Figure 12.

In terms of roadway segments, the greatest net increase in roadway volumes will occur on US1 Bypass, north of the Cottage Street/Coakley Road intersection during the PM peak hour period. The traffic volume on this roadway segment is projected to increase by +14% (+364 vehicles) during the PM peak hour period and by +18% (+383 vehicles) during the Saturday midday peak hour. The net impact on US1 Bypass south of the site is projected at +3% (PM) and +4% (SAT). Similarly, the impacts on Islington Street are on the order of +1% to +2%.

Net traffic decreases are expected on Bartlett Street north of the existing Shared Driveway intersection due to the anticipated traffic diversion as a result of the Cate Street Extension project. Corresponding traffic increases are expected on Cate Street west of Bartlett Street for the same reasons. Obviously, the traffic volume on the section of Cate Street between Cottage Street and the future pedestrian bridge will be limited to those with destinations on this short roadway section.

In terms of intersection utilization (total vehicles entering), the US1 Bypass/Borthwick Avenue/Cate Street Extension intersection is expected to accommodate +497 (PM) and +521 (SAT) additional vehicles during the peak hour periods. This translates into increases of approximately +17% and +23% respectively. Similarly, the US1 Bypass/Cottage Street/Coakley Road intersection is expected to undergo increases of +12% (PM) and +16% (SAT) as a result of the combined impact of site traffic and the new roadway connection to the Bypass. The impacts at the Islington Street/Bartlett Street intersection will be on the order of +1% during the peak hour periods.



PM Peak Hour

Location	2020 No-Build	2020 Build	Change	% Change
Intersection A	3026	3382	+356 veh	12%
Intersection B	2941	3438	+497 veh	17%
Intersection C	2097	2119	+22 veh	1%
Intersection D	2335	2418	+83 veh	4%
Intersection E	1520	1620	+100 veh	7%
Intersection F	1403	1278	-125 veh	-9%
Checkpoint 1	2585	2949	+364 veh	14%
Checkpoint 2	2333	2404	+71 veh	3%
Checkpoint 3	1365	1370	+5 veh	0%
Checkpoint 4	1280	1297	+17 veh	1%
Checkpoint 5	1316	1117	-199 veh	-15%
Checkpoint 6	224	453	229 veh	102%
Checkpoint 7	606	526	-80 veh	-13%
Checkpoint 8	37	572	535 veh	+++

Saturday Peak Hour

Location	2020 No-Build	2020 Build	Change	% Change
Intersection A	2337	2716	+379 veh	16%
Intersection B	2219	2740	+521 veh	23%
Intersection C	1732	1755	+23 veh	1%
Intersection D	1939	2039	+100 veh	5%
Intersection E	1165	1238	+73 veh	6%
Intersection F	1110	969	-141 veh	-13%
Checkpoint 1	2076	2459	+383 veh	18%
Checkpoint 2	1937	2020	+83 veh	4%
Checkpoint 3	1101	1105	+4 veh	0%
Checkpoint 4	1143	1162	+19 veh	2%
Checkpoint 5	1017	830	-187 veh	-18%
Checkpoint 6	122	340	218 veh	179%
Checkpoint 7	379	320	-59 veh	-16%
Checkpoint 8	44	615	571 veh	+++

Figure 12

2020 Impact Summary

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

TRAFFIC OPERATIONS AND SAFETY

INTERSECTION CAPACITY – SIGNALIZED INTERSECTIONS

The three signalized intersections in the study area were analyzed utilizing the methods of the *Highway Capacity Manual 2010*², as replicated by *Synchro Traffic Signal Timing Software (Version 10)*. A traffic flow rate, capacity, Level of Service (LOS), and delay estimate was determined for each critical traffic movement, lane group, and for the overall intersection. Levels of Service are simply letter grades (A-F) that categorize the vehicle delays associated with specific turning maneuvers. The following table describes the criteria used in the analysis of signalized intersections.

Table 2	Level-of-Service Criteria for Signalized Intersections
Level of Service	Control Delay (seconds/vehicle)
A	≤ 10.0
B	> 10.0 and ≤ 20.0
C	> 20.0 and ≤ 35.0
D	> 35.0 and ≤ 55.0
E	> 55.0 and ≤ 80.0
F	> 80.0

Source: Transportation Research Board, *Highway Capacity Manual 2010*.

Table 3 summarizes the results of the analysis for the **US1 Bypass/Cottage Street/Coakley Road** intersection and it shows that the overall intersection will operate at capacity ($v/c = 1.00$) and at LOS D during the 2020 PM peak hour with the proposed development fully occupied. Some individual lane groups within the intersection will operate slightly over capacity during this period. By 2030 this intersection will be capacity deficient during the PM peak hour both with ($v/c = 1.10$) and without ($v/c = 1.01$) the proposed development. This is an indicator that additional lane capacity is desirable from a long-range standpoint. With the current lane configuration the overall intersection will operate at LOS E during the 2030 PM peak hour (build case). During the 2030 Saturday midday peak hour, this intersection is expected to operate well below capacity ($v/c = 0.80$) and at LOS B, both with and without the proposed development.

The vehicle queuing analysis shows that minimal storage is needed in the northbound left-turn lane on US1 Bypass (for turns to Coakley Road) during both peak hour periods. Shortening the length of this turn lane will provide more storage for the southbound left-turn movement (to Cate Street Extension) at the signalized intersection to the south.

As requested by the NHDOT, the utilization of each of the two northbound through lanes was monitored during both peak hour periods. As a result of upstream conditions on the Bypass, more drivers favor the left rather than the right through lane (see Appendix H). The capacity analyses summarized on Table 3 are based on Lane Utilization Factors of 0.88 (PM) and 0.75 (SAT). This phenomenon affects intersection capacity in a negative way.

² Transportation Research Board, *Highway Capacity Manual* (Washington, D.C., 2010).
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Table 3

Signal-Controlled Intersection Capacity Analysis Summary (Existing Lane Configuration)
US Route 1 By-Pass / Cottage Street / Coakley Road

	2018 Existing				2020 No-Build				2020 Build (Scenario A)				2030 No-Build				2030 Build (Scenario A)			
	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 th -4)	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 th -4)	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 th -4)	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 th -4)	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 th -4)
Weekday PM Peak Hour																				
Coakley Road - EB LT&TH& RT	0.20	37.3	D	1 (2)	0.26	38.4	D	1 (3)	0.35	42.6	D	1 (3)	0.34	39.4	D	2 (3)	0.49	45.7	D	2 (3)
Cottage Street - WB LT&TH	0.83	59.9	E	7 (9)	0.93	79.1	E	9 (11)	1.04	114.8	F	9 (12)	1.03	104.8	F	10 (13)	1.17	156.4	F	11 (14)
Cottage Street - WB RT	0.14	38.1	D	1 (2)	0.29	40.0	D	2 (4)	0.06	40.5	D	0 (1)	0.33	40.2	D	2 (4)	0.10	40.9	D	0 (2)
US1 Bypass - NB LT	0.23	65.3	E	0 (1)	0.27	61.1	E	0 (1)	0.27	52.1	D	1 (1)	0.28	58.1	E	0 (1)	0.28	51.7	D	1 (1)
US1 Bypass - NB 2TH&RT	0.83	18.9	B	13 (27)	0.93	29.0	C	24 (39)	1.03	36.6	D	42 (47)	1.03	46.5	D	40 (45)	1.12	70.3	E	48 (49)
US1 Bypass - SB LT	0.45	60.2	E	1 (2)	0.71	79.3	E	2 (4)	0.59	65.3	E	2 (3)	0.76	86.0	F	2 (5)	0.63	69.6	E	2 (4)
US1 Bypass - SB 2TH&RT	0.36	10.9	B	5 (8)	0.39	11.1	B	5 (9)	0.45	10.1	B	6 (10)	0.44	11.8	B	6 (10)	0.49	10.6	B	6 (11)
Overall	0.81	22.1	C		0.92	30.3	C		1.00	35.5	D		1.01	42.5	D		1.10	58.5	E	
Cycle Length	120.0				120.0				120.0				120.0				120.0			
Saturday Peak Hour																				
Coakley Road - EB LT&TH& RT	0.10	40.1	D	1 (1)	0.11	39.9	D	1 (1)	0.11	44.3	D	1 (1)	0.12	39.6	D	1 (1)	0.14	44.8	D	1 (1)
Cottage Street - WB LT&TH	0.58	46.6	D	3 (5)	0.64	49.6	D	4 (6)	0.67	55.8	E	4 (6)	0.70	52.4	D	4 (7)	0.76	63.8	E	5 (8)
Cottage Street - WB RT	0.03	41.2	D	0 (0)	0.05	41.1	D	0 (1)	0.02	45.3	D	0 (0)	0.05	40.8	D	0 (2)	0.03	45.5	D	0 (0)
US1 Bypass - NB LT	0.17	72.3	E	0 (1)	0.19	66.2	E	0 (1)	0.23	67.8	E	0 (1)	0.23	67.4	E	0 (1)	0.25	58.3	E	0 (1)
US1 Bypass - NB 2TH&RT	0.61	9.4	A	12 (18)	0.69	11.0	B	15 (4)	0.78	8.9	A	5 (5)	0.75	13.5	B	18 (6)	0.84	11.4	B	5 (9)
US1 Bypass - SB LT	0.37	49.4	D	1 (3)	0.50	50.0	D	2 (4)	0.53	58.9	E	2 (4)	0.61	56.4	E	2 (5)	0.64	67.3	E	2 (5)
US1 Bypass - SB 2TH&RT	0.34	7.2	A	3 (8)	0.38	7.5	A	4 (8)	0.45	7.7	A	5 (10)	0.42	7.9	A	5 (9)	0.49	7.9	A	6 (11)
Overall	0.58	13.4	B		0.66	14.9	B		0.74	13.0	B		0.73	16.6	B		0.80	15.0	B	
Cycle Length	110.0				110.0				120.0				110.0				120.0			

1) Volume-to-capacity ratio, 2) Delay in vehicles per seconds, 3) Level of Service, 4) Queue length in vehicles

Table 4 summarizes the results of the analysis for the **US1 Bypass/Borthwick Avenue/Cate Street Extension** intersection and it shows that the overall intersection will operate below capacity ($v/c = 0.93$) and at LOS D during the 2020 PM peak hour period with the proposed development in full operation. By 2030 the overall intersection will operate at capacity ($v/c = 1.00$) during the PM peak hour and at LOS E. This is an indicator that additional lane capacity is desirable from a long-range standpoint. During the 2030 Saturday midday peak hour, this intersection will operate below capacity ($v/c = 0.82$) and at LOS D with the proposed development and the current lane configuration.

The vehicle queuing analysis shows that additional storage is needed in the southbound left-turn lane on US1 Bypass (for turns to Cate Street Extension) during both peak hour periods. Lengthening this turn lane is possible by shortening the storage for the northbound left-turn movement (to Coakley Road) at the signalized intersection to the north.

Table 5 summarizes the results of the analysis for the **Islington Street/Bartlett Street/Pharmacy Driveway** intersection and it shows that the overall intersection will operate slightly above capacity ($v/c = 1.03$) and at LOS D during the 2020 PM peak hour period with the proposed development in full operation. By 2030 this intersection will be capacity deficient during the PM peak hour both with ($v/c = 1.12$) and without ($v/c = 1.11$) the proposed development. Although this is an indicator that additional lane capacity is desirable, the City's current plans to reconstruct this intersection and upgrade the traffic signal system do not include additional travel lanes. Right-of-way availability appears to be a constraint. Increasing the traffic signal cycle length has the potential to increase intersection capacity; however longer vehicle queues usually result.

During the 2030 Saturday midday peak hour, this intersection will operate below capacity ($v/c = 0.89$) and at LOS C with the proposed development and the current lane configuration.

The calculations pertaining to the signalized intersection capacity analyses are included in Appendix I.

Table 4

Signal-Controlled Intersection Capacity Analysis Summary (Existing Lane Configuration)

US Route 1 By-Pass / Borthwick Avenue / Cate Street Extension

	2018 Existing				2020 No-Build				2020 Build (Scenario A)				2030 No-Build				2030 Build (Scenario A)				
	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	
Weekday PM Peak Hour																					
Borthwick Avenue - EB LT	0.68	50.4	D	7 (9)	0.73	50.5	D	8 (11)	0.90	75.0	E	9 (13)	0.77	52.2	D	9 (12)	0.96	88.0	F	10 (15)	
Borthwick Avenue - EB LT&TH	0.68	50.4	D	7 (9)	0.73	50.5	D	8 (11)	0.88	71.8	E	9 (13)	0.77	52.2	D	9 (12)	0.97	90.4	F	10 (15)	
Borthwick Avenue - EB RT	0.05	40.8	D	0 (0)	0.06	38.7	D	0 (0)	0.06	42.3	D	0 (0)	0.07	37.9	D	0 (1)	0.07	42.2	D	0 (0)	
Cate Street Extension - WB LT	0.11	56.8	E	0 (1)	0.12	56.9	E	0 (1)	0.21	45.2	D	2 (3)	0.12	55.8	E	0 (1)	0.23	46.1	D	2 (3)	
Cate Street Extension - WB TH&RT	0.01	55.8	E	0 (0)	0.01	55.8	E	0 (0)	0.90	83.4	F	6 (14)	0.01	55.0	D	0 (0)	1.03	117.6	F	7 (15)	
US1 Bypass - NB LT	0.33	57.1	E	1 (2)	0.38	57.4	E	1 (2)	0.47	60.8	E	1 (2)	0.47	60.0	E	1 (3)	0.51	61.7	E	1 (3)	
US1 Bypass - NB 2TH&RT	0.56	14.9	B	7 (17)	0.63	17.8	B	9 (20)	0.92	45.8	D	20 (26)	0.73	22.0	C	16 (24)	0.98	54.6	D	23 (30)	
US1 Bypass - SB LT	0.23	63.7	E	0 (1)	0.26	73.7	E	0 (1)	0.88	76.1	E	6 (10)	0.22	71.6	E	0 (1)	0.95	91.5	F	6 (11)	
US1 Bypass - SB 2TH&RT	0.50	10.9	B	6 (10)	0.57	14.6	B	8 (7)	0.63	21.6	C	10 (17)	0.65	19.0	B	15 (20)	0.69	22.9	C	13 (19)	
Overall	0.57	20.8	C		0.65	23.8	C		0.93	47.8	D		0.72	27.4	C		1.00	56.9	E		
Cycle Length	120.0				120.0				120.0				120.0				120.0				
Saturday Peak Hour																					
Borthwick Avenue - EB LT	0.49	46.1	D	3 (4)	0.51	45.7	D	3 (4)	0.68	61.5	E	4 (5)	0.54	46.0	D	4 (4)	0.70	61.7	E	4 (5)	
Borthwick Avenue - EB LT&TH	0.49	46.1	D	3 (4)	0.51	45.7	D	3 (4)	0.72	64.9	E	4 (5)	0.54	45.8	D	4 (4)	0.75	66.8	E	4 (5)	
Borthwick Avenue - EB RT	0.02	43.5	D	0 (0)	0.02	42.6	D	0 (0)	0.02	49.7	D	0 (0)	0.03	42.0	D	0 (0)	0.03	49.0	D	0 (0)	
Cate Street Extension - WB LT	0.03	49.3	D	0 (0)	0.03	49.3	D	0 (0)	0.36	45.9	D	3 (4)	0.03	49.7	D	0 (0)	0.33	44.6	D	3 (4)	
Cate Street Extension - WB TH&RT	0.05	49.4	D	0 (1)	0.05	49.4	D	0 (1)	0.74	58.8	E	4 (4)	0.05	49.8	D	0 (1)	0.83	67.1	E	6 (5)	
US1 Bypass - NB LT	0.24	52.0	D	1 (1)	0.27	52.2	D	1 (2)	0.38	61.0	E	1 (2)	0.32	53.6	D	1 (2)	0.33	58.6	E	1 (2)	
US1 Bypass - NB 2TH&RT	0.43	11.3	B	5 (12)	0.48	12.4	B	6 (14)	0.71	32.0	C	15 (19)	0.53	13.0	B	7 (15)	0.80	36.0	D	17 (21)	
US1 Bypass - SB LT	0.19	55.0	E	0 (1)	0.20	59.6	E	0 (1)	0.78	62.3	E	6 (12)	0.25	60.0	E	0 (1)	0.83	67.7	E	6 (13)	
US1 Bypass - SB 2TH&RT	0.43	8.3	A	5 (7)	0.49	9.5	A	4 (6)	0.51	12.8	B	6 (8)	0.54	9.7	A	6 (6)	0.59	16.3	B	12 (7)	
Overall	0.41	15.0	B		0.46	16.0	B		0.74	35.2	D		0.51	16.4	B		0.82	38.6	D		
Cycle Length	110.0				110.0				120.0				110.0				120.0				

1) Volume-to-capacity ratio, 2) Delay in vehicles per seconds, 3) Level of Service, 4) Queue length in vehicles

Table 5

Signal-Controlled Intersection Capacity Analysis Summary (Existing Lane Configuration)
Islington Street / Bartlett Street / Pharmacy Driveway

	2018 Existing				2020 No-Build				2020 Build (Scenario A)				2030 No-Build				2030 Build (Scenario A)				
	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th-4)}	
Weekday PM Peak Hour																					
Bartlett Street - EB LT&TH	0.76	28.8	C	4 (9)	1.08	99.1	F	7 (12)	1.11	107.3	F	7 (13)	1.19	136.7	F	8 (14)	1.21	146.2	F	8 (14)	
Bartlett Street - EB RT	0.20	18.6	B	0 (2)	0.43	23.4	C	1 (4)	0.45	23.6	C	1 (4)	0.54	24.8	C	2 (7)	0.56	25.2	C	2 (7)	
Pharmacy Dwy - WB LT&TH&RT	0.08	16.4	B	0 (1)	0.11	19.6	B	0 (1)	0.11	19.6	B	0 (1)	0.12	19.7	B	0 (1)	0.13	19.7	B	0 (1)	
Islington Street - NB LT	0.76	30.3	C	5 (9)	1.00	69.0	E	7 (13)	0.95	54.6	D	7 (13)	1.09	94.5	F	9 (14)	1.10	97.6	F	9 (14)	
Islington Street - NB TH&RT	0.29	7.2	A	2 (4)	0.30	5.5	A	2 (3)	0.30	5.5	A	2 (3)	0.33	5.7	A	2 (4)	0.33	5.7	A	2 (4)	
Islington Street - SB LT&TH	0.70	25.7	C	5 (8)	0.65	21.3	C	5 (8)	0.68	23.0	C	5 (8)	0.72	23.3	C	6 (9)	0.72	23.3	C	6 (9)	
Islington Street - SB RT	0.21	20.1	C	0 (2)	0.25	17.6	B	0 (2)	0.26	18.4	B	0 (2)	0.28	17.8	B	0 (2)	0.28	17.9	B	0 (2)	
Overall	0.85	21.7	C		1.01	38.8	D		1.03	38.0	D		1.11	49.5	D		1.12	51.8	D		
Cycle Length	90.0				90.0				90.0				90.0				90.0				
Saturday Peak Hour																					
Bartlett Street - EB LT&TH	0.62	18.0	B	3 (6)	0.73	25.9	C	5 (9)	0.73	25.3	C	5 (9)	0.81	31.7	C	5 (11)	0.83	33.8	C	5 (11)	
Bartlett Street - EB RT	0.16	14.4	B	0 (2)	0.23	17.9	B	0 (2)	0.24	17.5	B	0 (2)	0.30	18.7	B	1 (3)	0.31	18.8	B	1 (3)	
Pharmacy Dwy - WB LT&TH&RT	0.04	12.4	B	0 (1)	0.04	15.2	B	0 (1)	0.04	14.9	B	0 (1)	0.04	15.6	B	0 (1)	0.04	15.6	B	0 (1)	
Islington Street - NB LT	0.65	25.6	C	2 (6)	0.73	31.8	C	4 (8)	0.75	33.2	C	4 (8)	0.81	37.8	D	4 (9)	0.81	38.5	D	4 (9)	
Islington Street - NB TH&RT	0.28	7.2	A	2 (3)	0.30	7.9	A	2 (4)	0.30	8.3	A	2 (4)	0.32	8.0	A	3 (4)	0.32	8.0	A	3 (4)	
Islington Street - SB LT&TH	0.59	18.3	B	3 (6)	0.64	22.4	C	5 (7)	0.65	23.6	C	5 (8)	0.68	23.7	C	5 (8)	0.68	23.7	C	5 (8)	
Islington Street - SB RT	0.18	16.3	B	0 (2)	0.22	19.0	B	0 (2)	0.22	19.6	B	0 (2)	0.24	18.9	B	0 (2)	0.25	19.0	B	0 (2)	
Overall	0.74	16.2	B		0.80	20.5	C		0.81	20.9	C		0.87	22.6	C		0.89	23.1	C		
Cycle Length	80.0				90.0				90.0				90.0				90.0				

1) Volume-to-capacity ratio, 2) Delay in vehicles per seconds, 3) Level of Service, 4) Queue length in vehicles

TRAFFIC MITIGATION POSSIBILITIES

The previous capacity analyses have demonstrated that there is a long-range need to increase intersection capacity at the three signalized intersections in the study area to accommodate the anticipated 2030 PM peak hour traffic volumes. Based on an evaluation of several alternatives, it is recommended the following mitigation measures be considered:

- A. US1 Bypass/Cottage Street/Coakley Road
 - a. Add exclusive right-turn lane on the US1 Bypass northbound approach to the signal.
 - b. Change existing shared through-right lane to an exclusive through lane.
 - c. Shorten northbound left-turn lane to 50-feet.
- B. US1 Bypass/Borthwick Avenue/Cate Street Extension
 - a. Delineate the westbound approach with a shared left-through-right lane, and an exclusive right-turn lane.
 - b. Lengthen southbound left-turn lane.
 - c. Increase traffic signal cycle length to 120-seconds.
- C. Islington Street/Bartlett Street/Pharmacy Driveway
 - a. Increase traffic signal cycle length to 120-seconds.

Table 6 summarizes the results of the mitigation analyses for the worst-case 2030 Weekday PM peak hour period. The mitigation measures cited above have the potential to lower the overall intersection v/c ratio at the US1 Bypass/Cottage Street/Coakley Road intersection from v/c = 1.10 (existing lanes) to v/c = 1.01 (with additional northbound right-turn lane). Similarly, the US1 Bypass/Borthwick Avenue/Cate Street Extension intersection changes from v/c = 1.00 (existing lanes) to v/c = 0.94 (with reconfiguration of approach lanes on Cate Street Extension). Increasing the traffic signal cycle length at the Islington Street/Bartlett Street/Pharmacy Driveway will lower the v/c ratio from v/c = 1.12 (90-second cycle) to v/c = 0.98 (120-second cycle).

The calculations pertaining to the mitigation analyses are also included in Appendix I.

Table 6

Signal-Controlled Intersection Capacity Analysis Summary - with Mitigation
2030 Weekday PM Peak Hour

	2030 No-Build				2030 Build				2030 Build w/Mitigation			
	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 th ⁴⁾	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 th ⁴⁾	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 th ⁴⁾
US1 Bypass/Cottage St/Coakley Rd ⁵												
Coakley Road - EB LT&TH& RT	0.34	39.4	D	2 (3)	0.49	45.7	D	2 (3)	0.39	41.9	D	2 (3)
Cottage Street - WB LT&TH	1.03	104.8	F	10 (13)	1.17	156.4	F	11 (14)	1.07	122.0	F	10 (13)
Cottage Street - WB RT	0.33	40.2	D	2 (4)	0.10	40.9	D	0 (2)	0.10	39.3	D	0 (2)
US1 Bypass - NB LT	0.28	58.1	E	0 (1)	0.28	51.2	D	1 (1)	0.28	52.9	D	0 (1)
US1 Bypass - NB 2TH&RT	1.03	46.5	D	40 (45)	1.12	70.2	E	48 (49)	-	-	-	-
US1 Bypass - NB 2TH	-	-	-	-	-	-	-	-	1.02	30.8	C	40 (45)
US1 Bypass - NB RT	-	-	-	-	-	-	-	-	0.24	7.4	A	2 (3)
US1 Bypass - SB LT	0.76	86.0	F	2 (5)	0.63	69.6	E	2 (4)	0.63	69.6	E	2 (4)
US1 Bypass - SB 2TH&RT	0.44	11.8	B	6 (10)	0.49	10.7	B	7 (11)	0.50	11.7	B	7 (12)
Overall	1.01	42.5	D		1.10	58.4	E		1.01	31.8	C	
Cycle Length	120.0				120.0				120.0			
US1 Bypass/Borthwick Ave/Cate St Extension ⁶												
Borthw ick Avenue - EB LT	0.77	52.2	D	9 (12)	0.96	88.0	F	10 (15)	0.91	76.3	E	10 (15)
Borthw ick Avenue - EB LT&TH	0.77	52.2	D	9 (12)	0.97	90.4	F	10 (15)	0.92	78.2	E	10 (15)
Borthw ick Avenue - EB RT	0.07	37.9	D	0 (1)	0.07	42.2	D	0 (0)	0.07	41.3	D	0 (0)
Cate Street Extension - WB LT	0.12	55.8	E	0 (1)	0.28	47.4	D	2 (4)	-	-	-	-
Cate Street Extension - WB TH&RT	0.01	55.0	D	0 (0)	1.04	122.8	F	7 (15)	-	-	-	-
Cate Street Extension - WB LT&TH&RT	-	-	-	-	-	-	-	-	0.87	89.6	F	5 (11)
Cate Street Extension - WB RT	-	-	-	-	-	-	-	-	0.13	51.2	D	0 (3)
US1 Bypass - NB LT	0.47	60.0	E	1 (3)	0.51	61.7	E	1 (3)	0.51	61.7	E	1 (3)
US1 Bypass - NB 2TH&RT	0.73	22.0	C	16 (24)	0.99	54.9	D	23 (30)	0.92	41.3	D	21 (27)
US1 Bypass - SB LT	0.22	71.6	E	0 (1)	0.94	86.2	F	6 (11)	0.95	94.1	F	6 (11)
US1 Bypass - SB 2TH&RT	0.65	19.0	B	15 (20)	0.68	21.9	C	13 (19)	0.65	19.0	B	11 (18)
Overall	0.72	27.4	C		1.00	56.9	E		0.94	45.7	D	
Cycle Length	110.0				110.0				120.0			
Islington St/Bartlett St/Pharmacy Driveway ⁷												
Bartlett Street - EB LT&TH	1.19	136.7	F	8 (14)	1.22	149.9	F	8 (14)	0.97	70.5	E	9 (17)
Bartlett Street - EB RT	0.54	24.8	C	2 (7)	0.56	25.4	C	2 (7)	0.58	32.3	C	4 (8)
Pharmacy Dw y - WB LT&TH&RT	0.12	19.7	B	0 (1)	0.13	19.7	B	0 (1)	0.09	24.8	C	1 (2)
Islington Street - NB LT	1.09	94.5	F	9 (14)	1.10	97.6	F	9 (14)	0.98	71.3	E	11 (18)
Islington Street - NB TH&RT	0.33	5.7	A	2 (4)	0.33	5.7	A	2 (4)	0.34	8.7	A	4 (6)
Islington Street - SB LT&TH	0.72	23.3	C	6 (9)	0.72	23.3	C	6 (9)	0.76	36.0	D	9 (13)
Islington Street - SB RT	0.28	17.8	B	0 (2)	0.28	17.9	B	0 (2)	0.28	26.6	C	0 (2)
Overall	1.11	49.5	D		1.12	52.5	D		0.98	41.0	D	
Cycle Length	90.0				90.0				120.0			

1) Volume-to-capacity ratio, 2) Delay in vehicles per seconds, 3) Level of Service, 4) Queue length in vehicles

5) Mitigation = Add exclusive right-turn lane on US1 Bypass NB approach, change NB shared through-right lane to an exclusive through lane

6) Mitigation = Reconfigure WB approach with a shared left-through-right lane and an exclusive right-turn lane, increase signal cycle to 120 seconds

7) Mitigation = Increase signal cycle to 120 seconds

INTERSECTION CAPACITY – UNSIGNALIZED INTERSECTIONS

Capacity and Level of Service (LOS) calculations pertaining to unsignalized intersections address the quality of service for those vehicles turning into and out of intersecting side streets or driveways. The availability of adequate gaps in the traffic stream on the major street actually controls the potential capacity for vehicle movements to and from the minor approaches. Levels of Service are simply letter grades (A-F), which categorize the vehicle delays associated with specific turning maneuvers. Table 7 describes the criteria used in this analysis. Calculations pertaining to these analyses are included in Appendix J.

Table 7	Level-of-Service Criteria for Unsignalized Intersections
Level of Service	Control Delay (seconds/vehicle)
A	≤ 10.0
B	> 10.0 and ≤ 15.0
C	> 15.0 and ≤ 25.0
D	> 25.0 and ≤ 35.0
E	> 35.0 and ≤ 50.0
F	> 50.0

Source: Transportation Research Board, Highway Capacity Manual 2010.

The three unsignalized study area intersections were analyzed according to the methodologies of the *Highway Capacity Manual*³ as replicated by the latest edition of the *Synchro Traffic Signal Timing Software (Version 10)*, which also performs unsignalized intersection capacity analyses.

Table 8 summarizes the results for the **US1 Bypass/Existing Site Driveway** intersection. At this intersection, the only applicable traffic movement (with a conflicting traffic stream) is the right-turn departure movement from the site. The analyses demonstrate that this movement will operate well below capacity ($v/c = 0.05$) and at LOS C or higher through 2030 with the site in full operation. The calculations pertaining to these analyses are found in Appendix J.

³ Transportation Research Board, *Highway Capacity Manual* (Washington, D.C., 2010).

Table 8

**STOP-Controlled Intersection Capacity Analysis
US Route 1 By-Pass / Existing Site Driveway**

	Weekday PM Peak Hour				Saturday Peak Hour			
	Delay ¹	V/C ²	LOS ³	Queue ⁴	Delay ¹	V/C ²	LOS ³	Queue ⁴
Existing Site Driveway - WB Right Turns								
2018 Existing	13.1	0.01	B	<1	11.8	0.00	B	<1
2020 No Build	13.9	0.01	B	<1	12.4	0.01	B	<1
2020 Build	14.6	0.04	B	<1	13.0	0.05	B	<1
2030 No Build	14.9	0.01	B	<1	13.0	0.01	B	<1
2030 Build	15.7	0.04	C	<1	13.7	0.05	B	<1

¹ HCM Control Delay (seconds per vehicle), ² HCM Volume to Capacity Ratio, ³ HCM Level of Service, ⁴ HCM 95th Percentile Queue (vehicles)



The results of the analysis for the **Bartlett Street/Cate Street** intersection are summarized on Table 9A, and demonstrate that the departure movements from the Cate Street approach will operate well over capacity during the 2030 PM peak hour period as a result of site traffic (and diverted traffic). Departures from this approach will change from LOS D to LOS F during this period, and long vehicle queues on the minor approach will form. These findings are an indicator that physical improvements to this intersection are needed in order to accommodate site traffic.

It should be noted that this methodology is not capable of accounting for the vehicle queues that were temporarily observed on Bartlett Street that extended back from the traffic signal at Islington Street. This occurred occasionally during the PM peak hour; more so at the Cate Street intersection and to a lesser extent at the Shared Driveway. Nevertheless, driver courtesy was observed in several instances that enabled certain vehicles to turn during congested moments.

Three mitigation alternatives were evaluated for this intersection. Table 9B schematically shows the layout of each alternative, as well as an evaluation of traffic operations during the 2030 PM peak hour period.

- Alternative Configuration A - Re-stripe the northbound Bartlett Street approach to provide an exclusive left-turn pocket for turns on to Cate Street.
- Alternative Configuration B - Re-align the Cate Street and Bartlett Street northbound approach to create a “through street” with stop sign control on the Bartlett Street southbound approach.
- Alternative Configuration C – Same as Configuration B with additional right-turn slip ramp.

Table 9A

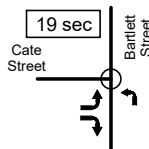
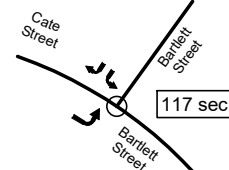
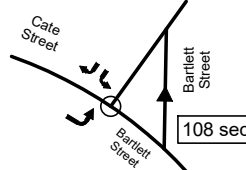
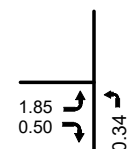
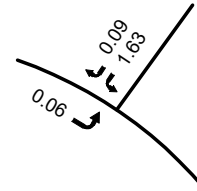
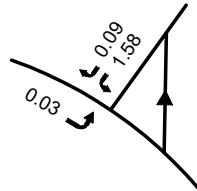
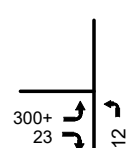
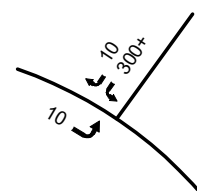
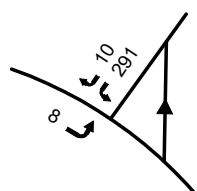
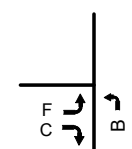
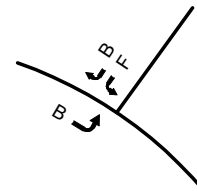
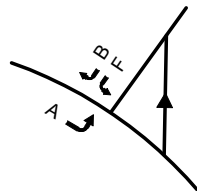
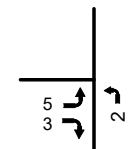
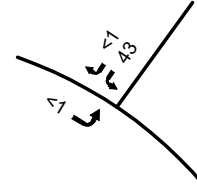
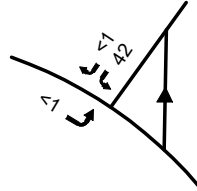
STOP-Controlled Intersection Capacity Analysis - Revised 9/19/18
Bartlett Street / Cate Street / Parking Lot Driveway

		Weekday PM Peak Hour				Saturday Peak Hour			
		Delay ¹	V/C ²	LOS ³	Queue ⁴	Delay ¹	V/C ²	LOS ³	Queue ⁴
Bartlett Street - NB Left Turns									
	2018 Existing	9.2	0.10	A	<1	8.6	0.05	A	<1
	2020 No Build	10.0	0.17	B	1	9.1	0.09	A	<1
	2020 Build	11.0	0.31	B	1	9.5	0.20	A	1
	2030 No Build	10.5	0.19	B	1	9.3	0.10	A	<1
	2030 Build	11.7	0.34	B	2	9.9	0.22	A	1
Cate Street - EB Left-Through									
	2018 Existing	16.1	0.19	C	1	12.5	0.06	B	<1
	2020 No Build	86.6	0.08	F	<1	35.6	0.01	E	<1
	2020 Build	>300.0	1.28	F	5	68.4	0.40	F	2
	2030 No Build	120.5	0.11	F	<1	43.4	0.01	E	<1
	2030 Build	>300.0	1.86	F	5	97.1	0.50	F	2
Cate Street - EB Right-Turns									
	2018 Existing	-	-	-	-	-	-	-	-
	2020 No Build	17.0	0.27	C	1	13.2	0.11	B	<1
	2020 Build	20.0	0.43	C	2	14.5	0.27	B	1
	2030 No Build	19.1	0.32	C	1	14.1	0.13	B	<1
	2030 Build	23.1	0.50	C	3	15.6	0.30	C	1
Parking Lot Driveway - WB Left-Through-Right-Turns									
	2018 Existing	37.8	0.01	E	<1	24.7	0.02	C	<1
	2020 No Build	68.3	0.02	F	<1	36.9	0.03	E	<1
	2020 Build	111.2	0.03	F	<1	55.7	0.05	F	<1
	2030 No Build	95.2	0.03	F	<1	45.4	0.04	E	<1
	2030 Build	169.3	0.05	F	<1	71.6	0.07	F	<1
Bartlett Street - SB Left-Turns									
	2018 Existing	8.7	0.00	A	<1	8.2	0.00	A	<1
	2020 No Build	9.1	0.00	A	<1	8.5	0.00	A	<1
	2020 Build	8.8	0.00	A	<1	8.2	0.00	A	<1
	2030 No Build	9.4	0.00	A	<1	8.6	0.00	A	<1
	2030 Build	9.0	0.00	A	<1	8.3	0.00	A	<1

¹ HCM Control Delay (seconds per vehicle), ² HCM Volume to Capacity Ratio, ³ HCM Level of Service, ⁴ HCM 95th Percentile Queue (vehicles)

Table 9B

Alternative Mitigation Evaluation - 2030 PM Peak Hour
Bartlett Street / Cate Street

	Alternative Configuration A	Alternative Configuration B	Alternative Configuration C
1. Overall Intersection Delay (sec):			
2. Volume to Capacity Ratio:			
3. Movement Delay (sec):			
4. Level of Service:			
5. 95th Percentile Queue (veh):			

Alternative Configuration A = Add Northbound Left-Turn Lane on Bartlett Street for turns to Cate Street
 Alternative Configuration B = Realign Bartlett Street Approach to Cate Street
 Alternative Configuration C = Realign Bartlett Street Approach to Cate Street with "Slip Ramp"

Although there are advantages and disadvantages associated with each alternative configuration that requires city review/input, it appears that Configuration A offers the least overall intersection delay. As a short-range measure, this alternative could be enhanced by providing two approach lanes on Cate Street (one shared left-through lane, one exclusive right-turn lane).

The analysis of these alternative intersection layouts are contained in Appendix K.

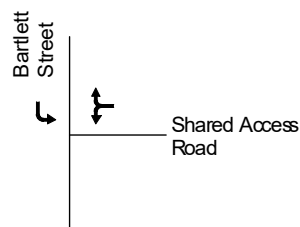
The results of the analysis for the **Bartlett Street/Existing Shared Driveway** intersection are summarized on Table 10, and demonstrate that all applicable movements will operate below capacity during the 2030 peak hour periods with the site in full operation; subject to the occasional restrictions due to vehicle queuing on Bartlett Street. Nevertheless, long delays (LOS F) and vehicle queues of up to six vehicles are expected on the minor approach during the weekday PM peak hour in 2030. The left-turn arrival movement from Bartlett Street (on to the existing Shared Driveway) will operate at LOS A during all hours of the day through the horizon year and beyond with the development fully occupied.

Table 10

**STOP-Controlled Intersection Capacity Analysis
Bartlett Street / Shared Access Road**

	Weekday PM Peak Hour				Saturday Peak Hour			
	Delay ¹	V/C ²	LOS ³	Queue ⁴	Delay ¹	V/C ²	LOS ³	Queue ⁴
Shared Access Road - WB Left & Right-Turn Departures								
2018 Existing	22.2	0.36	C	2	17.3	0.18	C	1
2020 No-Build	44.3	0.63	E	4	24.2	0.35	C	2
2020 Build	58.1	0.71	F	5	22.3	0.32	C	1
2030 No-Build	62.3	0.74	F	5	28.3	0.39	D	2
2030 Build	91.6	0.86	F	6	26.2	0.37	D	2
Bartlett Street - SB Left-Turn Arrivals								
2018 Existing	8.8	0.03	A	<1	8.3	0.02	A	<1
2020 No-Build	9.4	0.05	A	<1	8.7	0.04	A	<1
2020 Build	9.0	0.02	A	<1	8.4	0.01	A	<1
2030 No-Build	9.7	0.05	A	<1	8.8	0.04	A	<1
2030 Build	9.2	0.02	A	<1	8.5	0.01	A	<1

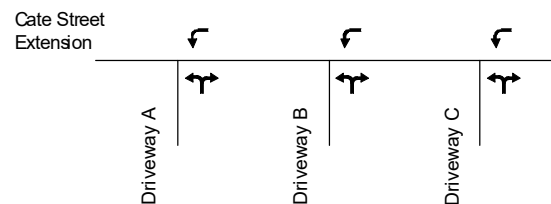
¹ HCM Control Delay (seconds per vehicle), ² HCM Volume to Capacity Ratio, ³ HCM Level of Service, ⁴ HCM 95th Percentile Queue (vehicles)



Analysis of the three **Cate Street Extension/Proposed Site Driveway** intersections are summarized on Table 11, and demonstrate that all applicable movements will operate well below capacity and at LOS B (or higher) through 2030 and beyond with the site in full operation. Vehicle queuing on the minor approaches will be minimal.

Table 11		STOP-Controlled Intersection Capacity Analysis Cate Street Extension / Site Driveways A, B & C							
		Weekday PM Peak Hour				Saturday Peak Hour			
		Delay ¹	V/C ²	LOS ³	Queue ⁴	Delay ¹	V/C ²	LOS ³	Queue ⁴
Cate Street Extension / Site Driveway A									
Site Driveway A - NB Left & Right-Turn Departures									
	2020 Build	12.7	0.21	B	1	13.5	0.30	B	1
	2030 Build	12.7	0.21	B	1	13.5	0.30	B	1
Cate Street Extension - WB Left-Turn Arrivals									
	2020 Build	7.7	0.00	A	<1	7.8	0.01	A	<1
	2030 Build	7.7	0.00	A	<1	7.8	0.01	A	<1
Cate Street Extension / Site Driveway B									
Site Driveway B - NB Left & Right-Turn Departures									
	2020 Build	10.3	0.04	B	<1	10.4	0.05	B	<1
	2030 Build	10.3	0.04	B	<1	10.4	0.05	B	<1
Cate Street Extension - WB Left-Turn Arrivals									
	2020 Build	7.4	0.01	A	<1	7.5	0.00	A	<1
	2030 Build	7.4	0.01	A	<1	7.5	0.00	A	<1
Cate Street Extension / Site Driveway C									
Site Driveway C - NB Left & Right-Turn Departures									
	2020 Build	10.3	0.01	B	<1	10.1	0.01	B	<1
	2030 Build	10.3	0.01	B	<1	10.1	0.01	B	<1
Cate Street Extension - WB Left-Turn Arrivals									
	2020 Build	7.4	0.00	A	<1	7.4	0.00	A	<1
	2030 Build	7.4	0.00	A	<1	7.4	0.00	A	<1

¹ HCM Control Delay (seconds per vehicle), ² HCM Volume to Capacity Ratio, ³ HCM Level of Service, ⁴ HCM 95th Percentile Queue (vehicles)



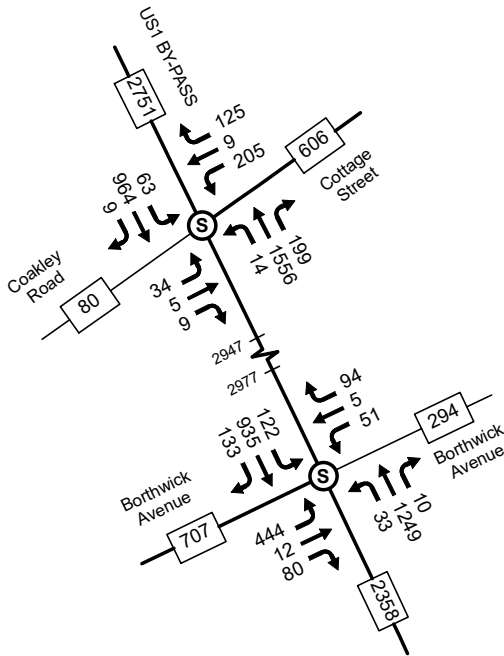
SUPPLEMENTAL DEVELOPMENT SCENARIOS

To assist the NHDOT and City in the decision-making process regarding the: 1) the possible future extension of Cate Street (to the Bypass), and 2) the possible future extension of the existing median island on the Bypass through the Coakley Road/Cottage Street intersection, supplemental traffic projections have been prepared for the two signalized intersections on the Bypass.

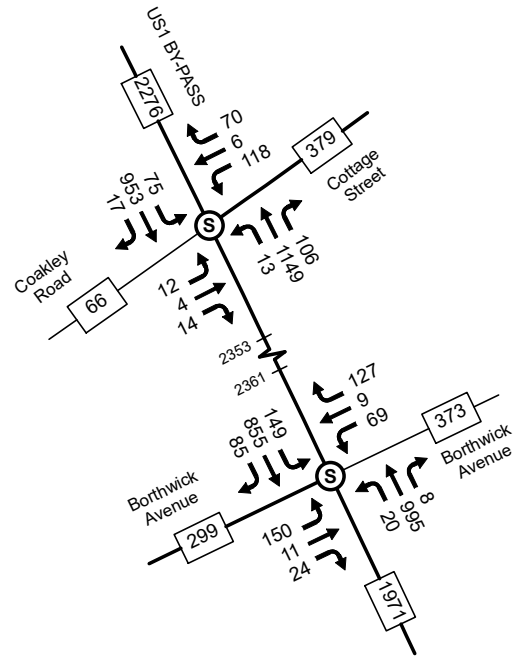
The impact of the Cate Street Extension can be identified by comparing Development Scenario A (with Cate Street Extension) with Development Scenario B (no Cate Street Extension). Similarly, the impact of the median island extension on the Bypass can be identified by comparing Development Scenario C (with median extension) with Development Scenario A (no median extension).

Figure 13 and Figure 14 summarize the Supplemental Build traffic volumes for Development Scenarios B and C, respectively. The supplemental Impact Summary for 2020 is summarized on Figure 15. The following conclusions are evident from these supplemental traffic projections for the worst-case PM peak hour:

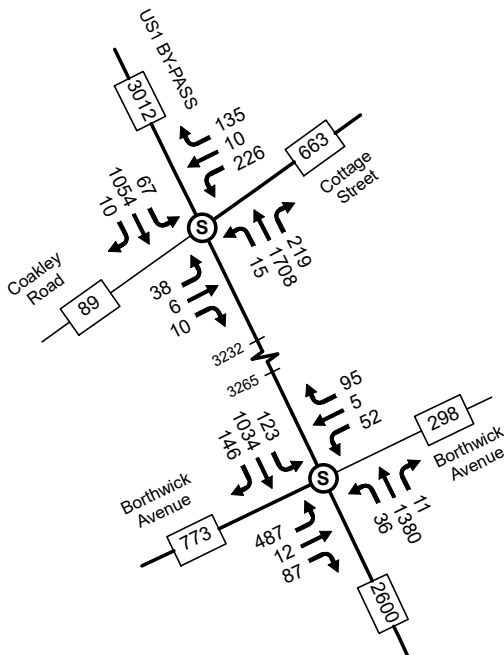
1. Extending Cate Street to the Bypass will increase the traffic demand at the Coakley Road/Cottage Street signalized intersection by approximately +190 vehicles during the PM peak hour.
2. Extending Cate Street to the Bypass will increase the traffic demand at the Borthwick Avenue/Cate Street Extension signalized intersection by approximately +270 vehicles during the PM peak hour.
3. Extending the median island on the Bypass through the Coakley Road/Cottage Street intersection (with elimination of the traffic signal) will reduce the traffic demand at this intersection by approximately -96 vehicles during the PM peak hour.
4. Extending the median island on the Bypass through the Coakley Road/Cottage Street intersection will increase the traffic demand at the Borthwick Avenue/Cate Street Extension signalized intersection by approximately +100 vehicles during the PM peak hour.



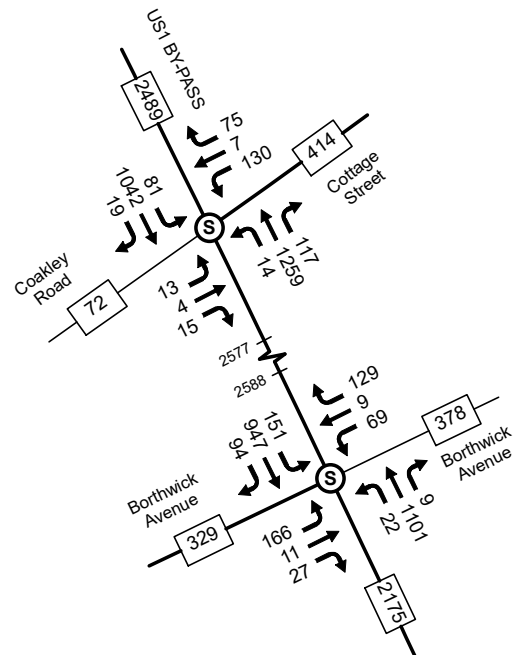
2020 PM BUILD



2020 SATURDAY BUILD



2030 PM BUILD



2030 SATURDAY BUILD

Scenario B = Proposed Development without Cate Street Extension

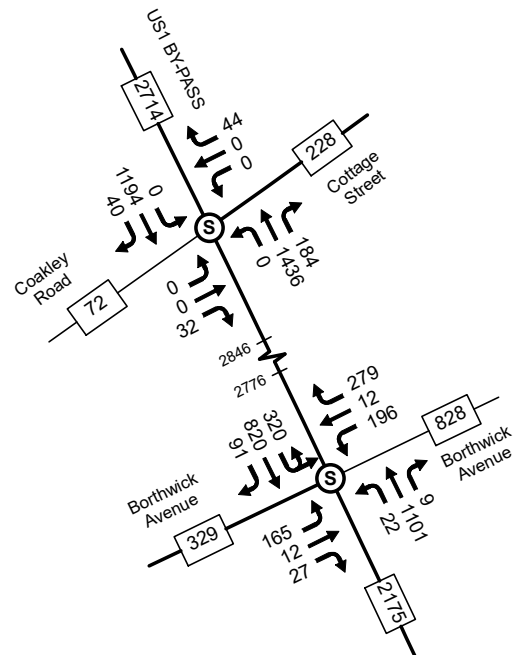
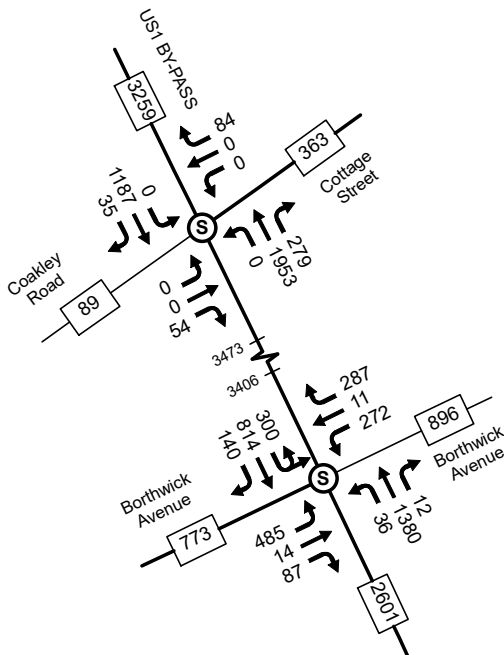
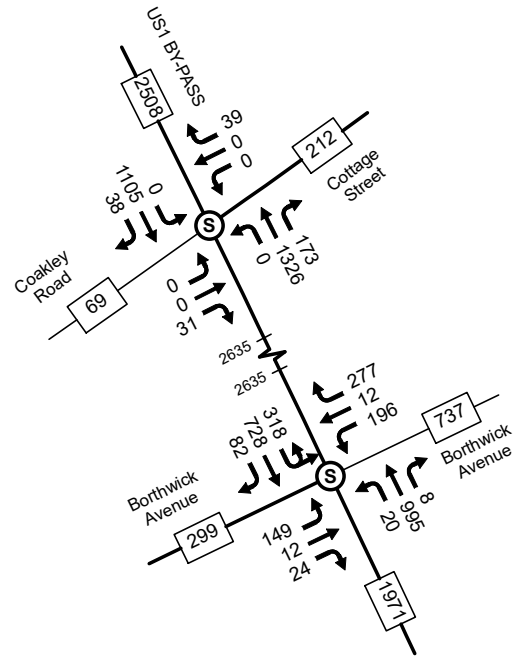
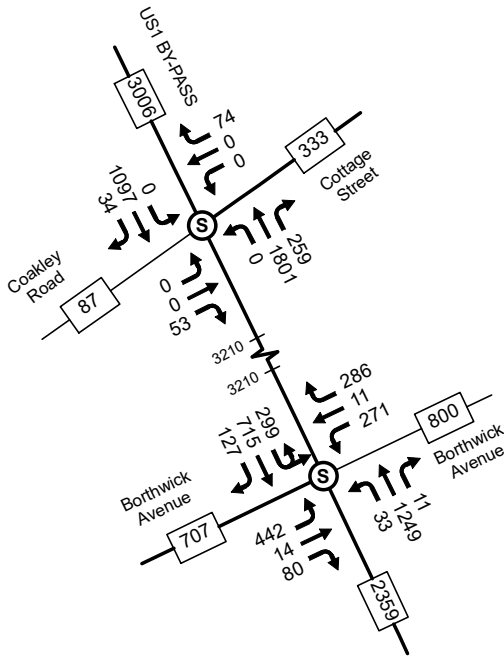


1831A

Figure 13

Supplemental Build Traffic Volumes - (Scenario B)

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire



Scenario C = Proposed Development with Cate Street Extension & US1 Bypass Median

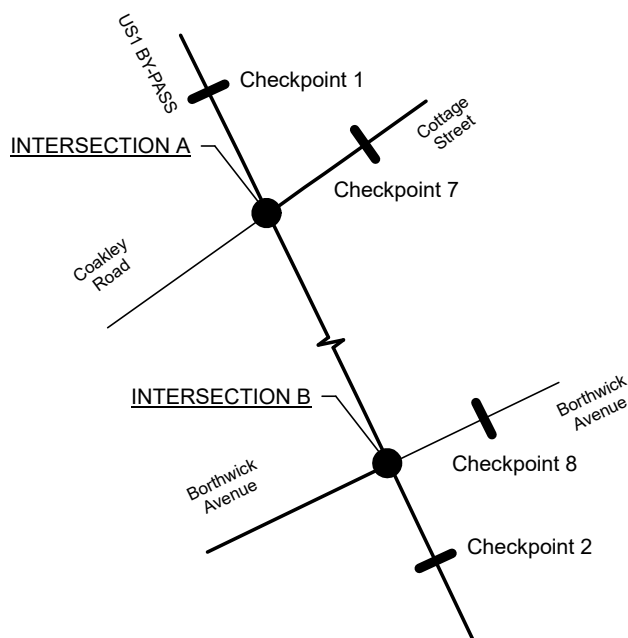


1831A

Figure 14

Supplemental Build Traffic Volumes - (Scenario C)

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire



PM Peak Hour

Location	2020 No-Build	Build Scenario A				Build Scenario B				Build Scenario C			
		2020 Build	Change	% Change		2020 Build	Change	% Change		2020 Build	Change	% Change	
Intersection A	3026	3382	+356 veh	12%		3192	+166 veh	5%		3286	+260 veh	9%	
Intersection B	2941	3438	+497 veh	17%		3168	+227 veh	8%		3538	+597 veh	20%	
Checkpoint 1	2585	2949	+364 veh	14%		2751	+166 veh	6%		2998	+413 veh	16%	
Checkpoint 2	2333	2358	+25 veh	1%		2358	+25 veh	1%		2359	+26 veh	1%	
Checkpoint 7	606	526	-80 veh	-13%		606	0 veh	0%		306	-300 veh	-50%	
Checkpoint 8	37	572	+535 veh	+++		294	+257 veh	+++		892	+855 veh	+++	

Saturday Peak Hour

Location	2020 No-Build	Build Scenario A				Build Scenario B				Build Scenario C			
		2020 Build	Change	% Change		2020 Build	Change	% Change		2020 Build	Change	% Change	
Intersection A	2337	2716	+379 veh	16%		2537	+200 veh	9%		2691	+354 veh	15%	
Intersection B	2219	2740	+521 veh	23%		2502	+283 veh	13%		2821	+602 veh	27%	
Checkpoint 1	2076	2459	+383 veh	18%		2276	+200 veh	10%		2501	+425 veh	20%	
Checkpoint 2	1942	1971	+29 veh	1%		1971	+29 veh	1%		1971	+29 veh	1%	
Checkpoint 7	379	320	-59 veh	-16%		379	0 veh	0%		193	-186 veh	-49%	
Checkpoint 8	44	615	+571 veh	+++		373	+329 veh	+++		823	+779 veh	+++	

Build Scenario A = Proposed Development with Cate Street Extension
 Build Scenario B = Proposed Development without Cate Street Extension
 Build Scenario C = Proposed Development with Cate Street Extension & US1 Bypass Median



The Supplemental Capacity Analyses for these two intersections for the worst-case PM peak hour using the 2030 Build traffic volumes for each development scenario are summarized on Table 12. The following conclusions are evident from these supplemental capacity analyses:

1. Extending Cate Street to the Bypass will increase the V/C ratio for the overall Coakley Road/Cottage Street intersection from 0.95 to 1.01. Although the overall Level of Service remains at LOS C, extending Cate Street will increase the average delay at this intersection by approximately six seconds/vehicle.
2. Extending Cate Street to the Bypass will increase the V/C ratio for the overall Borthwick Avenue/Cate Street Extension from 0.83 to 0.94. Although the overall Level of Service remains at LOS D, extending Cate Street will increase the average delay at this intersection by approximately ten seconds/vehicle.
3. Extending the median island on the Bypass through the Coakley Road/Cottage Street intersection will increase the V/C ratio at the nearby Borthwick Avenue/Cate Street Extension intersection from 0.94 to 1.14. The overall Level of Service changes from LOS D to LOS F. Average delay at this intersection increases by approximately +40 seconds/vehicle as a result of the median extension.

Table 12

Supplemental Signal-Controlled Intersection Capacity Analysis Summary (with Mitigation)
2030 Weekday PM Peak Hour

	2030 No-Build				2030 Build (Scenario A)*				2030 Build (Scenario B)*				2030 Build (Scenario C)*			
	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th 4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th 4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th 4)}	V/C ¹⁾	Delay ²⁾	LOS ³⁾	Queue Avg/95 ^{th 4)}
US1 Bypass/Cottage St/Coakley Rd																
Coakley Road - EB LT&TH& RT	0.34	39.4	D	2 (3)	0.39	41.9	D	2 (3)	0.28	36.7	D	2 (3)	0.16	14.7	B	1
Cottage Street - WB LT&TH	1.03	104.8	F	10 (13)	1.07	122.0	F	10 (13)	0.95	79.2	E	10 (13)	0.62	53.0	F	4
Cottage Street - WB RT	0.33	40.2	D	2 (4)	0.10	39.3	D	0 (2)	0.30	38.1	D	2 (4)	0.16	14.7	B	1
US1 Bypass - NB LT	0.28	58.1	E	0 (1)	0.28	52.9	D	0 (1)	0.28	54.7	D	0 (1)	0.62	53.0	F	4
US1 Bypass - NB 2TH	1.03	46.5	D	40 (45)	1.02	30.8	C	40 (45)	0.97	22.5	C	12 (39)	0.62	53.0	F	4
US1 Bypass - NB RT					0.24	7.4	A	2 (3)	0.26	8.4	A	2 (3)	0.62	53.0	F	4
US1 Bypass - SB LT	0.76	86.0	F	2 (5)	0.63	69.6	E	2 (4)	0.76	86.0	F	2 (5)	0.62	53.0	F	4
US1 Bypass - SB 2TH&RT	0.44	11.8	B	6 (10)	0.50	11.7	B	7 (12)	0.50	13.7	B	7 (12)	0.62	53.0	F	4
Overall	1.01	42.5	D		1.01	31.8	C		0.95	26.0	C		0.62	53.0	F	4
Cycle Length	120.0				120.0				120.0				120.0			
US1 Bypass/Borthwick Ave/Cate St Extension																
Borthwick Avenue - EB LT	0.77	52.2	D	9 (12)	0.91	76.3	E	10 (11)	0.83	59.3	E	9 (12)	1.11	138.9	F	11 (16)
Borthwick Avenue - EB LT&TH	0.77	52.2	D	9 (12)	0.92	78.2	E	10 (11)	0.83	59.5	E	9 (12)	1.12	142.2	F	11 (17)
Borthwick Avenue - EB RT	0.07	37.9	D	0 (1)	0.07	41.3	D	0 (0)	0.07	39.3	D	0 (1)	0.07	44.7	D	0 (0)
Cate Street Extension - WB LT&TH&RT	0.12	55.8	E	0 (1)	0.87	89.6	F	5 (11)	0.62	63.2	E	2 (6)	1.21	171.3	F	14 (22)
Cate Street Extension - WB RT	0.01	55.0	D	0 (0)	0.13	51.2	D	0 (3)	0.05	53.7	D	0 (0)	0.54	49.8	D	3 (7)
US1 Bypass - NB LT	0.47	60.0	E	1 (3)	0.51	61.7	E	1 (3)	0.51	61.7	E	1 (3)	0.51	61.7	E	1 (3)
US1 Bypass - NB 2TH&RT	0.73	22.0	C	16 (24)	0.92	41.3	D	21 (27)	0.86	33.5	C	21 (25)	1.07	82.8	F	26 (32)
US1 Bypass - SB LT	0.22	71.6	E	0 (1)	0.95	94.1	F	6 (11)	0.73	71.8	E	3 (7)	1.13	144.2	F	11 (18)
US1 Bypass - SB 2TH&RT	0.65	19.0	B	15 (20)	0.65	19.0	B	11 (18)	0.65	18.4	B	13 (19)	0.56	22.2	C	11 (14)
Overall	0.72	27.4	C		0.94	45.7	D		0.83	35.6	D		1.14	85.3	F	
Cycle Length	120.0				120.0				120.0				120.0			

UNSIGNALIZED INTERSECTION			
EB Right-Turns	0.16	14.7	B
WB Right-Turns	0.62	53.0	F

1) Volume-to-capacity ratio, 2) Delay in vehicles per seconds, 3) Level of Service, 4) Queue length in vehicles
Scenario A = Proposed Development with Cate Street Extension
Scenario B = Proposed Development No Cate Street Extension
Scenario C = Proposed Development with Cate Street Extension and Median Island at Cottage Street/Coakley Road Intersection

STUDY FINDINGS AND CONCLUSIONS

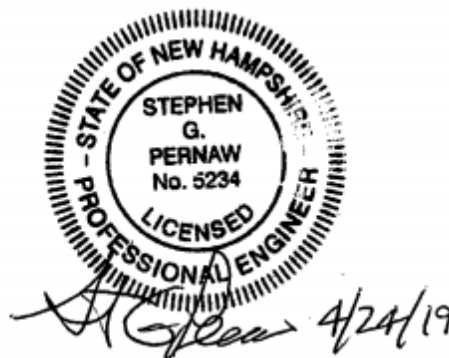
Based on the existing conditions data collected along US1 Bypass and at the six existing study area intersections, the anticipated traffic increases from the proposed residential/commercial development (Development Scenario B), and the analysis of future traffic operations in the study area, Pernaw & Company, Inc. concludes that:

1. The May 2018 traffic counts revealed that the Weekday PM peak hour traffic volumes are generally higher than those observed during the Saturday Midday peak hour period. During the PM peak hour (4:30 to 5:30 PM) the US1 Bypass carried over 2,200 vehicles (total both directions, north of Cottage Street), Islington Street and Bartlett Street carried over 1,100 vehicles, Cottage Street (east of the Bypass) carried 500 vehicles, and Cate Street (west of Bartlett Street) carried approximately 150 vehicles. See Figure 3A.
2. The proposed residences and commercial uses are expected to generate a total of 353 vehicle-trips (198 arrivals, 155 departures) during the weekday PM peak hour period, and 444 vehicle-trips (230 arrivals, to 214 departures) during the Saturday Midday peak hour period. Approximately 24-28% of these trips will be “pass-by” trips that will turn into the site from the existing traffic stream on the Bypass. See Table 1.
3. The intersection capacity and Level of Service analyses for the two signalized study area intersections on the Bypass indicates that with implementation of the mitigation measures recommended on Page 36, these intersections will operate below capacity through 2030 with the subject site in full operation. More specifically, the Cottage Street/Coakley Road intersection is projected to operate with an overall volume-to-capacity ratio of $v/c = 0.95$ during the 2030 PM peak hour and the Borthwick Avenue/Existing Site Driveway intersection is projected to operate at $v/c = 0.83$. See Table 12.
4. Cate Street Extension (Supplemental Development Scenario A) - The possible future realignment and extension of Cate Street through the subject site to the US1 Bypass (and the closure of the Cate Street bridge to through traffic; for pedestrian use only) is expected to alter local travel patterns as this new connection will become an attractive travel route for many drivers (depending upon their trip origin or destination). Analysis of this development scenario shows that there will be net increases on the Bypass, and these will increase the v/c ratio at Cottage Street/Coakley Road intersection from $v/c = 0.95$ to 1.01 (slightly over capacity) during the 2030 PM peak hour. The Borthwick Avenue/Cate Street Extension intersection increases from $v/c = 0.83$ to 0.94. See Table 12.
5. Median Island Extension (Supplemental Development Scenario C) - The possible future extension of the median island on the Bypass through the Cottage Street/Coakley Road intersection (Development Scenario C) will eliminate the need for traffic signal control at this location. However, the added traffic demand at the Borthwick Avenue/Cate Street Extension intersection increases its v/c from 0.94 to 1.14 (significantly over capacity) during the 2030 PM peak hour. See Table 12.
6. Analysis of the three existing unsignalized study area intersections revealed that peak period capacity deficiencies will occur at the Bartlett Street/Cate Street intersection in 2020 as a result of site traffic and diverted traffic (weekday PM peak hour). Three mitigation scenarios

were evaluated, with varying results. Configuration A, which maintains Cate Street as the minor leg of the intersection, appears to operate more efficiently than reconfiguring Bartlett Street such that the north leg functions as the minor approach (Configuration B and C) See Table 9A and 9B.

7. Analysis of the three proposed site driveway intersections on Cate Street Extension, if constructed, confirms that each intersection will operate well below capacity with single approach lanes on each leg of each intersection. These intersections will operate at LOS B (or higher) through 2030 with the site fully occupied. Vehicle queuing will be minimal. See Table 11.

In conclusion, development of the subject site as proposed can be successfully mitigated by implementing the recommendations summarized on Page 36. All signalized study area intersections will operate below capacity ($v/c < 1.0$) during the weekday PM and Saturday midday peak hour periods in 2030, with the site in full operation. The traffic diversion that will occur in the study area due to the possible future extension of Cate Street through the subject site to the Bypass has the potential to increase the overall v/c ratio at the Cottage Street/Coakley Road intersection to 1.01. Similarly, the traffic diversion that will occur along the Bypass due to the possible future extension of the median island through the Cottage Street/Coakley Road intersection has the potential to create a significant capacity deficiency at the Borthwick Road/Cate Street Extension intersection ($v/c = 1.14$) during the 2030 PM peak hour period. It should be noted that the extension of the median island will also impact several other properties in the area. The possible future extension of both Cate Street and the median island on the Bypass are not proposed by Torrington Properties, Inc. The subject site can and should be developed independently of these other longer-range projects.



APPENDIX

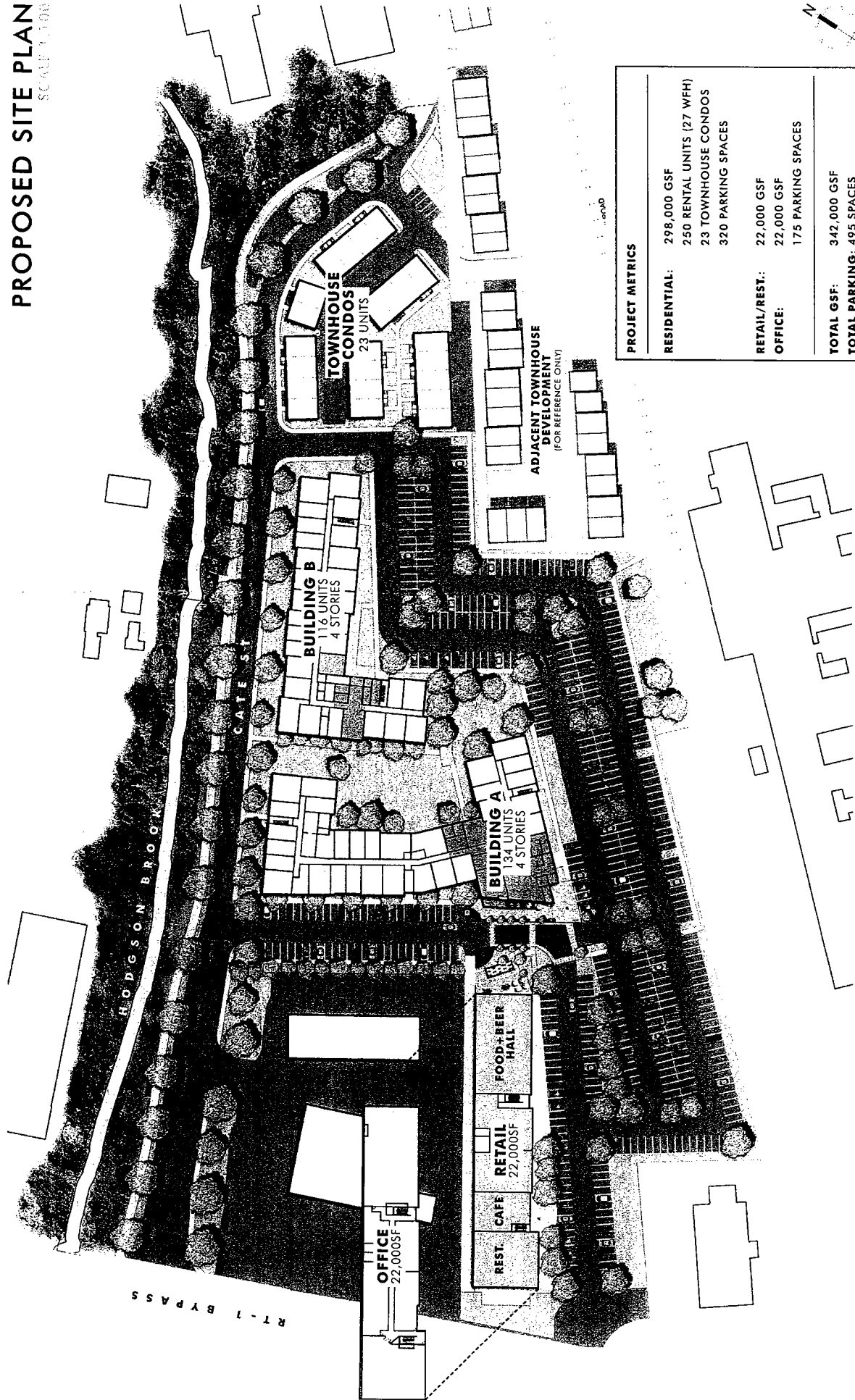
Appendix A	Site Plan
Appendix B	Automatic Traffic Recorder Counts
Appendix C	Intersection Turning Movement Counts
Appendix D	Pedestrian Counts
Appendix E	Seasonal Adjustment Factors / Historical Growth Rates
Appendix F	Other Development Traffic Volumes
Appendix G	Site Generated Traffic Volumes / Trip Distribution / Traffic Diversion
Appendix H	Lane Utilization Factors
Appendix I	Capacity and Level of Service Calculations – Signalized
Appendix J	Capacity and Level of Service Calculations - Unsignalized
Appendix K	Bartlett Street / Cate Street Alternative Layouts & Analyses

Appendix A

Site Plan

PROPOSED SITE PLAN

SCALE: 1"=100'



PROJECT METRICS	
RESIDENTIAL:	298,000 GSF
	250 RENTAL UNITS (27 WFH)
	23 TOWNHOUSE CONDOS
	320 PARKING SPACES
RETAIL/REST.:	22,000 GSF
OFFICE:	22,000 GSF
	175 PARKING SPACES
TOTAL GSF:	342,000 GSF
TOTAL PARKING:	495 SPACES



Appendix B

Automatic Traffic Recorder Counts

List View

All DIRs

Record			1			of 1	Goto Record	go
Location ID	82379042			MPO ID				
Type	SPOT			HPMS ID				
On NHS	Yes			On HPMS	Yes			
LRS ID	U0000001B_			LRS Loc Pt.				
SF Group	03			Route Type				
AF Group	03			Route				
GF Group	E			Active	Yes			
Class Dist Grp	Default			Category	3			
Seas Clss Grp	Default							
WIM Group	Default							
QC Group	Default							
Funct'l Class	Freeway & Expressway			Milepost				
Located On	US Route 1 Bypass N							
Loc On Alias	US 1 BYPASS UNDER B&M RAILROAD (EB-WB) (81379043-81379042)							
PR				MP		PT		
More Detail								
STATION DATA								

Directions:

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2018	18,997	1,792	9	59	17,515 (92%)	1,482 (8%)	
2017	21,848 ³				20,274 (93%)	1,574 (7%)	Grown from 2016
2016	21,420 ³				19,535 (91%)	1,885 (9%)	Grown from 2015
2015	21,000						
2012	37,000						

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Travel Demand Model										
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV	

VOLUME COUNT			
	Date	Int	Total
	Thu 8/2/2018	60	22,272
	Wed 8/1/2018	60	23,285
	Tue 7/31/2018	60	22,861
	Fri 9/4/2015	60	25,199
	Thu 9/3/2015	60	24,394
	Wed 9/2/2015	60	24,783
	Tue 9/1/2015	60	24,726
	Mon 8/31/2015	60	24,496
	Fri 12/14/2012	60	48,039

VOLUME TREND	
Year	Annual Growth
2018	-13%
2017	2%
2016	2%
2015	-17%
2012	14%
2009	1%
2006	1%
2003	0%
2000	2%



Excel Version

Weekly Volume Report			
Location ID:	82379042	Type:	SPOT
Located On:	US Route 1 Bypass N	:	
Direction:	2-WAY		
Community:	PORTSMOUTH	Period:	Mon 7/30/2018 - Sun 8/5/2018
AADT:	18997		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		81	102	112				98	0.4%
1:00 AM		51	57	47				52	0.2%
2:00 AM		42	48	56				49	0.2%
3:00 AM		56	81	80				72	0.3%
4:00 AM		125	151	111				129	0.6%
5:00 AM		363	362	338				354	1.6%
6:00 AM		765	739	729				744	3.3%
7:00 AM		1238	1292	1257				1,262	5.5%
8:00 AM		1469	1425	1346				1,413	6.2%
9:00 AM		1450	1516	1463				1,476	6.5%
10:00 AM		1536	1628	1465				1,543	6.8%
11:00 AM		1603	1695	1696				1,665	7.3%
12:00 PM		1710	1726	1762				1,733	7.6%
1:00 PM		1692	1622	1619				1,644	7.2%
2:00 PM		1750	1713	1700				1,721	7.5%
3:00 PM		1722	1734	1643				1,700	7.5%
4:00 PM		1792	1709	1524				1,675	7.3%
5:00 PM		1710	1585	1498				1,598	7.0%
6:00 PM		1260	1343	1171				1,258	5.5%
7:00 PM		880	1043	868				930	4.1%
8:00 PM		682	717	691				697	3.1%
9:00 PM		470	516	571				519	2.3%
10:00 PM		249	290	296				278	1.2%
11:00 PM		165	191	229				195	0.9%
Total	0	22,861	23,285	22,272	0	0	0		
24hr Total		22861	23285	22272				22,806	
AM Pk Hr		11:00	11:00	11:00					
AM Peak		1603	1695	1696				1,665	
PM Pk Hr		4:00	3:00	12:00					
PM Peak		1792	1734	1762				1,763	
% Pk Hr		7.84%	7.45%	7.91%				7.73%	

List View

All DIRs

Record 1 of 1 Goto Record

go

Location ID	82379052	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	Yes
LRS ID	N3790035	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	
GF Group	E	Active	Yes
Class Dist Grp	Default	Category	3
Seas Class Grp	Default		
WIM Group	Default		
QC Group	Default		
Funct'l Class	Minor Arterial	Milepost	
Located On	Bartlett St		
Loc On Alias	BARTLETT ST WEST OF ISLINGTON ST		
	PR	MP	PT

More Detail

STATION DATA

Directions: 2-WAY

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2018	16,742 ³		9		15,437 (92%)	1,305 (8%)	Grown from 2017
2017	16,414	1,434	9		15,233 (93%)	1,181 (7%)	
2016	17,860 ³				16,289 (91%)	1,571 (9%)	Grown from 2015
2015	17,510 ³						Grown from 2014
2014	17,000						

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Travel Demand Model										
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV	

VOLUME COUNT			
Date	Int	Total	
Thu 9/21/2017	60	18,508	
Wed 9/20/2017	60	18,359	
Tue 9/19/2017	60	18,293	
Fri 8/1/2014	60	18,538	
Thu 7/31/2014	60	18,997	
Wed 7/30/2014	60	19,331	
Tue 7/29/2014	60	20,116	
Mon 7/28/2014	60	20,172	

VOLUME TREND	
Year	Annual Growth
2018	2%
2017	-8%
2016	2%
2015	3%
2014	16%
2011	-4%
2009	-2%
2005	-9%



Excel Version

Weekly Volume Report			
Location ID:	82379052	Type:	SPOT
Located On:	Bartlett St	:	
Direction:	2-WAY		
Community:	PORTSMOUTH	Period:	Mon 9/18/2017 - Sun 9/24/2017
AADT:	16414		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		246	258	261				255	
1:00 AM		207	238	233				226	
2:00 AM		84	80	105				90	
3:00 AM		49	52	73				58	
4:00 AM		95	167	207				156	
5:00 AM		194	254	292				247	
6:00 AM		356	378	407				380	
7:00 AM		782	844	902				843	
8:00 AM		997	985	982				988	
9:00 AM		998	1010	1029				1,012	
10:00 AM		1134	1146	1170				1,150	
11:00 AM		1377	1387	1403				1,389	
12:00 PM		1386	1358	1349				1,364	
1:00 PM		1350	1340	1342				1,344	
2:00 PM		1326	1311	1321				1,319	
3:00 PM		1384	1376	1380				1,380	
4:00 PM		1414	1422	1434				1,423	
5:00 PM		1375	1312	1271				1,319	
6:00 PM		1071	1045	1022				1,046	
7:00 PM		800	752	720				757	
8:00 PM		593	576	568				579	
9:00 PM		480	458	445				461	
10:00 PM		392	369	345				369	
11:00 PM		203	241	247				230	
Total	0	18,293	18,359	18,508	0	0	0		
24hr Total		18293	18359	18508				18,387	
AM Pk Hr		11:00	11:00	11:00					
AM Peak		1377	1387	1403				1,389	
PM Pk Hr		4:00	4:00	4:00					
PM Peak		1414	1422	1434				1,423	
% Pk Hr		7.73%	7.75%	7.75%				7.74%	

List View All DIRs

Record	1	of 1	Goto Record	go
Location ID	82379111		MPO ID	
Type	SPOT		HPMS ID	
On NHS	No		On HPMS	No
LRS ID	L3790394		LRS Loc Pt.	
SF Group	04		Route Type	
AF Group	04		Route	
GF Group	E		Active	Yes
Class Dist Grp	Default		Category	3
Seas Clss Grp	Default			
WIM Group	Default			
QC Group	Default			
Funct'l Class	Local		Milepost	
Located On	Cate St			
Loc On Alias	CATE ST AT HODGSON BROOK			
PR MP PT				
More Detail				
STATION DATA				

Directions: 2-WAY

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2018	1,448 ³		12		1,334 (92%)	114 (8%)	Grown from 2017
2017	1,420	165	12		1,319 (93%)	101 (7%)	
2016	1,576 ³				1,437 (91%)	139 (9%)	Grown from 2015
2015	1,545 ³						Grown from 2014
2014	1,500						

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Travel Demand Model										
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV	

VOLUME COUNT			
Date	Int	Total	
Thu 8/31/2017	60	1,501	
Wed 8/30/2017	60	1,663	
Tue 8/29/2017	60	1,722	
Thu 8/7/2014	60	1,714	
Wed 8/6/2014	60	1,952	
Tue 8/5/2014	60	1,769	
Mon 8/4/2014	60	1,619	
Sun 7/17/2011	60	463	

VOLUME TREND	
Year	Annual Growth
2018	2%
2017	-10%
2016	2%
2015	3%
2014	16%
2011	8%
2009	3%
2005	-7%



Excel Version

Weekly Volume Report			
Location ID:	82379111	Type:	SPOT
Located On:	Cate St	:	
Direction:	2-WAY		
Community:	PORTSMOUTH	Period:	Mon 8/28/2017 - Sun 9/3/2017
AADT:	1420		

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM		2	6	1				3	
1:00 AM		3	3	3				3	
2:00 AM		3	3	1				2	
3:00 AM		0	0	0				0	
4:00 AM		4	5	5				5	
5:00 AM		19	12	17				16	
6:00 AM		40	38	50				43	
7:00 AM		128	95	108				110	
8:00 AM		160	148	152				153	
9:00 AM		102	119	95				105	
10:00 AM		105	120	86				104	
11:00 AM		127	122	79				109	
12:00 PM		147	165	116				143	
1:00 PM		120	135	101				119	
2:00 PM		148	113	87				116	
3:00 PM		125	117	103				115	
4:00 PM		111	102	129				114	
5:00 PM		130	103	131				121	
6:00 PM		81	72	86				80	
7:00 PM		61	64	54				60	
8:00 PM		54	46	34				45	
9:00 PM		30	42	34				35	
10:00 PM		16	25	20				20	
11:00 PM		6	8	9				8	
Total	0	1,722	1,663	1,501	0	0	0		
24hr Total		1722	1663	1501				1,629	
AM Pk Hr		8:00	8:00	8:00					
AM Peak		160	148	152				153	
PM Pk Hr		2:00	12:00	5:00					
PM Peak		148	165	131				148	
% Pk Hr		9.29%	9.92%	10.13%				9.78%	

Appendix C

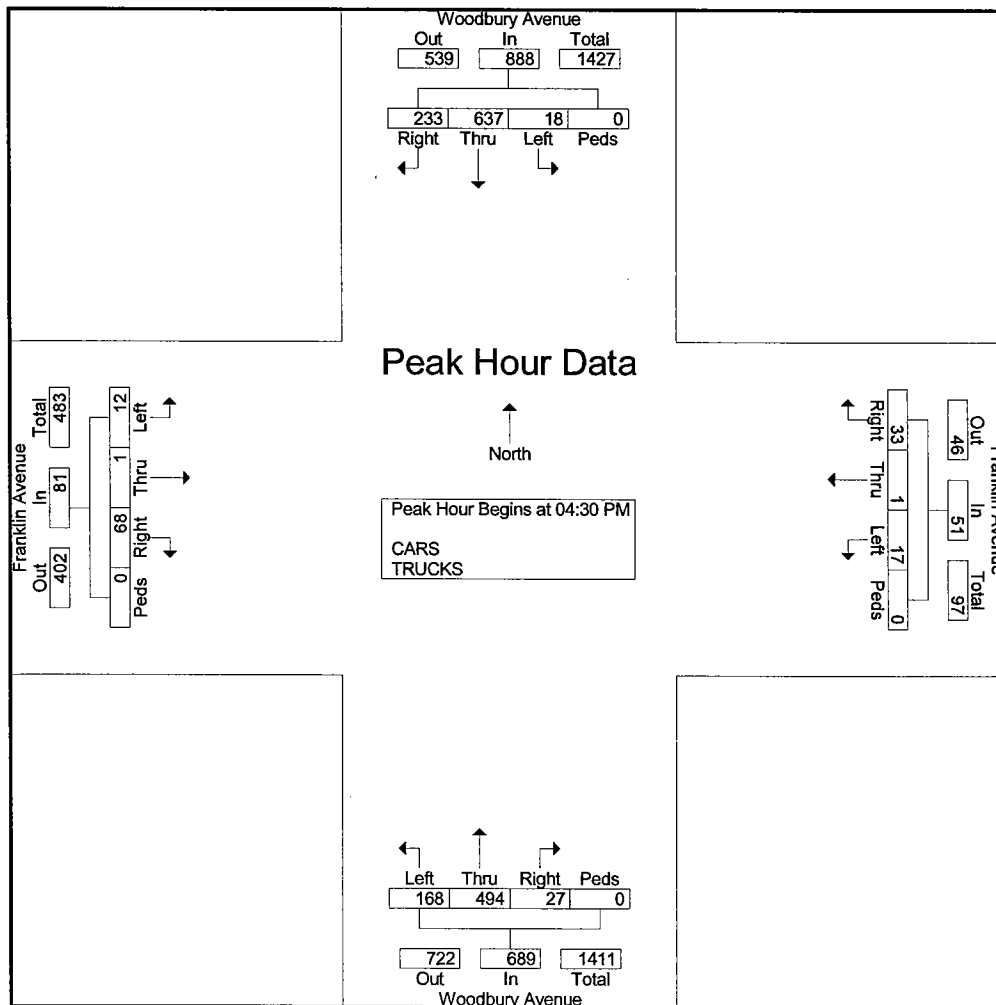
Intersection Turning Movement Counts

Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Thurs Woodbury Avenue-Franklin Avenue
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	Woodbury Avenue From North					Franklin Avenue From East					Woodbury Avenue From South					Franklin Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	59	146	3	0	208	8	0	5	0	13	8	101	40	0	149	17	0	6	0	23	393
04:45 PM	49	145	6	0	200	5	1	4	0	10	8	113	43	0	164	16	1	0	0	17	391
05:00 PM	66	167	5	0	238	15	0	5	0	20	7	151	43	0	201	18	0	4	0	22	481
05:15 PM	59	179	4	0	242	5	0	3	0	8	4	129	42	0	175	17	0	2	0	19	444
Total Volume	233	637	18	0	888	33	1	17	0	51	27	494	168	0	689	68	1	12	0	81	1709
% App. Total	26.2	71.7	2	0		64.7	2	33.3	0		3.9	71.7	24.4	0		84	1.2	14.8	0		
PHF	.883	.890	.750	.000	.917	.550	.250	.850	.000	.638	.844	.818	.977	.000	.857	.944	.250	.500	.000	.880	.888

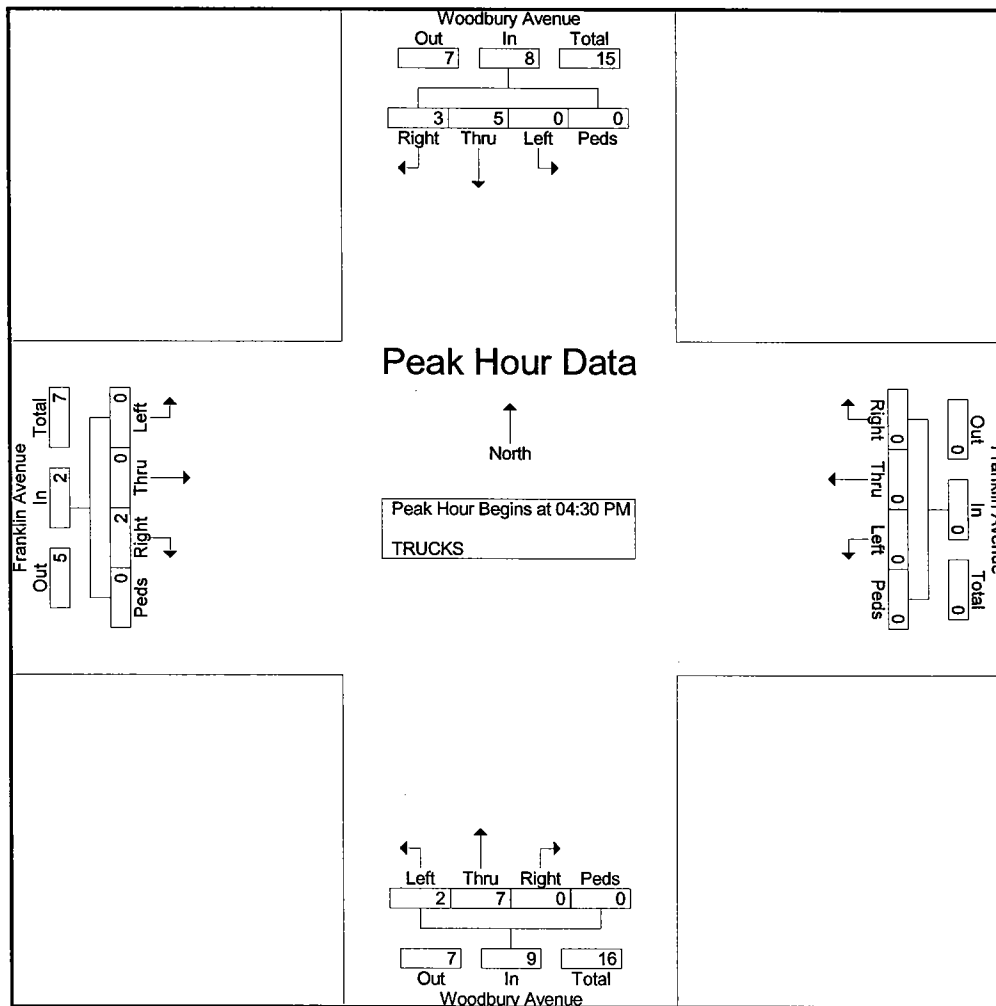


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Weather: Clear
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Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Thurs Woodbury Avenue-Franklin Avenue
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	Woodbury Avenue From North					Franklin Avenue From East					Woodbury Avenue From South					Franklin Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	3
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
05:00 PM	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
05:15 PM	2	2	0	0	4	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	6
Total Volume	3	5	0	0	8	0	0	0	0	0	0	7	2	0	9	2	0	0	0	2	19
% App. Total	37.5	62.5	0	0		0	0	0	0		0	77.8	22.2	0		100	0	0	0		
PHF	.375	.625	.000	.000	.500	.000	.000	.000	.000	.000	.000	.438	.250	.000	.563	.500	.000	.000	.000	.500	.792



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Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

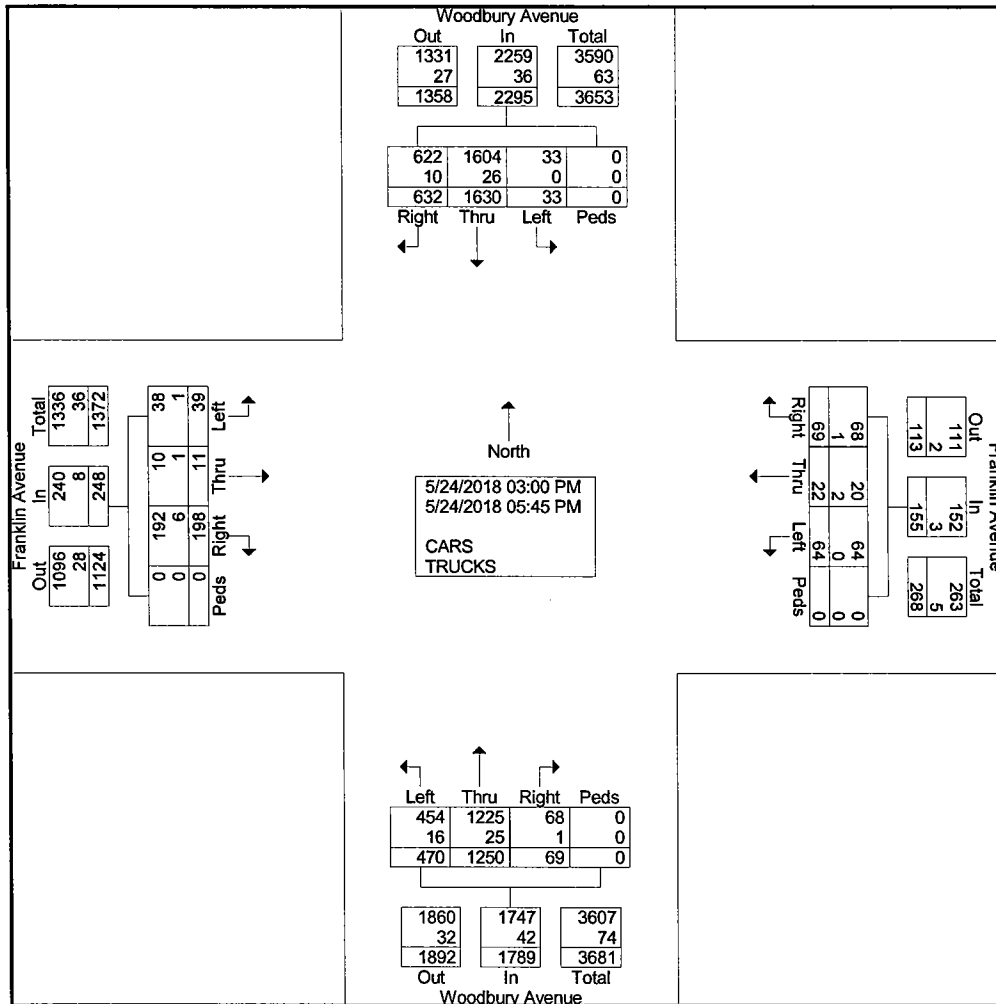
Groups Printed- CARS - TRUCKS

Start Time	Woodbury Avenue From North					Franklin Avenue From East					Woodbury Avenue From South					Franklin Avenue From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	52	95	0	0	147	7	3	10	0	20	5	83	44	0	132	15	4	1	0	20	319
03:15 PM	51	115	0	0	166	2	3	5	0	10	3	87	44	0	134	12	1	4	0	17	327
03:30 PM	57	124	1	0	182	4	7	4	0	15	3	116	40	0	159	24	1	5	0	30	386
03:45 PM	62	131	4	0	197	2	1	5	0	8	7	103	27	0	137	14	0	4	0	18	360
Total	222	465	5	0	692	15	14	24	0	53	18	389	155	0	562	65	6	14	0	85	1392
04:00 PM	42	124	1	0	167	4	1	5	0	10	4	104	35	0	143	13	1	7	0	21	341
04:15 PM	52	121	4	0	177	4	3	6	0	13	8	101	39	0	148	27	1	2	0	30	368
04:30 PM	59	146	3	0	208	8	0	5	0	13	8	101	40	0	149	17	0	6	0	23	393
04:45 PM	49	145	6	0	200	5	1	4	0	10	8	113	43	0	164	16	1	0	0	17	391
Total	202	536	14	0	752	21	5	20	0	46	28	419	157	0	604	73	3	15	0	91	1493
05:00 PM	66	167	5	0	238	15	0	5	0	20	7	151	43	0	201	18	0	4	0	22	481
05:15 PM	59	179	4	0	242	5	0	3	0	8	4	129	42	0	175	17	0	2	0	19	444
05:30 PM	42	137	3	0	182	7	1	9	0	17	11	84	43	0	138	11	0	2	0	13	350
05:45 PM	41	146	2	0	189	6	2	3	0	11	1	78	30	0	109	14	2	2	0	18	327
Total	208	629	14	0	851	33	3	20	0	56	23	442	158	0	623	60	2	10	0	72	1602
Grand Total	632	1630	33	0	2295	69	22	64	0	155	69	1250	470	0	1789	198	11	39	0	248	4487
Apprch %	27.5	71	1.4	0		44.5	14.2	41.3	0		3.9	69.9	26.3	0		79.8	4.4	15.7	0		
Total %	14.1	36.3	0.7	0	51.1	1.5	0.5	1.4	0	3.5	1.5	27.9	10.5	0	39.9	4.4	0.2	0.9	0	5.5	
CARS	622	1604	33	0	2259	68	20	64	0	152	68	1225	454	0	1747	192	10	38	0	240	4398
% CARS	98.4	98.4	100	0	98.4	98.6	90.9	100	0	98.1	98.6	98	96.6	0	97.7	97	90.9	97.4	0	96.8	98
TRUCKS	10	26	0	0	36	1	2	0	0	3	1	25	16	0	42	6	1	1	0	8	89
% TRUCKS	1.6	1.6	0	0	1.6	1.4	9.1	0	0	1.9	1.4	2	3.4	0	2.3	3	9.1	2.6	0	3.2	2

Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Thurs Woodbury Avenue-Franklin Avenue
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



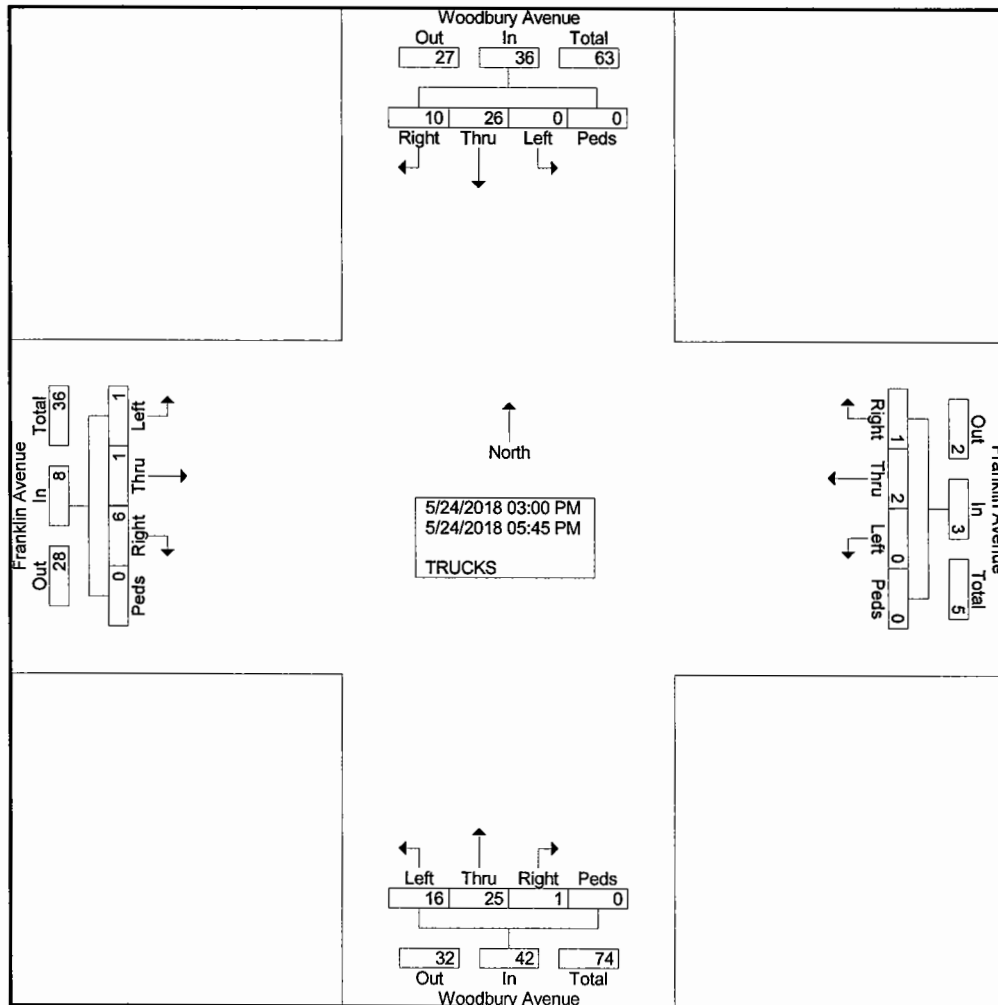
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File Name : 1831A Thurs Woodbury Avenue-Franklin Avenue
Site Code : 1831A
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Page No : 1

Groups Printed- TRUCKS

	Woodbury Avenue From North					Franklin Avenue From East					Woodbury Avenue From South					Franklin Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	2	2	0	0	4	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	9
03:15 PM	1	6	0	0	7	0	1	0	0	1	0	4	5	0	9	1	0	0	0	1	18
03:30 PM	0	5	0	0	5	0	1	0	0	1	0	5	2	0	7	3	0	1	0	4	17
03:45 PM	0	2	0	0	2	1	0	0	0	1	0	2	1	0	3	0	0	0	0	0	6
Total	3	15	0	0	18	1	2	0	0	3	0	15	9	0	24	4	0	1	0	5	50
04:00 PM	2	2	0	0	4	0	0	0	0	0	0	0	4	0	4	0	0	0	0	0	8
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	3
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	5
Total	2	3	0	0	5	0	0	0	0	0	0	5	7	0	12	1	0	0	0	1	18
05:00 PM	1	2	0	0	3	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	5
05:15 PM	2	2	0	0	4	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	6
05:30 PM	1	3	0	0	4	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	7
05:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3
Total	5	8	0	0	13	0	0	0	0	0	1	5	0	0	6	1	1	0	0	2	21
Grand Total	10	26	0	0	36	1	2	0	0	3	1	25	16	0	42	6	1	1	0	8	89
Apprch %	27.8	72.2	0	0		33.3	66.7	0	0		2.4	59.5	38.1	0		75	12.5	12.5	0		
Total %	11.2	29.2	0	0	40.4	1.1	2.2	0	0	3.4	1.1	28.1	18	0	47.2	6.7	1.1	1.1	0	9	

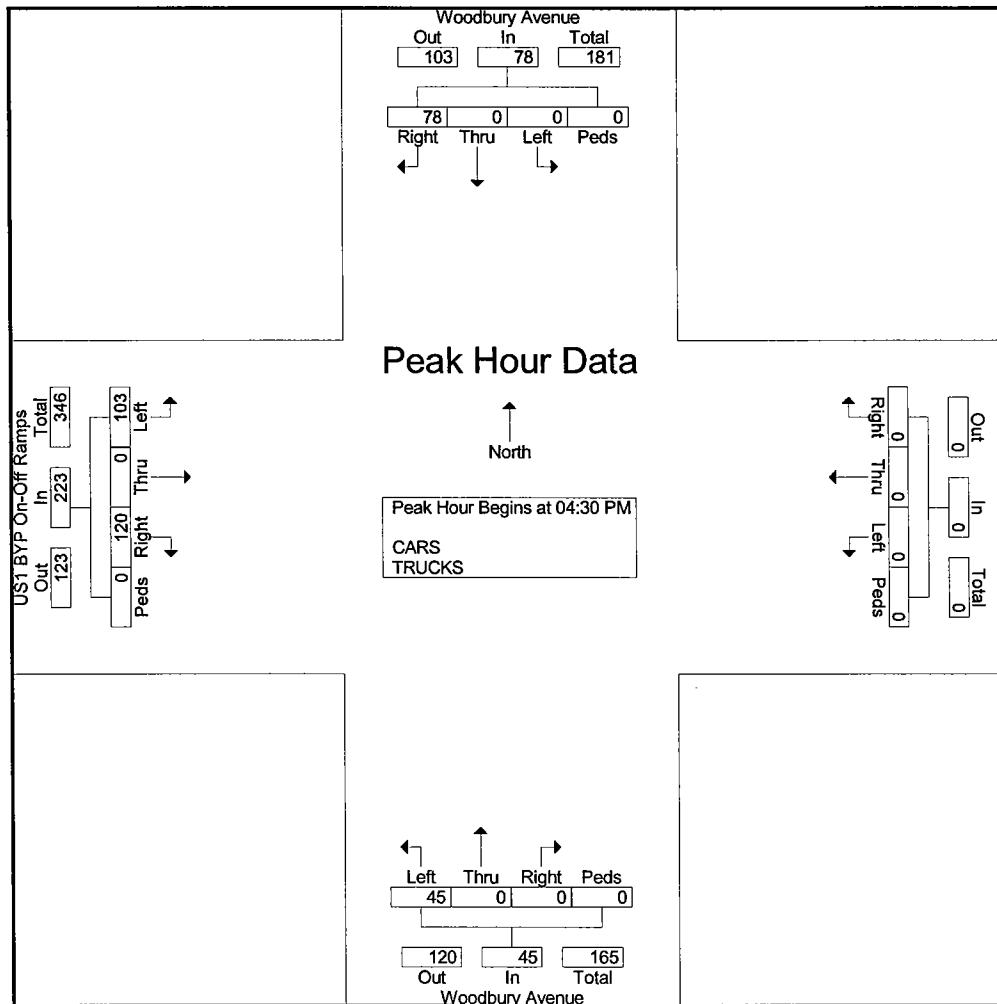


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P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Thurs Woodbury Avenue-US1 BYP On-Off Ramps turns only
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	Woodbury Avenue From North					From East					Woodbury Avenue From South					US1 BYP On-Off Ramps From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	18	0	0	0	18	0	0	0	0	0	0	0	13	0	13	34	0	24	0	58	89
04:45 PM	21	0	0	0	21	0	0	0	0	0	0	0	7	0	7	30	0	19	0	49	77
05:00 PM	19	0	0	0	19	0	0	0	0	0	0	0	16	0	16	28	0	28	0	56	91
05:15 PM	20	0	0	0	20	0	0	0	0	0	0	0	9	0	9	28	0	32	0	60	89
Total Volume	78	0	0	0	78	0	0	0	0	0	0	0	45	0	45	120	0	103	0	223	346
% App. Total	100	0	0	0		0	0	0	0		0	0	100	0		53.8	0	46.2	0		
PHF	.929	.000	.000	.000	.929	.000	.000	.000	.000	.000	.000	.000	.703	.000	.703	.882	.000	.805	.000	.929	.951

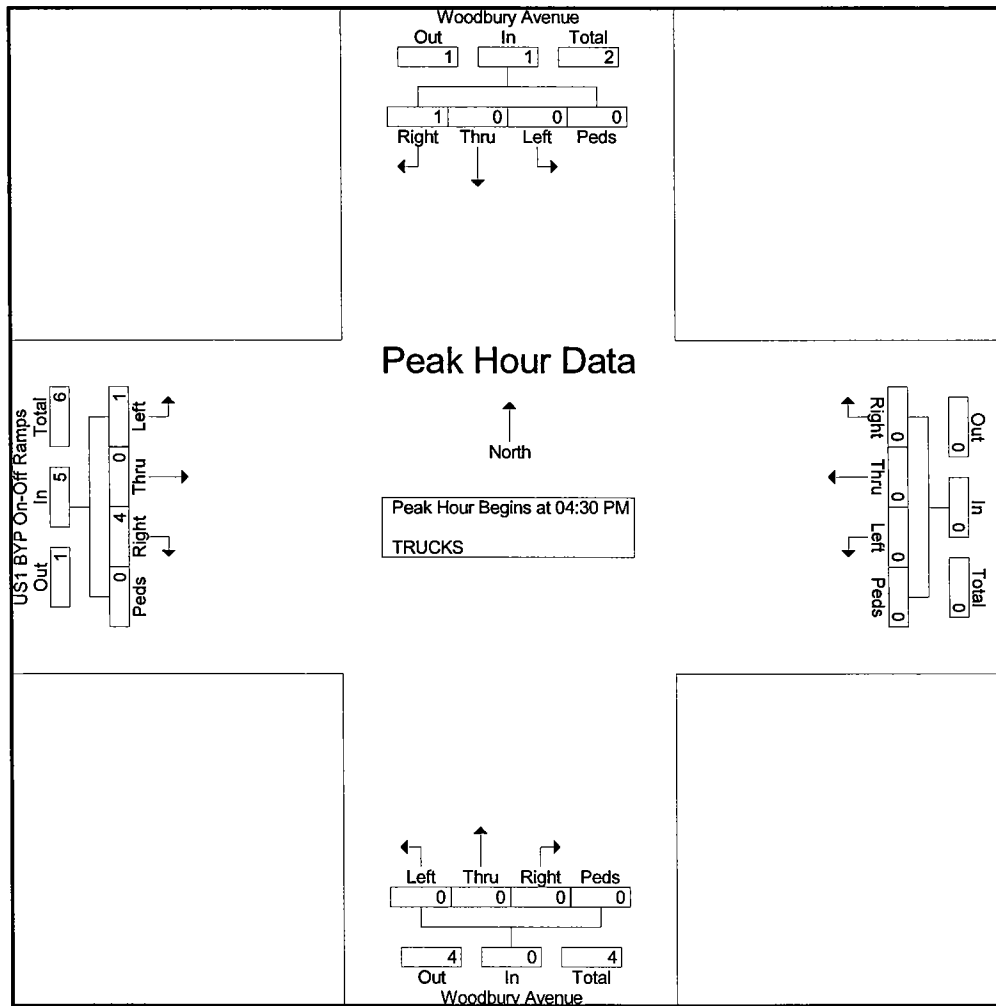


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Weather: Clear
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File Name : 1831A Thurs Woodbury Avenue-US1 BYP On-Off Ramps turns only
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	Woodbury Avenue From North					From East					Woodbury Avenue From South					US1 BYP On-Off Ramps From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3	3
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4	0	1	0	5	6
% App. Total	100	0	0	0		0	0	0	0		0	0	0	0		80	0	20	0		
PHF	.250	.000	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.250	.000	.417	.500



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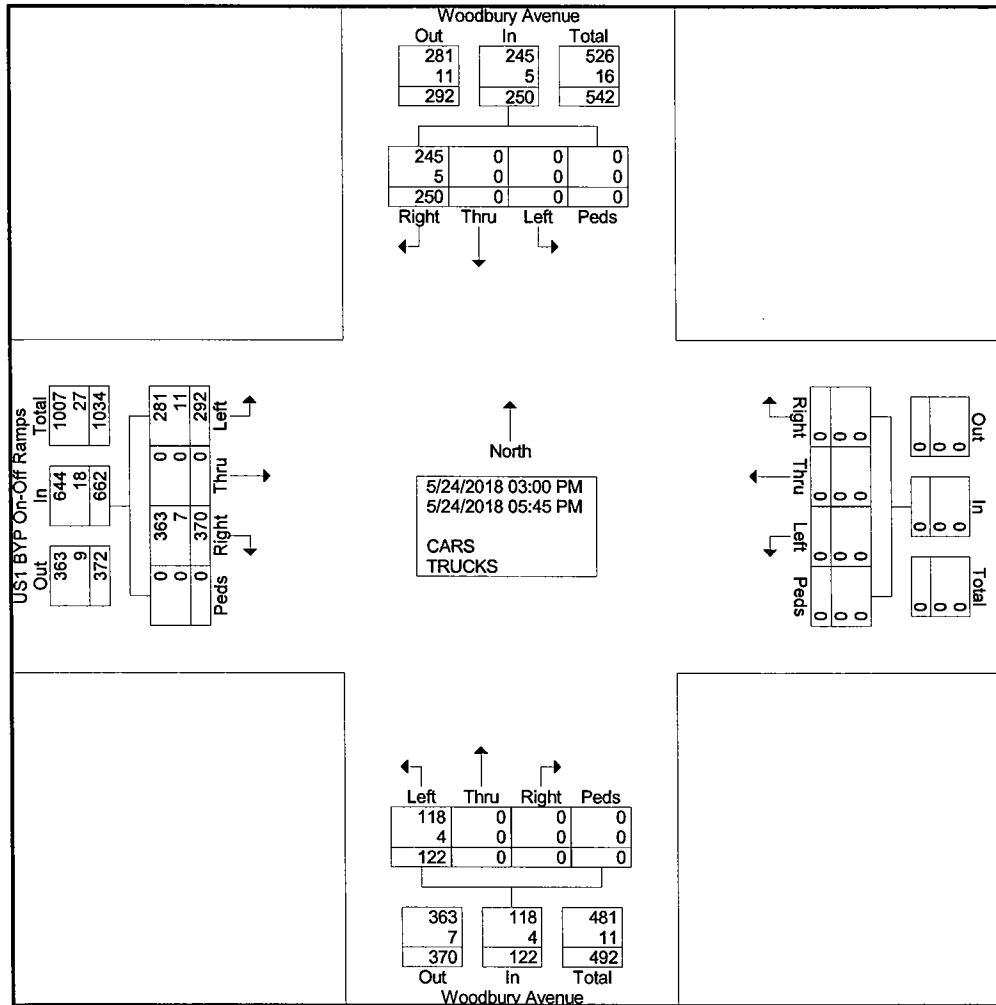
Groups Printed- CARS - TRUCKS

Start Time	Woodbury Avenue From North					From East					Woodbury Avenue From South					US1 BYP On-Off Ramps From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	13	0	0	0	13	0	0	0	0	0	0	0	13	0	13	36	0	21	0	57	83
03:15 PM	20	0	0	0	20	0	0	0	0	0	0	0	10	0	10	21	0	21	0	42	72
03:30 PM	20	0	0	0	20	0	0	0	0	0	0	0	7	0	7	26	0	28	0	54	81
03:45 PM	20	0	0	0	20	0	0	0	0	0	0	0	10	0	10	35	0	23	0	58	88
Total	73	0	0	0	73	0	0	0	0	0	0	0	40	0	40	118	0	93	0	211	324
04:00 PM	19	0	0	0	19	0	0	0	0	0	0	0	5	0	5	27	0	22	0	49	73
04:15 PM	29	0	0	0	29	0	0	0	0	0	0	0	12	0	12	35	0	37	0	72	113
04:30 PM	18	0	0	0	18	0	0	0	0	0	0	0	13	0	13	34	0	24	0	58	89
04:45 PM	21	0	0	0	21	0	0	0	0	0	0	0	7	0	7	30	0	19	0	49	77
Total	87	0	0	0	87	0	0	0	0	0	0	0	37	0	37	126	0	102	0	228	352
05:00 PM	19	0	0	0	19	0	0	0	0	0	0	0	16	0	16	28	0	28	0	56	91
05:15 PM	20	0	0	0	20	0	0	0	0	0	0	0	9	0	9	28	0	32	0	60	89
05:30 PM	27	0	0	0	27	0	0	0	0	0	0	0	10	0	10	32	0	19	0	51	88
05:45 PM	24	0	0	0	24	0	0	0	0	0	0	0	10	0	10	38	0	18	0	56	90
Total	90	0	0	0	90	0	0	0	0	0	0	0	45	0	45	126	0	97	0	223	358
Grand Total	250	0	0	0	250	0	0	0	0	0	0	0	122	0	122	370	0	292	0	662	1034
Apprch %	100	0	0	0		0	0	0	0		0	0	100	0		55.9	0	44.1	0		
Total %	24.2	0	0	0	24.2	0	0	0	0	0	0	0	11.8	0	11.8	35.8	0	28.2	0	64	
CARS	245	0	0	0	245	0	0	0	0	0	0	0	118	0	118	363	0	281	0	644	1007
% CARS	98	0	0	0	98	0	0	0	0	0	0	0	96.7	0	96.7	98.1	0	96.2	0	97.3	97.4
TRUCKS	5	0	0	0	5	0	0	0	0	0	0	0	4	0	4	7	0	11	0	18	27
% TRUCKS	2	0	0	0	2	0	0	0	0	0	0	0	3.3	0	3.3	1.9	0	3.8	0	2.7	2.6

Stephen G. Pernaw & Co., Inc.
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Weather: Clear
Collected By: MV
Job Number: 1831A
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File Name : 1831A Thurs Woodbury Avenue-US1 BYP On-Off Ramps turns only
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



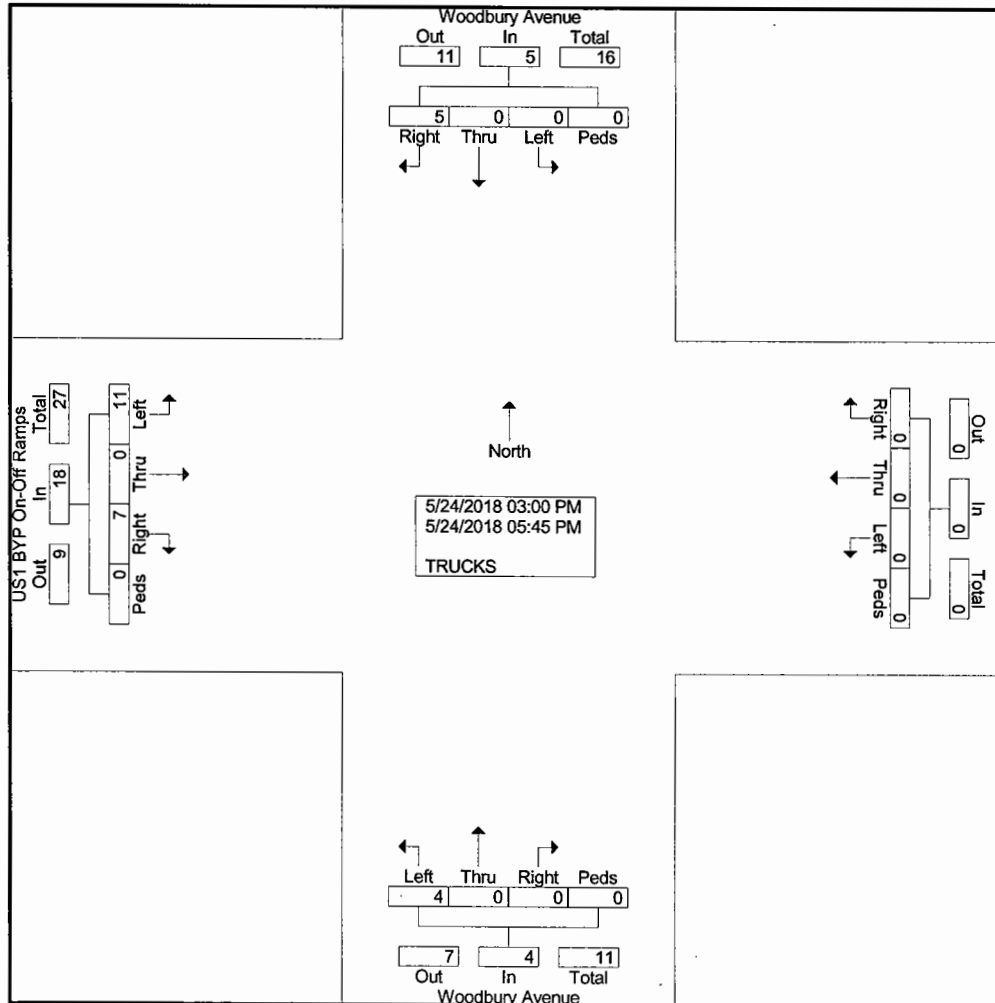
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File Name : 1831A Thurs Woodbury Avenue-US1 BYP On-Off Ramps turns only
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- TRUCKS

Start Time	Woodbury Avenue From North					From East					Woodbury Avenue From South					US1 BYP On-Off Ramps From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	2	0	2	2	0	4	0	6	9
03:15 PM	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	1	0	2	3
Total	3	0	0	0	3	0	0	0	0	0	0	0	3	0	3	3	0	9	0	12	18
04:00 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	3	3
Total	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	4	0	2	0	6	8
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	1	0	0	0	1	0	0	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	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	5	0	0	0	5	0	0	0	0	0	0	0	4	0	4	7	0	11	0	18	27
Apprch %	100	0	0	0		0	0	0	0		0	0	100	0		38.9	0	61.1	0		
Total %	18.5	0	0	0	18.5	0	0	0	0	0	0	0	14.8	0	14.8	25.9	0	40.7	0	66.7	

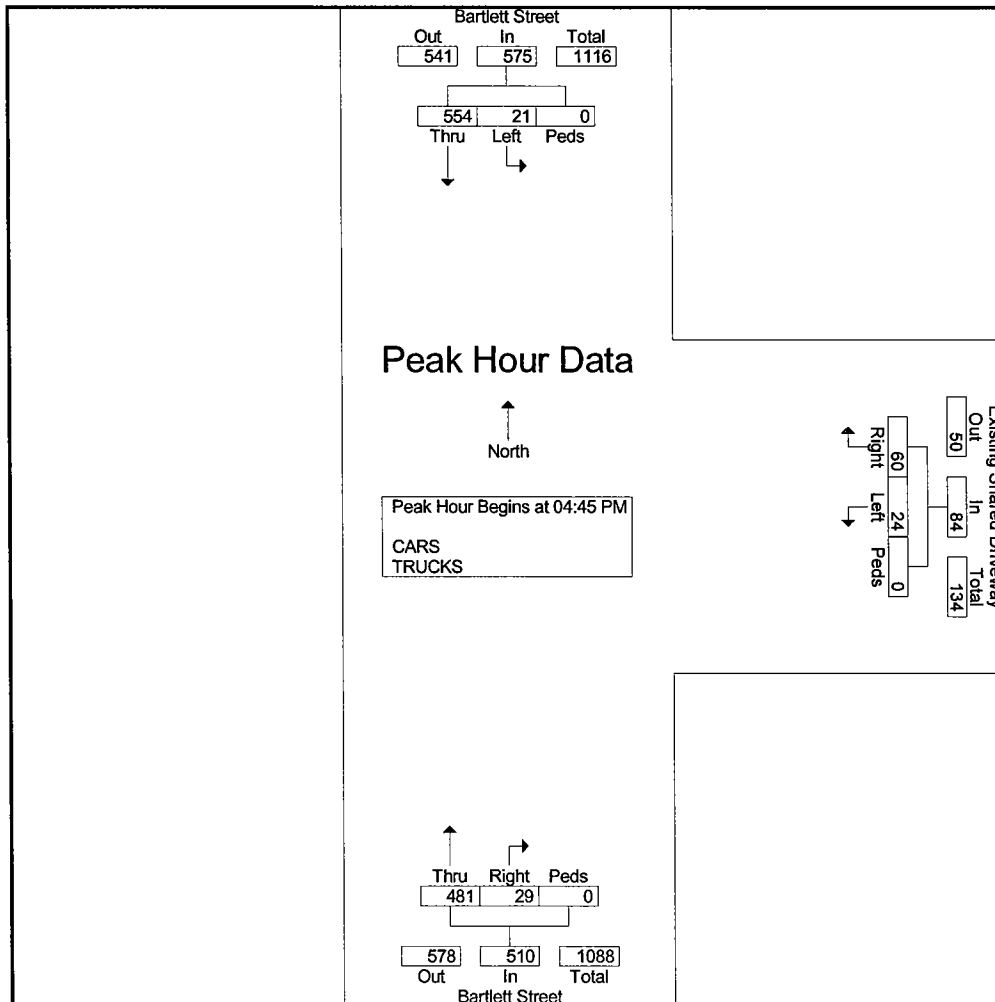


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P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_C_Thurs_PM_Bart-Shared
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	Bartlett Street From North				Existing Shared Driveway From East				Bartlett Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	130	5	0	135	17	8	0	25	9	123	0	132	292
05:00 PM	128	6	0	134	23	6	0	29	6	150	0	156	319
05:15 PM	148	4	0	152	10	6	0	16	7	124	0	131	299
05:30 PM	148	6	0	154	10	4	0	14	7	84	0	91	259
Total Volume	554	21	0	575	60	24	0	84	29	481	0	510	1169
% App. Total	96.3	3.7	0		71.4	28.6	0		5.7	94.3	0		
PHF	.936	.875	.000	.933	.652	.750	.000	.724	.806	.802	.000	.817	.916

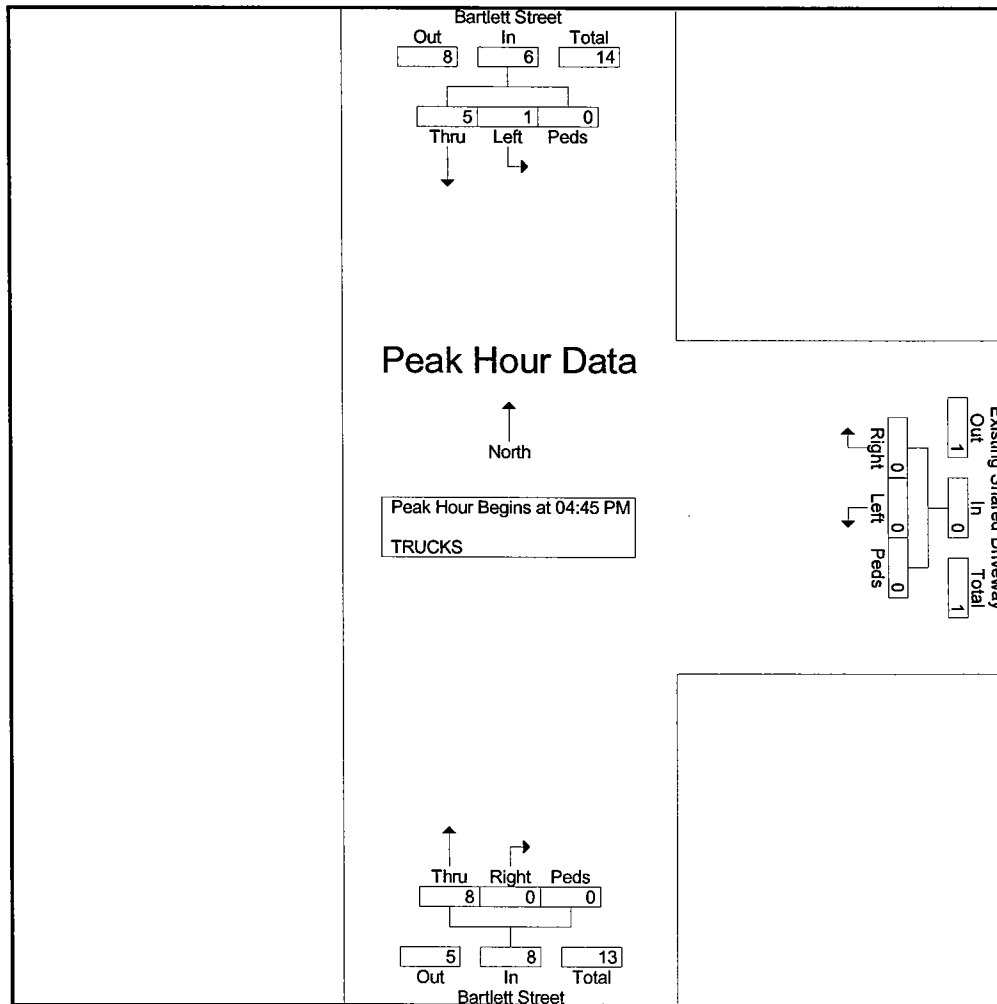


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_C_Thurs_PM_Bart-Shared
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	Bartlett Street From North				Existing Shared Driveway From East				Bartlett Street From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 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	3	0	3	3
05:00 PM	4	0	0	4	0	0	0	0	0	0	0	0	4
05:15 PM	0	0	0	0	0	0	0	0	0	4	0	4	4
05:30 PM	1	1	0	2	0	0	0	0	0	1	0	1	3
Total Volume	5	1	0	6	0	0	0	0	0	8	0	8	14
% App. Total	83.3	16.7	0		0	0	0		0	100	0		
PHF	.313	.250	.000	.375	.000	.000	.000	.000	.000	.500	.000	.500	.875



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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_C_Thurs_PM_Bart-Shared
Site Code : 1831A
Start Date : 5/24/2018
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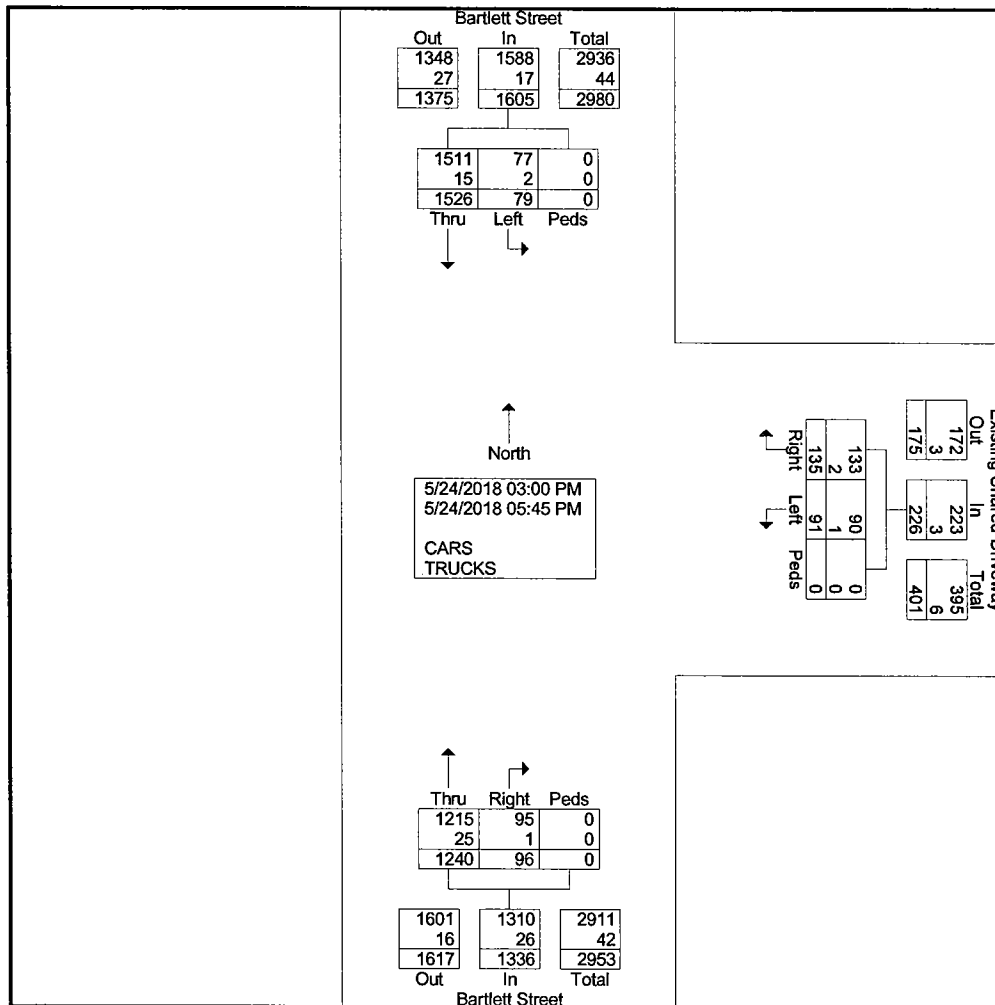
Groups Printed- CARS - TRUCKS

Start Time	Bartlett Street From North				Existing Shared Driveway From East				Bartlett Street From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
03:00 PM	107	7	0	114	10	11	0	21	10	96	0	106	241
03:15 PM	106	7	0	113	6	8	0	14	11	90	0	101	228
03:30 PM	117	10	0	127	10	5	0	15	9	104	0	113	255
03:45 PM	128	4	0	132	9	7	0	16	9	113	0	122	270
Total	458	28	0	486	35	31	0	66	39	403	0	442	994
04:00 PM	132	6	0	138	9	8	0	17	9	92	0	101	256
04:15 PM	126	6	0	132	12	9	0	21	8	88	0	96	249
04:30 PM	136	8	0	144	11	10	0	21	8	84	0	92	257
04:45 PM	130	5	0	135	17	8	0	25	9	123	0	132	292
Total	524	25	0	549	49	35	0	84	34	387	0	421	1054
05:00 PM	128	6	0	134	23	6	0	29	6	150	0	156	319
05:15 PM	148	4	0	152	10	6	0	16	7	124	0	131	299
05:30 PM	148	6	0	154	10	4	0	14	7	84	0	91	259
05:45 PM	120	10	0	130	8	9	0	17	3	92	0	95	242
Total	544	26	0	570	51	25	0	76	23	450	0	473	1119
Grand Total	1526	79	0	1605	135	91	0	226	96	1240	0	1336	3167
Apprch %	95.1	4.9	0		59.7	40.3	0		7.2	92.8	0		
Total %	48.2	2.5	0	50.7	4.3	2.9	0	7.1	3	39.2	0	42.2	
CARS	1511	77	0	1588	133	90	0	223	95	1215	0	1310	3121
% CARS	99	97.5	0	98.9	98.5	98.9	0	98.7	99	98	0	98.1	98.5
TRUCKS	15	2	0	17	2	1	0	3	1	25	0	26	46
% TRUCKS	1	2.5	0	1.1	1.5	1.1	0	1.3	1	2	0	1.9	1.5

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_C_Thurs_PM_Bart-Shared
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



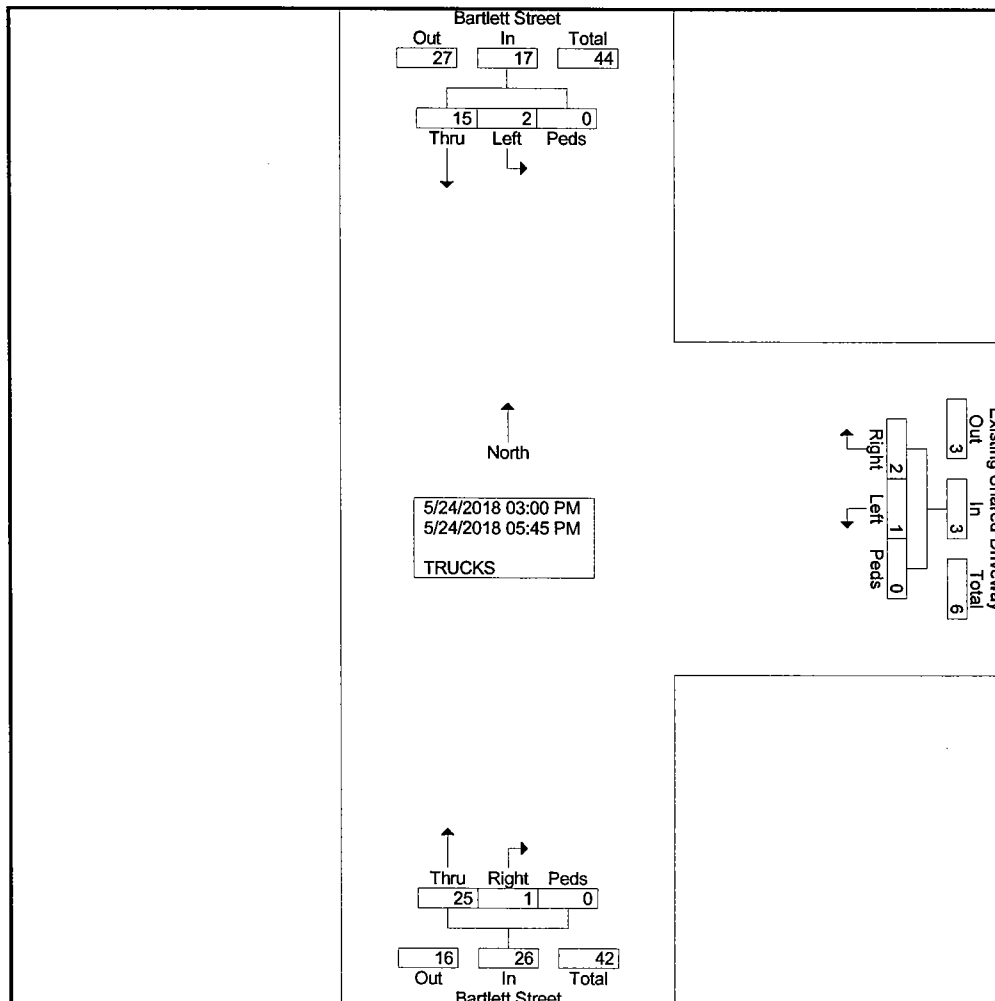
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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_C_Thurs_PM_Bart-Shared
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- TRUCKS

Start Time	Bartlett Street From North				Existing Shared Driveway From East				Bartlett Street From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
03:00 PM	3	1	0	4	0	1	0	1	0	4	0	4	9
03:15 PM	1	0	0	1	1	0	0	1	1	2	0	3	5
03:30 PM	1	0	0	1	0	0	0	0	0	0	0	0	1
03:45 PM	0	0	0	0	0	0	0	0	0	4	0	4	4
Total	5	1	0	6	1	1	0	2	1	10	0	11	19
04:00 PM	1	0	0	1	0	0	0	0	0	3	0	3	4
04:15 PM	1	0	0	1	1	0	0	1	0	0	0	0	2
04:30 PM	3	0	0	3	0	0	0	0	0	2	0	2	5
04:45 PM	0	0	0	0	0	0	0	0	0	3	0	3	3
Total	5	0	0	5	1	0	0	1	0	8	0	8	14
05:00 PM	4	0	0	4	0	0	0	0	0	0	0	0	4
05:15 PM	0	0	0	0	0	0	0	0	0	4	0	4	4
05:30 PM	1	1	0	2	0	0	0	0	0	1	0	1	3
05:45 PM	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	5	1	0	6	0	0	0	0	0	7	0	7	13
Grand Total	15	2	0	17	2	1	0	3	1	25	0	26	46
Apprch %	88.2	11.8	0		66.7	33.3	0		3.8	96.2	0		
Total %	32.6	4.3	0	37	4.3	2.2	0	6.5	2.2	54.3	0	56.5	

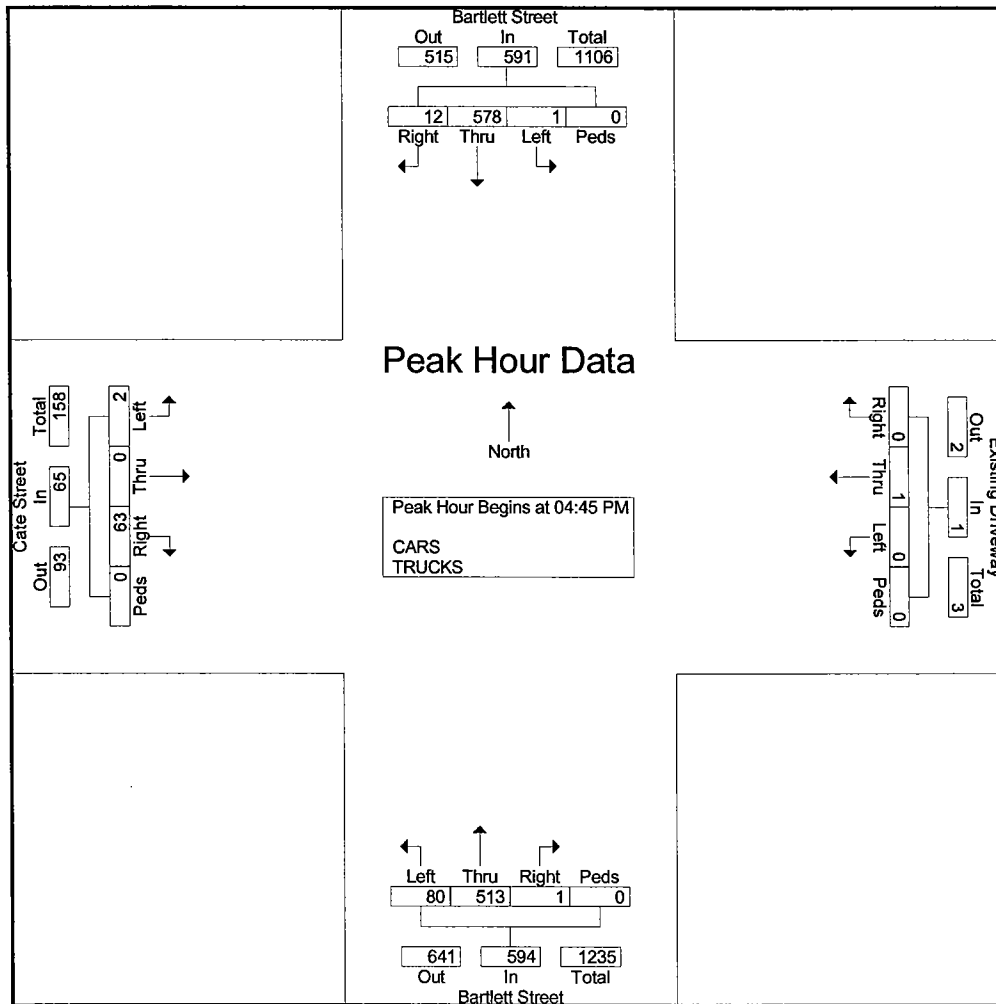


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_Thurs_PM_Bartlett-Cate
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	Bartlett Street From North					Existing Driveway From East					Bartlett Street From South					Cate Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	1	142	0	0	143	0	0	0	0	0	0	131	28	0	159	11	0	1	0	12	314
05:00 PM	2	129	1	0	132	0	0	0	0	0	0	158	21	0	179	18	0	1	0	19	330
05:15 PM	2	158	0	0	160	0	1	0	0	1	0	129	16	0	145	16	0	0	0	16	322
05:30 PM	7	149	0	0	156	0	0	0	0	0	1	95	15	0	111	18	0	0	0	18	285
Total Volume	12	578	1	0	591	0	1	0	0	1	1	513	80	0	594	63	0	2	0	65	1251
% App. Total	2	97.8	0.2	0		0	100	0	0		0.2	86.4	13.5	0		96.9	0	3.1	0		
PHF	.429	.915	.250	.000	.923	.000	.250	.000	.000	.250	.250	.812	.714	.000	.830	.875	.000	.500	.000	.855	.948

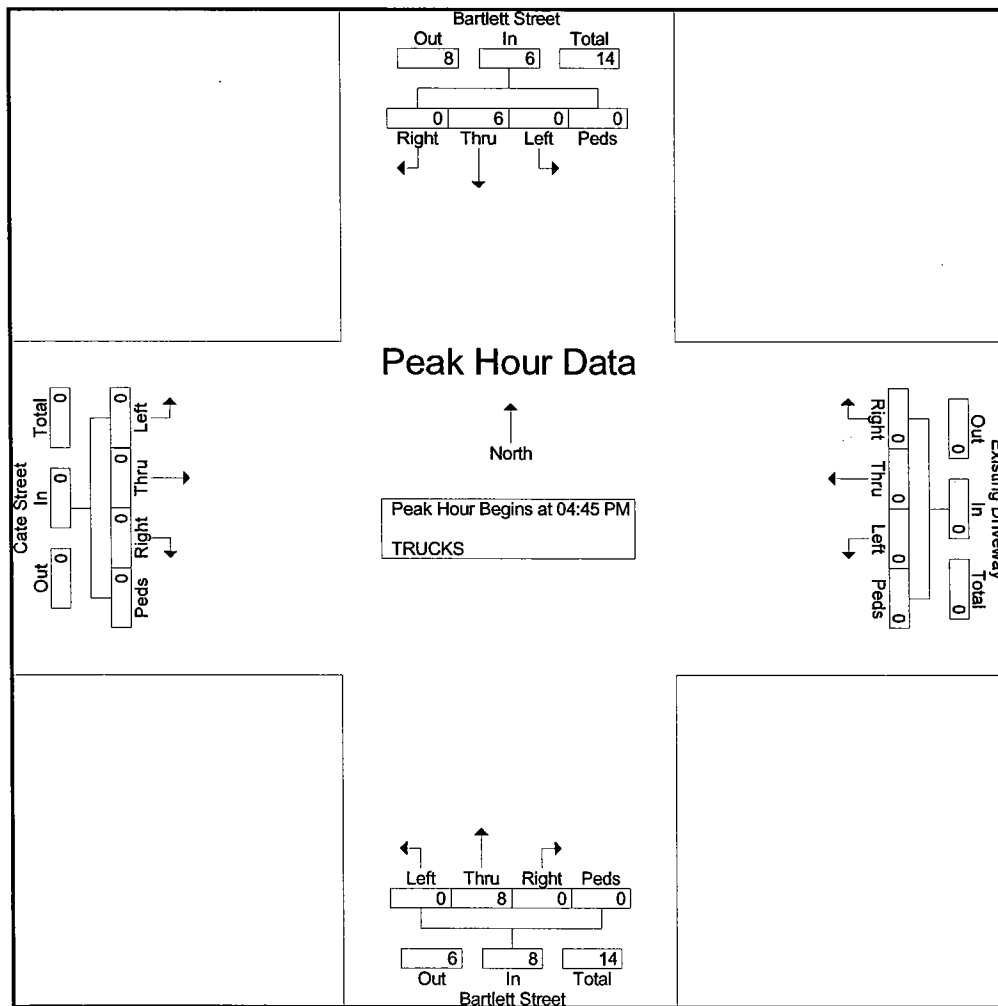


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_Thurs_PM_Bartlett-Cate
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	Bartlett Street From North					Existing Driveway From East					Bartlett Street From South					Cate Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
05:00 PM	0	4	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
05:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total Volume	0	6	0	0	6	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	14
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.375	.000	.000	.375	.000	.000	.000	.000	.000	.000	.667	.000	.000	.667	.000	.000	.000	.000	.000	.700



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Weather: Clear
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File Name : 1831A_INT_D_Thurs_PM_Bartlett-Cate
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

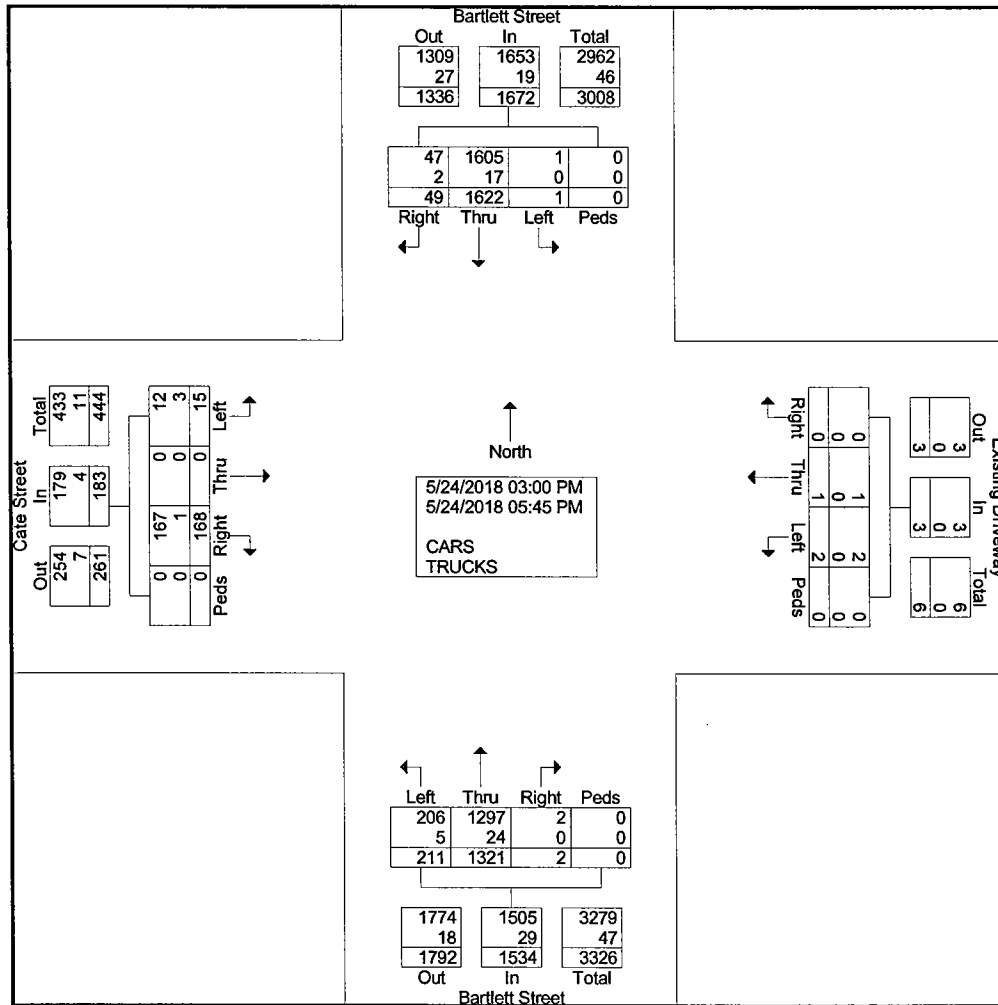
Groups Printed- CARS - TRUCKS

Start Time	Bartlett Street From North					Existing Driveway From East					Bartlett Street From South					Cate Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	4	120	0	0	124	0	0	0	0	0	0	103	24	0	127	14	0	4	0	18	269
03:15 PM	8	110	0	0	118	0	0	0	0	0	0	95	19	0	114	15	0	1	0	16	248
03:30 PM	0	124	0	0	124	0	0	0	0	0	0	113	11	0	124	6	0	3	0	9	257
03:45 PM	6	127	0	0	133	0	0	1	0	1	1	120	17	0	138	9	0	1	0	10	282
Total	18	481	0	0	499	0	0	1	0	1	1	431	71	0	503	44	0	9	0	53	1056
04:00 PM	7	142	0	0	149	0	0	0	0	0	0	98	13	0	111	27	0	1	0	28	288
04:15 PM	2	133	0	0	135	0	0	0	0	0	0	97	22	0	119	14	0	1	0	15	269
04:30 PM	6	142	0	0	148	0	0	0	0	0	0	92	16	0	108	10	0	1	0	11	267
04:45 PM	1	142	0	0	143	0	0	0	0	0	0	131	28	0	159	11	0	1	0	12	314
Total	16	559	0	0	575	0	0	0	0	0	0	418	79	0	497	62	0	4	0	66	1138
05:00 PM	2	129	1	0	132	0	0	0	0	0	0	158	21	0	179	18	0	1	0	19	330
05:15 PM	2	158	0	0	160	0	1	0	0	1	0	129	16	0	145	16	0	0	0	16	322
05:30 PM	7	149	0	0	156	0	0	0	0	0	1	95	15	0	111	18	0	0	0	18	285
05:45 PM	4	146	0	0	150	0	0	1	0	1	0	90	9	0	99	10	0	1	0	11	261
Total	15	582	1	0	598	0	1	1	0	2	1	472	61	0	534	62	0	2	0	64	1198
Grand Total	49	1622	1	0	1672	0	1	2	0	3	2	1321	211	0	1534	168	0	15	0	183	3392
Apprch %	2.9	97	0.1	0		0	33.3	66.7	0		0.1	86.1	13.8	0		91.8	0	8.2	0		
Total %	1.4	47.8	0	0	49.3	0	0	0.1	0	0.1	0.1	38.9	6.2	0	45.2	5	0	0.4	0	5.4	
CARS	47	1605	1	0	1653	0	1	2	0	3	2	1297	206	0	1505	167	0	12	0	179	3340
% CARS	95.9	99	100	0	98.9	0	100	100	0	100	100	98.2	97.6	0	98.1	99.4	0	80	0	97.8	98.5
TRUCKS	2	17	0	0	19	0	0	0	0	0	0	24	5	0	29	1	0	3	0	4	52
% TRUCKS	4.1	1	0	0	1.1	0	0	0	0	0	0	1.8	2.4	0	1.9	0.6	0	20	0	2.2	1.5

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_Thurs_PM_Bartlett-Cate
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



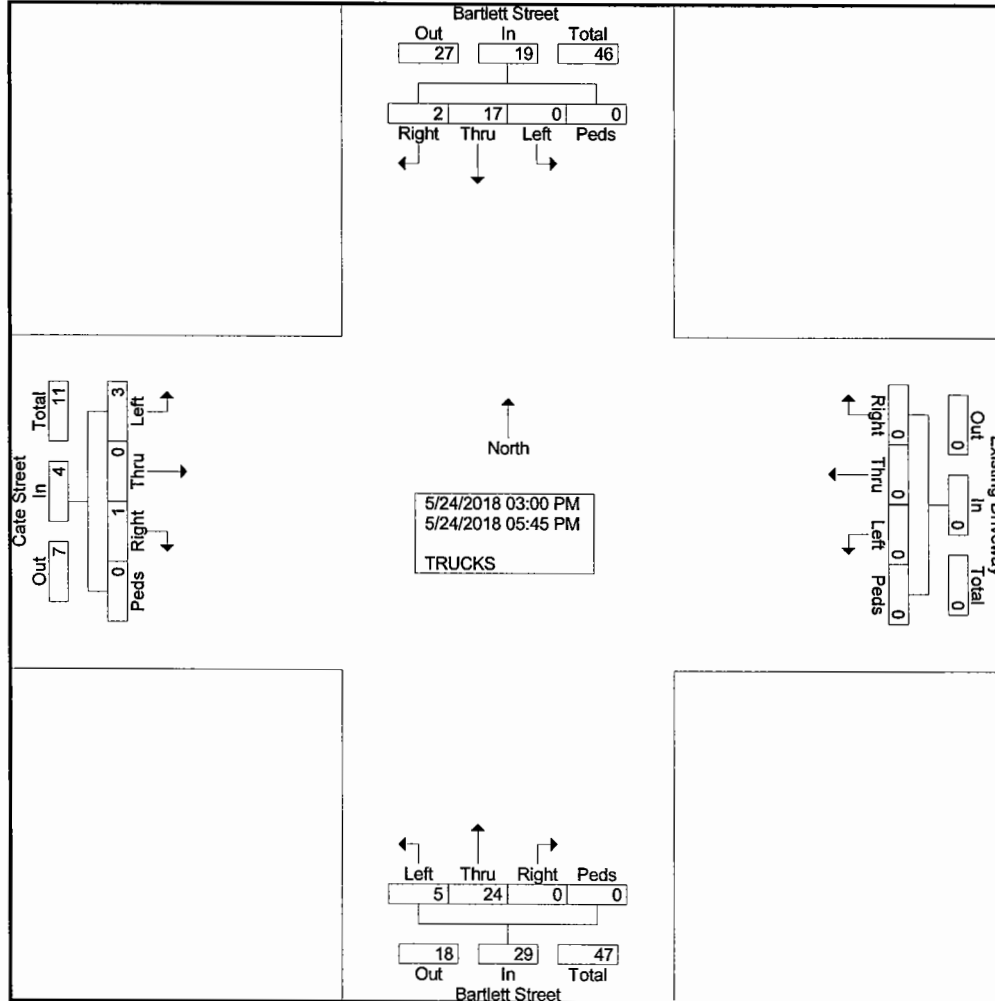
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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_Thurs_PM_Bartlett-Cate
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- TRUCKS

Start Time	Bartlett Street From North					Existing Driveway From East					Bartlett Street From South					Cate Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	0	6	0	0	6	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	10
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	4
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	2	0	4	0	0	1	0	1	5
Total	0	6	0	0	6	0	0	0	0	0	0	8	4	0	12	0	0	2	0	2	20
04:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	1	0	3	0	0	1	0	1	5
04:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	1	3	0	0	4	0	0	0	0	0	0	3	0	0	3	1	0	0	0	1	8
04:45 PM	0	1	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
Total	1	6	0	0	7	0	0	0	0	0	0	8	1	0	9	1	0	1	0	2	18
05:00 PM	0	4	0	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
05:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
05:45 PM	1	0	0	0	1	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	4
Total	1	5	0	0	6	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	14
Grand Total	2	17	0	0	19	0	0	0	0	0	0	24	5	0	29	1	0	3	0	4	52
Apprch %	10.5	89.5	0	0		0	0	0	0		0	82.8	17.2	0		25	0	75	0		
Total %	3.8	32.7	0	0	36.5	0	0	0	0		0	46.2	9.6	0	55.8	1.9	0	5.8	0	7.7	

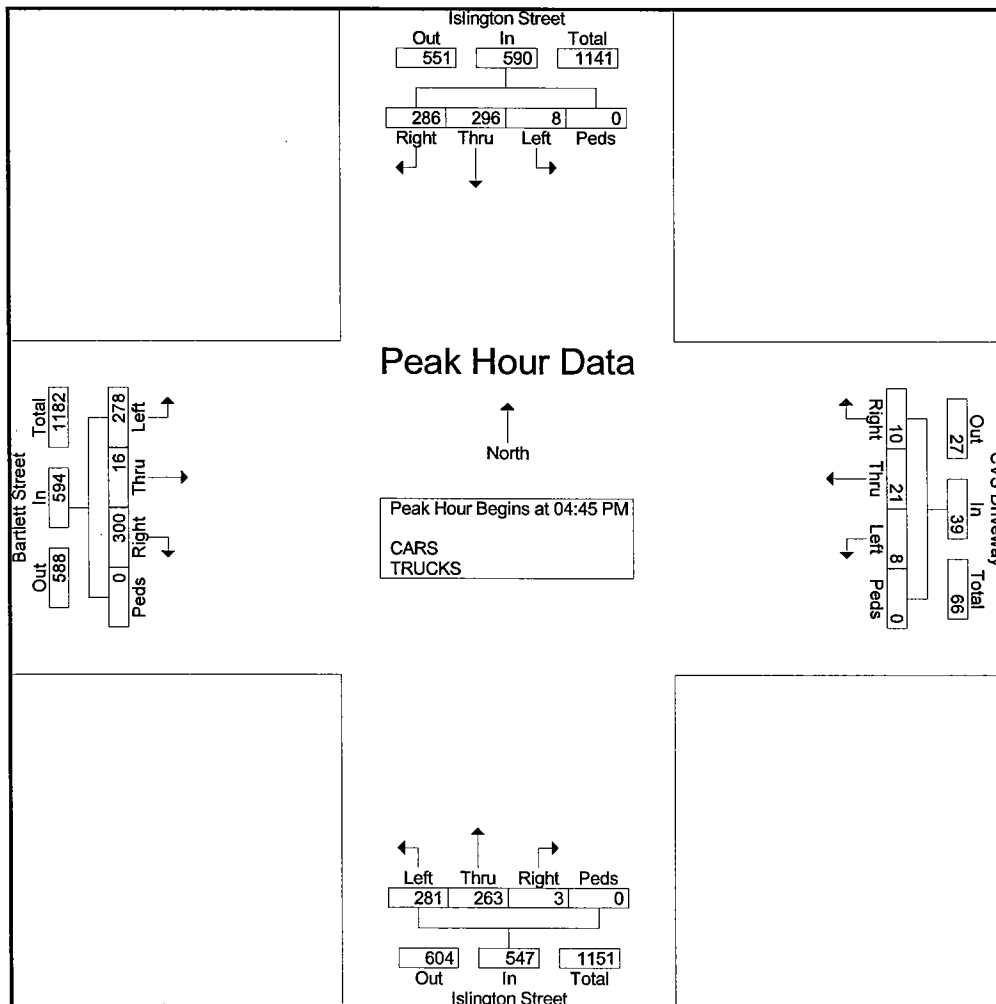


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_E_Thurs_PM_Islington-Bartlett
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	84	84	1	0	169	3	4	1	0	8	0	64	69	0	133	73	6	61	0	140	450
05:00 PM	91	67	1	0	159	2	5	3	0	10	3	75	83	0	161	67	1	69	0	137	467
05:15 PM	68	81	3	0	152	2	5	3	0	10	0	65	70	0	135	83	2	68	0	153	450
05:30 PM	43	64	3	0	110	3	7	1	0	11	0	59	59	0	118	77	7	80	0	164	403
Total Volume	286	296	8	0	590	10	21	8	0	39	3	263	281	0	547	300	16	278	0	594	1770
% App. Total	48.5	50.2	1.4	0		25.6	53.8	20.5	0		0.5	48.1	51.4	0		50.5	2.7	46.8	0		
PHF	.786	.881	.667	.000	.873	.833	.750	.667	.000	.886	.250	.877	.846	.000	.849	.904	.571	.869	.000	.905	.948

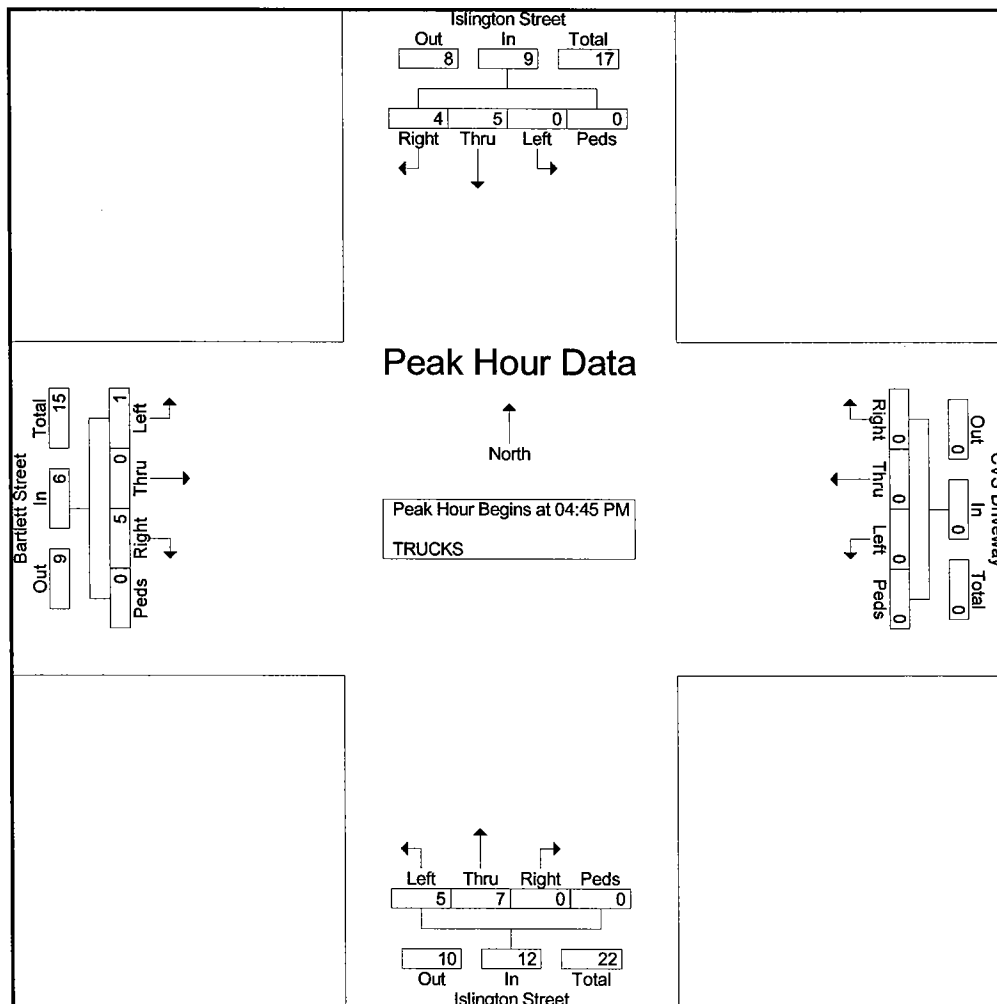


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P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_E_Thurs_PM_Islington-Bartlett
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	1	1	0	0	2	0	0	0	0	0	0	2	2	0	4	1	0	1	0	2	8
05:00 PM	1	2	0	0	3	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	6
05:15 PM	2	1	0	0	3	0	0	0	0	0	0	4	1	0	5	1	0	0	0	1	9
05:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	4
Total Volume	4	5	0	0	9	0	0	0	0	0	0	7	5	0	12	5	0	1	0	6	27
% App. Total	44.4	55.6	0	0		0	0	0	0	0	0	58.3	41.7	0		83.3	0	16.7	0		
PHF	.500	.625	.000	.000	.750	.000	.000	.000	.000	.000	.000	.438	.625	.000	.600	.625	.000	.250	.000	.750	.750



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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_E_Thurs_PM_Islington-Bartlett
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

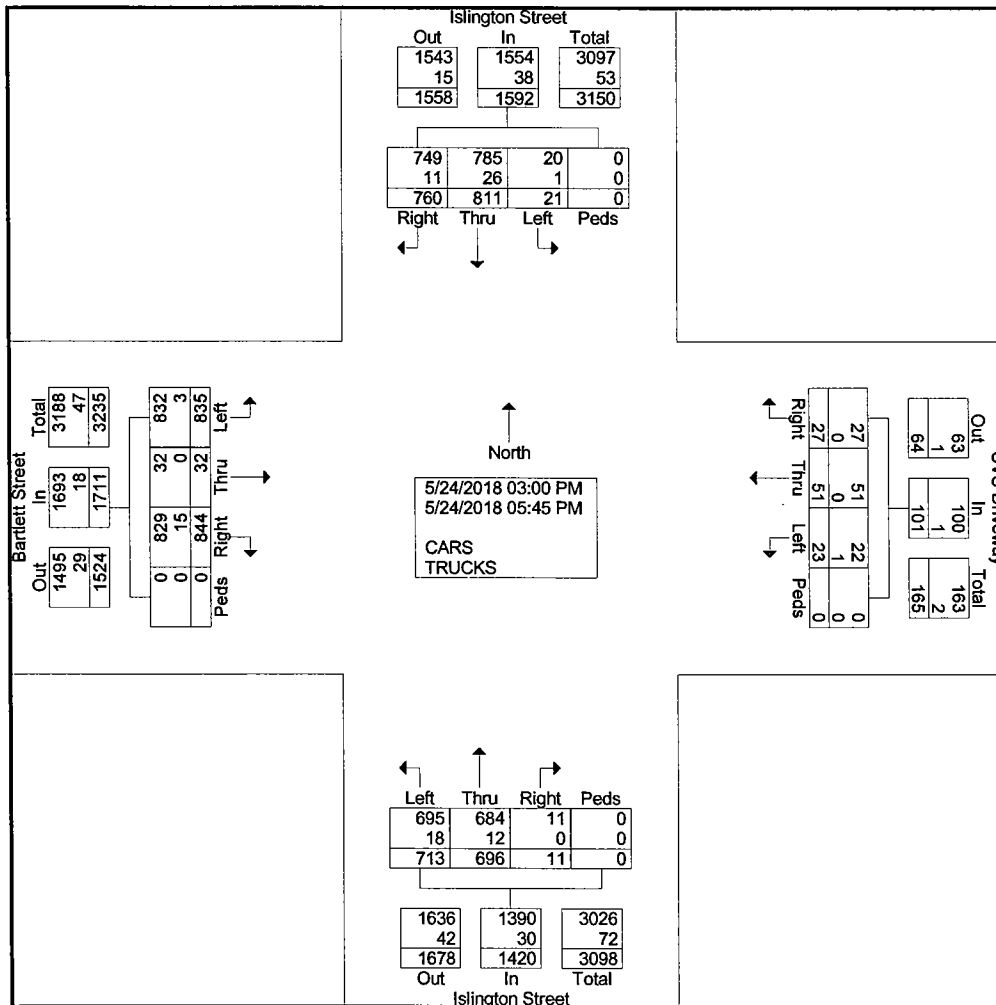
Groups Printed- CARS - TRUCKS

Start Time	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	78	64	2	0	144	3	3	2	0	8	0	45	50	0	95	69	3	61	0	133	380
03:15 PM	61	72	1	0	134	2	3	2	0	7	3	49	48	0	100	58	4	54	0	116	357
03:30 PM	61	56	2	0	119	3	5	2	0	10	1	61	56	0	118	64	2	66	0	132	379
03:45 PM	73	84	1	0	158	0	1	0	0	1	1	54	64	0	119	59	2	72	0	133	411
Total	273	276	6	0	555	8	12	6	0	26	5	209	218	0	432	250	11	253	0	514	1527
04:00 PM	45	66	3	0	114	2	5	1	0	8	3	55	60	0	118	71	1	87	0	159	399
04:15 PM	67	63	0	0	130	1	4	2	0	7	0	55	46	0	101	70	1	65	0	136	374
04:30 PM	42	58	4	0	104	5	4	3	0	12	0	64	60	0	124	70	2	73	0	145	385
04:45 PM	84	84	1	0	169	3	4	1	0	8	0	64	69	0	133	73	6	61	0	140	450
Total	238	271	8	0	517	11	17	7	0	35	3	238	235	0	476	284	10	286	0	580	1608
05:00 PM	91	67	1	0	159	2	5	3	0	10	3	75	83	0	161	67	1	69	0	137	467
05:15 PM	68	81	3	0	152	2	5	3	0	10	0	65	70	0	135	83	2	68	0	153	450
05:30 PM	43	64	3	0	110	3	7	1	0	11	0	59	59	0	118	77	7	80	0	164	403
05:45 PM	47	52	0	0	99	1	5	3	0	9	0	50	48	0	98	83	1	79	0	163	369
Total	249	264	7	0	520	8	22	10	0	40	3	249	260	0	512	310	11	296	0	617	1689
Grand Total	760	811	21	0	1592	27	51	23	0	101	11	696	713	0	1420	844	32	835	0	1711	4824
Apprch %	47.7	50.9	1.3	0		26.7	50.5	22.8	0		0.8	49	50.2	0		49.3	1.9	48.8	0		
Total %	15.8	16.8	0.4	0	33	0.6	1.1	0.5	0	2.1	0.2	14.4	14.8	0	29.4	17.5	0.7	17.3	0	35.5	
CARS	749	785	20	0	1554	27	51	22	0	100	11	684	695	0	1390	829	32	832	0	1693	4737
% CARS	98.6	96.8	95.2	0	97.6	100	100	95.7	0	99	100	98.3	97.5	0	97.9	98.2	100	99.6	0	98.9	98.2
TRUCKS	11	26	1	0	38	0	0	1	0	1	0	12	18	0	30	15	0	3	0	18	87
% TRUCKS	1.4	3.2	4.8	0	2.4	0	0	4.3	0	1	0	1.7	2.5	0	2.1	1.8	0	0.4	0	1.1	1.8

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P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_E_Thurs_PM_Islington-Bartlett
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



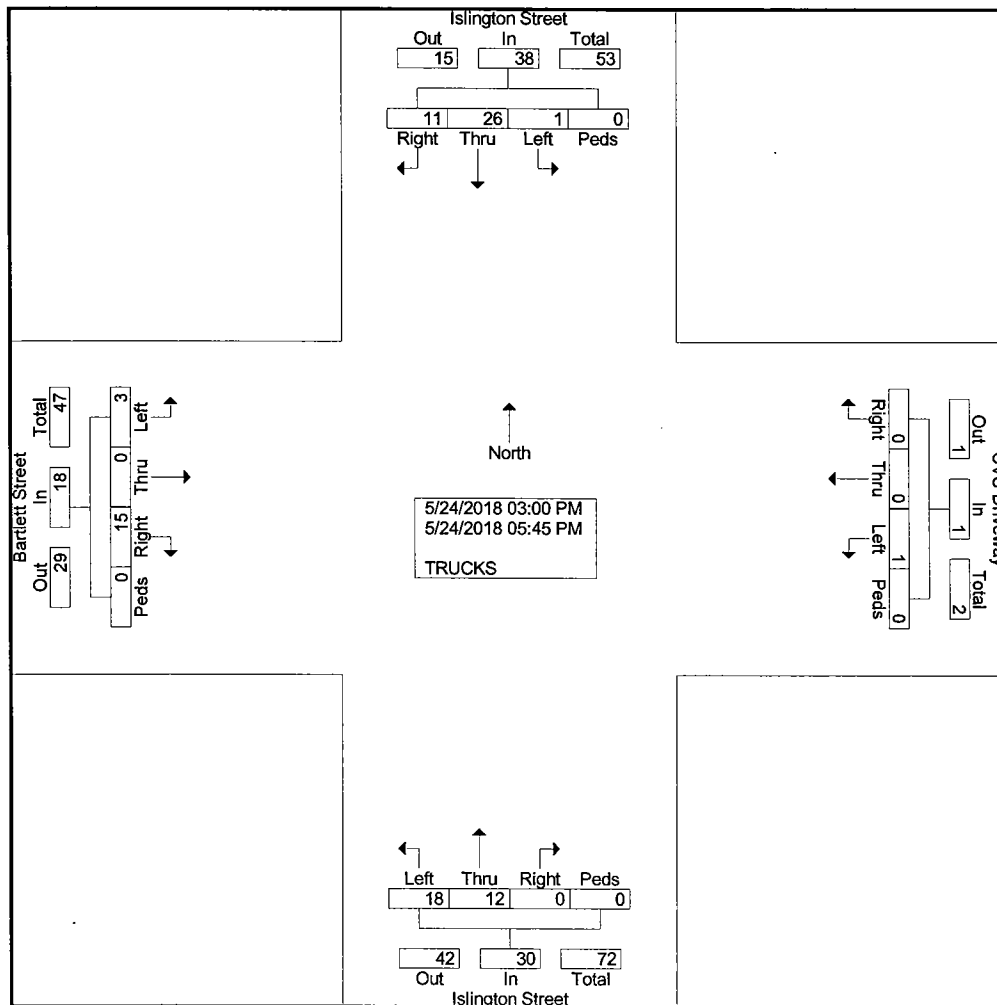
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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_E_Thurs_PM_Islington-Bartlett
Site Code : 1831A
Start Date : 5/24/2018
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Groups Printed- TRUCKS

	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	3	3	1	0	7	0	0	0	0	0	0	3	1	0	4	5	0	0	0	5	16
03:15 PM	2	3	0	0	5	0	0	1	0	1	0	0	1	0	1	1	0	0	0	1	8
03:30 PM	0	3	0	0	3	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4
03:45 PM	2	5	0	0	7	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	9
Total	7	14	1	0	22	0	0	1	0	1	0	3	5	0	8	6	0	0	0	6	37
04:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	3	0	4	1	0	0	0	1	6
04:15 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
04:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	2	0	2	0	4	7
04:45 PM	1	1	0	0	2	0	0	0	0	0	0	2	2	0	4	1	0	1	0	2	8
Total	1	5	0	0	6	0	0	0	0	0	0	4	7	0	11	5	0	3	0	8	25
05:00 PM	1	2	0	0	3	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	6
05:15 PM	2	1	0	0	3	0	0	0	0	0	0	4	1	0	5	1	0	0	0	1	9
05:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	4
05:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	6
Total	3	7	0	0	10	0	0	0	0	0	0	5	6	0	11	4	0	0	0	4	25
Grand Total	11	26	1	0	38	0	0	1	0	1	0	12	18	0	30	15	0	3	0	18	87
Apprch %	28.9	68.4	2.6	0		0	0	100	0		0	40	60	0		83.3	0	16.7	0		
Total %	12.6	29.9	1.1	0	43.7	0	0	1.1	0	1.1	0	13.8	20.7	0	34.5	17.2	0	3.4	0	20.7	

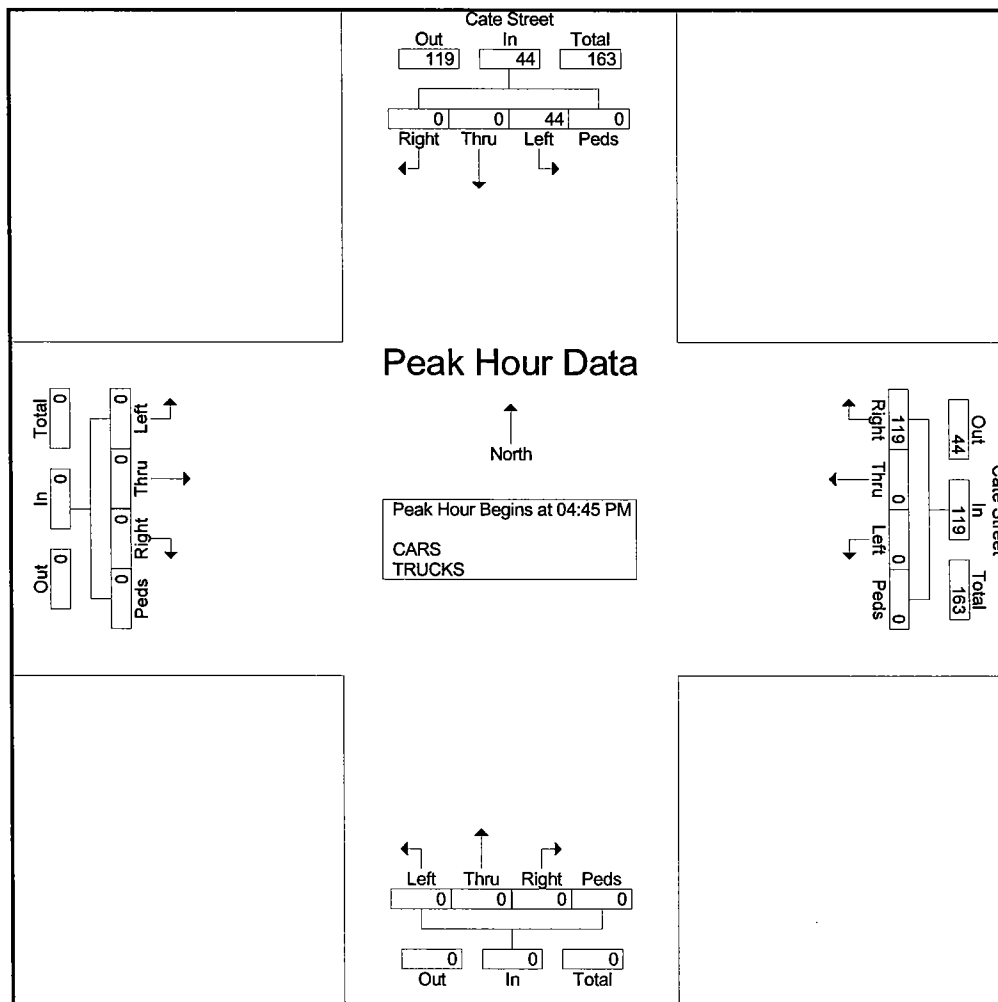


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St PM
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	Cate Street From North					Cate Street From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	6	0	6	33	0	0	0	33	0	0	0	0	0	0	0	0	0	0	39
05:00 PM	0	0	16	0	16	41	0	0	0	41	0	0	0	0	0	0	0	0	0	0	57
05:15 PM	0	0	9	0	9	23	0	0	0	23	0	0	0	0	0	0	0	0	0	0	32
05:30 PM	0	0	13	0	13	22	0	0	0	22	0	0	0	0	0	0	0	0	0	0	35
Total Volume	0	0	44	0	44	119	0	0	0	119	0	0	0	0	0	0	0	0	0	0	163
% App. Total	0	0	100	0		100	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.688	.000	.688	.726	.000	.000	.000	.726	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.715

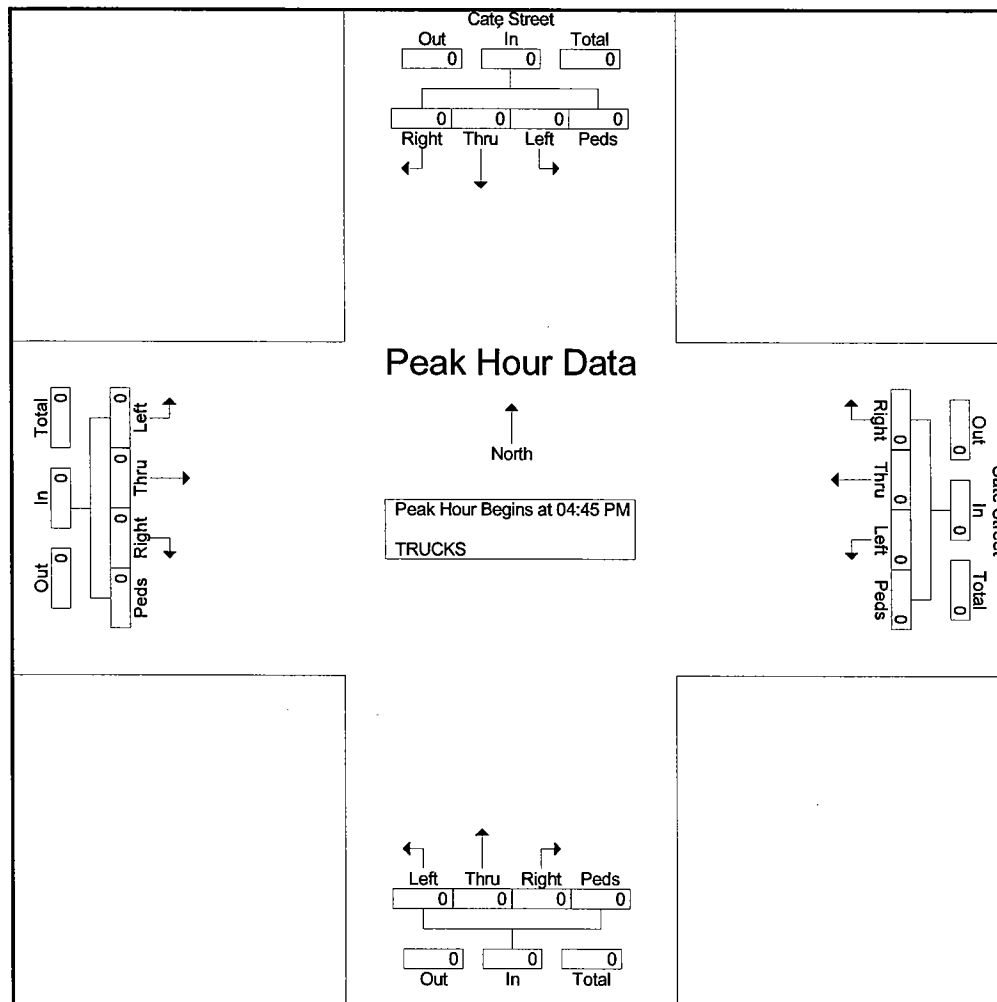


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St PM
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	Cate Street From North					Cate Street From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St PM
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

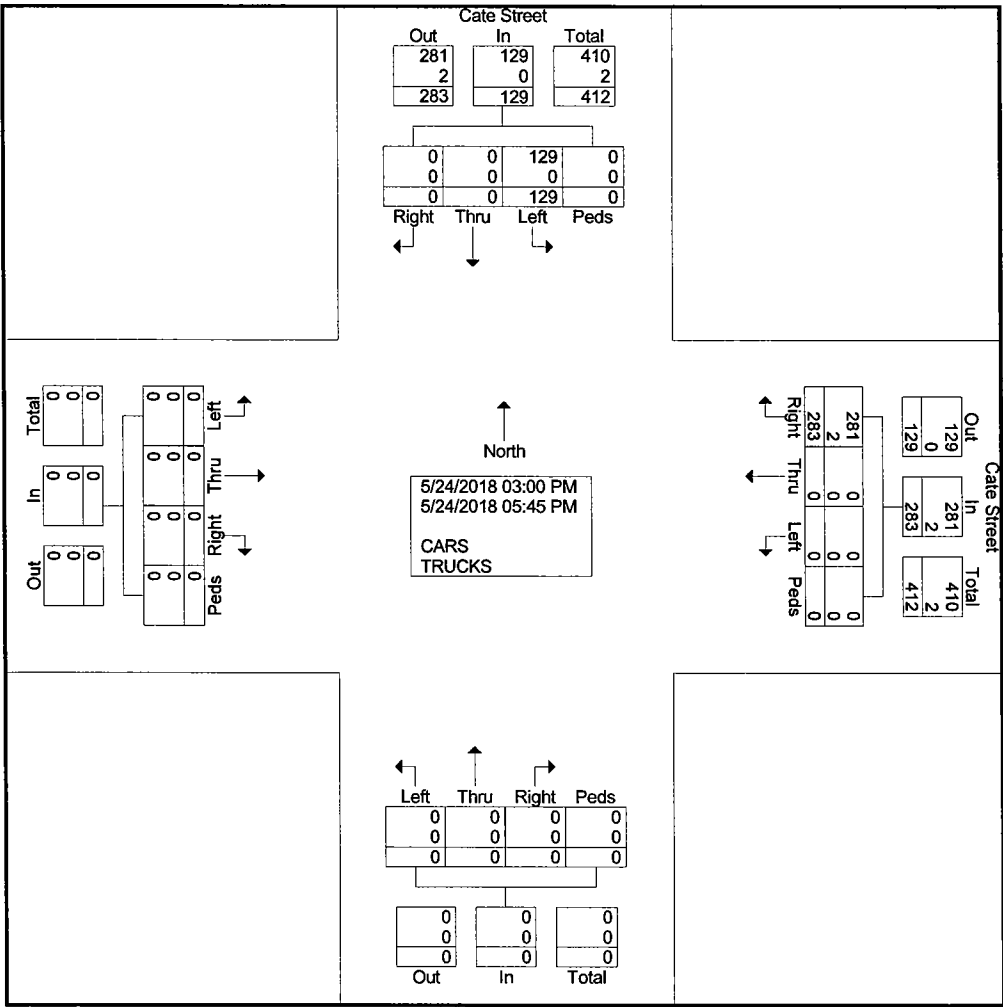
Groups Printed- CARS - TRUCKS

[illegible]

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St PM
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



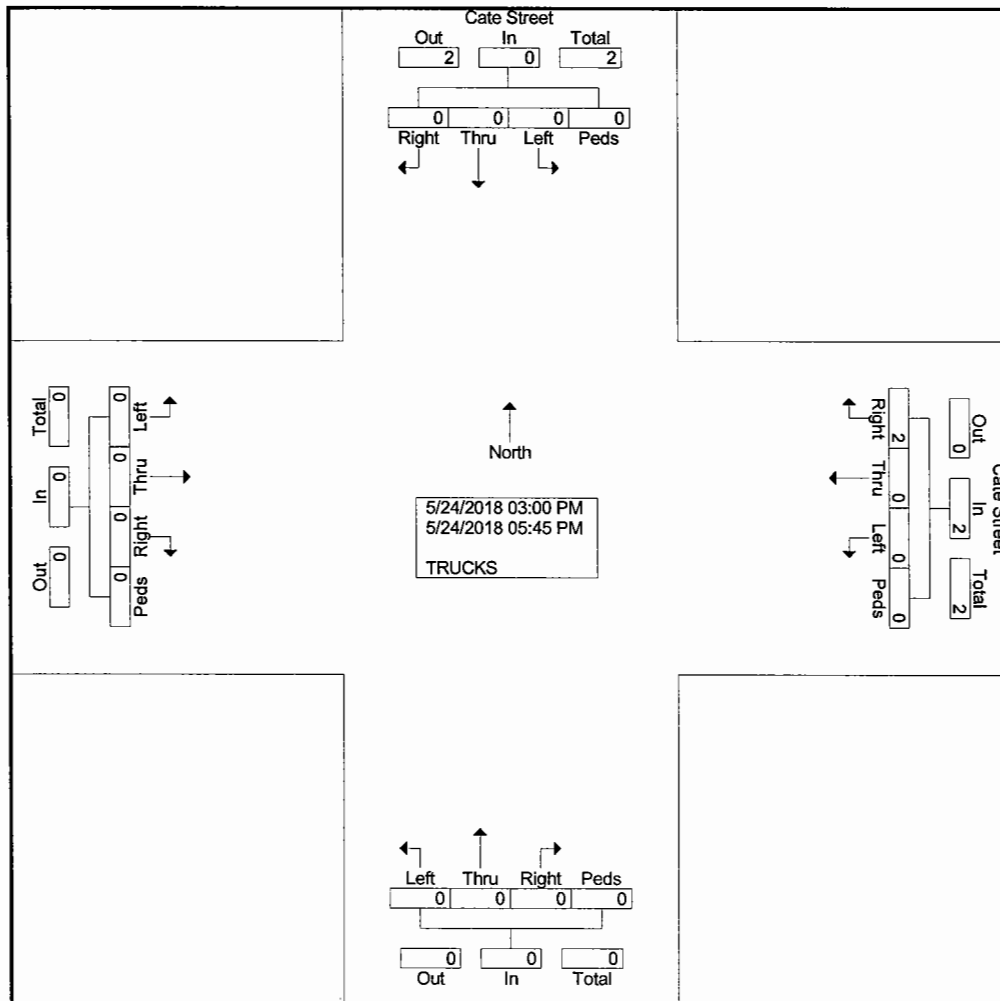
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Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St PM
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- TRUCKS

	Cate Street From North					Cate Street From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
04:00 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
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	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	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	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Apprch %	0	0	0	0		100	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	0	0		100	0	0	0	100	0	0	0	0		0	0	0	0		

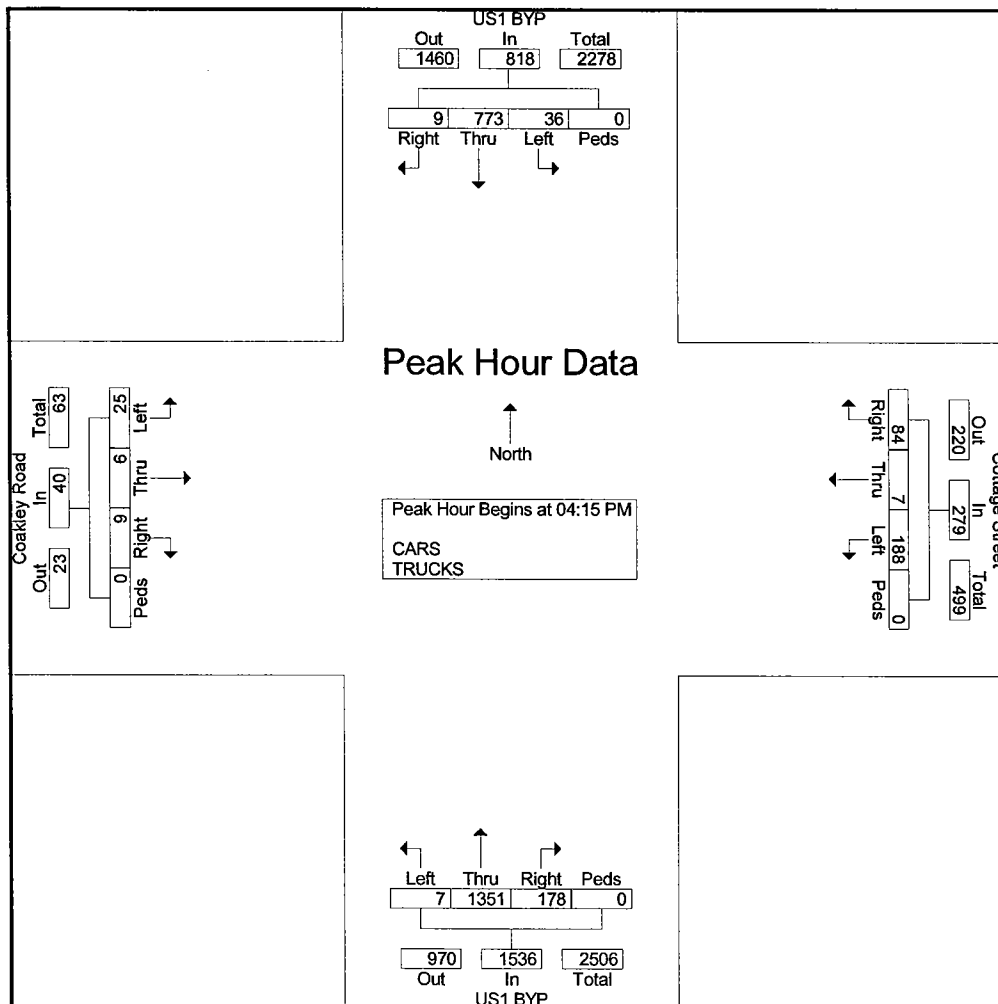


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P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_Thurs_PM_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	US1 BYP From North					Cottage Street From East					US1 BYP From South					Coakley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	2	186	10	0	198	14	0	40	0	54	39	341	0	0	380	1	3	5	0	9	641
04:30 PM	4	198	8	0	210	10	4	50	0	64	52	335	3	0	390	3	0	7	0	10	674
04:45 PM	1	196	10	0	207	27	1	41	0	69	35	312	0	0	347	4	0	10	0	14	637
05:00 PM	2	193	8	0	203	33	2	57	0	92	52	363	4	0	419	1	3	3	0	7	721
Total Volume	9	773	36	0	818	84	7	188	0	279	178	1351	7	0	1536	9	6	25	0	40	2673
% App. Total	1.1	94.5	4.4	0		30.1	2.5	67.4	0		11.6	88	0.5	0		22.5	15	62.5	0		
PHF	.563	.976	.900	.000	.974	.636	.438	.825	.000	.758	.856	.930	.438	.000	.916	.563	.500	.625	.000	.714	.927

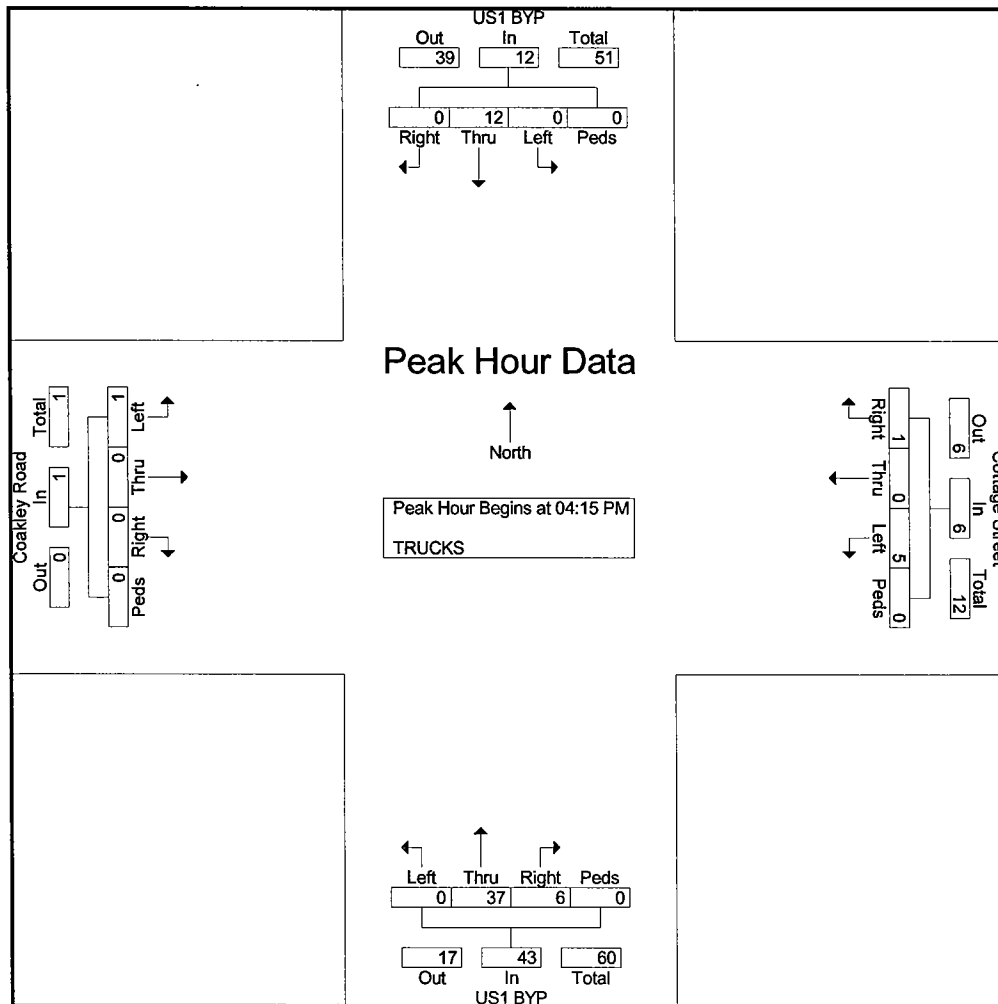


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_Thurs_PM_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	US1 BYP From North					Cottage Street From East					US1 BYP From South					Coakley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:15 PM to 05:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	1	0	0	1	1	0	1	0	2	2	16	0	0	18	0	0	0	0	0	21
04:30 PM	0	3	0	0	3	0	0	3	0	3	2	7	0	0	9	0	0	1	0	1	16
04:45 PM	0	6	0	0	6	0	0	1	0	1	1	5	0	0	6	0	0	0	0	0	13
05:00 PM	0	2	0	0	2	0	0	0	0	0	1	9	0	0	10	0	0	0	0	0	12
Total Volume	0	12	0	0	12	1	0	5	0	6	6	37	0	0	43	0	0	1	0	1	62
% App. Total	0	100	0	0		16.7	0	83.3	0		14	86	0	0		0	0	100	0		
PHF	.000	.500	.000	.000	.500	.250	.000	.417	.000	.500	.750	.578	.000	.000	.597	.000	.000	.250	.000	.250	.738



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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_Thurs_PM_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/24/2018
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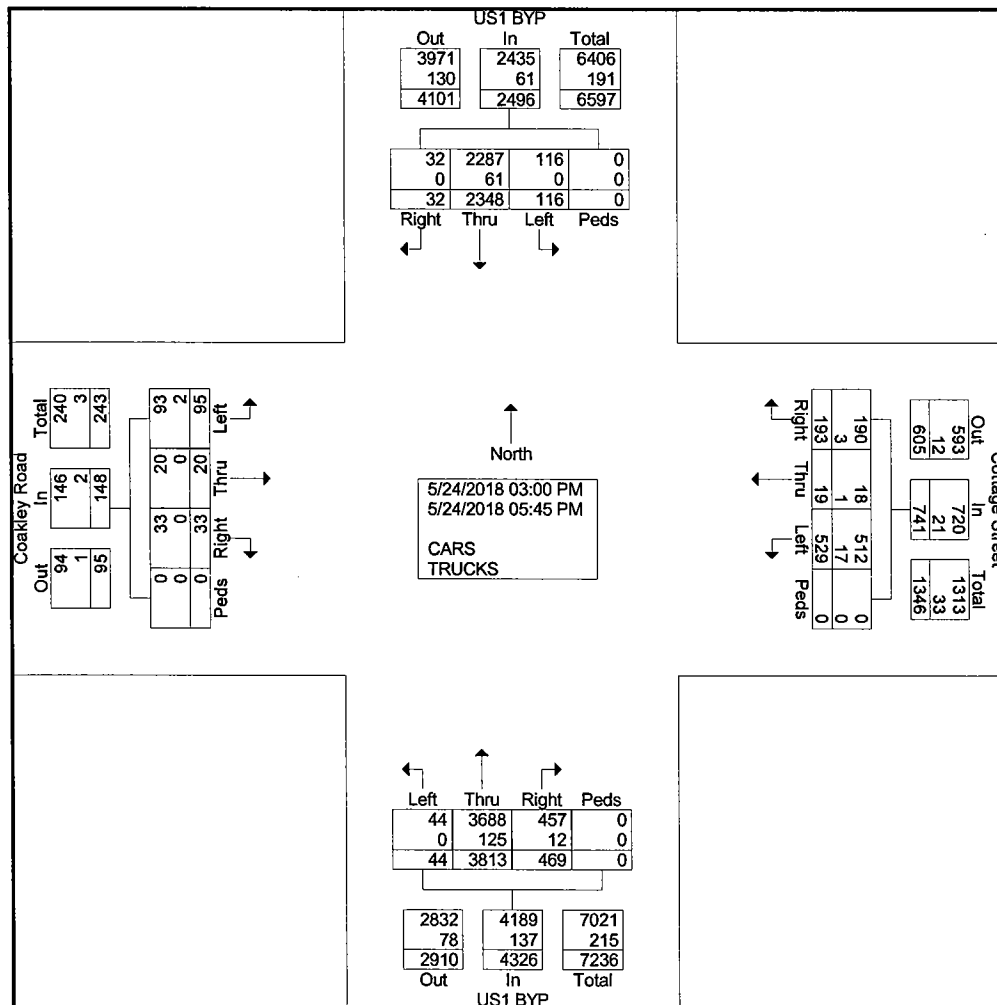
Groups Printed- CARS - TRUCKS

Start Time	US1 BYP From North					Cottage Street From East					US1 BYP From South					Coakley Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	4	212	10	0	226	18	0	32	0	50	36	317	3	0	356	2	3	9	0	14	646
03:15 PM	5	188	16	0	209	12	3	49	0	64	32	307	5	0	344	5	2	13	0	20	637
03:30 PM	3	194	8	0	205	12	1	45	0	58	48	325	3	0	376	3	1	8	0	12	651
03:45 PM	4	201	5	0	210	12	3	52	0	67	34	345	5	0	384	1	1	7	0	9	670
Total	16	795	39	0	850	54	7	178	0	239	150	1294	16	0	1460	11	7	37	0	55	2604
04:00 PM	1	208	11	0	220	9	3	45	0	57	55	326	8	0	389	5	2	10	0	17	683
04:15 PM	2	186	10	0	198	14	0	40	0	54	39	341	0	0	380	1	3	5	0	9	641
04:30 PM	4	198	8	0	210	10	4	50	0	64	52	335	3	0	390	3	0	7	0	10	674
04:45 PM	1	196	10	0	207	27	1	41	0	69	35	312	0	0	347	4	0	10	0	14	637
Total	8	788	39	0	835	60	8	176	0	244	181	1314	11	0	1506	13	5	32	0	50	2635
05:00 PM	2	193	8	0	203	33	2	57	0	92	52	363	4	0	419	1	3	3	0	7	721
05:15 PM	1	202	8	0	211	16	1	38	0	55	38	315	6	0	359	0	2	11	0	13	638
05:30 PM	4	183	16	0	203	14	0	46	0	60	31	273	3	0	307	4	1	8	0	13	583
05:45 PM	1	187	6	0	194	16	1	34	0	51	17	254	4	0	275	4	2	4	0	10	530
Total	8	765	38	0	811	79	4	175	0	258	138	1205	17	0	1360	9	8	26	0	43	2472
Grand Total	32	2348	116	0	2496	193	19	529	0	741	469	3813	44	0	4326	33	20	95	0	148	7711
Apprch %	1.3	94.1	4.6	0		26	2.6	71.4	0		10.8	88.1	1	0		22.3	13.5	64.2	0		
Total %	0.4	30.5	1.5	0	32.4	2.5	0.2	6.9	0	9.6	6.1	49.4	0.6	0	56.1	0.4	0.3	1.2	0	1.9	
CARS	32	2287	116	0	2435	190	18	512	0	720	457	3688	44	0	4189	33	20	93	0	146	7490
% CARS	100	97.4	100	0	97.6	98.4	94.7	96.8	0	97.2	97.4	96.7	100	0	96.8	100	100	97.9	0	98.6	97.1
TRUCKS	0	61	0	0	61	3	1	17	0	21	12	125	0	0	137	0	0	2	0	2	221
% TRUCKS	0	2.6	0	0	2.4	1.6	5.3	3.2	0	2.8	2.6	3.3	0	0	3.2	0	0	2.1	0	1.4	2.9

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_Thurs_PM_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



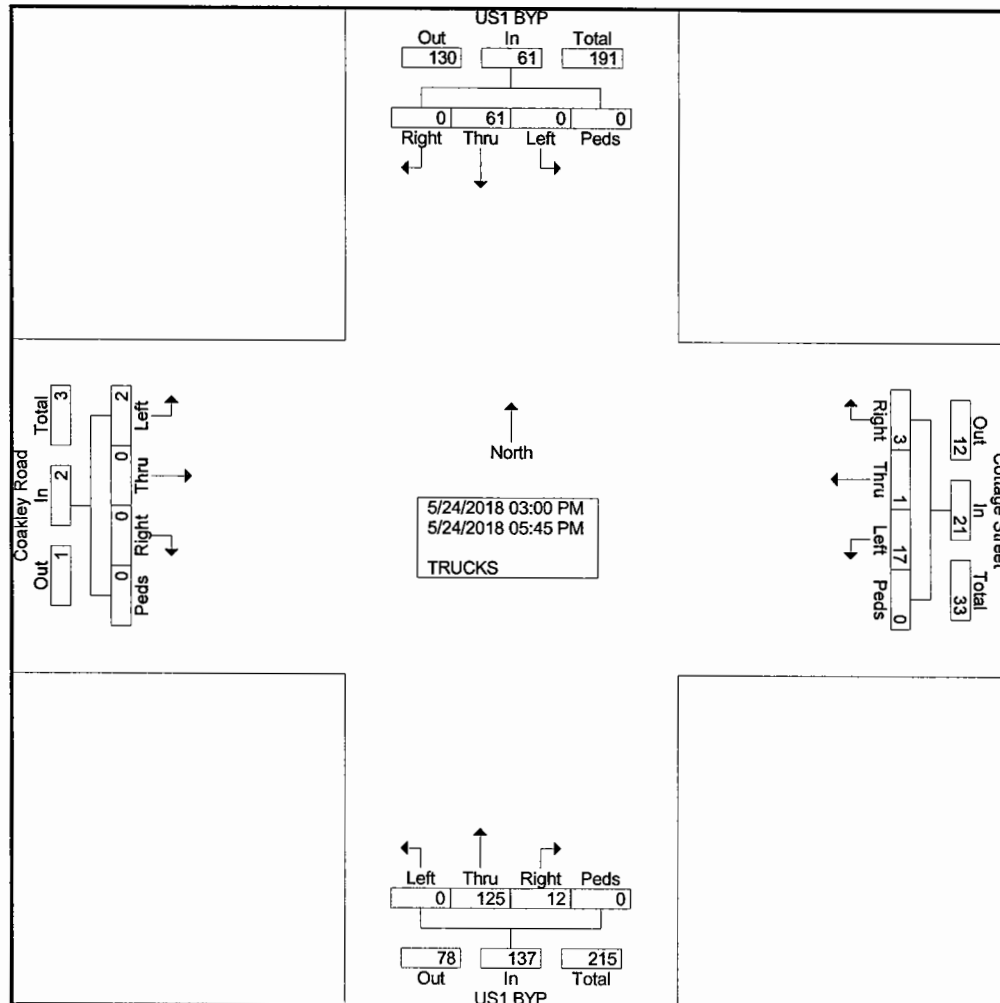
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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_Thurs_PM_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- TRUCKS

Start Time	US1 BYP From North					Cottage Street From East					US1 BYP From South					Coakley Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	0	10	0	0	10	0	0	0	0	0	1	12	0	0	13	0	0	0	0	0	23
03:15 PM	0	12	0	0	12	0	1	1	0	2	0	25	0	0	25	0	0	0	0	0	39
03:30 PM	0	6	0	0	6	0	0	1	0	1	2	15	0	0	17	0	0	1	0	1	25
03:45 PM	0	7	0	0	7	1	0	5	0	6	0	17	0	0	17	0	0	0	0	0	30
Total	0	35	0	0	35	1	1	7	0	9	3	69	0	0	72	0	0	1	0	1	117
04:00 PM	0	4	0	0	4	1	0	2	0	3	2	8	0	0	10	0	0	0	0	0	17
04:15 PM	0	1	0	0	1	1	0	1	0	2	2	16	0	0	18	0	0	0	0	0	21
04:30 PM	0	3	0	0	3	0	0	3	0	3	2	7	0	0	9	0	0	1	0	1	16
04:45 PM	0	6	0	0	6	0	0	1	0	1	1	5	0	0	6	0	0	0	0	0	13
Total	0	14	0	0	14	2	0	7	0	9	7	36	0	0	43	0	0	1	0	1	67
05:00 PM	0	2	0	0	2	0	0	0	0	0	1	9	0	0	10	0	0	0	0	0	12
05:15 PM	0	5	0	0	5	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	10
05:30 PM	0	2	0	0	2	0	0	1	0	1	1	3	0	0	4	0	0	0	0	0	7
05:45 PM	0	3	0	0	3	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	8
Total	0	12	0	0	12	0	0	3	0	3	2	20	0	0	22	0	0	0	0	0	37
Grand Total	0	61	0	0	61	3	1	17	0	21	12	125	0	0	137	0	0	2	0	2	221
Apprch %	0	100	0	0		14.3	4.8	81	0		8.8	91.2	0	0		0	0	100	0		
Total %	0	27.6	0	0	27.6	1.4	0.5	7.7	0	9.5	5.4	56.6	0	0	62	0	0	0.9	0	0.9	

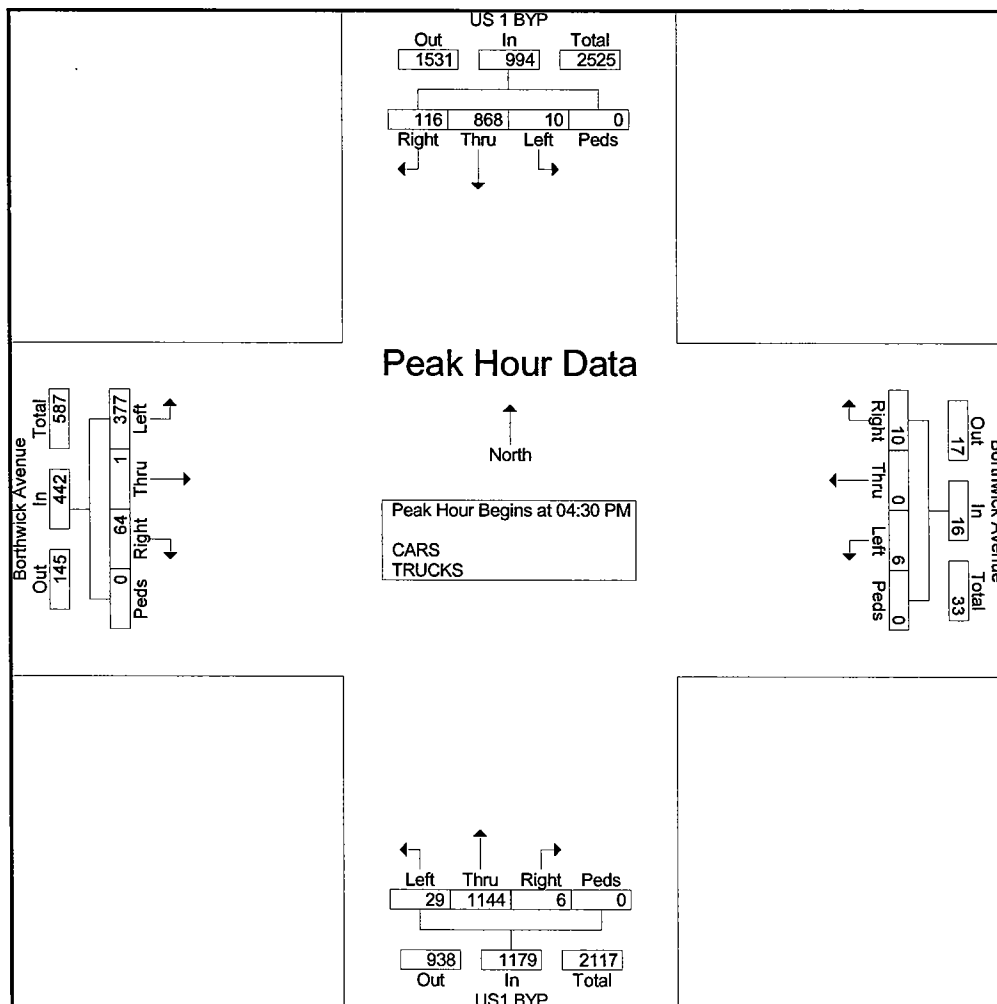


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_H_Thurs_PM_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	US 1 BYP From North					Borthwick Avenue From East					US1 BYP From South					Borthwick Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	28	220	3	0	251	2	0	1	0	3	0	293	4	0	297	15	0	112	0	127	678
04:45 PM	25	214	2	0	241	4	0	3	0	7	5	270	11	0	286	15	0	69	0	84	618
05:00 PM	31	227	0	0	258	3	0	1	0	4	1	297	6	0	304	18	1	115	0	134	700
05:15 PM	32	207	5	0	244	1	0	1	0	2	0	284	8	0	292	16	0	81	0	97	635
Total Volume	116	868	10	0	994	10	0	6	0	16	6	1144	29	0	1179	64	1	377	0	442	2631
% App. Total	11.7	87.3	1	0		62.5	0	37.5	0		0.5	97	2.5	0		14.5	0.2	85.3	0		
PHF	.906	.956	.500	.000	.963	.625	.000	.500	.000	.571	.300	.963	.659	.000	.970	.889	.250	.820	.000	.825	.940

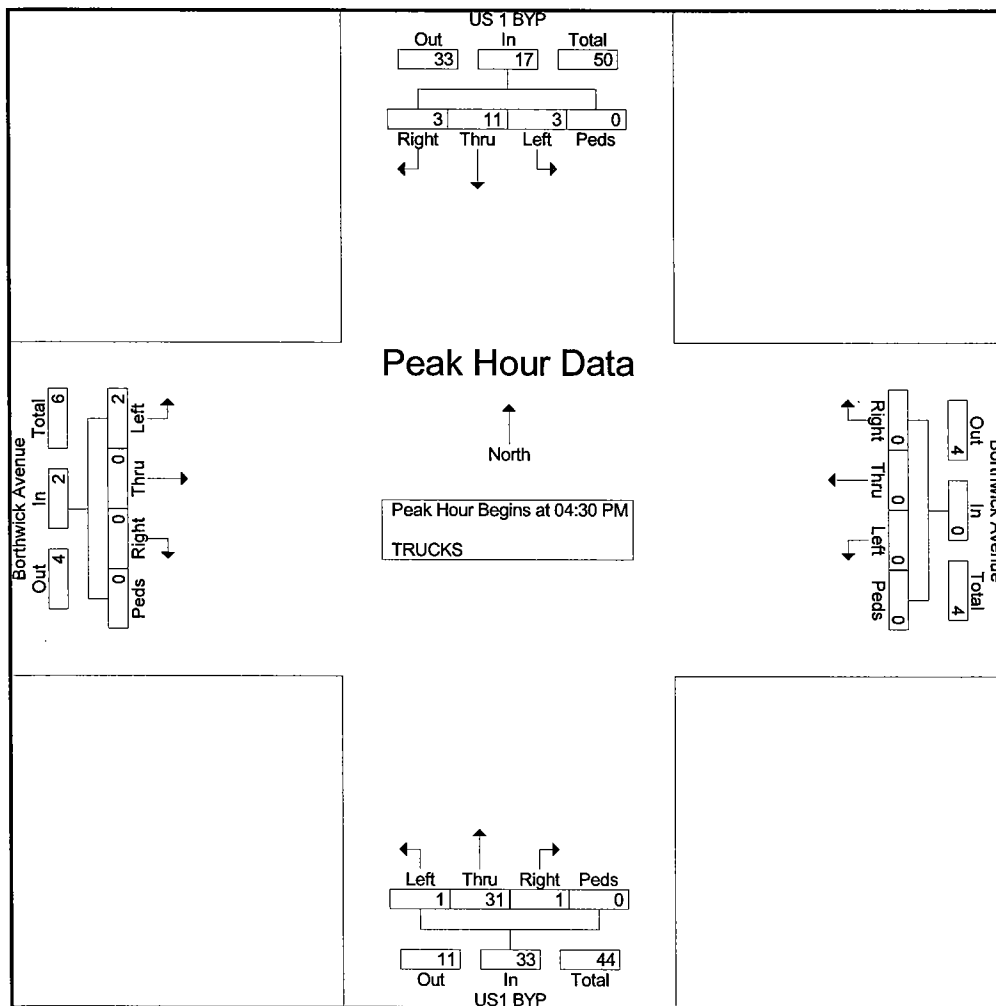


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_H_Thurs_PM_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	US 1 BYP From North					Borthwick Avenue From East					US1 BYP From South					Borthwick Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	2	2	0	4	0	0	0	0	0	0	10	0	0	10	0	0	1	0	1	15
04:45 PM	1	5	0	0	6	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0	14
05:00 PM	0	2	0	0	2	0	0	0	0	0	0	9	0	0	9	0	0	1	0	1	12
05:15 PM	2	2	1	0	5	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	11
Total Volume	3	11	3	0	17	0	0	0	0	0	1	31	1	0	33	0	0	2	0	2	52
% App. Total	17.6	64.7	17.6	0		0	0	0	0	0	3	93.9	3	0		0	0	100	0		
PHF	.375	.550	.375	.000	.708	.000	.000	.000	.000	.000	.250	.775	.250	.000	.825	.000	.000	.500	.000	.500	.867



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Weather: Clear
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File Name : 1831A_INT_H_Thurs_PM_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

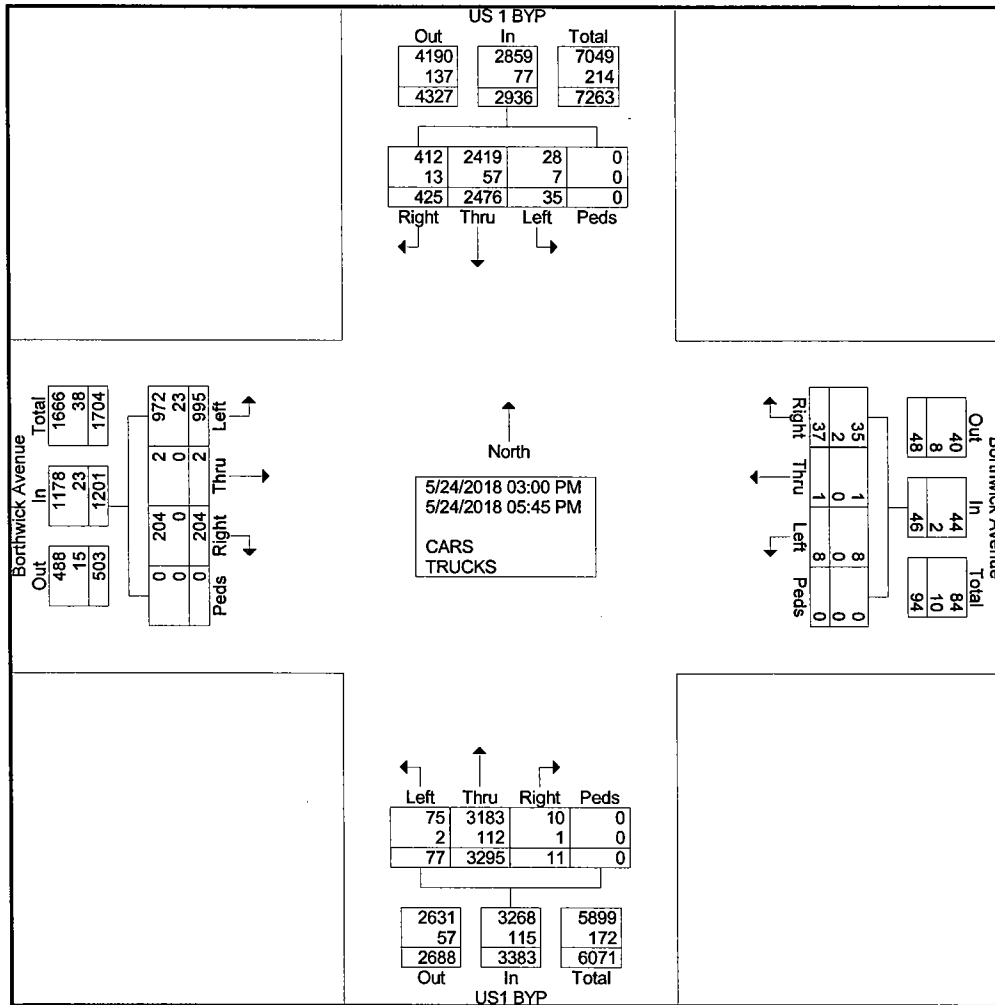
Groups Printed- CARS - TRUCKS

Start Time	US 1 BYP From North					Borthwick Avenue From East					US1 BYP From South					Borthwick Avenue From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	47	193	5	0	245	5	0	0	0	5	2	283	5	0	290	12	0	69	0	81	621
03:15 PM	46	196	3	0	245	4	0	0	0	4	0	262	10	0	272	16	0	78	0	94	615
03:30 PM	58	174	4	0	236	1	0	0	0	1	0	295	11	0	306	12	0	92	0	104	647
03:45 PM	45	213	3	0	261	5	0	0	0	5	0	285	5	0	290	16	0	78	0	94	650
Total	196	776	15	0	987	15	0	0	0	15	2	1125	31	0	1158	56	0	317	0	373	2533
04:00 PM	39	204	4	0	247	6	0	0	0	6	1	270	5	0	276	29	1	113	0	143	672
04:15 PM	27	201	1	0	229	2	0	0	0	2	0	288	6	0	294	21	0	83	0	104	629
04:30 PM	28	220	3	0	251	2	0	1	0	3	0	293	4	0	297	15	0	112	0	127	678
04:45 PM	25	214	2	0	241	4	0	3	0	7	5	270	11	0	286	15	0	69	0	84	618
Total	119	839	10	0	968	14	0	4	0	18	6	1121	26	0	1153	80	1	377	0	458	2597
05:00 PM	31	227	0	0	258	3	0	1	0	4	1	297	6	0	304	18	1	115	0	134	700
05:15 PM	32	207	5	0	244	1	0	1	0	2	0	284	8	0	292	16	0	81	0	97	635
05:30 PM	22	217	2	0	241	3	1	1	0	5	1	250	1	0	252	18	0	59	0	77	575
05:45 PM	25	210	3	0	238	1	0	1	0	2	1	218	5	0	224	16	0	46	0	62	526
Total	110	861	10	0	981	8	1	4	0	13	3	1049	20	0	1072	68	1	301	0	370	2436
Grand Total	425	2476	35	0	2936	37	1	8	0	46	11	3295	77	0	3383	204	2	995	0	1201	7566
Apprch %	14.5	84.3	1.2	0		80.4	2.2	17.4	0		0.3	97.4	2.3	0		17	0.2	82.8	0		
Total %	5.6	32.7	0.5	0	38.8	0.5	0	0.1	0	0.6	0.1	43.6	1	0	44.7	2.7	0	13.2	0	15.9	
CARS	412	2419	28	0	2859	35	1	8	0	44	10	3183	75	0	3268	204	2	972	0	1178	7349
% CARS	96.9	97.7	80	0	97.4	94.6	100	100	0	95.7	90.9	96.6	97.4	0	96.6	100	100	97.7	0	98.1	97.1
TRUCKS	13	57	7	0	77	2	0	0	0	2	1	112	2	0	115	0	0	23	0	23	217
% TRUCKS	3.1	2.3	20	0	2.6	5.4	0	0	0	4.3	9.1	3.4	2.6	0	3.4	0	0	2.3	0	1.9	2.9

Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_H_Thurs_PM_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



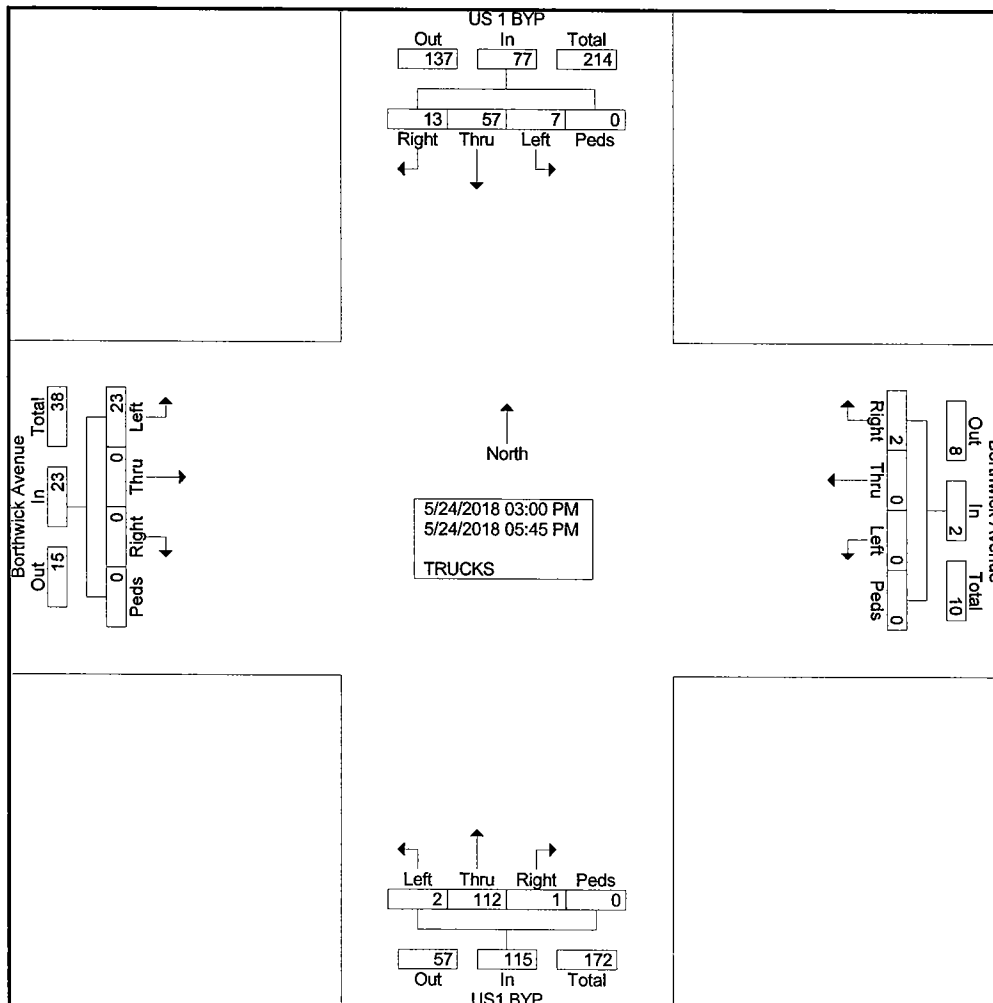
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Weather: Clear
Collected By: MV
Job Number: 1831A
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File Name : 1831A_INT_H_Thurs_PM_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- TRUCKS

Start Time	US 1 BYP From North					Borthwick Avenue From East					US1 BYP From South					Borthwick Avenue From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	2	7	1	0	10	1	0	0	0	1	0	9	1	0	10	0	0	3	0	3	24
03:15 PM	1	12	0	0	13	0	0	0	0	0	0	17	0	0	17	0	0	6	0	6	36
03:30 PM	1	5	2	0	8	0	0	0	0	0	0	13	0	0	13	0	0	3	0	3	24
03:45 PM	2	11	0	0	13	0	0	0	0	0	0	11	0	0	11	0	0	2	0	2	26
Total	6	35	3	0	44	1	0	0	0	1	0	50	1	0	51	0	0	14	0	14	110
04:00 PM	1	2	1	0	4	1	0	0	0	1	0	9	0	0	9	0	0	2	0	2	16
04:15 PM	1	2	0	0	3	0	0	0	0	0	0	16	0	0	16	0	0	3	0	3	22
04:30 PM	0	2	2	0	4	0	0	0	0	0	0	10	0	0	10	0	0	1	0	1	15
04:45 PM	1	5	0	0	6	0	0	0	0	0	1	7	0	0	8	0	0	0	0	0	14
Total	3	11	3	0	17	1	0	0	0	1	1	42	0	0	43	0	0	6	0	6	67
05:00 PM	0	2	0	0	2	0	0	0	0	0	0	9	0	0	9	0	0	1	0	1	12
05:15 PM	2	2	1	0	5	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	11
05:30 PM	1	3	0	0	4	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	8
05:45 PM	1	4	0	0	5	0	0	0	0	0	0	3	0	0	3	0	0	1	0	1	9
Total	4	11	1	0	16	0	0	0	0	0	0	20	1	0	21	0	0	3	0	3	40
Grand Total	13	57	7	0	77	2	0	0	0	2	1	112	2	0	115	0	0	23	0	23	217
Apprch %	16.9	74	9.1	0		100	0	0	0		0.9	97.4	1.7	0		0	0	100	0		
Total %	6	26.3	3.2	0	35.5	0.9	0	0	0	0.9	0.5	51.6	0.9	0	53	0	0	10.6	0	10.6	

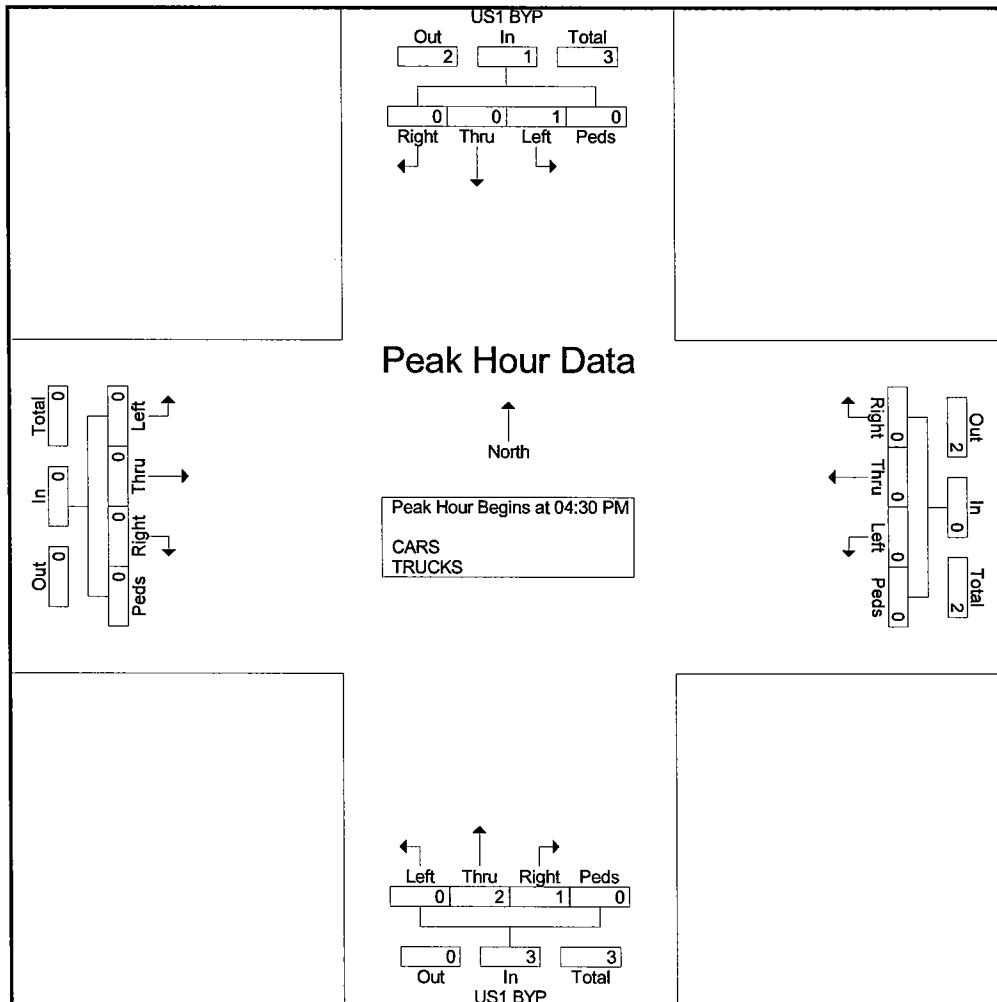


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Thurs US1 BYP-U-Haul-Existing Site Driveways
Site Code : 1831A
Start Date : 5/24/2018
Page No : 3

	US1 BYP From North					From East					US1 BYP From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	3
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	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	1	0	1	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	4
% App. Total	0	0	100	0		0	0	0	0		33.3	66.7	0	0		0	0	0	0		
PHF	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.250	.000	.000	.250	.000	.000	.000	.000	.000	.333

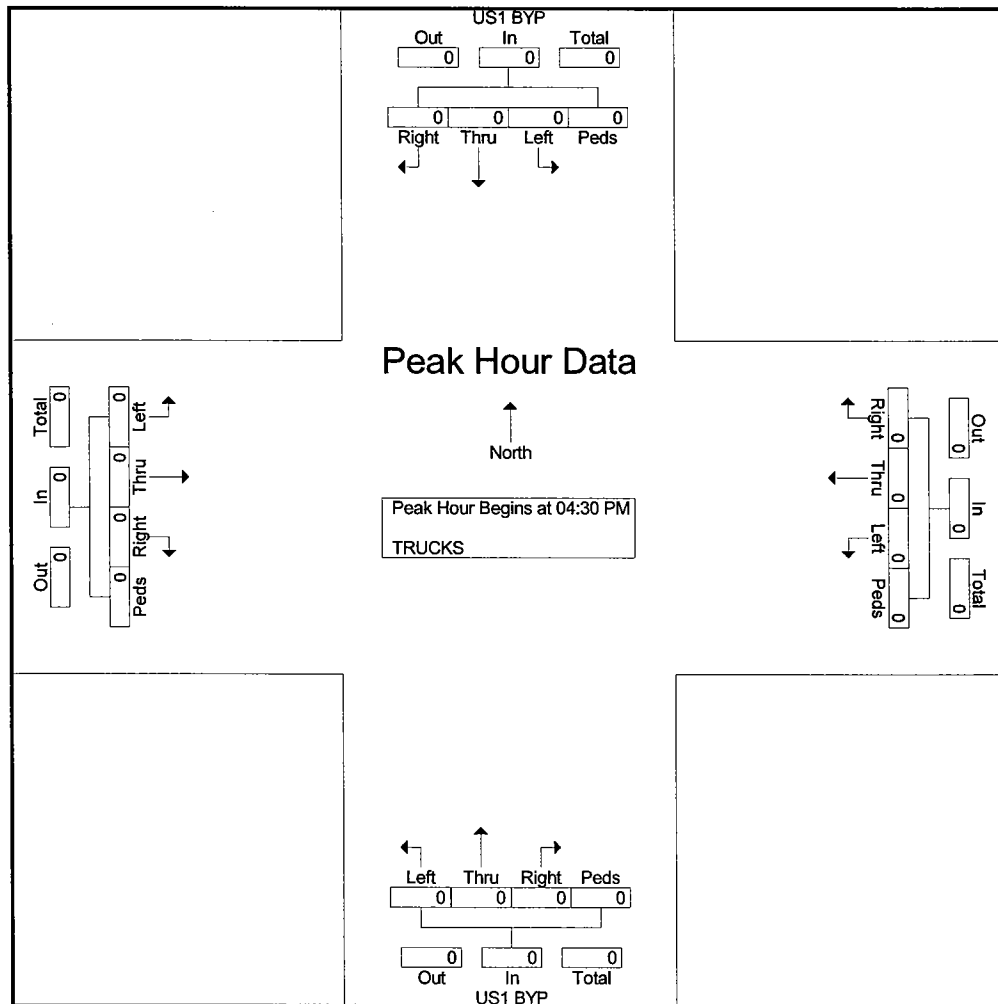


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Weather: Clear
Collected By: MV
Job Number: 1831A
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File Name : 1831A Thurs US1 BYP-U-Haul-Existing Site Driveways
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2

	US1 BYP From North					From East					US1 BYP From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
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	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000



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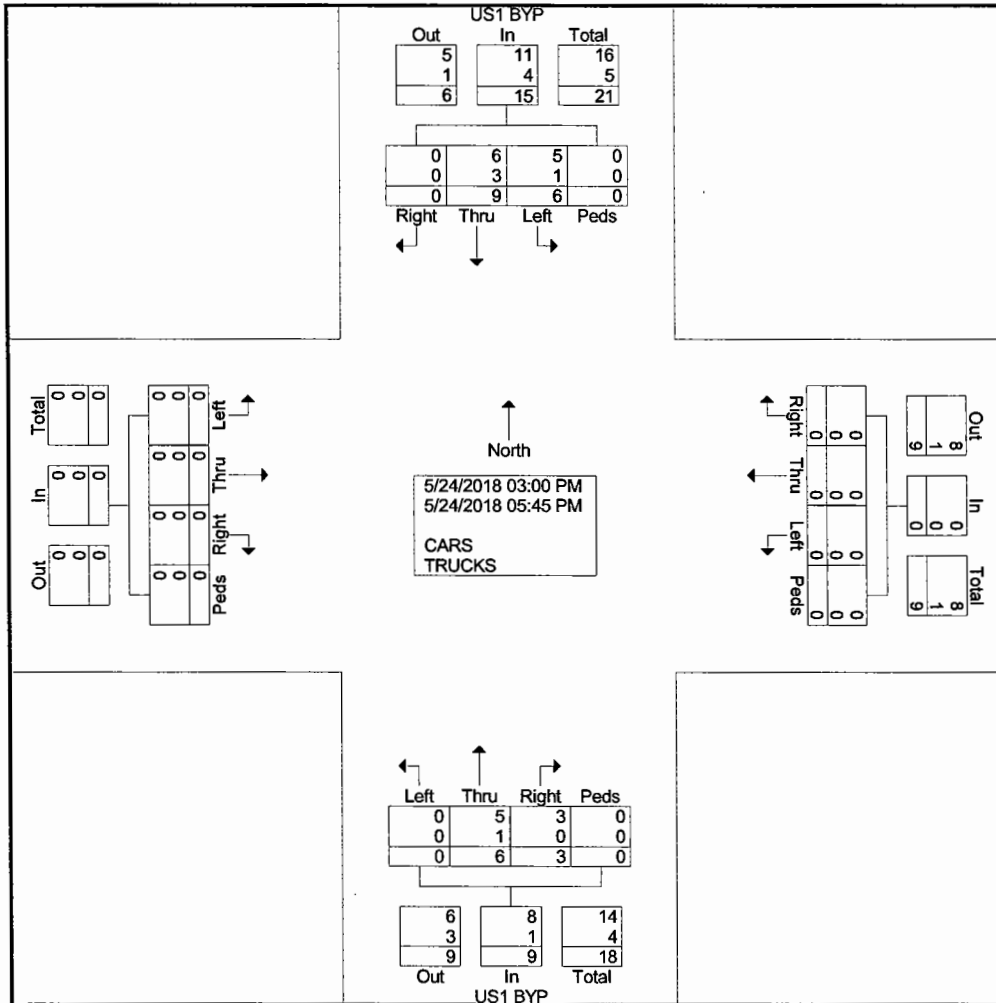
Groups Printed- CARS - TRUCKS

Start Time	US1 BYP From North					From East					US1 BYP From South					From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
03:15 PM	0	2	1	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
03:30 PM	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
03:45 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total	0	6	2	0	8	0	0	0	0	0	1	3	0	0	4	0	0	0	0	0	12
04:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	2	3	0	0	5	0	0	0	0	0	6
05:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	2	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	2	4	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Grand Total	0	9	6	0	15	0	0	0	0	0	3	6	0	0	9	0	0	0	0	0	24
Apprch %	0	60	40	0		0	0	0	0		33.3	66.7	0	0		0	0	0	0		
Total %	0	37.5	25	0	62.5	0	0	0	0	0	12.5	25	0	0	37.5	0	0	0	0	0	
CARS	0	6	5	0	11	0	0	0	0	0	3	5	0	0	8	0	0	0	0	0	19
% CARS	0	66.7	83.3	0	73.3	0	0	0	0	0	100	83.3	0	0	88.9	0	0	0	0	0	79.2
TRUCKS	0	3	1	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
% TRUCKS	0	33.3	16.7	0	26.7	0	0	0	0	0	0	16.7	0	0	11.1	0	0	0	0	0	20.8

Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Thurs US1 BYP-U-Haul-Existing Site Driveways
Site Code : 1831A
Start Date : 5/24/2018
Page No : 2



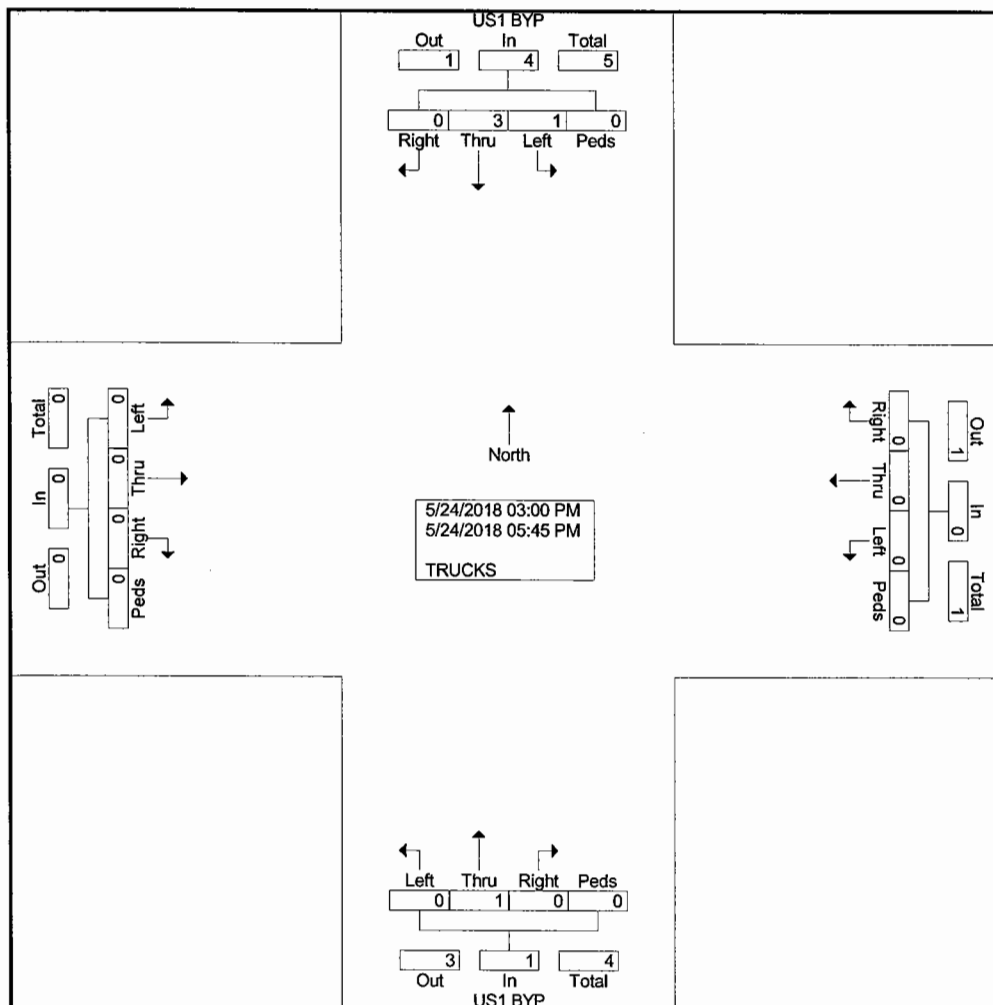
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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Thurs US1 BYP-U-Haul-Existing Site Driveways
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- TRUCKS

Start Time	US1 BYP From North					From East					US1 BYP From South					From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
03:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	2	1	0	3	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	4
04:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	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	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	3	1	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
Apprch %	0	75	25	0		0	0	0	0		0	100	0	0		0	0	0	0		
Total %	0	60	20	0	80	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	

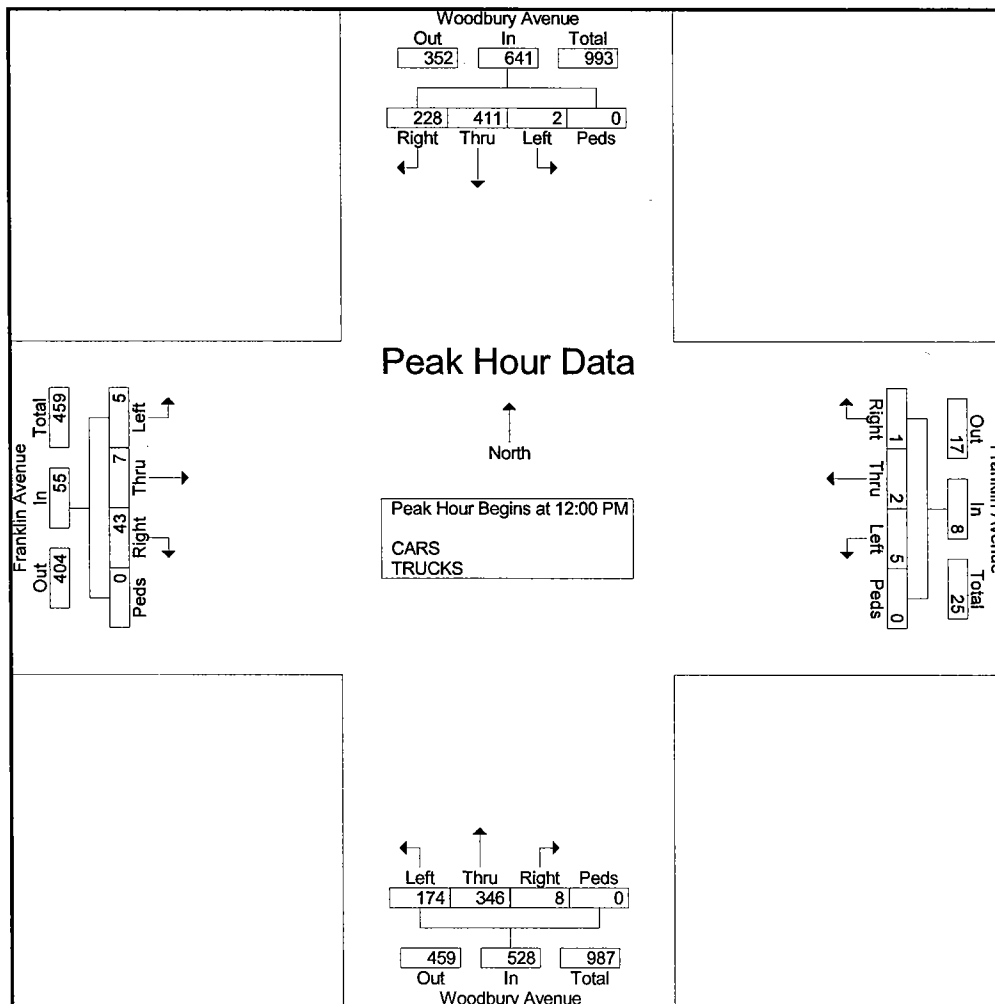


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT Woodbury Avenue-Franklin Avenue
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Woodbury Avenue From North					Franklin Avenue From East					Woodbury Avenue From South					Franklin Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	65	88	0	0	153	0	0	0	0	0	3	80	49	0	132	9	3	1	0	13	298
12:15 PM	65	114	1	0	180	1	0	4	0	5	1	102	42	0	145	9	1	0	0	10	340
12:30 PM	54	120	0	0	174	0	1	1	0	2	1	70	44	0	115	11	2	2	0	15	306
12:45 PM	44	89	1	0	134	0	1	0	0	1	3	94	39	0	136	14	1	2	0	17	288
Total Volume	228	411	2	0	641	1	2	5	0	8	8	346	174	0	528	43	7	5	0	55	1232
% App. Total	35.6	64.1	0.3	0		12.5	25	62.5	0		1.5	65.5	33	0		78.2	12.7	9.1	0		
PHF	.877	.856	.500	.000	.890	.250	.500	.313	.000	.400	.667	.848	.888	.000	.910	.768	.583	.625	.000	.809	.906

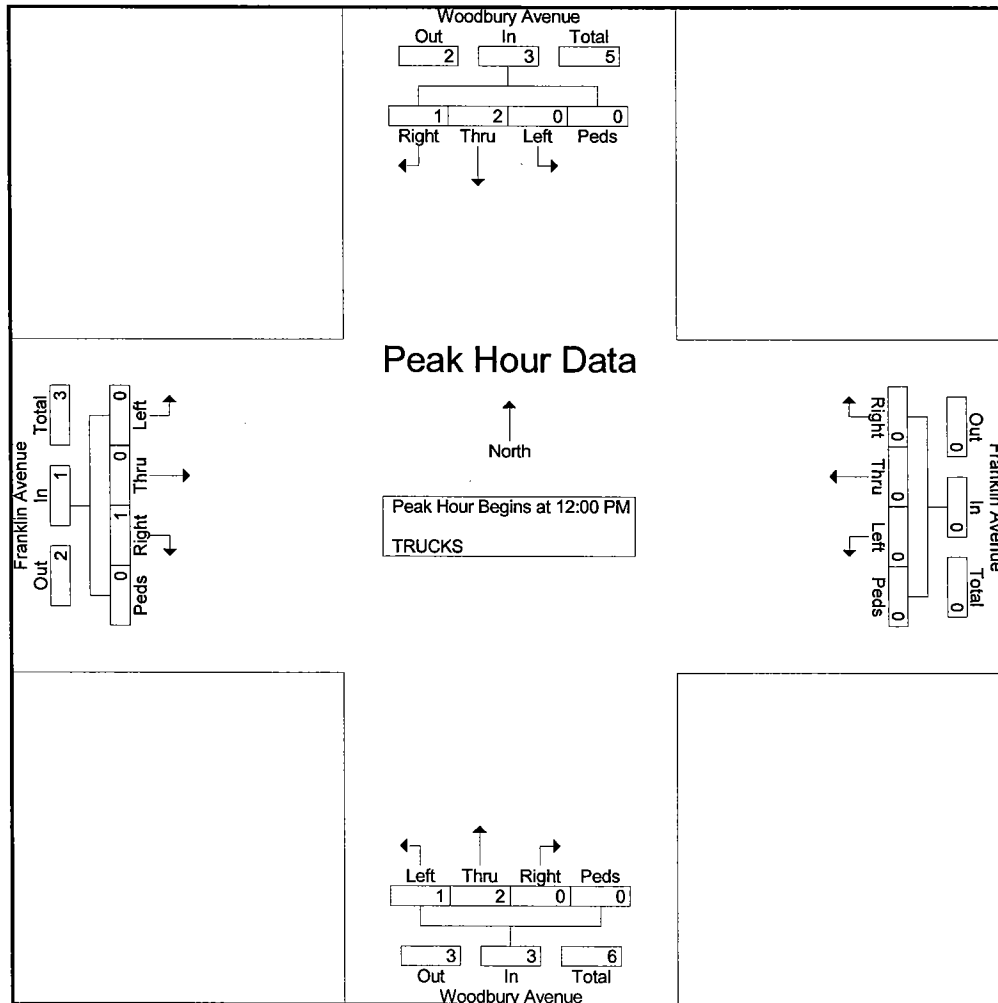


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Weather: Clear
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Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT Woodbury Avenue-Franklin Avenue
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Woodbury Avenue From North					Franklin Avenue From East					Woodbury Avenue From South					Franklin Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	3
12:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Total Volume	1	2	0	0	3	0	0	0	0	0	0	2	1	0	3	1	0	0	0	1	7
% App. Total	33.3	66.7	0	0		0	0	0	0		0	66.7	33.3	0		100	0	0	0		
PHF	.250	.500	.000	.000	.750	.000	.000	.000	.000	.000	.000	.500	.250	.000	.375	.250	.000	.000	.000	.250	.583



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File Name : 1831A SAT Woodbury Avenue-Franklin Avenue
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

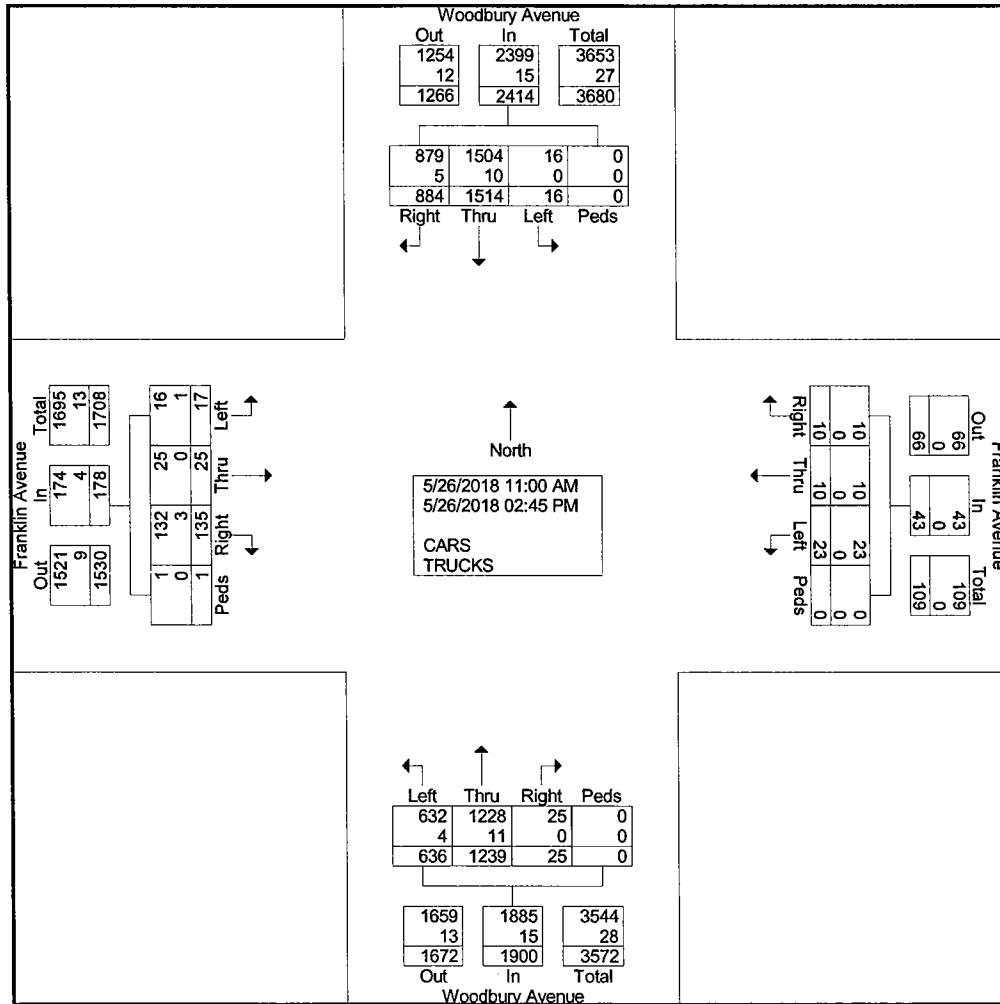
Groups Printed- CARS - TRUCKS

	Woodbury Avenue From North					Franklin Avenue From East					Woodbury Avenue From South					Franklin Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	50	100	1	0	151	0	1	1	0	2	1	66	51	0	118	6	0	0	0	6	277
11:15 AM	48	99	1	0	148	1	1	0	0	2	1	89	40	0	130	7	0	1	0	8	288
11:30 AM	66	105	1	0	172	1	1	1	0	3	1	93	27	0	121	5	1	1	0	7	303
11:45 AM	47	105	0	0	152	1	0	0	0	1	1	77	46	0	124	7	0	2	0	9	286
Total	211	409	3	0	623	3	3	2	0	8	4	325	164	0	493	25	1	4	0	30	1154
12:00 PM	65	88	0	0	153	0	0	0	0	0	3	80	49	0	132	9	3	1	0	13	298
12:15 PM	65	114	1	0	180	1	0	4	0	5	1	102	42	0	145	9	1	0	0	10	340
12:30 PM	54	120	0	0	174	0	1	1	0	2	1	70	44	0	115	11	2	2	0	15	306
12:45 PM	44	89	1	0	134	0	1	0	0	1	3	94	39	0	136	14	1	2	0	17	288
Total	228	411	2	0	641	1	2	5	0	8	8	346	174	0	528	43	7	5	0	55	1232
01:00 PM	44	83	5	0	132	1	1	1	0	3	0	76	39	0	115	5	0	2	0	7	257
01:15 PM	52	78	0	0	130	2	1	1	0	4	1	78	36	0	115	8	3	2	0	13	262
01:30 PM	61	84	0	0	145	1	1	2	0	4	1	60	35	0	96	9	1	0	0	10	255
01:45 PM	57	95	1	0	153	0	0	1	0	1	1	67	30	0	98	6	4	1	1	12	264
Total	214	340	6	0	560	4	3	5	0	12	3	281	140	0	424	28	8	5	1	42	1038
02:00 PM	54	94	1	0	149	1	0	4	0	5	2	64	30	0	96	12	4	2	0	18	268
02:15 PM	53	91	1	0	145	0	1	3	0	4	3	63	47	0	113	11	3	1	0	15	277
02:30 PM	64	77	2	0	143	0	1	3	0	4	3	89	44	0	136	6	1	0	0	7	290
02:45 PM	60	92	1	0	153	1	0	1	0	2	2	71	37	0	110	10	1	0	0	11	276
Total	231	354	5	0	590	2	2	11	0	15	10	287	158	0	455	39	9	3	0	51	1111
Grand Total	884	1514	16	0	2414	10	10	23	0	43	25	1239	636	0	1900	135	25	17	1	178	4535
Apprch %	36.6	62.7	0.7	0		23.3	23.3	53.5	0		1.3	65.2	33.5	0		75.8	14	9.6	0.6		
Total %	19.5	33.4	0.4	0	53.2	0.2	0.2	0.5	0	0.9	0.6	27.3	14	0	41.9	3	0.6	0.4	0	3.9	
CARS	879	1504	16	0	2399	10	10	23	0	43	25	1228	632	0	1885	132	25	16	1	174	4501
% CARS	99.4	99.3	100	0	99.4	100	100	100	0	100	100	99.1	99.4	0	99.2	97.8	100	94.1	100	97.8	99.3
TRUCKS	5	10	0	0	15	0	0	0	0	0	0	11	4	0	15	3	0	1	0	4	34
% TRUCKS	0.6	0.7	0	0	0.6	0	0	0	0	0	0	0.9	0.6	0	0.8	2.2	0	5.9	0	2.2	0.7

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT Woodbury Avenue-Franklin Avenue
Site Code : 1831A
Start Date : 5/26/2018
Page No : 2



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Page No : 1

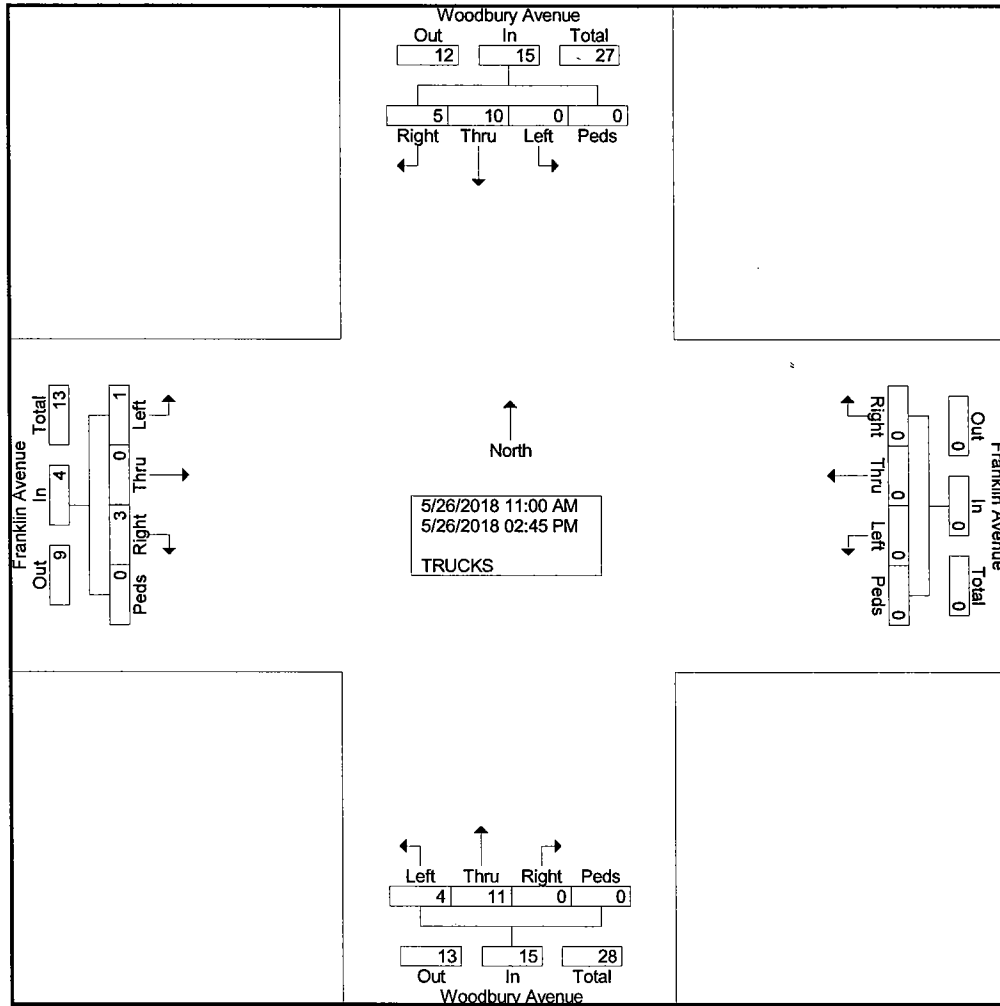
Groups Printed- TRUCKS

Start Time	Woodbury Avenue From North					Franklin Avenue From East					Woodbury Avenue From South					Franklin Avenue From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	2
11:15 AM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
11:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	2	0	0	3	0	0	0	0	0	0	6	1	0	7	0	0	0	0	0	10
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	3
12:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	2
Total	1	2	0	0	3	0	0	0	0	0	0	2	1	0	3	1	0	0	0	1	7
01:00 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	2
01:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
01:45 PM	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	2	4	0	0	6	0	0	0	0	0	0	2	0	0	2	1	0	1	0	2	10
02:00 PM	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	3
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	2	0	0	3	0	0	0	0	0	0	1	2	0	3	1	0	0	0	1	7
Grand Total	5	10	0	0	15	0	0	0	0	0	0	11	4	0	15	3	0	1	0	4	34
Apprch %	33.3	66.7	0	0		0	0	0	0		0	73.3	26.7	0		75	0	25	0		
Total %	14.7	29.4	0	0	44.1	0	0	0	0		0	32.4	11.8	0	44.1	8.8	0	2.9	0	11.8	

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Weather: Clear
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File Name : 1831A SAT Woodbury Avenue-Franklin Avenue
Site Code : 1831A
Start Date : 5/26/2018
Page No : 2

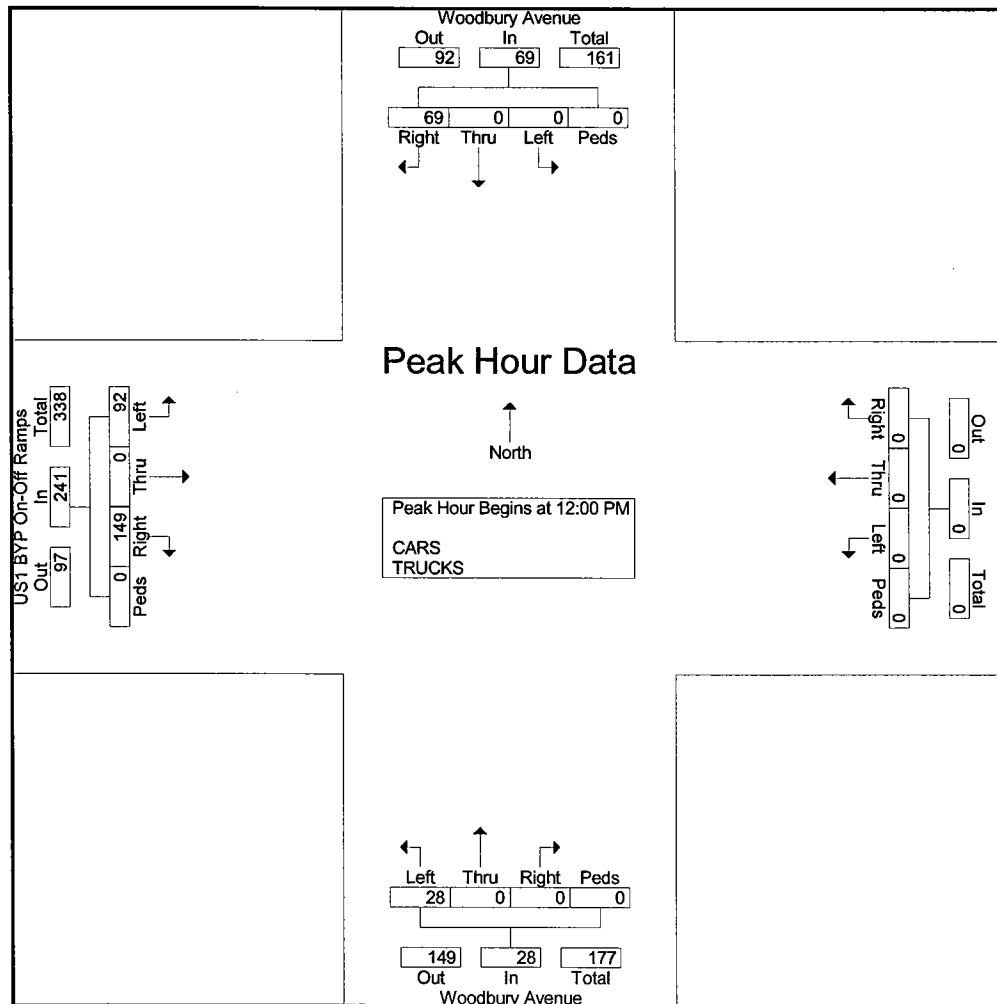


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT Woodbury Avenue-US1 BYP On-Off Ramps
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Woodbury Avenue From North					From East					Woodbury Avenue From South					US1 BYP On-Off Ramps From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	22	0	0	0	22	0	0	0	0	0	0	0	6	0	6	41	0	29	0	70	98
12:15 PM	20	0	0	0	20	0	0	0	0	0	0	0	4	0	4	35	0	19	0	54	78
12:30 PM	18	0	0	0	18	0	0	0	0	0	0	0	13	0	13	32	0	27	0	59	90
12:45 PM	9	0	0	0	9	0	0	0	0	0	0	0	5	0	5	41	0	17	0	58	72
Total Volume	69	0	0	0	69	0	0	0	0	0	0	0	28	0	28	149	0	92	0	241	338
% App. Total	100	0	0	0		0	0	0	0		0	0	100	0		61.8	0	38.2	0		
PHF	.784	.000	.000	.000	.784	.000	.000	.000	.000	.000	.000	.000	.538	.000	.538	.909	.000	.793	.000	.861	.862

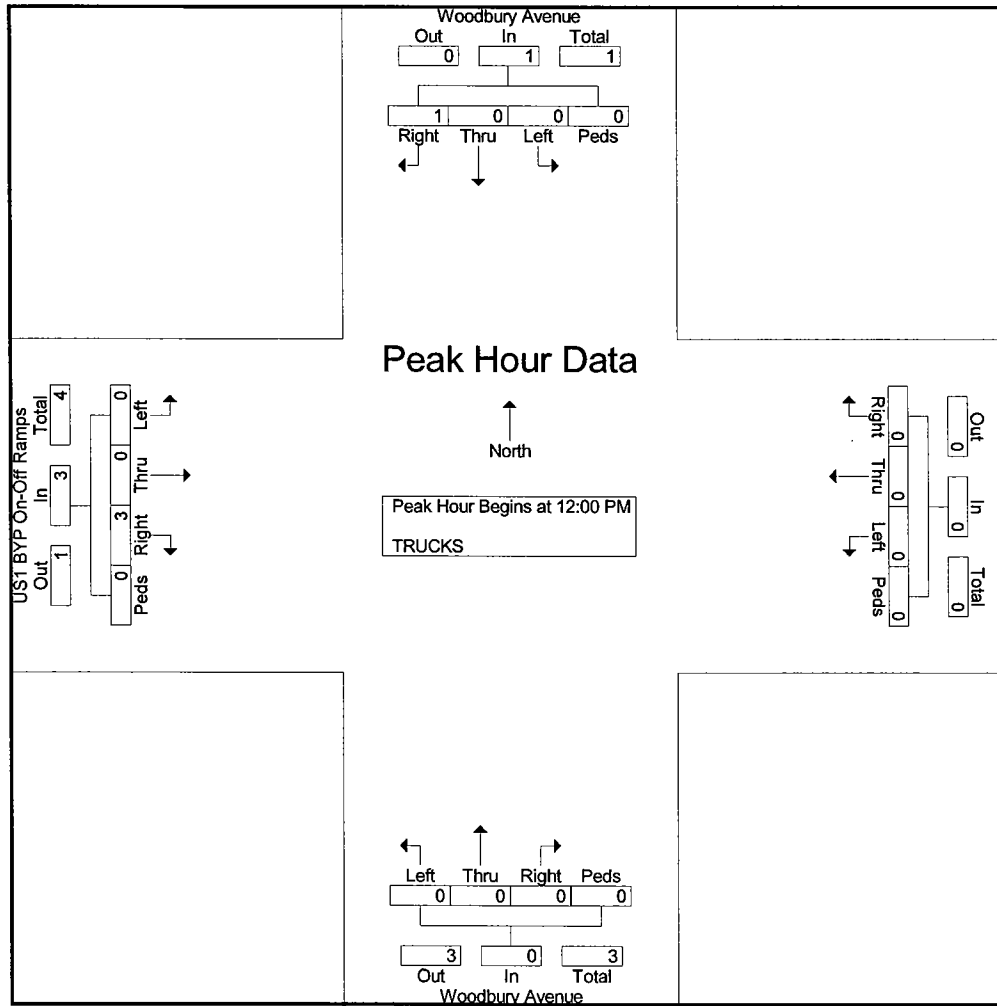


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT Woodbury Avenue-US1 BYP On-Off Ramps
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Woodbury Avenue From North					From East					Woodbury Avenue From South					US1 BYP On-Off Ramps From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	4
% App. Total	100	0	0	0		0	0	0	0		0	0	0	0		100	0	0	0		
PHF	.250	.000	.000	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375	.000	.000	.000	.375	.500



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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT Woodbury Avenue-US1 BYP On-Off Ramps
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

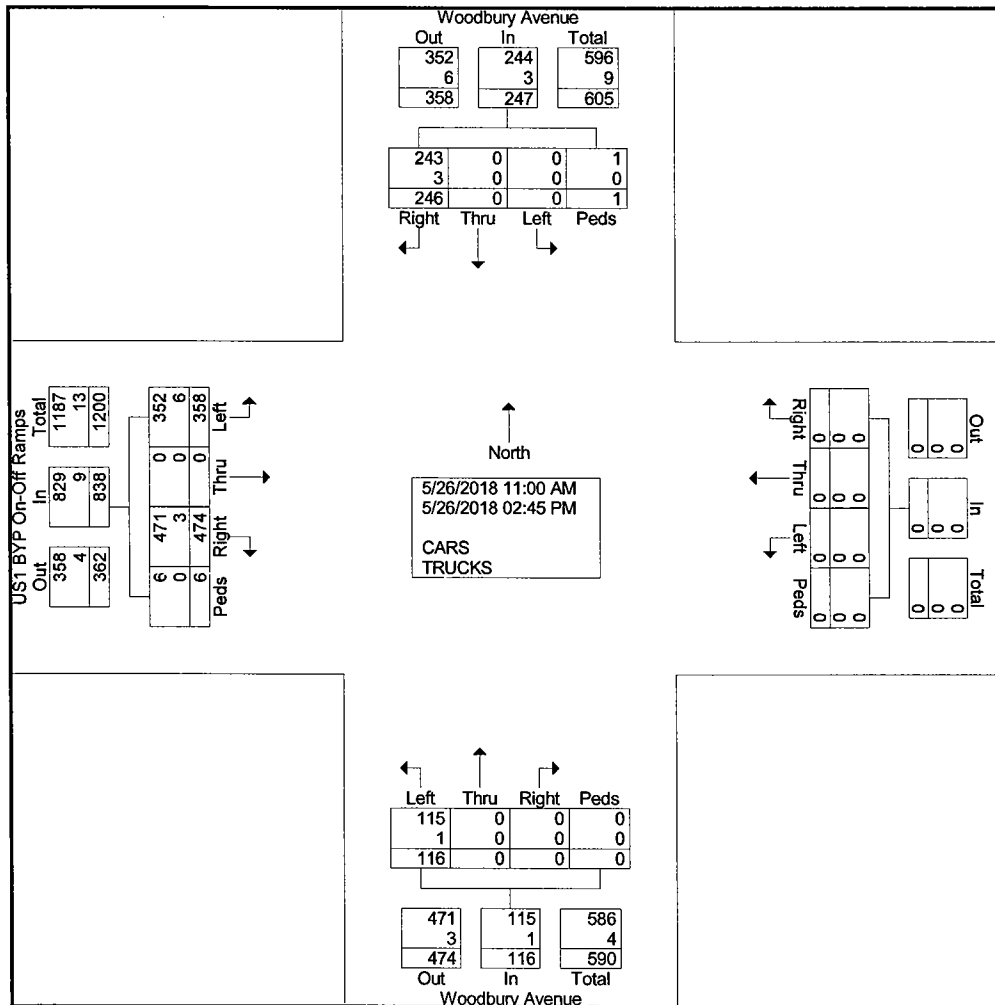
Groups Printed- CARS - TRUCKS

Start Time	Woodbury Avenue From North					From East					Woodbury Avenue From South					US1 BYP On-Off Ramps From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	10	0	0	0	10	0	0	0	0	0	0	0	13	0	13	27	0	24	0	51	74
11:15 AM	24	0	0	0	24	0	0	0	0	0	0	0	4	0	4	23	0	27	1	51	79
11:30 AM	11	0	0	0	11	0	0	0	0	0	0	0	5	0	5	30	0	28	3	61	77
11:45 AM	24	0	0	1	25	0	0	0	0	0	0	0	10	0	10	32	0	35	0	67	102
Total	69	0	0	1	70	0	0	0	0	0	0	0	32	0	32	112	0	114	4	230	332
12:00 PM	22	0	0	0	22	0	0	0	0	0	0	0	6	0	6	41	0	29	0	70	98
12:15 PM	20	0	0	0	20	0	0	0	0	0	0	0	4	0	4	35	0	19	0	54	78
12:30 PM	18	0	0	0	18	0	0	0	0	0	0	0	13	0	13	32	0	27	0	59	90
12:45 PM	9	0	0	0	9	0	0	0	0	0	0	0	5	0	5	41	0	17	0	58	72
Total	69	0	0	0	69	0	0	0	0	0	0	0	28	0	28	149	0	92	0	241	338
01:00 PM	16	0	0	0	16	0	0	0	0	0	0	0	9	0	9	20	0	21	2	43	68
01:15 PM	19	0	0	0	19	0	0	0	0	0	0	0	6	0	6	25	0	24	0	49	74
01:30 PM	18	0	0	0	18	0	0	0	0	0	0	0	8	0	8	41	0	22	0	63	89
01:45 PM	18	0	0	0	18	0	0	0	0	0	0	0	10	0	10	36	0	15	0	51	79
Total	71	0	0	0	71	0	0	0	0	0	0	0	33	0	33	122	0	82	2	206	310
02:00 PM	16	0	0	0	16	0	0	0	0	0	0	0	7	0	7	27	0	23	0	50	73
02:15 PM	8	0	0	0	8	0	0	0	0	0	0	0	7	0	7	35	0	23	0	58	73
02:30 PM	13	0	0	0	13	0	0	0	0	0	0	0	9	0	9	28	0	23	0	51	73
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	2
Total	37	0	0	0	37	0	0	0	0	0	0	0	23	0	23	91	0	70	0	161	221
Grand Total	246	0	0	1	247	0	0	0	0	0	0	0	116	0	116	474	0	358	6	838	1201
Apprch %	99.6	0	0	0.4		0	0	0	0		0	0	100	0		56.6	0	42.7	0.7		
Total %	20.5	0	0	0.1	20.6	0	0	0	0	0	0	0	9.7	0	9.7	39.5	0	29.8	0.5	69.8	
CARS	243	0	0	1	244	0	0	0	0	0	0	0	115	0	115	471	0	352	6	829	1188
% CARS	98.8	0	0	100	98.8	0	0	0	0	0	0	0	99.1	0	99.1	99.4	0	98.3	100	98.9	98.9
TRUCKS	3	0	0	0	3	0	0	0	0	0	0	0	1	0	1	3	0	6	0	9	13
% TRUCKS	1.2	0	0	0	1.2	0	0	0	0	0	0	0	0.9	0	0.9	0.6	0	1.7	0	1.1	1.1

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT Woodbury Avenue-US1 BYP On-Off Ramps
Site Code : 1831A
Start Date : 5/26/2018
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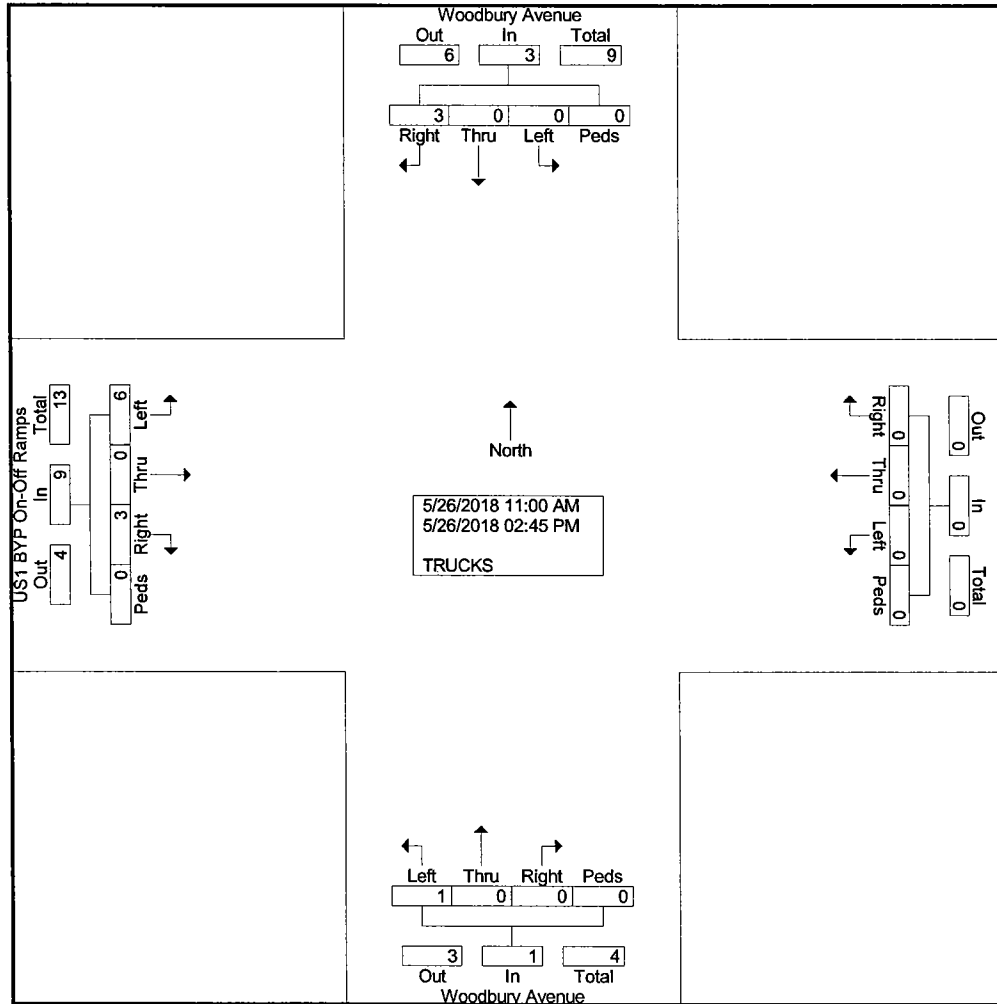
Groups Printed- TRUCKS

Start Time	Woodbury Avenue From North					From East					Woodbury Avenue From South					US1 BYP On-Off Ramps From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	4
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	3
Total	1	0	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	1	0	1	3
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Grand Total	3	0	0	0	3	0	0	0	0	0	0	0	1	0	1	3	0	6	0	9	13
Apprch %	100	0	0	0		0	0	0	0		0	0	100	0		33.3	0	66.7	0		
Total %	23.1	0	0	0	23.1	0	0	0	0	0	0	0	7.7	0	7.7	23.1	0	46.2	0	69.2	

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File Name : 1831A SAT Woodbury Avenue-US1 BYP On-Off Ramps
Site Code : 1831A
Start Date : 5/26/2018
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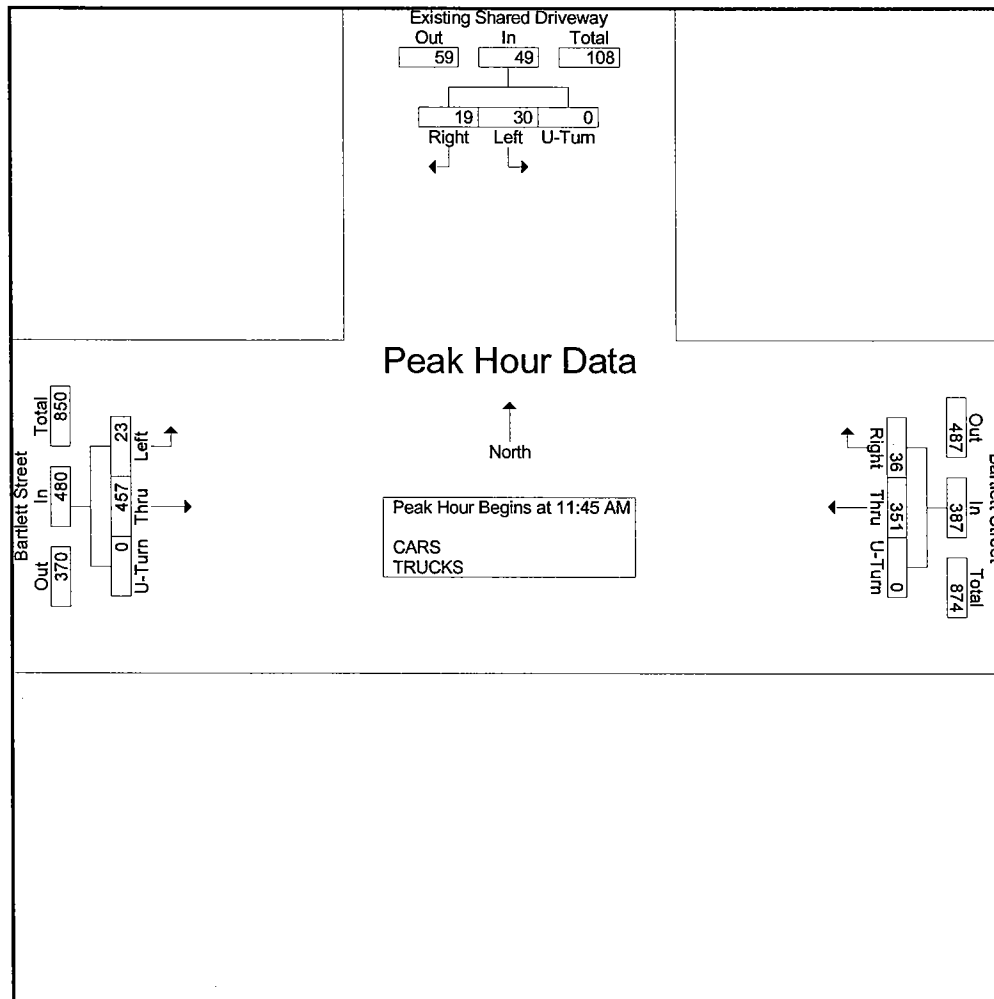


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_C_SAT_Bart-Shared
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Existing Shared Driveway From North				Bartlett Street From East				Bartlett Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:45 AM													
11:45 AM	4	6	0	10	10	84	0	94	111	2	0	113	217
12:00 PM	6	10	0	16	9	79	0	88	104	8	0	112	216
12:15 PM	5	6	0	11	9	102	0	111	120	7	0	127	249
12:30 PM	4	8	0	12	8	86	0	94	122	6	0	128	234
Total Volume	19	30	0	49	36	351	0	387	457	23	0	480	916
% App. Total	38.8	61.2	0		9.3	90.7	0		95.2	4.8	0		
PHF	.792	.750	.000	.766	.900	.860	.000	.872	.936	.719	.000	.938	.920

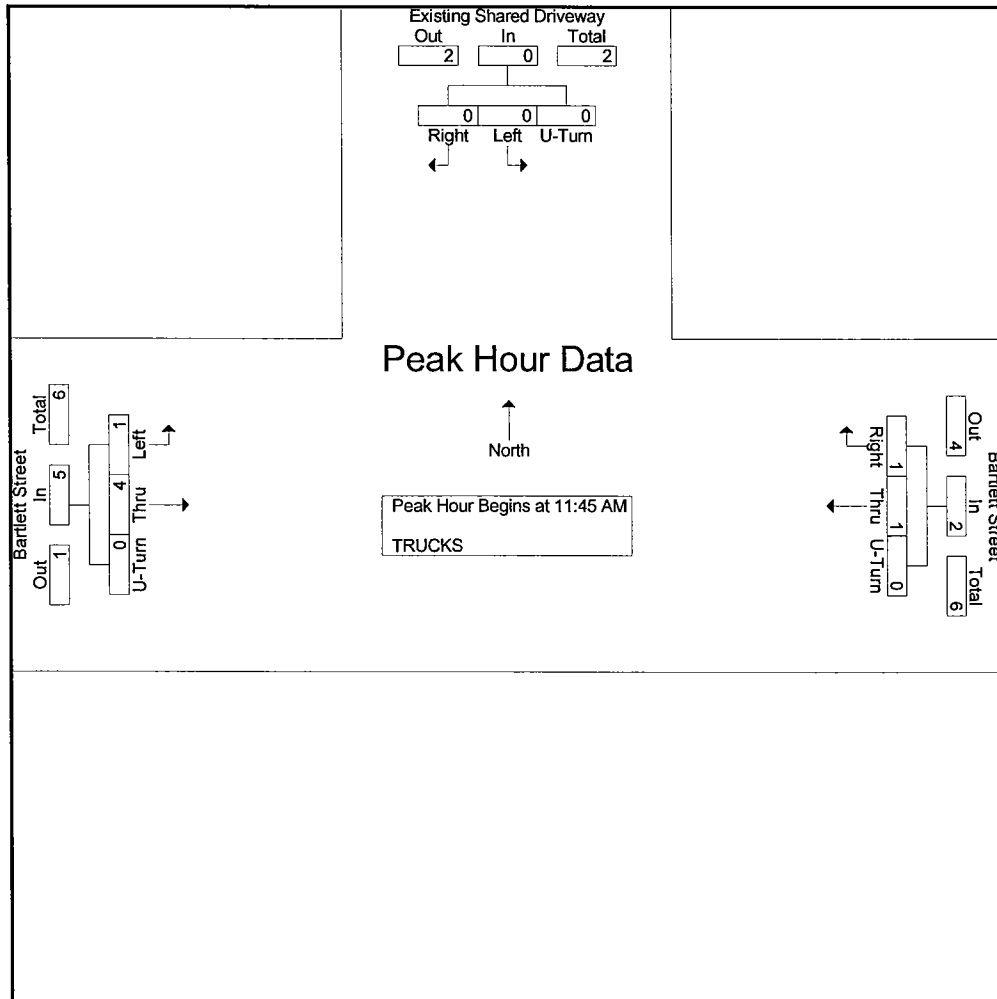


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Weather: Clear
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File Name : 1831A_INT_C_SAT_Bart-Shared
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Existing Shared Driveway From North				Bartlett Street From East				Bartlett Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 11:45 AM to 12:30 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 11:45 AM													
11:45 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
12:30 PM	0	0	0	0	0	1	0	1	2	0	0	2	3
Total Volume	0	0	0	0	1	1	0	2	4	1	0	5	7
% App. Total	0	0	0	0	50	50	0	0	80	20	0	0	
PHF	.000	.000	.000	.000	.250	.250	.000	.500	.500	.250	.000	.625	.583



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Weather: Clear
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Town/State: Portsmouth, NH

File Name : 1831A_INT_C_SAT_Bart-Shared
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

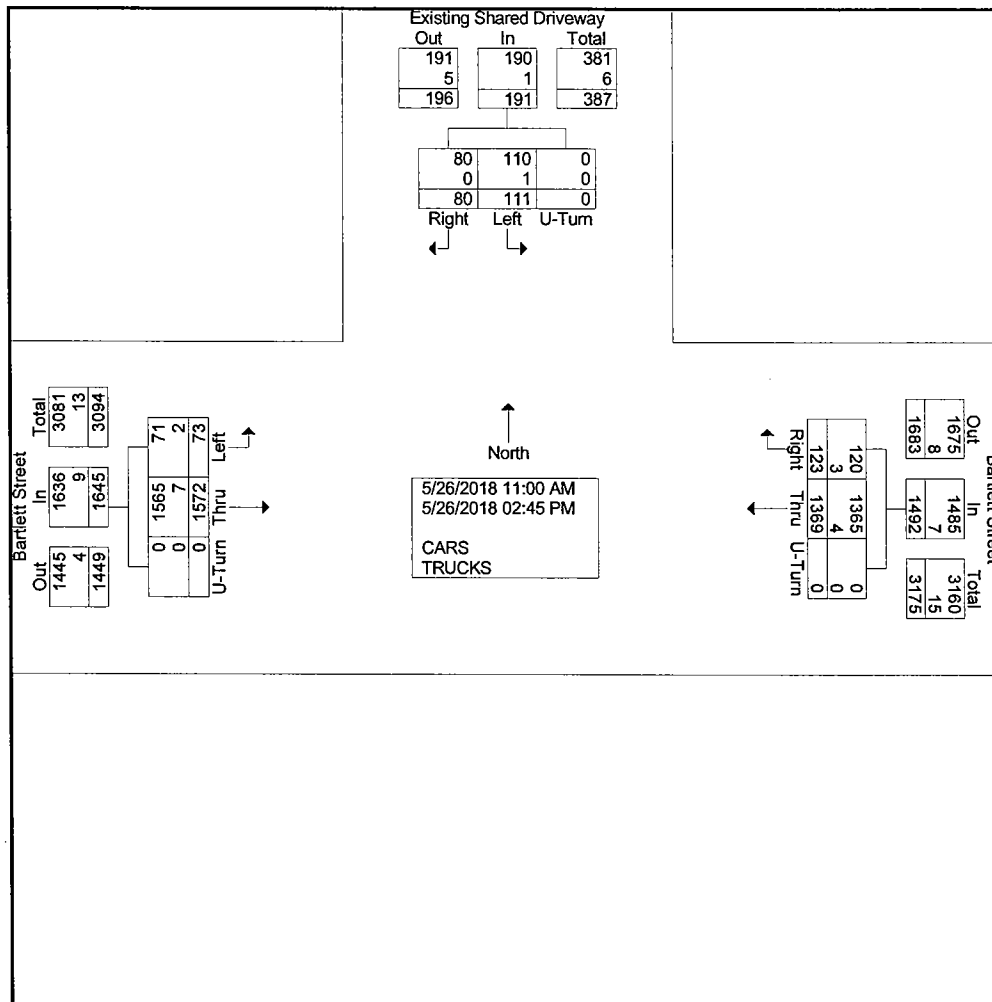
Groups Printed- CARS - TRUCKS

Start Time	Existing Shared Driveway From North				Bartlett Street From East				Bartlett Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
11:00 AM	2	5	0	7	6	81	0	87	116	2	0	118	212
11:15 AM	3	7	0	10	4	104	0	108	103	5	0	108	226
11:30 AM	5	4	0	9	5	79	0	84	89	1	0	90	183
11:45 AM	4	6	0	10	10	84	0	94	111	2	0	113	217
Total	14	22	0	36	25	348	0	373	419	10	0	429	838
12:00 PM	6	10	0	16	9	79	0	88	104	8	0	112	216
12:15 PM	5	6	0	11	9	102	0	111	120	7	0	127	249
12:30 PM	4	8	0	12	8	86	0	94	122	6	0	128	234
12:45 PM	6	9	0	15	8	94	0	102	93	6	0	99	216
Total	21	33	0	54	34	361	0	395	439	27	0	466	915
01:00 PM	6	6	0	12	9	84	0	93	100	2	0	102	207
01:15 PM	6	7	0	13	9	86	0	95	85	5	0	90	198
01:30 PM	8	7	0	15	8	71	0	79	97	5	0	102	196
01:45 PM	1	3	0	4	10	90	0	100	99	3	0	102	206
Total	21	23	0	44	36	331	0	367	381	15	0	396	807
02:00 PM	6	9	0	15	8	73	0	81	95	7	0	102	198
02:15 PM	8	10	0	18	7	71	0	78	90	5	0	95	191
02:30 PM	5	6	0	11	7	99	0	106	66	3	0	69	186
02:45 PM	5	8	0	13	6	86	0	92	82	6	0	88	193
Total	24	33	0	57	28	329	0	357	333	21	0	354	768
Grand Total	80	111	0	191	123	1369	0	1492	1572	73	0	1645	3328
Apprch %	41.9	58.1	0		8.2	91.8	0		95.6	4.4	0		
Total %	2.4	3.3	0	5.7	3.7	41.1	0	44.8	47.2	2.2	0	49.4	
CARS	80	110	0	190	120	1365	0	1485	1565	71	0	1636	3311
% CARS	100	99.1	0	99.5	97.6	99.7	0	99.5	99.6	97.3	0	99.5	99.5
TRUCKS	0	1	0	1	3	4	0	7	7	2	0	9	17
% TRUCKS	0	0.9	0	0.5	2.4	0.3	0	0.5	0.4	2.7	0	0.5	0.5

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Weather: Clear
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File Name : 1831A_INT_C_SAT_Bart-Shared
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Start Date : 5/26/2018
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Site Code : 1831A
Start Date : 5/26/2018
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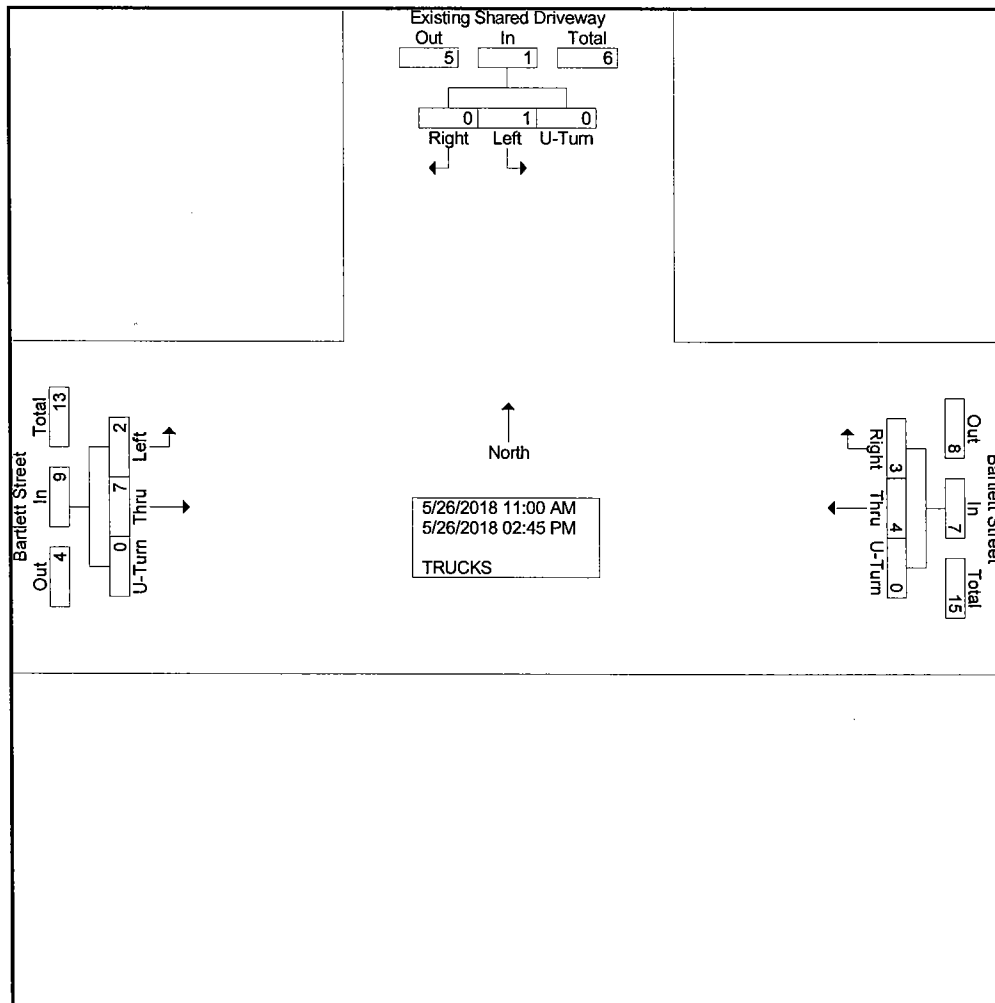
Groups Printed- TRUCKS

Start Time	Existing Shared Driveway From North				Bartlett Street From East				Bartlett Street From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
11:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	2	0	0	2	2
Total	0	0	0	0	0	1	0	1	3	0	0	3	4
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	1	0	0	1	0	1	0	1	2
12:30 PM	0	0	0	0	0	1	0	1	2	0	0	2	3
12:45 PM	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	1	1	0	2	2	2	0	4	6
01:00 PM	0	0	0	0	1	1	0	2	1	0	0	1	3
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	1	1	0	2	2	0	0	2	4
02:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
02:15 PM	0	0	0	0	1	0	0	1	0	0	0	0	1
02:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	1
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	1	1	1	0	2	0	0	0	0	3
Grand Total	0	1	0	1	3	4	0	7	7	2	0	9	17
Apprch %	0	100	0		42.9	57.1	0		77.8	22.2	0		
Total %	0	5.9	0	5.9	17.6	23.5	0	41.2	41.2	11.8	0	52.9	

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Weather: Clear
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Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_C_SAT_Bart-Shared
Site Code : 1831A
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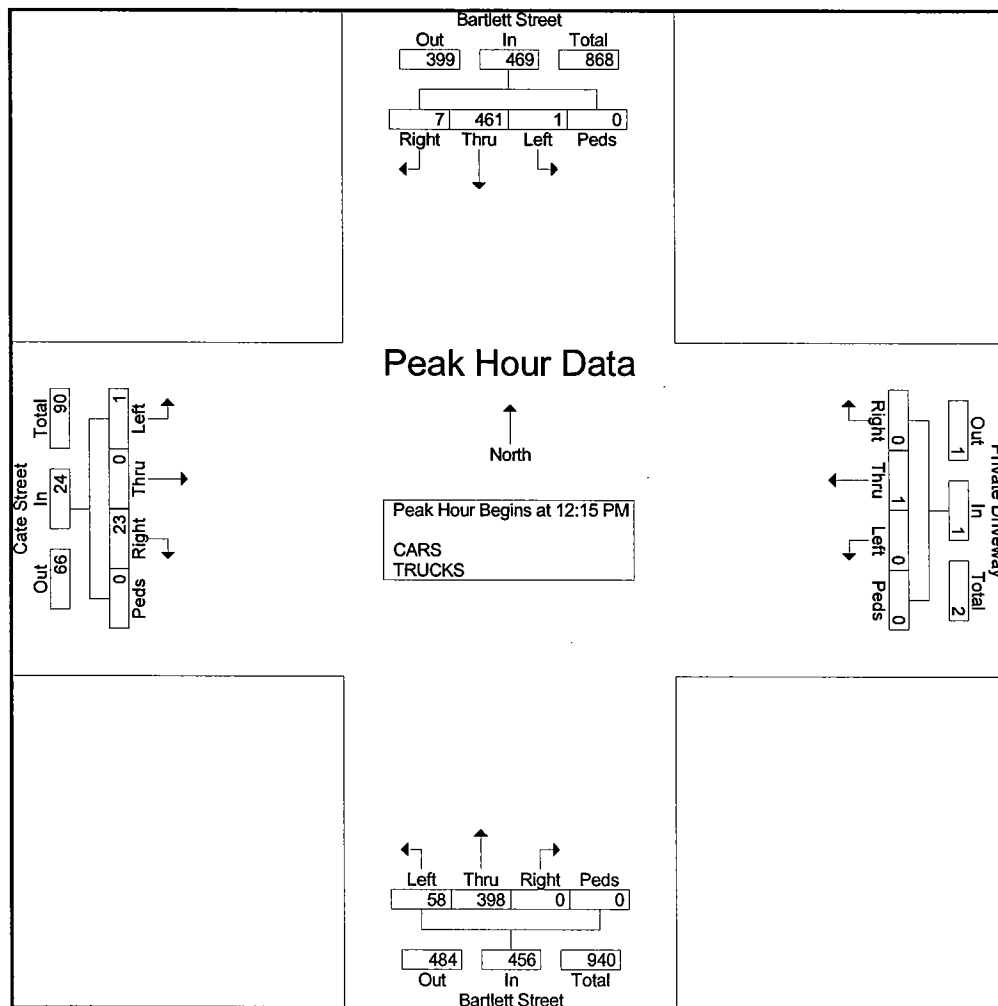


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_SAT_Bartlett-Cate
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Bartlett Street From North					Private Driveway From East					Bartlett Street From South					Cate Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:15 PM																					
12:15 PM	1	125	0	0	126	0	0	0	0	0	0	109	16	0	125	5	0	0	0	5	256
12:30 PM	0	130	1	0	131	0	1	0	0	1	0	95	9	0	104	4	0	0	0	4	240
12:45 PM	1	102	0	0	103	0	0	0	0	0	0	102	16	0	118	5	0	1	0	6	227
01:00 PM	5	104	0	0	109	0	0	0	0	0	0	92	17	0	109	9	0	0	0	9	227
Total Volume	7	461	1	0	469	0	1	0	0	1	0	398	58	0	456	23	0	1	0	24	950
% App. Total	1.5	98.3	0.2	0		0	100	0	0		0	87.3	12.7	0		95.8	0	4.2	0		
PHF	.350	.887	.250	.000	.895	.000	.250	.000	.000	.250	.000	.913	.853	.000	.912	.639	.000	.250	.000	.667	.928

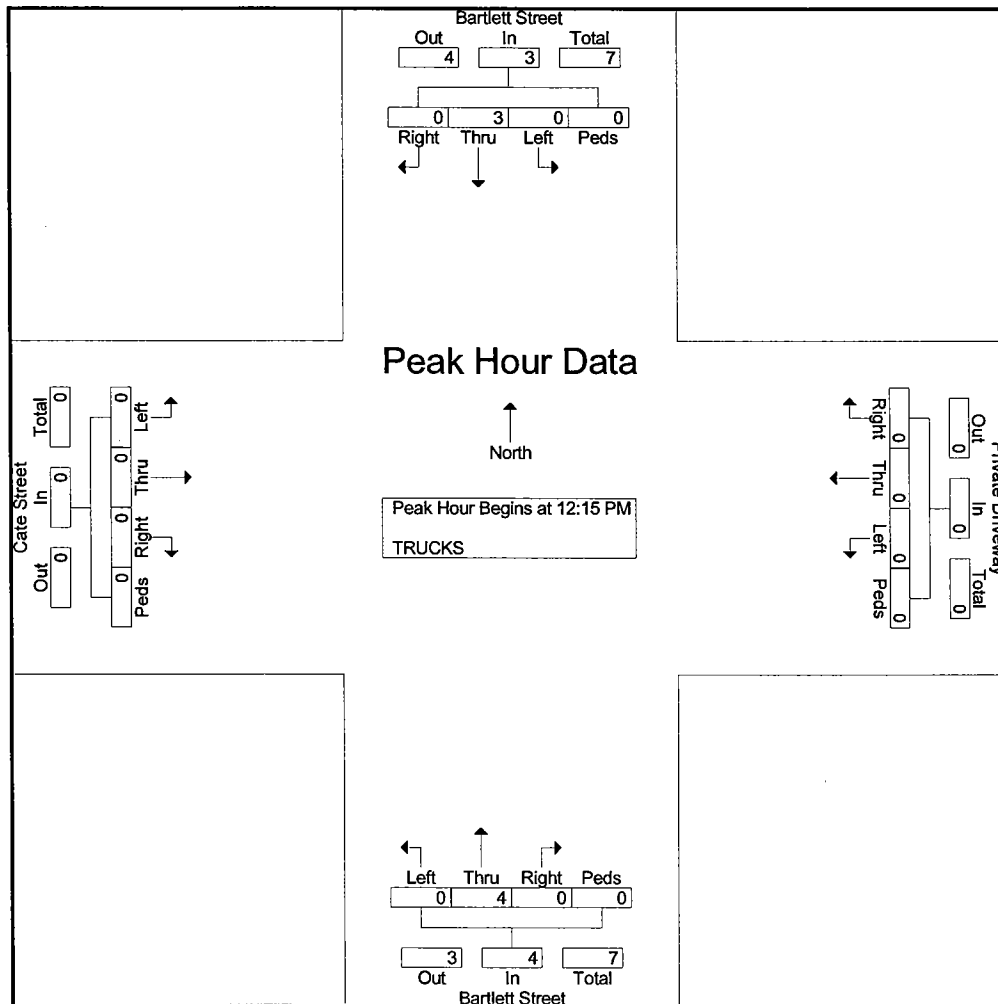


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_SAT_Bartlett-Cate
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Bartlett Street From North					Private Driveway From East					Bartlett Street From South					Cate Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:15 PM to 01:00 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:15 PM																					
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
Total Volume	0	3	0	0	3	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	7
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.375	.000	.000	.375	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.583



Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_SAT_Bartlett-Cate
Site Code : 1831A
Start Date : 5/26/2018
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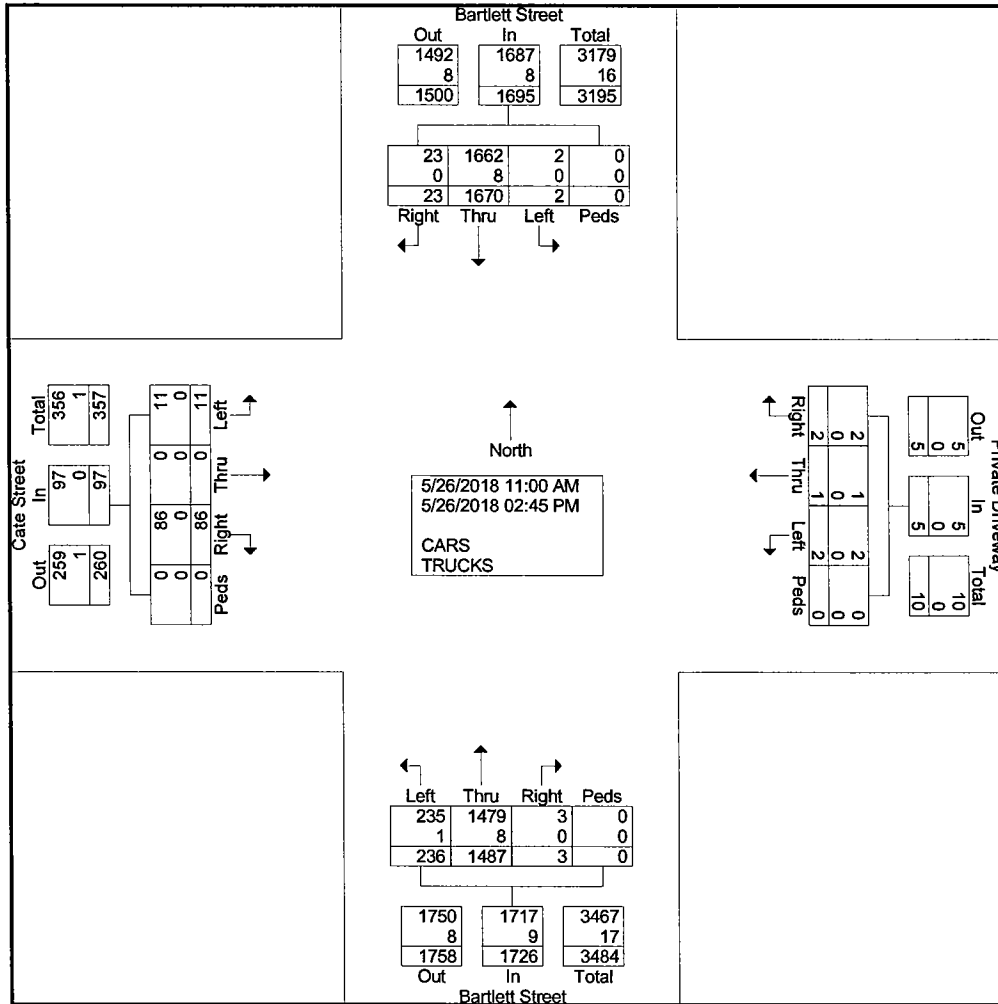
Groups Printed- CARS - TRUCKS

Start Time	Bartlett Street From North					Private Driveway From East					Bartlett Street From South					Cate Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	118	0	0	118	0	0	0	0	0	0	89	14	0	103	10	0	0	0	10	231
11:15 AM	2	110	0	0	112	0	0	0	0	0	0	106	20	0	126	8	0	0	0	8	246
11:30 AM	1	90	0	0	91	0	0	0	0	0	0	84	11	0	95	1	0	1	0	2	188
11:45 AM	2	112	0	0	114	0	0	0	0	0	0	97	13	0	110	6	0	1	0	7	231
Total	5	430	0	0	435	0	0	0	0	0	0	376	58	0	434	25	0	2	0	27	896
12:00 PM	1	112	0	0	113	0	0	1	0	1	1	86	12	0	99	5	0	0	0	5	218
12:15 PM	1	125	0	0	126	0	0	0	0	0	0	109	16	0	125	5	0	0	0	5	256
12:30 PM	0	130	1	0	131	0	1	0	0	1	0	95	9	0	104	4	0	0	0	4	240
12:45 PM	1	102	0	0	103	0	0	0	0	0	0	102	16	0	118	5	0	1	0	6	227
Total	3	469	1	0	473	0	1	1	0	2	1	392	53	0	446	19	0	1	0	20	941
01:00 PM	5	104	0	0	109	0	0	0	0	0	0	92	17	0	109	9	0	0	0	9	227
01:15 PM	4	91	0	0	95	0	0	0	0	0	0	93	17	0	110	4	0	4	0	8	213
01:30 PM	2	101	1	0	104	1	0	1	0	2	1	79	12	0	92	9	0	0	0	9	207
01:45 PM	2	105	0	0	107	0	0	0	0	0	0	98	24	0	122	5	0	1	0	6	235
Total	13	401	1	0	415	1	0	1	0	2	1	362	70	0	433	27	0	5	0	32	882
02:00 PM	1	96	0	0	97	0	0	0	0	0	0	80	19	0	99	3	0	1	0	4	200
02:15 PM	0	99	0	0	99	1	0	0	0	1	1	80	14	0	95	5	0	0	0	5	200
02:30 PM	1	81	0	0	82	0	0	0	0	0	0	102	10	0	112	2	0	2	0	4	198
02:45 PM	0	94	0	0	94	0	0	0	0	0	0	95	12	0	107	5	0	0	0	5	206
Total	2	370	0	0	372	1	0	0	0	1	1	357	55	0	413	15	0	3	0	18	804
Grand Total	23	1670	2	0	1695	2	1	2	0	5	3	1487	236	0	1726	86	0	11	0	97	3523
Apprch %	1.4	98.5	0.1	0		40	20	40	0		0.2	86.2	13.7	0		88.7	0	11.3	0		
Total %	0.7	47.4	0.1	0	48.1	0.1	0	0.1	0	0.1	0.1	42.2	6.7	0	49	2.4	0	0.3	0	2.8	
CARS	23	1662	2	0	1687	2	1	2	0	5	3	1479	235	0	1717	86	0	11	0	97	3506
% CARS	100	99.5	100	0	99.5	100	100	100	0	100	100	99.5	99.6	0	99.5	100	0	100	0	100	99.5
TRUCKS	0	8	0	0	8	0	0	0	0	0	0	8	1	0	9	0	0	0	0	0	17
% TRUCKS	0	0.5	0	0	0.5	0	0	0	0	0	0	0.5	0.4	0	0.5	0	0	0	0	0	0.5

Stephen G. Pernaw & Co., Inc.
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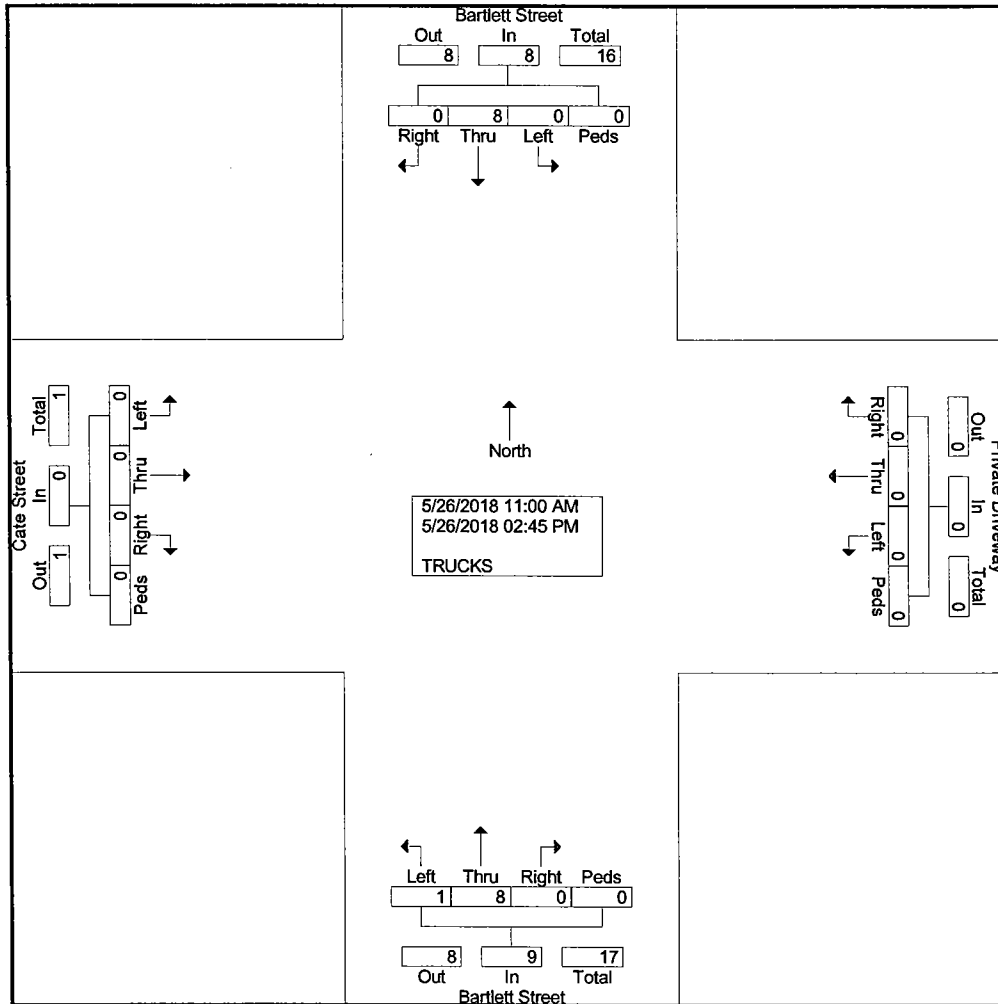
Groups Printed- TRUCKS

Start Time	Bartlett Street From North					Private Driveway From East					Bartlett Street From South					Cate Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
11:15 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
12:30 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
01:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
02:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
02:45 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
Total	0	2	0	0	2	0	0	0	0	0	0	3	1	0	4	0	0	0	0	0	6
Grand Total	0	8	0	0	8	0	0	0	0	0	0	8	1	0	9	0	0	0	0	0	17
Apprch %	0	100	0	0		0	0	0	0		0	88.9	11.1	0		0	0	0	0		
Total %	0	47.1	0	0	47.1	0	0	0	0		0	47.1	5.9	0	52.9	0	0	0	0		

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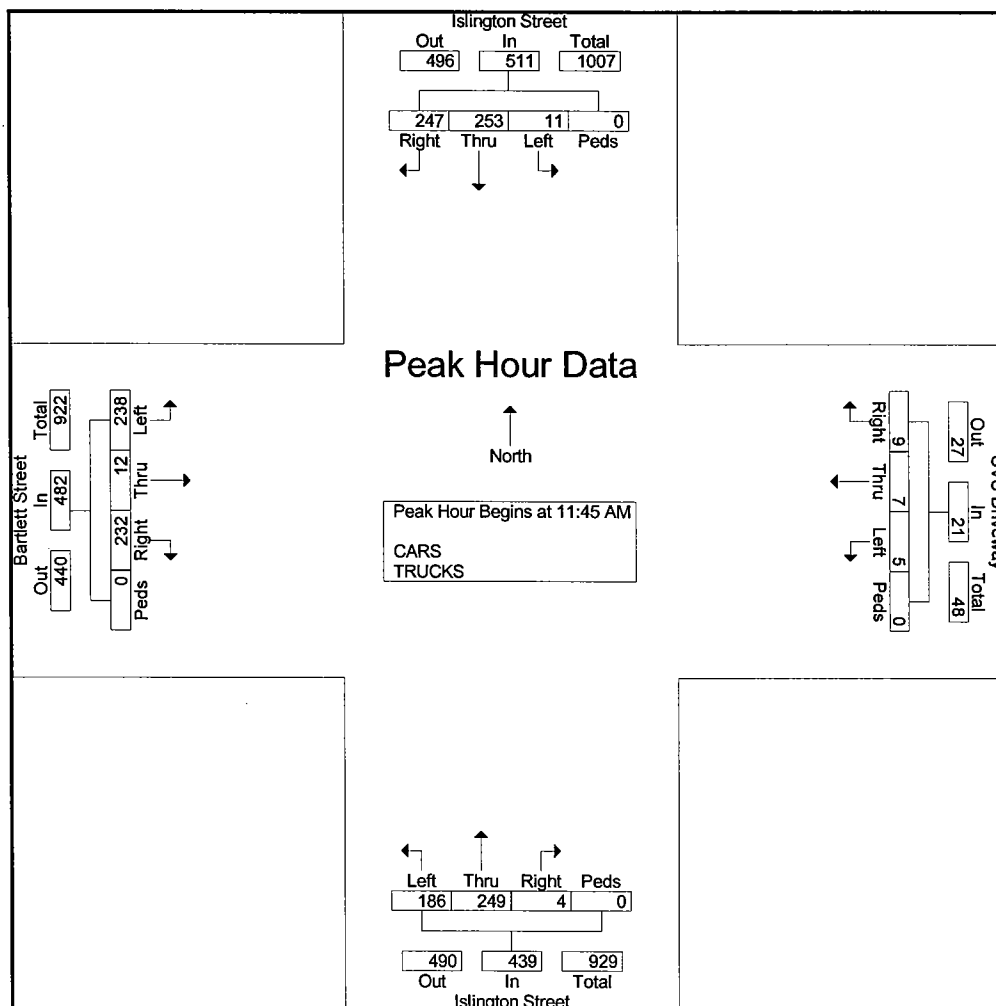


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File Name : 1831A_INT_E_SAT_Islington-Bartlett
Site Code : 1831A
Start Date : 5/26/2018
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	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 12:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	71	73	4	0	148	2	0	0	0	2	1	66	39	0	106	62	1	47	0	110	366
12:00 PM	52	67	4	0	123	2	2	3	0	7	1	70	47	0	118	45	2	65	0	112	360
12:15 PM	67	45	0	0	112	4	2	1	0	7	1	54	57	0	112	62	4	67	0	133	364
12:30 PM	57	68	3	0	128	1	3	1	0	5	1	59	43	0	103	63	5	59	0	127	363
Total Volume	247	253	11	0	511	9	7	5	0	21	4	249	186	0	439	232	12	238	0	482	1453
% App. Total	48.3	49.5	2.2	0		42.9	33.3	23.8	0		0.9	56.7	42.4	0		48.1	2.5	49.4	0		
PHF	.870	.866	.688	.000	.863	.563	.583	.417	.000	.750	1.00	.889	.816	.000	.930	.921	.600	.888	.000	.906	.992

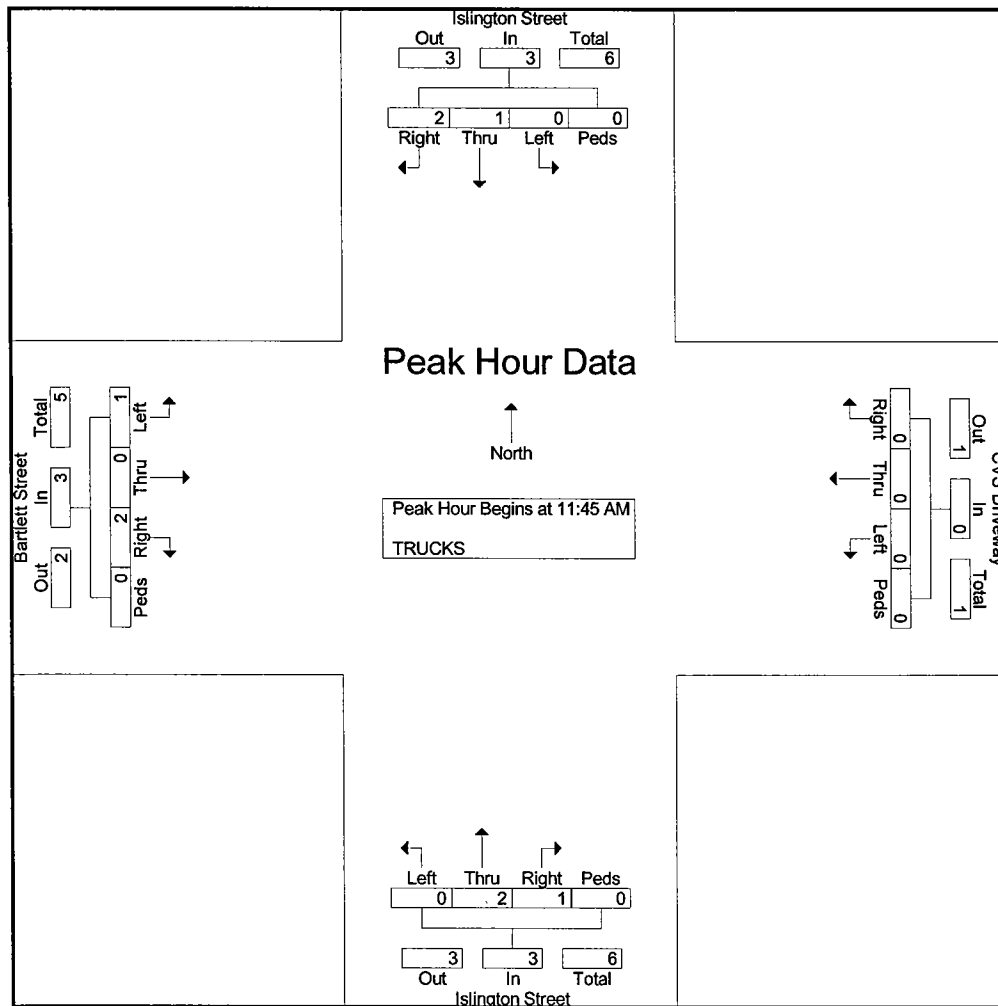


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Weather: Clear
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File Name : 1831A_INT_E_SAT_Islington-Bartlett
Site Code : 1831A
Start Date : 5/26/2018
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	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:45 AM to 12:30 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:45 AM																					
11:45 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	4
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3
Total Volume	2	1	0	0	3	0	0	0	0	0	1	2	0	0	3	2	0	1	0	3	9
% App. Total	66.7	33.3	0	0		0	0	0	0	0	33.3	66.7	0	0		66.7	0	33.3	0		
PHF	.500	.250	.000	.000	.750	.000	.000	.000	.000	.000	.250	.500	.000	.000	.375	.500	.000	.250	.000	.375	.563



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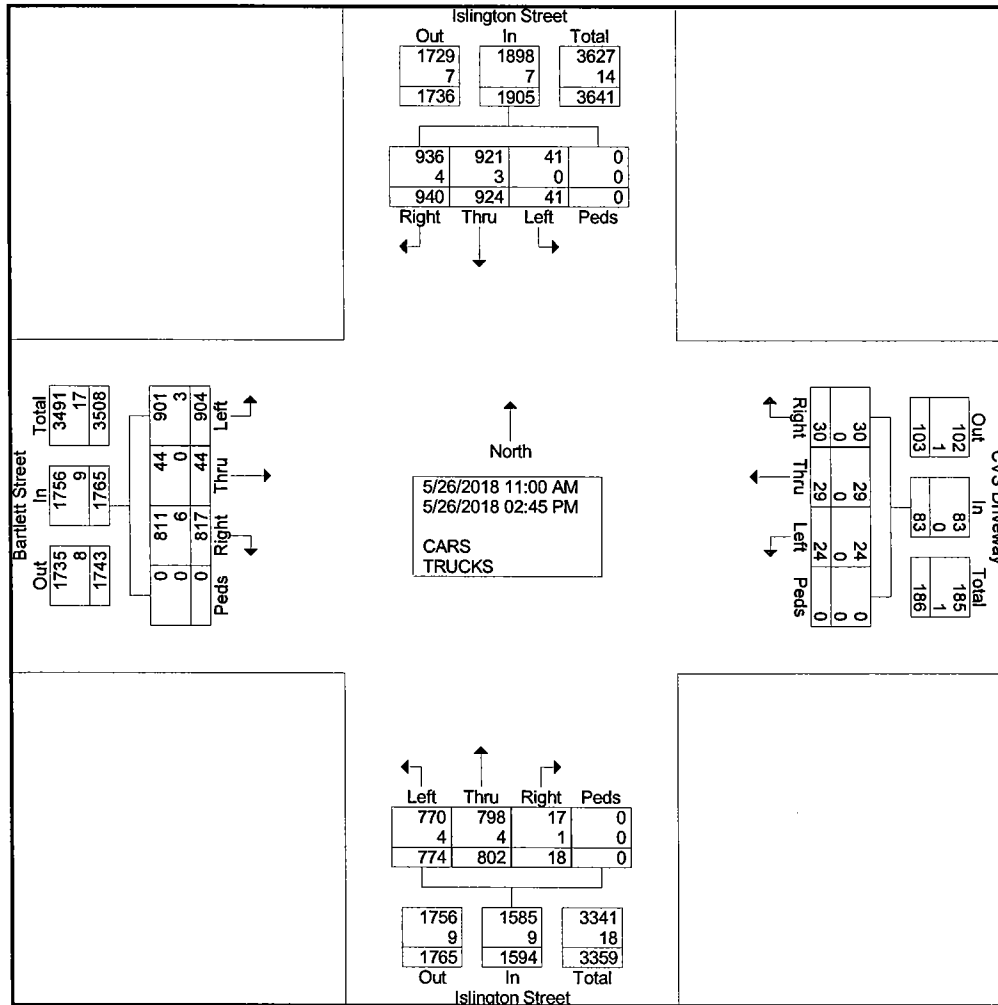
Groups Printed- CARS - TRUCKS

Start Time	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	59	65	6	0	130	1	3	3	0	7	3	46	43	0	92	54	5	70	0	129	358
11:15 AM	71	63	1	0	135	2	2	1	0	5	1	54	61	0	116	56	0	60	0	116	372
11:30 AM	56	63	0	0	119	2	1	0	0	3	0	69	40	0	109	46	0	52	0	98	329
11:45 AM	71	73	4	0	148	2	0	0	0	2	1	66	39	0	106	62	1	47	0	110	366
Total	257	264	11	0	532	7	6	4	0	17	5	235	183	0	423	218	6	229	0	453	1425
12:00 PM	52	67	4	0	123	2	2	3	0	7	1	70	47	0	118	45	2	65	0	112	360
12:15 PM	67	45	0	0	112	4	2	1	0	7	1	54	57	0	112	62	4	67	0	133	364
12:30 PM	57	68	3	0	128	1	3	1	0	5	1	59	43	0	103	63	5	59	0	127	363
12:45 PM	59	47	4	0	110	3	1	3	0	7	1	51	52	0	104	42	2	62	0	106	327
Total	235	227	11	0	473	10	8	8	0	26	4	234	199	0	437	212	13	253	0	478	1414
01:00 PM	59	51	3	0	113	1	1	4	0	6	0	31	50	0	81	64	0	53	0	117	317
01:15 PM	62	57	5	0	124	1	1	0	0	2	1	48	48	0	97	43	1	50	0	94	317
01:30 PM	49	54	2	0	105	0	1	2	0	3	2	47	45	0	94	54	4	54	0	112	314
01:45 PM	60	53	2	0	115	3	2	2	0	7	0	35	60	0	95	41	9	61	0	111	328
Total	230	215	12	0	457	5	5	8	0	18	3	161	203	0	367	202	14	218	0	434	1276
02:00 PM	46	49	2	0	97	1	1	1	0	3	3	44	48	0	95	54	1	52	0	107	302
02:15 PM	55	67	2	0	124	4	4	1	0	9	2	36	39	0	77	51	3	51	0	105	315
02:30 PM	56	41	1	0	98	2	3	1	0	6	1	47	54	0	102	36	4	53	0	93	299
02:45 PM	61	61	2	0	124	1	2	1	0	4	0	45	48	0	93	44	3	48	0	95	316
Total	218	218	7	0	443	8	10	4	0	22	6	172	189	0	367	185	11	204	0	400	1232
Grand Total	940	924	41	0	1905	30	29	24	0	83	18	802	774	0	1594	817	44	904	0	1765	5347
Apprch %	49.3	48.5	2.2	0		36.1	34.9	28.9	0		1.1	50.3	48.6	0		46.3	2.5	51.2	0		
Total %	17.6	17.3	0.8	0	35.6	0.6	0.5	0.4	0	1.6	0.3	15	14.5	0	29.8	15.3	0.8	16.9	0	33	
CARS	936	921	41	0	1898	30	29	24	0	83	17	798	770	0	1585	811	44	901	0	1756	5322
% CARS	99.6	99.7	100	0	99.6	100	100	100	0	100	94.4	99.5	99.5	0	99.4	99.3	100	99.7	0	99.5	99.5
TRUCKS	4	3	0	0	7	0	0	0	0	0	1	4	4	0	9	6	0	3	0	9	25
% TRUCKS	0.4	0.3	0	0	0.4	0	0	0	0	0	5.6	0.5	0.5	0	0.6	0.7	0	0.3	0	0.5	0.5

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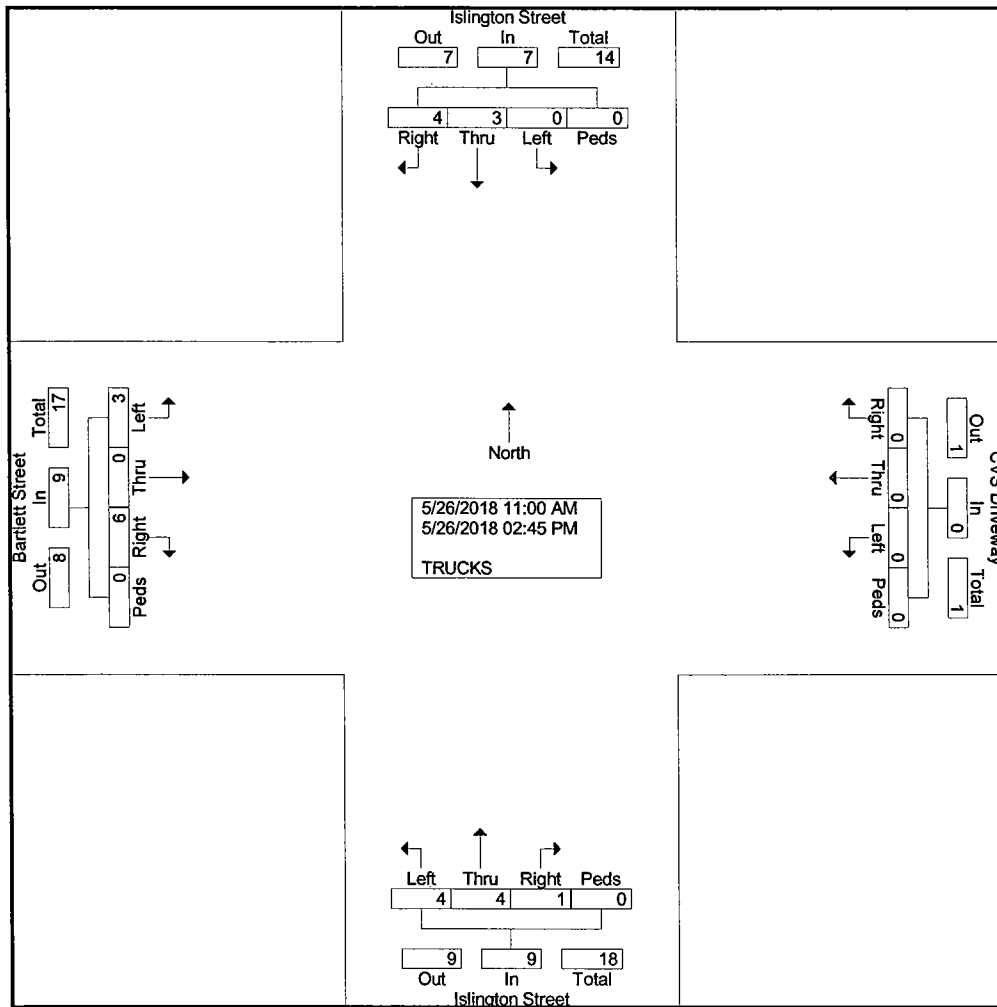
Groups Printed- TRUCKS

	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
11:45 AM	0	1	0	0	1	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	4
Total	0	1	0	0	1	0	0	0	0	0	1	2	1	0	4	1	0	1	0	2	7
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:30 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	2	3
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	1	0	2	5
01:00 PM	0	1	0	0	1	0	0	0	0	0	0	0	2	0	2	1	0	0	0	1	4
01:15 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
Total	0	2	0	0	2	0	0	0	0	0	0	0	2	0	2	2	0	0	0	2	6
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0	0	0	2	3
02:15 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
02:45 PM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Total	2	0	0	0	2	0	0	0	0	0	0	1	1	0	2	2	0	1	0	3	7
Grand Total	4	3	0	0	7	0	0	0	0	0	1	4	4	0	9	6	0	3	0	9	25
Apprch %	57.1	42.9	0	0		0	0	0	0		11.1	44.4	44.4	0		66.7	0	33.3	0		
Total %	16	12	0	0	28	0	0	0	0	0	4	16	16	0	36	24	0	12	0	36	

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_E_SAT_Islington-Bartlett
Site Code : 1831A
Start Date : 5/26/2018
Page No : 2

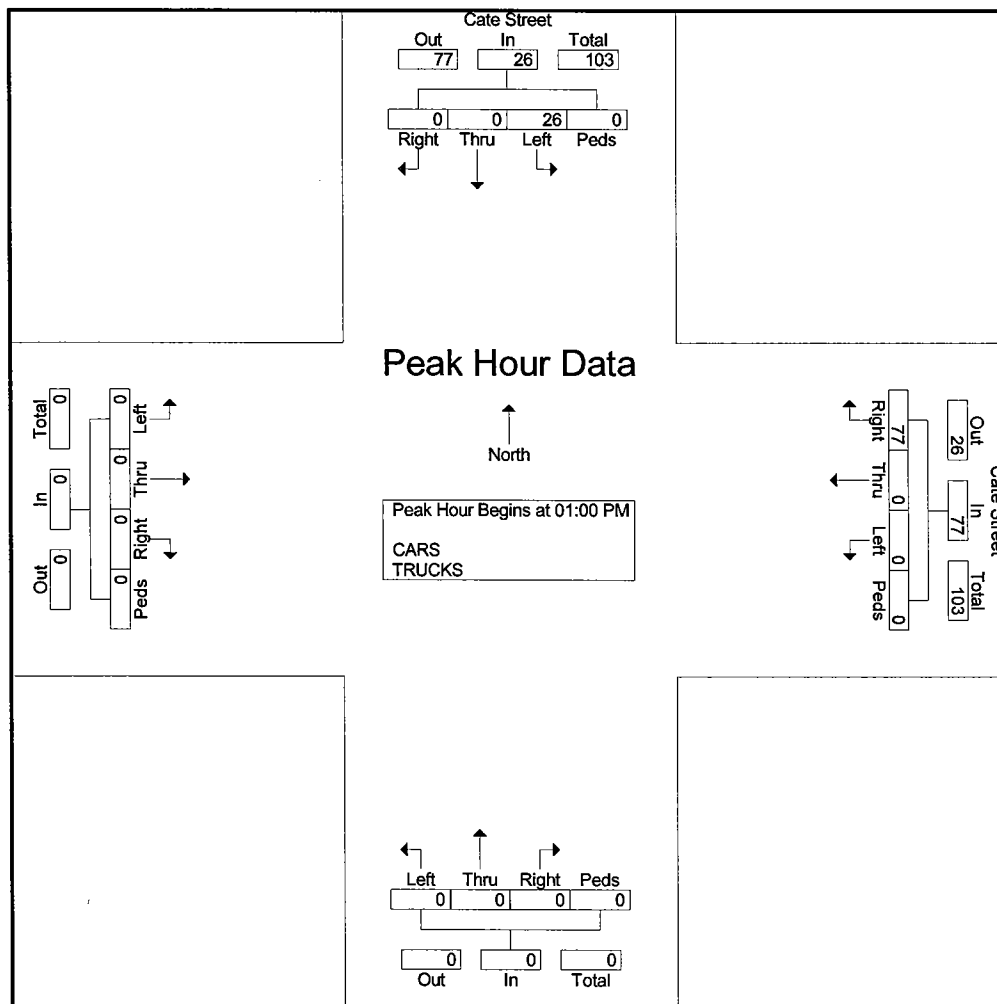


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St SAT
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Cate Street From North					Cate Street From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	0	0	8	0	8	19	0	0	0	19	0	0	0	0	0	0	0	0	0	0	27
01:15 PM	0	0	4	0	4	18	0	0	0	18	0	0	0	0	0	0	0	0	0	0	22
01:30 PM	0	0	8	0	8	15	0	0	0	15	0	0	0	0	0	0	0	0	0	0	23
01:45 PM	0	0	6	0	6	25	0	0	0	25	0	0	0	0	0	0	0	0	0	0	31
Total Volume	0	0	26	0	26	77	0	0	0	77	0	0	0	0	0	0	0	0	0	0	103
% App. Total	0	0	100	0		100	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.813	.000	.813	.770	.000	.000	.000	.770	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.831

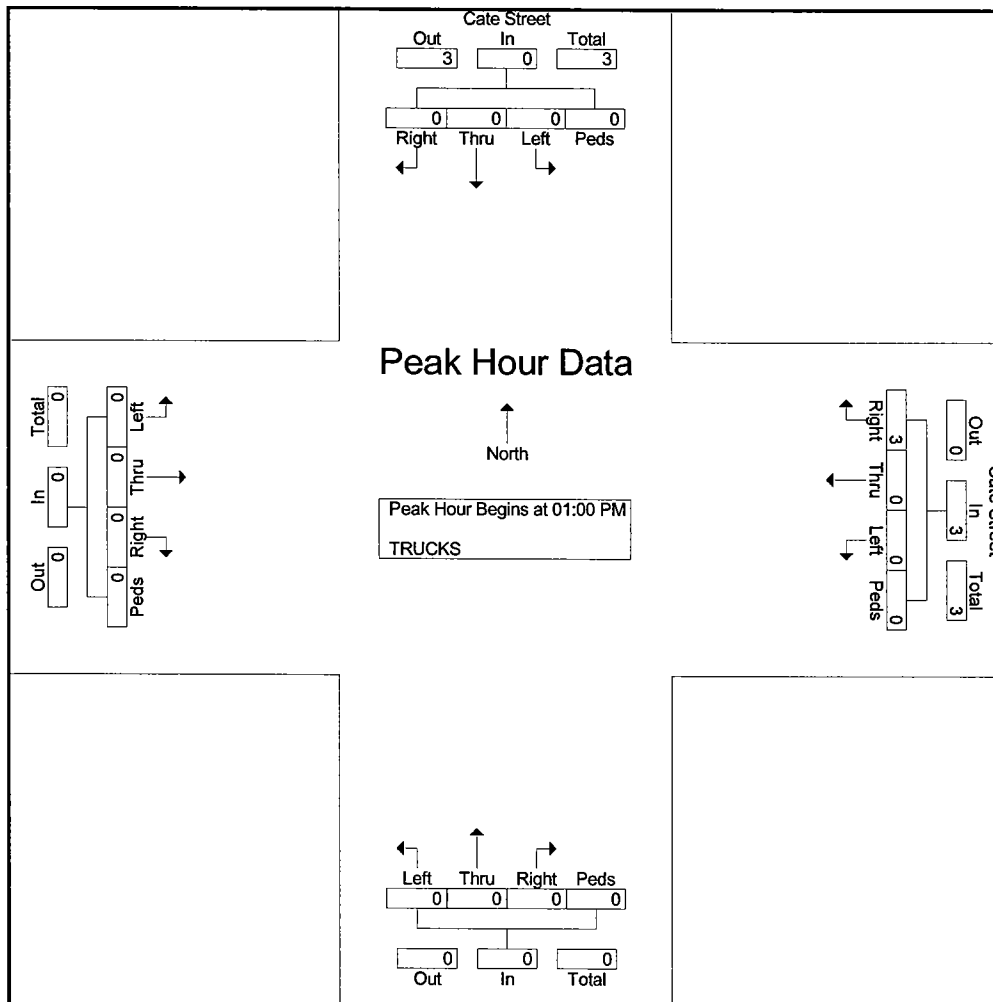


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St SAT
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	Cate Street From North					Cate Street From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 01:00 PM to 01:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 01:00 PM																					
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
01:45 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	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
% App. Total	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.375	.000	.000	.000	.375	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375



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Job Number: 1831A
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File Name : 1831A Cate St SAT
Site Code : 1831A
Start Date : 5/26/2018
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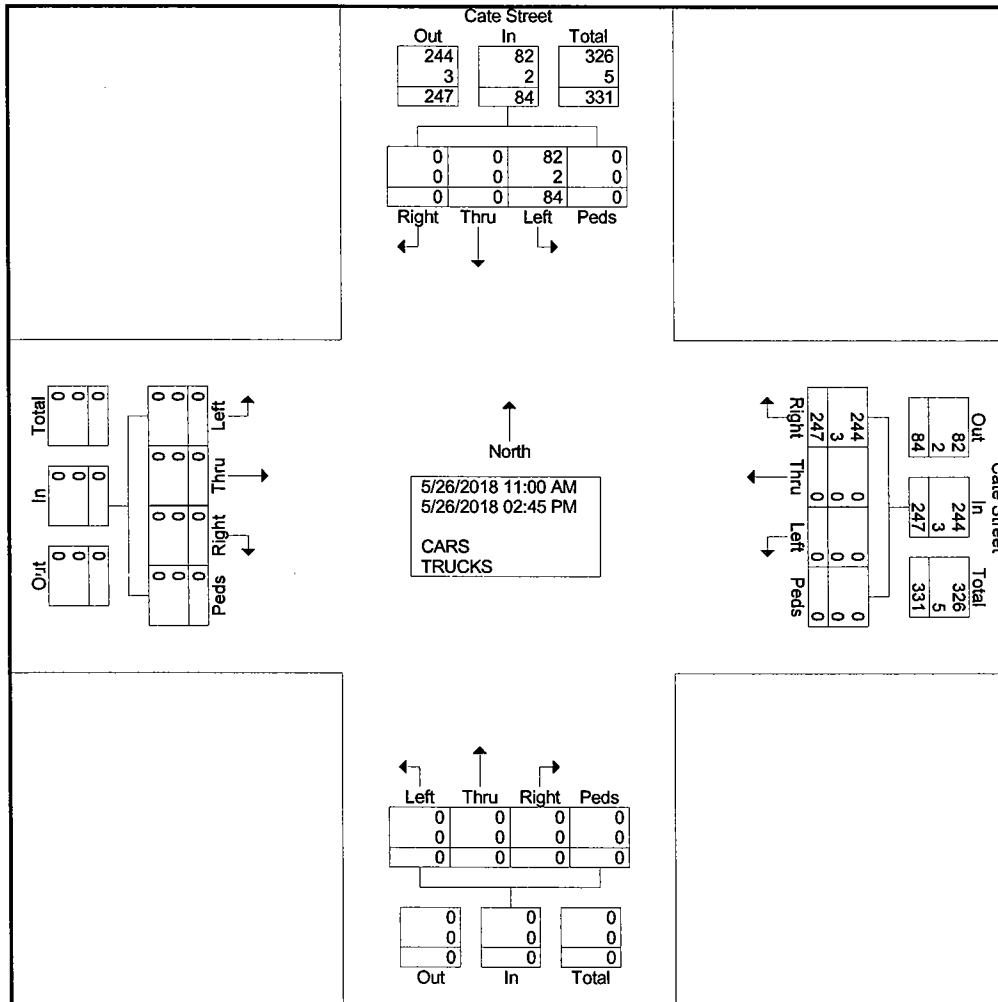
Groups Printed- CARS - TRUCKS

	Cate Street From North					Cate Street From East					From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
11:00 AM	0	0	8	0	8	13	0	0	0	13	0	0	0	0	0	0	0	0	0	0	21
11:15 AM	0	0	5	0	5	20	0	0	0	20	0	0	0	0	0	0	0	0	0	0	25
11:30 AM	0	0	1	0	1	11	0	0	0	11	0	0	0	0	0	0	0	0	0	0	12
11:45 AM	0	0	7	0	7	14	0	0	0	14	0	0	0	0	0	0	0	0	0	0	21
Total	0	0	21	0	21	58	0	0	0	58	0	0	0	0	0	0	0	0	0	0	79
12:00 PM	0	0	4	0	4	12	0	0	0	12	0	0	0	0	0	0	0	0	0	0	16
12:15 PM	0	0	5	0	5	15	0	0	0	15	0	0	0	0	0	0	0	0	0	0	20
12:30 PM	0	0	4	0	4	11	0	0	0	11	0	0	0	0	0	0	0	0	0	0	15
12:45 PM	0	0	5	0	5	16	0	0	0	16	0	0	0	0	0	0	0	0	0	0	21
Total	0	0	18	0	18	54	0	0	0	54	0	0	0	0	0	0	0	0	0	0	72
01:00 PM	0	0	8	0	8	19	0	0	0	19	0	0	0	0	0	0	0	0	0	0	27
01:15 PM	0	0	4	0	4	18	0	0	0	18	0	0	0	0	0	0	0	0	0	0	22
01:30 PM	0	0	8	0	8	15	0	0	0	15	0	0	0	0	0	0	0	0	0	0	23
01:45 PM	0	0	6	0	6	25	0	0	0	25	0	0	0	0	0	0	0	0	0	0	31
Total	0	0	26	0	26	77	0	0	0	77	0	0	0	0	0	0	0	0	0	0	103
02:00 PM	0	0	6	0	6	20	0	0	0	20	0	0	0	0	0	0	0	0	0	0	26
02:15 PM	0	0	6	0	6	15	0	0	0	15	0	0	0	0	0	0	0	0	0	0	21
02:30 PM	0	0	2	0	2	11	0	0	0	11	0	0	0	0	0	0	0	0	0	0	13
02:45 PM	0	0	5	0	5	12	0	0	0	12	0	0	0	0	0	0	0	0	0	0	17
Total	0	0	19	0	19	58	0	0	0	58	0	0	0	0	0	0	0	0	0	0	77
Grand Total	0	0	84	0	84	247	0	0	0	247	0	0	0	0	0	0	0	0	0	0	331
Apprch %	0	0	100	0		100	0	0	0		0	0	0	0		0	0	0	0		
Total %	0	0	25.4	0	25.4	74.6	0	0	0	74.6	0	0	0	0	0	0	0	0	0	0	
CARS	0	0	82	0	82	244	0	0	0	244	0	0	0	0	0	0	0	0	0	0	326
% CARS	0	0	97.6	0	97.6	98.8	0	0	0	98.8	0	0	0	0	0	0	0	0	0	0	98.5
TRUCKS	0	0	2	0	2	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
% TRUCKS	0	0	2.4	0	2.4	1.2	0	0	0	1.2	0	0	0	0	0	0	0	0	0	0	1.5

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St SAT
Site Code : 1831A
Start Date : 5/26/2018
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Page No : 1

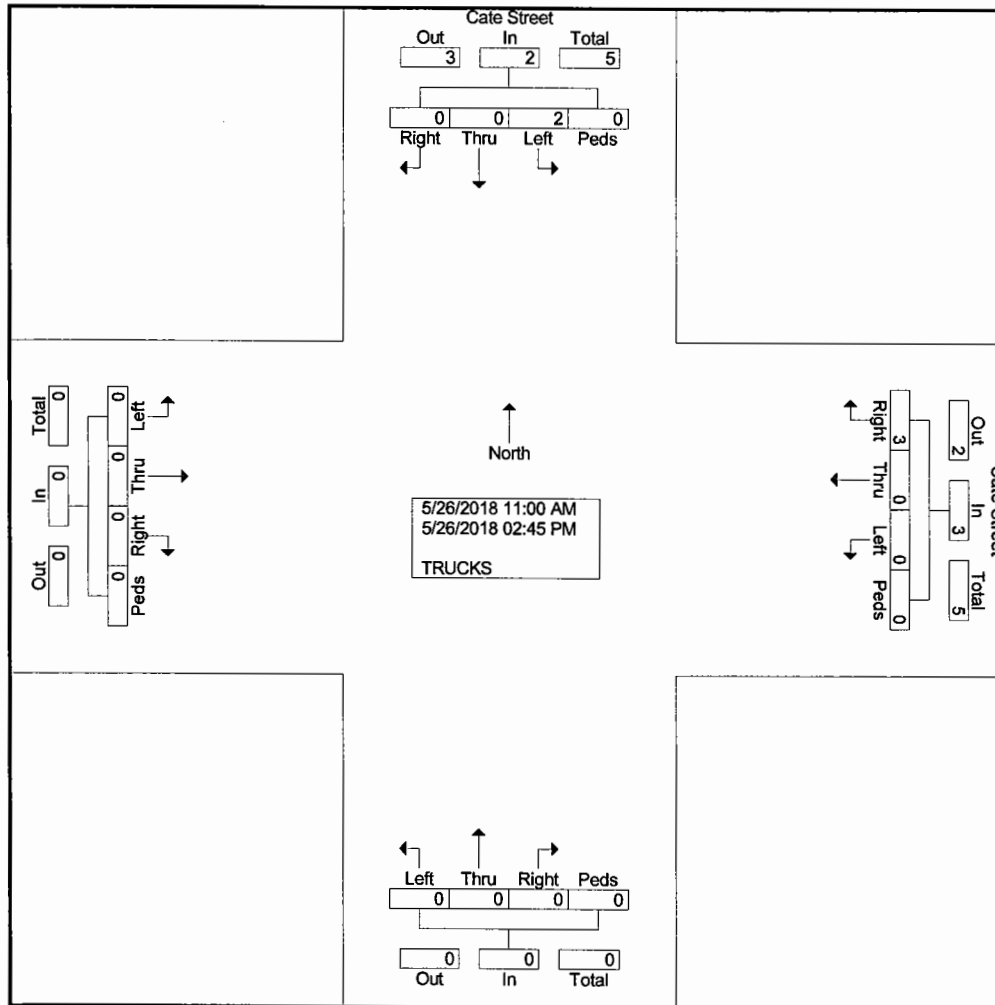
Groups Printed- TRUCKS

[illegible]

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A Cate St SAT
Site Code : 1831A
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Page No : 2

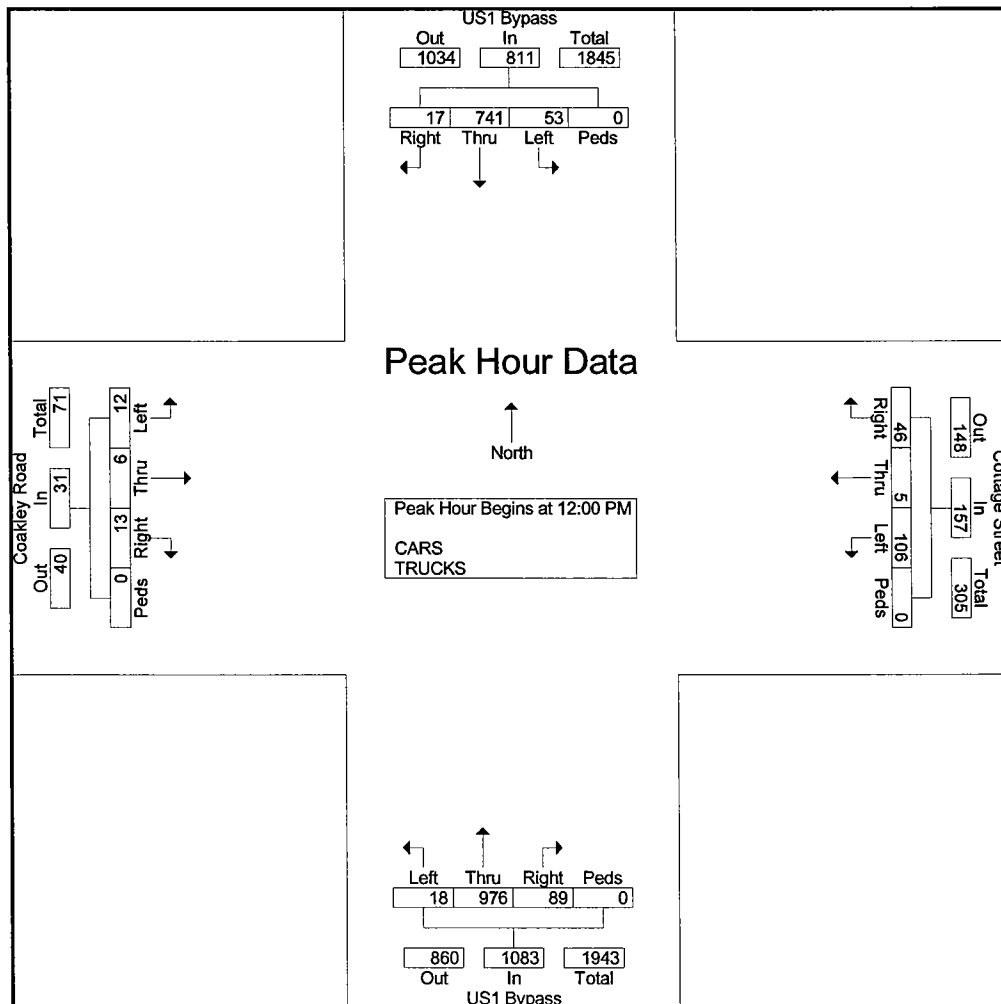


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_SAT_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	US1 Bypass From North					Cottage Street From East					US1 Bypass From South					Coakley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	4	182	11	0	197	11	0	19	0	30	26	250	5	0	281	1	2	2	0	5	513
12:15 PM	5	202	19	0	226	11	3	26	0	40	30	232	2	0	264	6	2	2	0	10	540
12:30 PM	5	177	14	0	196	10	2	28	0	40	16	238	4	0	258	4	0	4	0	8	502
12:45 PM	3	180	9	0	192	14	0	33	0	47	17	256	7	0	280	2	2	4	0	8	527
Total Volume	17	741	53	0	811	46	5	106	0	157	89	976	18	0	1083	13	6	12	0	31	2082
% App. Total	2.1	91.4	6.5	0		29.3	3.2	67.5	0		8.2	90.1	1.7	0		41.9	19.4	38.7	0		
PHF	.850	.917	.697	.000	.897	.821	.417	.803	.000	.835	.742	.953	.643	.000	.964	.542	.750	.750	.000	.775	.964

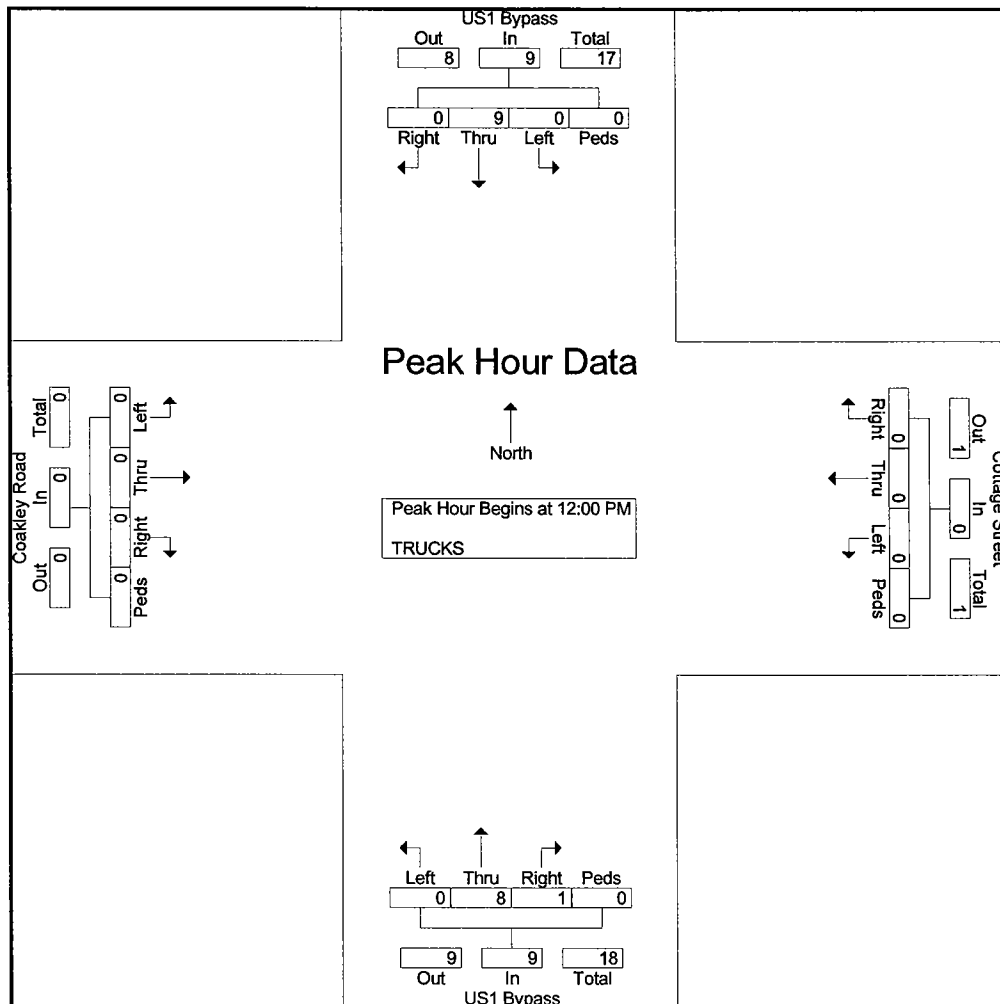


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_SAT_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	US1 Bypass From North					Cottage Street From East					US1 Bypass From South					Coakley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 12:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 12:00 PM																					
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
12:15 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
12:30 PM	0	1	0	0	1	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	6
12:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total Volume	0	9	0	0	9	0	0	0	0	0	1	8	0	0	9	0	0	0	0	0	18
% App. Total	0	100	0	0		0	0	0	0		11.1	88.9	0	0		0	0	0	0		
PHF	.000	.563	.000	.000	.563	.000	.000	.000	.000	.000	.250	.500	.000	.000	.450	.000	.000	.000	.000	.000	.750



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Weather: Clear
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Town/State: Portsmouth, NH

File Name : 1831A_INT_G_SAT_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

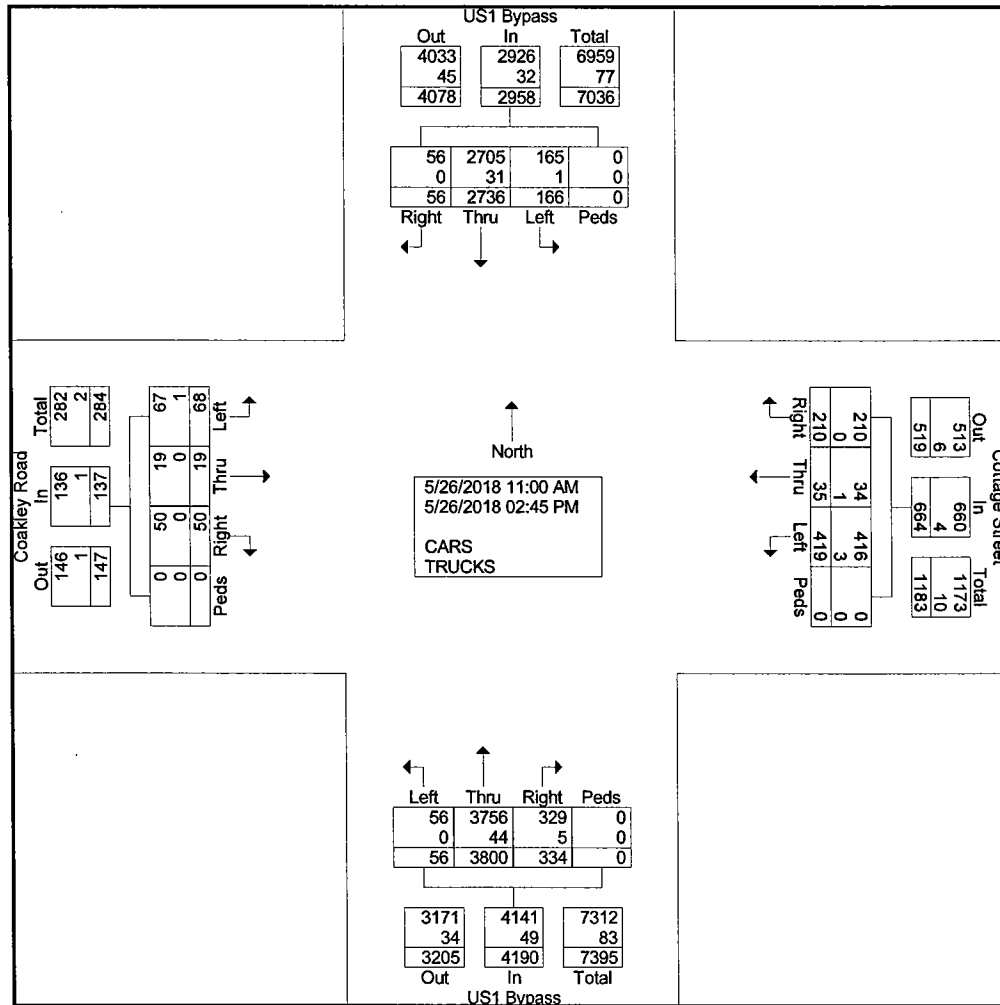
Groups Printed- CARS - TRUCKS

Start Time	US1 Bypass From North					Cottage Street From East					US1 Bypass From South					Coakley Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	2	163	14	0	179	11	3	33	0	47	27	197	3	0	227	4	1	2	0	7	460
11:15 AM	2	155	11	0	168	17	2	30	0	49	26	235	1	0	262	3	2	5	0	10	489
11:30 AM	2	180	9	0	191	13	1	27	0	41	30	231	3	0	264	4	0	6	0	10	506
11:45 AM	1	205	7	0	213	14	0	32	0	46	22	235	1	0	258	2	0	3	0	5	522
Total	7	703	41	0	751	55	6	122	0	183	105	898	8	0	1011	13	3	16	0	32	1977
12:00 PM	4	182	11	0	197	11	0	19	0	30	26	250	5	0	281	1	2	2	0	5	513
12:15 PM	5	202	19	0	226	11	3	26	0	40	30	232	2	0	264	6	2	2	0	10	540
12:30 PM	5	177	14	0	196	10	2	28	0	40	16	238	4	0	258	4	0	4	0	8	502
12:45 PM	3	180	9	0	192	14	0	33	0	47	17	256	7	0	280	2	2	4	0	8	527
Total	17	741	53	0	811	46	5	106	0	157	89	976	18	0	1083	13	6	12	0	31	2082
01:00 PM	5	151	7	0	163	11	4	27	0	42	21	242	3	0	266	5	1	8	0	14	485
01:15 PM	4	166	11	0	181	13	3	23	0	39	13	254	4	0	271	1	1	6	0	8	499
01:30 PM	3	168	12	0	183	9	0	19	0	28	21	210	3	0	234	5	1	5	0	11	456
01:45 PM	2	160	7	0	169	24	5	20	0	49	23	234	2	0	259	2	1	6	0	9	486
Total	14	645	37	0	696	57	12	89	0	158	78	940	12	0	1030	13	4	25	0	42	1926
02:00 PM	9	173	15	0	197	18	5	26	0	49	9	244	7	0	260	2	2	8	0	12	518
02:15 PM	8	167	8	0	183	12	4	21	0	37	14	224	2	0	240	3	2	2	0	7	467
02:30 PM	0	159	3	0	162	8	1	29	0	38	14	263	6	0	283	2	0	3	0	5	488
02:45 PM	1	148	9	0	158	14	2	26	0	42	25	255	3	0	283	4	2	2	0	8	491
Total	18	647	35	0	700	52	12	102	0	166	62	986	18	0	1066	11	6	15	0	32	1964
Grand Total	56	2736	166	0	2958	210	35	419	0	664	334	3800	56	0	4190	50	19	68	0	137	7949
Apprch %	1.9	92.5	5.6	0		31.6	5.3	63.1	0		8	90.7	1.3	0		36.5	13.9	49.6	0		
Total %	0.7	34.4	2.1	0	37.2	2.6	0.4	5.3	0	8.4	4.2	47.8	0.7	0	52.7	0.6	0.2	0.9	0	1.7	
CARS	56	2705	165	0	2926	210	34	416	0	660	329	3756	56	0	4141	50	19	67	0	136	7863
% CARS	100	98.9	99.4	0	98.9	100	97.1	99.3	0	99.4	98.5	98.8	100	0	98.8	100	100	98.5	0	99.3	98.9
TRUCKS	0	31	1	0	32	0	1	3	0	4	5	44	0	0	49	0	0	1	0	1	86
% TRUCKS	0	1.1	0.6	0	1.1	0	2.9	0.7	0	0.6	1.5	1.2	0	0	1.2	0	0	1.5	0	0.7	1.1

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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_SAT_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/26/2018
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Weather: Clear
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File Name : 1831A_INT_G_SAT_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

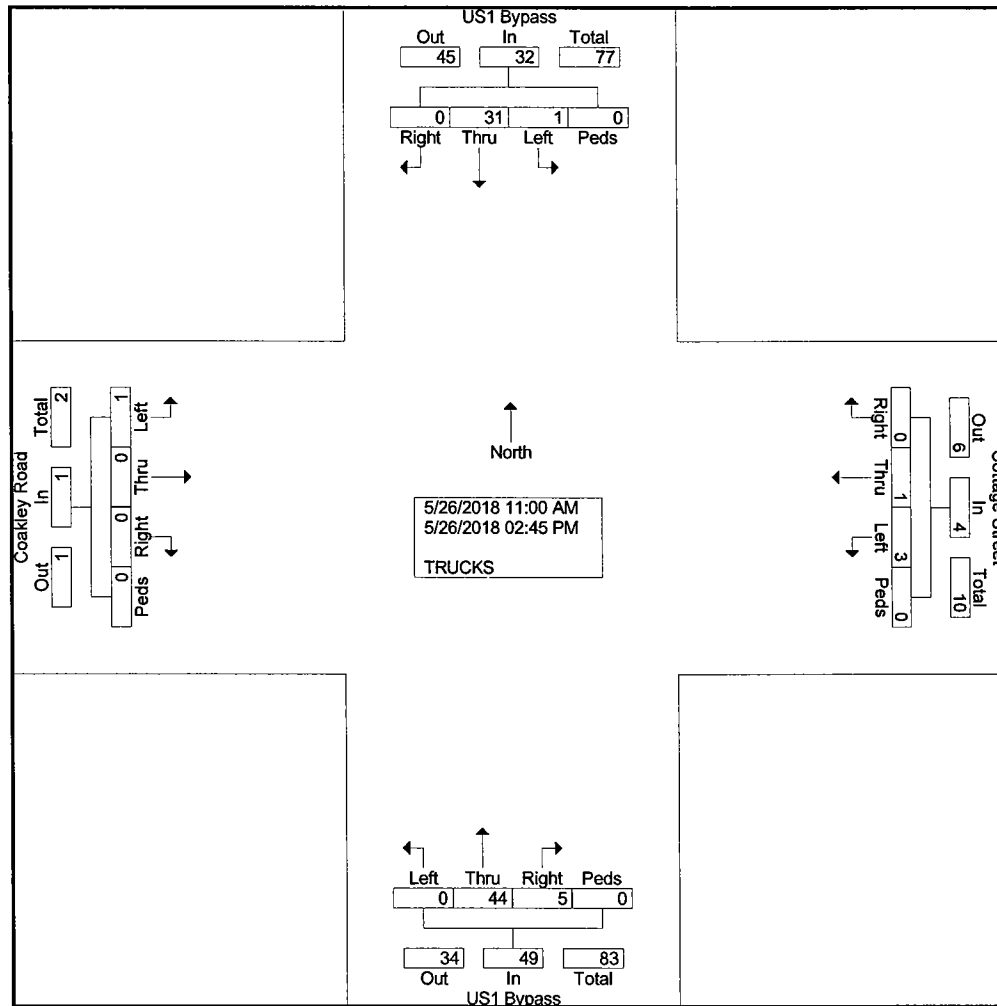
Groups Printed- TRUCKS

Start Time	US1 Bypass From North					Cottage Street From East					US1 Bypass From South					Coakley Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	3	0	0	3	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	8
11:15 AM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
11:30 AM	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	8
11:45 AM	0	3	0	0	3	0	0	0	0	0	1	5	0	0	6	0	0	0	0	0	9
Total	0	11	0	0	11	0	0	0	0	0	1	16	0	0	17	0	0	0	0	0	28
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
12:15 PM	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	6
12:30 PM	0	1	0	0	1	0	0	0	0	0	1	4	0	0	5	0	0	0	0	0	6
12:45 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	9	0	0	9	0	0	0	0	0	1	8	0	0	9	0	0	0	0	0	18
01:00 PM	0	1	0	0	1	0	0	1	0	1	0	2	0	0	2	0	0	1	0	1	5
01:15 PM	0	1	0	0	1	0	0	0	0	0	1	6	0	0	7	0	0	0	0	0	8
01:30 PM	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	3
01:45 PM	0	3	0	0	3	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	6
Total	0	5	0	0	5	0	0	1	0	1	3	12	0	0	15	0	0	1	0	1	22
02:00 PM	0	2	1	0	3	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	8
02:15 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
02:30 PM	0	1	0	0	1	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	3
02:45 PM	0	1	0	0	1	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	3
Total	0	6	1	0	7	0	1	2	0	3	0	8	0	0	8	0	0	0	0	0	18
Grand Total	0	31	1	0	32	0	1	3	0	4	5	44	0	0	49	0	0	1	0	1	86
Apprch %	0	96.9	3.1	0		0	25	75	0		10.2	89.8	0	0		0	0	100	0		
Total %	0	36	1.2	0	37.2	0	1.2	3.5	0	4.7	5.8	51.2	0	0	57	0	0	1.2	0	1.2	

Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_SAT_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/26/2018
Page No : 2

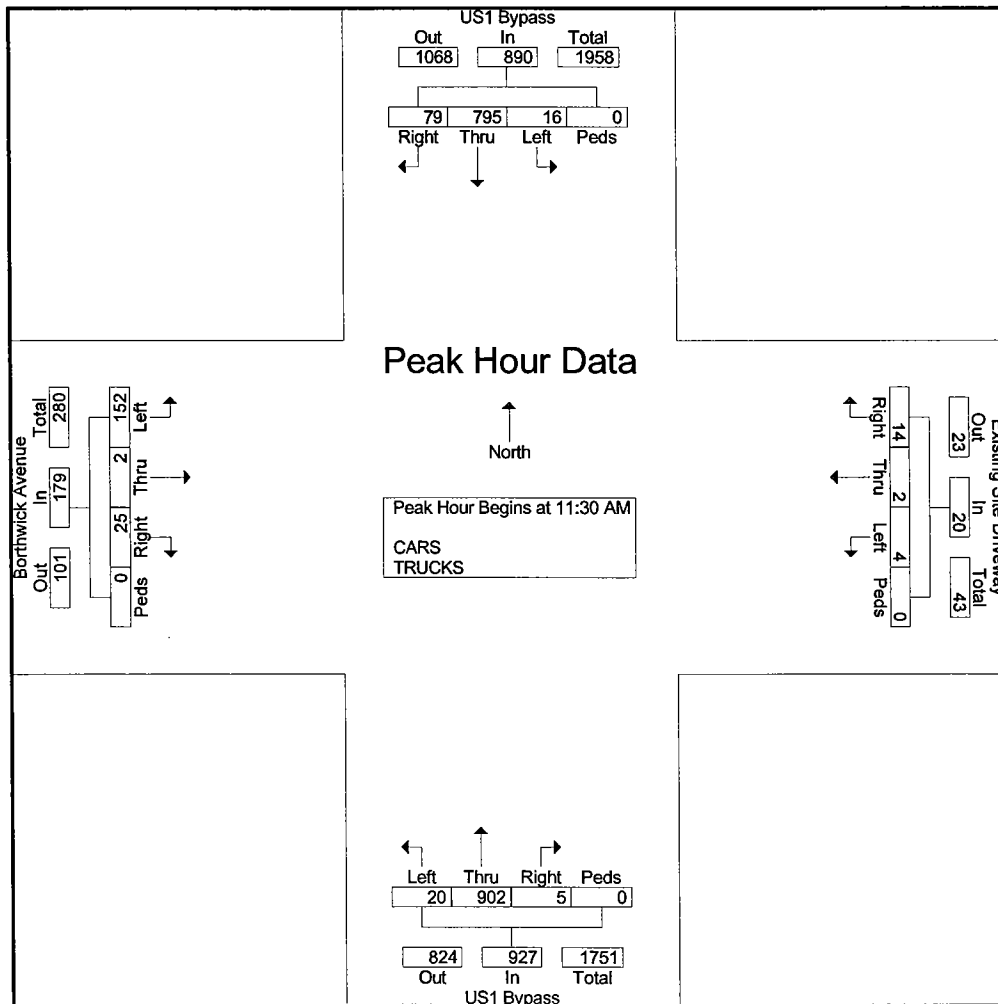


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Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_H_SAT_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	US1 Bypass From North					Existing Site Driveway From East					US1 Bypass From South					Borthwick Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	15	193	2	0	210	1	0	2	0	3	0	231	5	0	236	8	0	36	0	44	493
11:45 AM	18	215	8	0	241	2	2	0	0	4	2	213	5	0	220	6	1	37	0	44	509
12:00 PM	30	173	1	0	204	6	0	1	0	7	2	224	4	0	230	8	0	54	0	62	503
12:15 PM	16	214	5	0	235	5	0	1	0	6	1	234	6	0	241	3	1	25	0	29	511
Total Volume	79	795	16	0	890	14	2	4	0	20	5	902	20	0	927	25	2	152	0	179	2016
% App. Total	8.9	89.3	1.8	0		70	10	20	0		0.5	97.3	2.2	0		14	1.1	84.9	0		
PHF	.658	.924	.500	.000	.923	.583	.250	.500	.000	.714	.625	.964	.833	.000	.962	.781	.500	.704	.000	.722	.986

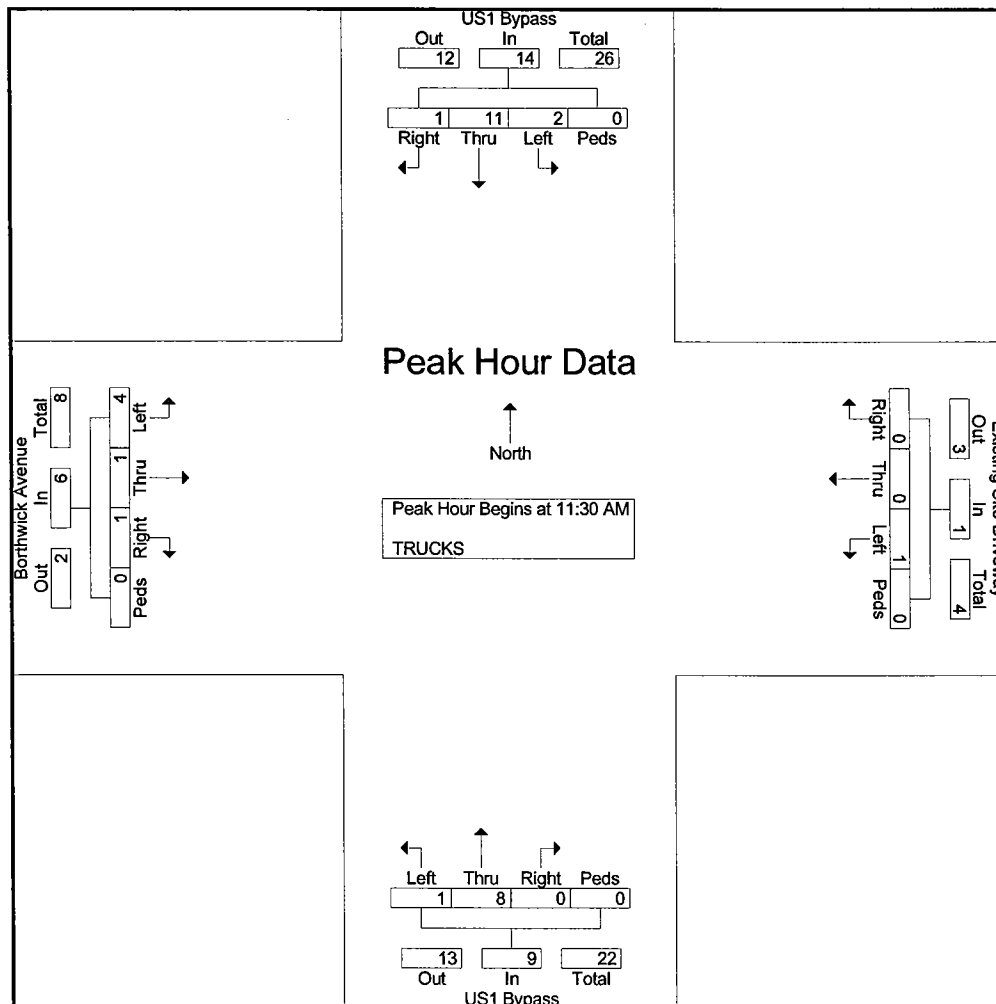


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_H_SAT_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	US1 Bypass From North					Existing Site Driveway From East					US1 Bypass From South					Borthwick Avenue From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 12:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	0	4	0	0	4	0	0	1	0	1	0	2	0	0	2	0	0	2	0	2	9
11:45 AM	0	2	1	0	3	0	0	0	0	0	0	3	0	0	3	0	0	2	0	2	8
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	4
12:15 PM	1	4	1	0	6	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	9
Total Volume	1	11	2	0	14	0	0	1	0	1	0	8	1	0	9	1	1	4	0	6	30
% App. Total	7.1	78.6	14.3	0		0	0	100	0		0	88.9	11.1	0		16.7	16.7	66.7	0		
PHF	.250	.688	.500	.000	.583	.000	.000	.250	.000	.250	.000	.667	.250	.000	.750	.250	.250	.500	.000	.750	.833



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File Name : 1831A_INT_H_SAT_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

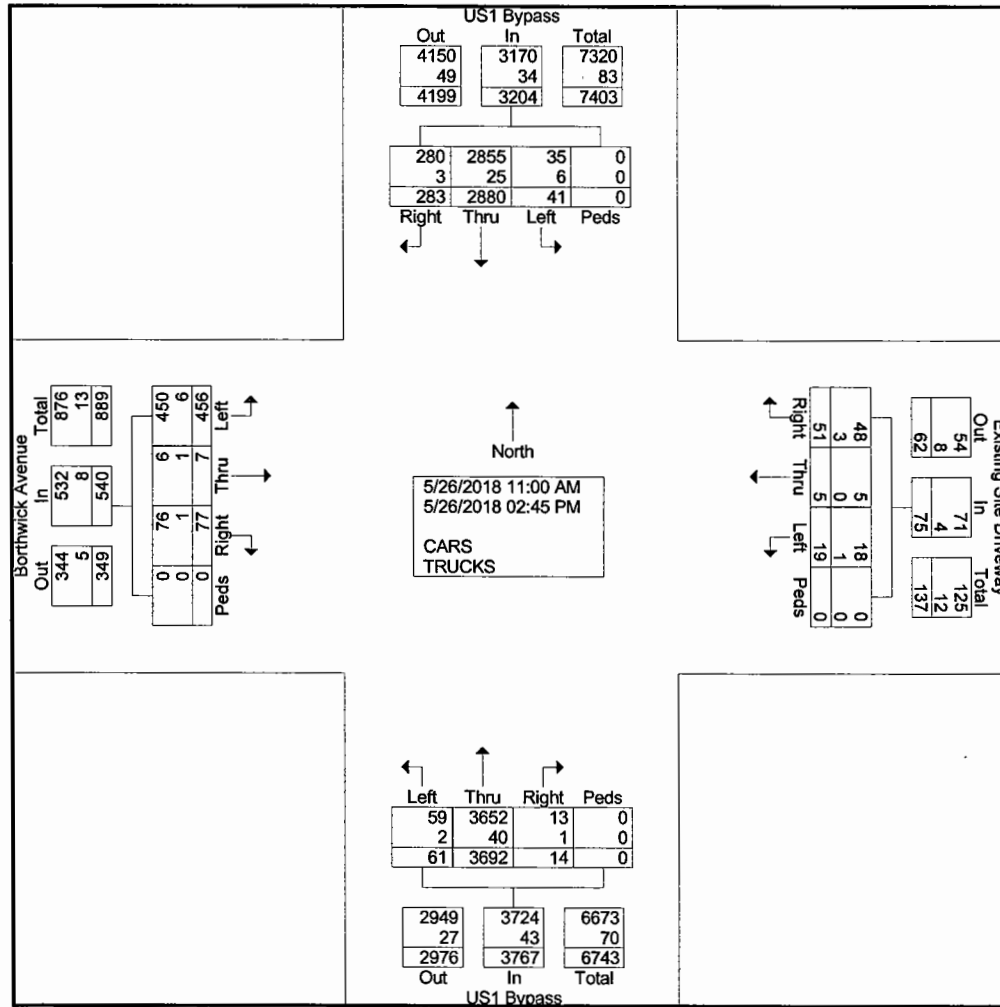
Groups Printed- CARS - TRUCKS

Start Time	US1 Bypass From North					Existing Site Driveway From East					US1 Bypass From South					Borthwick Avenue From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	24	170	1	0	195	3	0	1	0	4	0	182	1	0	183	6	1	46	0	53	435
11:15 AM	20	172	2	0	194	3	0	0	0	3	1	217	6	0	224	6	0	47	0	53	474
11:30 AM	15	193	2	0	210	1	0	2	0	3	0	231	5	0	236	8	0	36	0	44	493
11:45 AM	18	215	8	0	241	2	2	0	0	4	2	213	5	0	220	6	1	37	0	44	509
Total	77	750	13	0	840	9	2	3	0	14	3	843	17	0	863	26	2	166	0	194	1911
12:00 PM	30	173	1	0	204	6	0	1	0	7	2	224	4	0	230	8	0	54	0	62	503
12:15 PM	16	214	5	0	235	5	0	1	0	6	1	234	6	0	241	3	1	25	0	29	511
12:30 PM	12	196	0	0	208	2	0	0	0	2	0	241	3	0	244	5	0	21	0	26	480
12:45 PM	25	183	2	0	210	3	0	0	0	3	0	246	4	0	250	1	0	27	0	28	491
Total	83	766	8	0	857	16	0	2	0	18	3	945	17	0	965	17	1	127	0	145	1985
01:00 PM	12	171	1	0	184	3	0	1	0	4	2	247	1	0	250	5	0	16	0	21	459
01:15 PM	12	177	0	0	189	1	0	2	0	3	1	248	0	0	249	3	0	17	0	20	461
01:30 PM	23	170	1	0	194	2	0	1	0	3	0	200	3	0	203	3	1	29	0	33	433
01:45 PM	18	158	4	0	180	4	0	1	0	5	0	237	1	0	238	8	0	20	0	28	451
Total	65	676	6	0	747	10	0	5	0	15	3	932	5	0	940	19	1	82	0	102	1804
02:00 PM	16	176	7	0	199	6	0	2	0	8	2	239	7	0	248	4	0	23	0	27	482
02:15 PM	14	173	2	0	189	1	1	5	0	7	2	225	2	0	229	4	1	17	0	22	447
02:30 PM	14	176	3	0	193	6	0	1	0	7	1	244	7	0	252	4	2	23	0	29	481
02:45 PM	14	163	2	0	179	3	2	1	0	6	0	264	6	0	270	3	0	18	0	21	476
Total	58	688	14	0	760	16	3	9	0	28	5	972	22	0	999	15	3	81	0	99	1886
Grand Total	283	2880	41	0	3204	51	5	19	0	75	14	3692	61	0	3767	77	7	456	0	540	7586
Apprch %	8.8	89.9	1.3	0		68	6.7	25.3	0		0.4	98	1.6	0		14.3	1.3	84.4	0		
Total %	3.7	38	0.5	0	42.2	0.7	0.1	0.3	0	1	0.2	48.7	0.8	0	49.7	1	0.1	6	0	7.1	
CARS	280	2855	35	0	3170	48	5	18	0	71	13	3652	59	0	3724	76	6	450	0	532	7497
% CARS	98.9	99.1	85.4	0	98.9	94.1	100	94.7	0	94.7	92.9	98.9	96.7	0	98.9	98.7	85.7	98.7	0	98.5	98.8
TRUCKS	3	25	6	0	34	3	0	1	0	4	1	40	2	0	43	1	1	6	0	8	89
% TRUCKS	1.1	0.9	14.6	0	1.1	5.9	0	5.3	0	5.3	7.1	1.1	3.3	0	1.1	1.3	14.3	1.3	0	1.5	1.2

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File Name : 1831A_INT_H_SAT_US1 BYP-Borthwick
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Start Date : 5/26/2018
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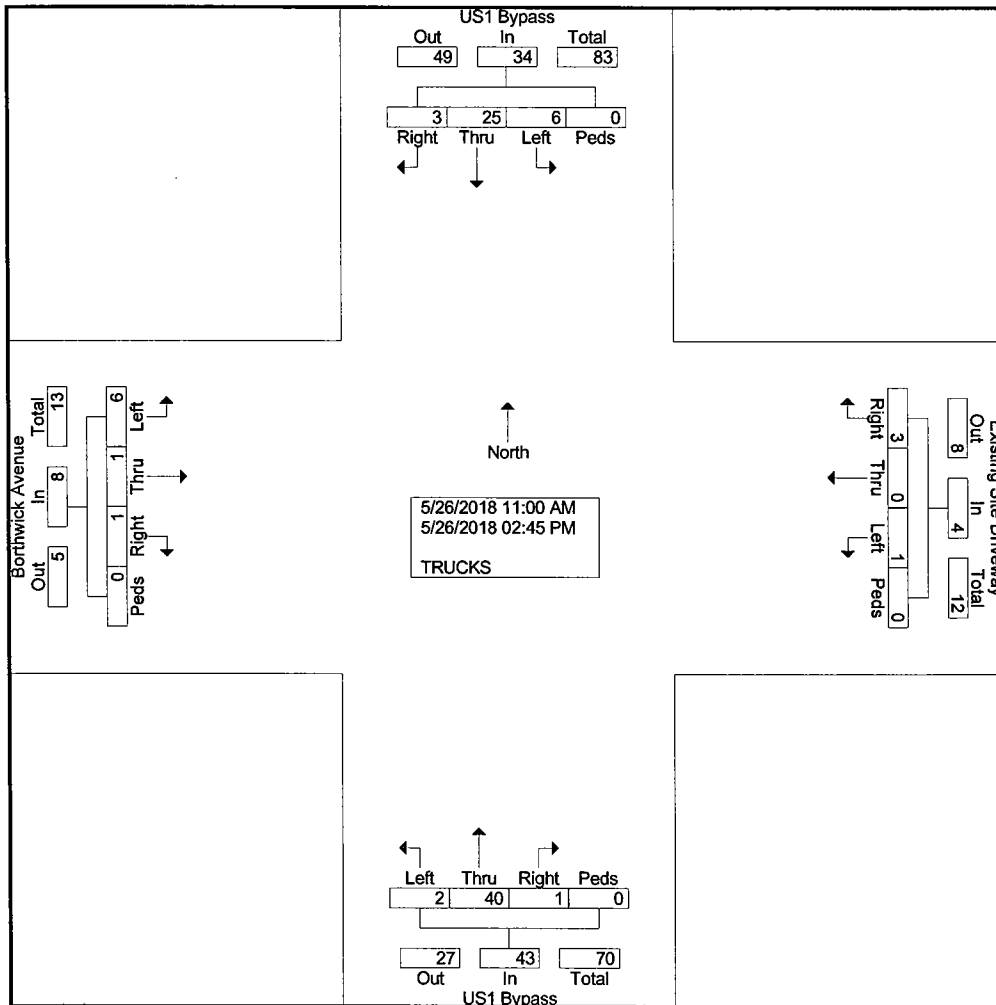
Groups Printed- TRUCKS

Start Time	US1 Bypass From North					Existing Site Driveway From East					US1 Bypass From South					Borthwick Avenue From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	2	0	0	2	1	0	0	0	1	0	5	0	0	5	0	0	0	0	0	8
11:15 AM	0	1	0	0	1	0	0	0	0	0	0	2	1	0	3	0	0	0	0	0	4
11:30 AM	0	4	0	0	4	0	0	1	0	1	0	2	0	0	2	0	0	2	0	2	9
11:45 AM	0	2	1	0	3	0	0	0	0	0	0	3	0	0	3	0	0	2	0	2	8
Total	0	9	1	0	10	1	0	1	0	2	0	12	1	0	13	0	0	4	0	4	29
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	1	0	0	0	1	4
12:15 PM	1	4	1	0	6	0	0	0	0	0	0	2	0	0	2	0	1	0	0	1	9
12:30 PM	1	0	0	0	1	0	0	0	0	0	0	5	0	0	5	0	0	1	0	1	7
12:45 PM	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
Total	2	7	1	0	10	0	0	0	0	0	0	9	1	0	10	1	1	1	0	3	23
01:00 PM	1	0	1	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
01:15 PM	0	1	0	0	1	1	0	0	0	1	0	6	0	0	6	0	0	0	0	0	8
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	3
01:45 PM	0	2	1	0	3	0	0	0	0	0	0	2	0	0	2	0	0	1	0	1	6
Total	1	3	2	0	6	1	0	0	0	1	0	12	0	0	12	0	0	1	0	1	20
02:00 PM	0	2	1	0	3	1	0	0	0	1	0	3	0	0	3	0	0	0	0	0	7
02:15 PM	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	4
02:30 PM	0	1	0	0	1	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	4
02:45 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	6	2	0	8	1	0	0	0	1	1	7	0	0	8	0	0	0	0	0	17
Grand Total	3	25	6	0	34	3	0	1	0	4	1	40	2	0	43	1	1	6	0	8	89
Apprch %	8.8	73.5	17.6	0		75	0	25	0		2.3	93	4.7	0		12.5	12.5	75	0		
Total %	3.4	28.1	6.7	0	38.2	3.4	0	1.1	0	4.5	1.1	44.9	2.2	0	48.3	1.1	1.1	6.7	0	9	

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File Name : 1831A_INT_H_SAT_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/26/2018
Page No : 2

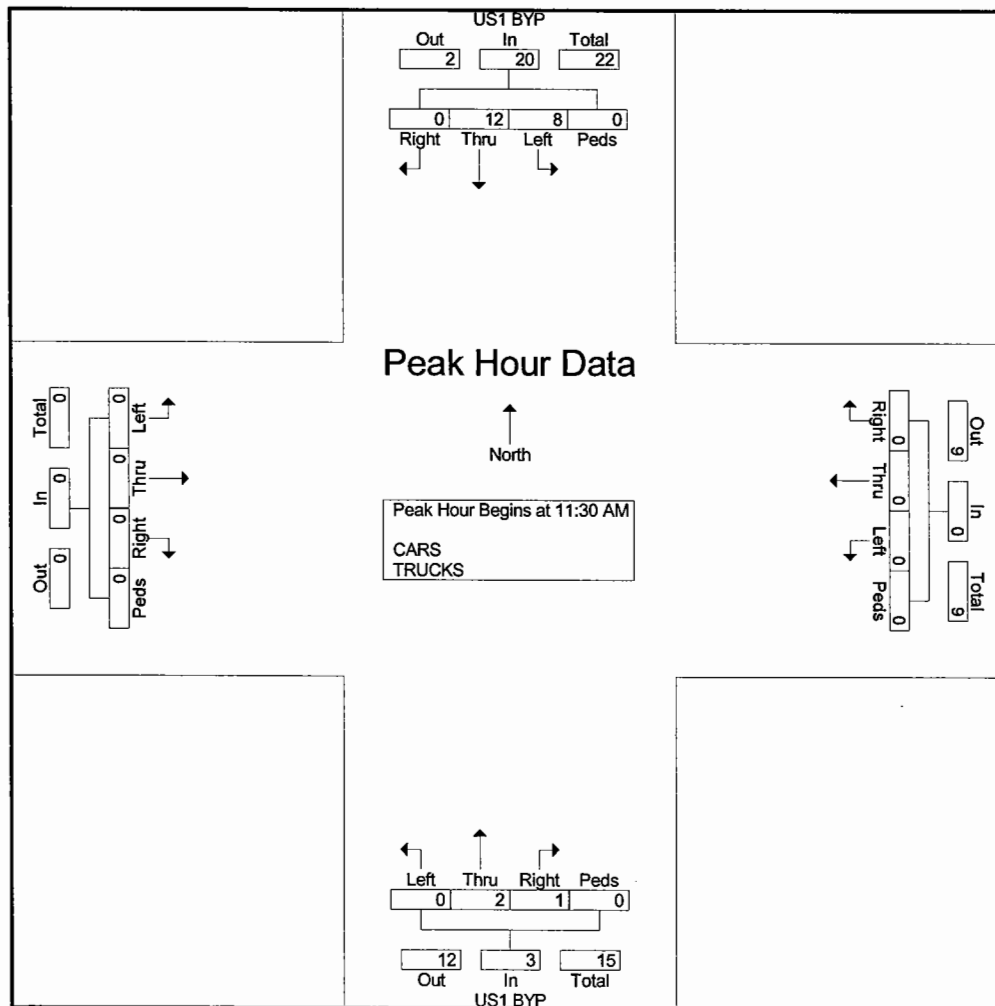


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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT US1 BYP-U-Haul-Existing Site Driveways
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	US1 BYP From North					From East					US1 BYP From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	0	2	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
11:45 AM	0	4	4	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
12:00 PM	0	3	0	0	3	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	5
12:15 PM	0	3	1	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
Total Volume	0	12	8	0	20	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	23
% App. Total	0	60	40	0		0	0	0	0	0	33.3	66.7	0	0		0	0	0	0	0	
PHF	.000	.750	.500	.000	.625	.000	.000	.000	.000	.000	.250	.500	.000	.000	.375	.000	.000	.000	.000	.000	.719

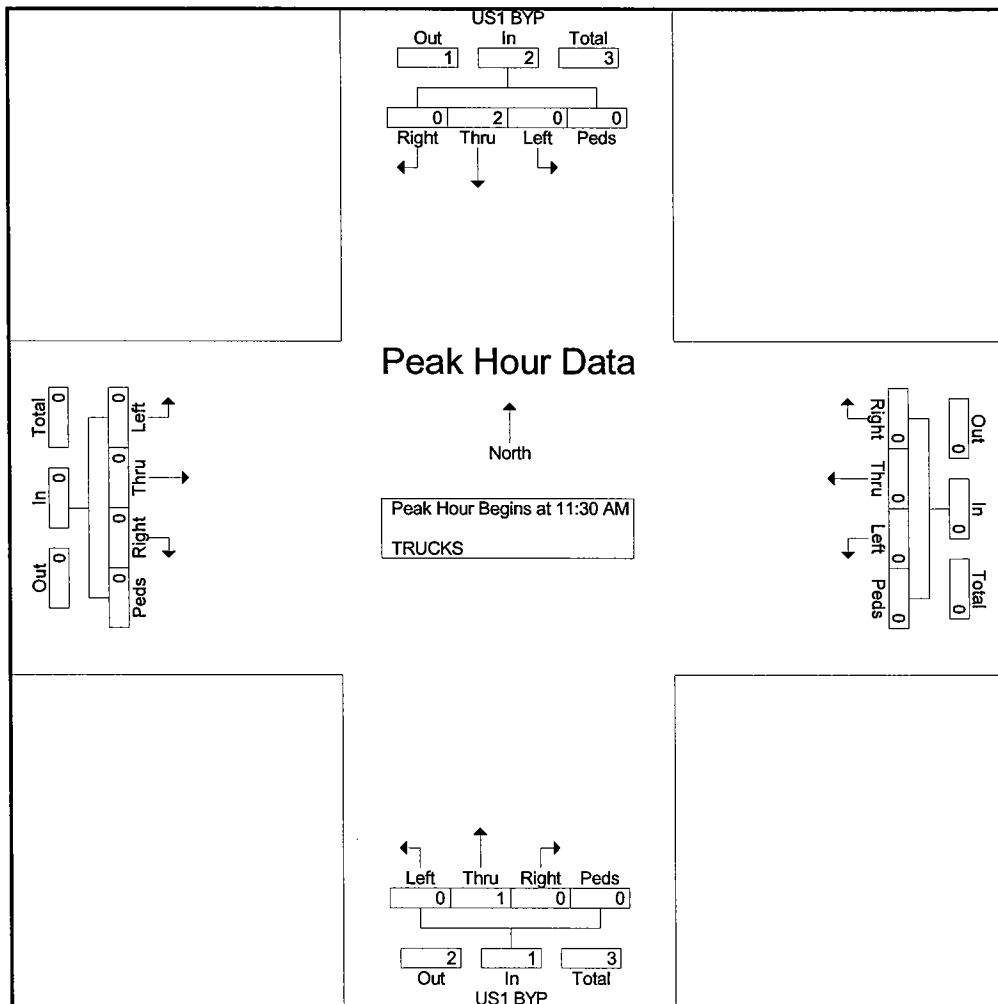


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Weather: Clear
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File Name : 1831A SAT US1 BYP-U-Haul-Existing Site Driveways
Site Code : 1831A
Start Date : 5/26/2018
Page No : 3

	US1 BYP From North					From East					US1 BYP From South					From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 11:30 AM to 12:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 11:30 AM																					
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	2	0	0	2	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	3
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.500	.000	.000	.500	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.000	.000	.000	.000	.375



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Site Code : 1831A
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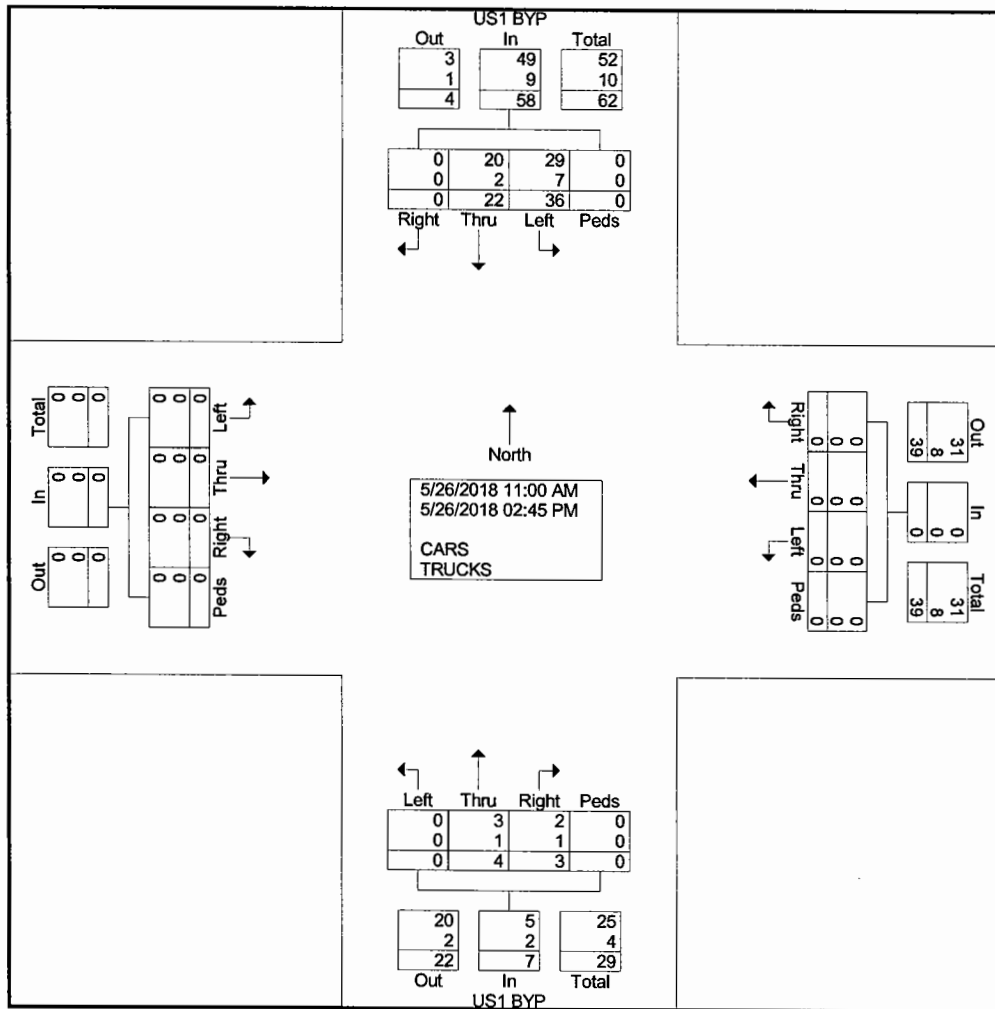
Groups Printed- CARS - TRUCKS

Start Time	US1 BYP From North					From East					US1 BYP From South					From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	2	3	0	5	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	6
11:15 AM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
11:30 AM	0	2	3	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
11:45 AM	0	4	4	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Total	0	8	12	0	20	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	21
12:00 PM	0	3	0	0	3	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	5
12:15 PM	0	3	1	0	4	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	5
12:30 PM	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
12:45 PM	0	1	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	8	6	0	14	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	17
01:00 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
01:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
01:30 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
01:45 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
02:00 PM	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
02:15 PM	0	1	4	0	5	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	8
02:30 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:45 PM	0	3	8	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
Total	0	6	13	0	19	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	22
Grand Total	0	22	36	0	58	0	0	0	0	0	3	4	0	0	7	0	0	0	0	0	65
Apprch %	0	37.9	62.1	0		0	0	0	0		42.9	57.1	0	0		0	0	0	0		
Total %	0	33.8	55.4	0	89.2	0	0	0	0		4.6	6.2	0	0	10.8	0	0	0	0		
CARS	0	20	29	0	49	0	0	0	0	0	2	3	0	0	5	0	0	0	0	0	54
% CARS	0	90.9	80.6	0	84.5	0	0	0	0	0	66.7	75	0	0	71.4	0	0	0	0	0	83.1
TRUCKS	0	2	7	0	9	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	11
% TRUCKS	0	9.1	19.4	0	15.5	0	0	0	0	0	33.3	25	0	0	28.6	0	0	0	0	0	16.9

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File Name : 1831A SAT US1 BYP-U-Haul-Existing Site Driveways
Site Code : 1831A
Start Date : 5/26/2018
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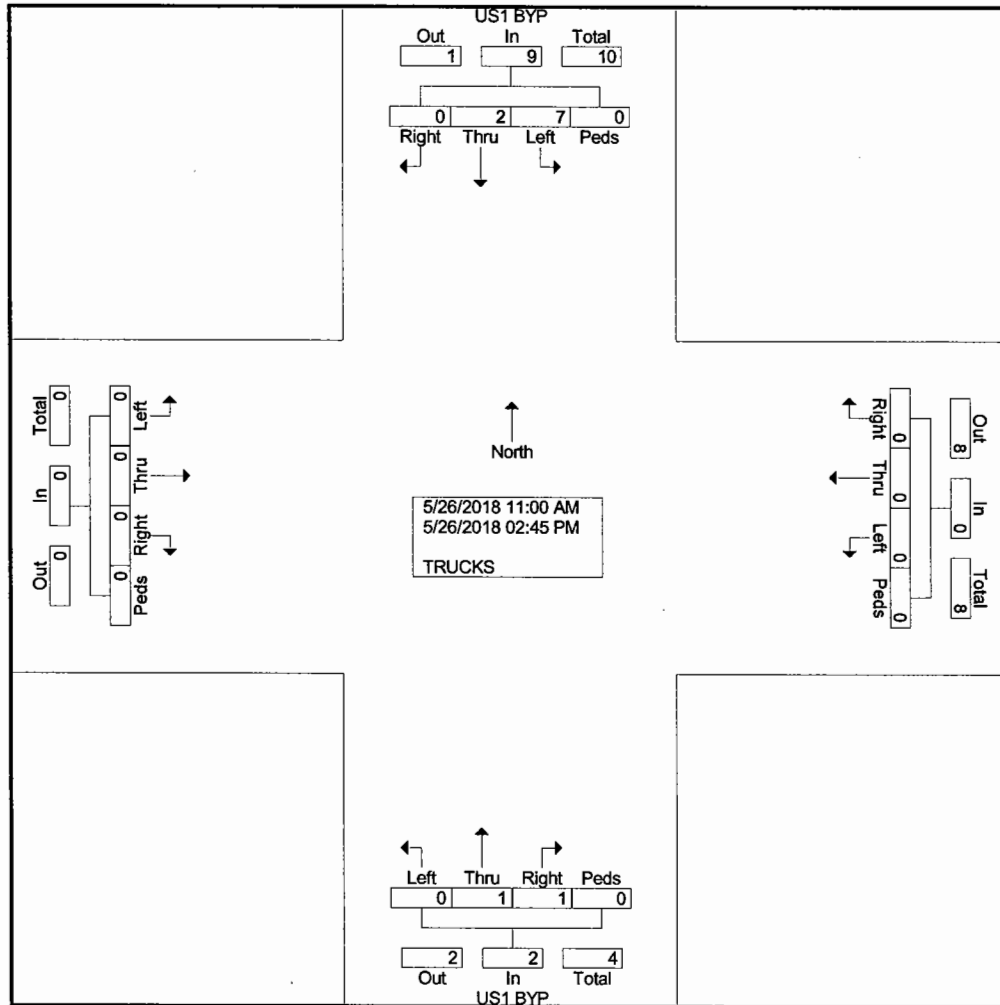
Groups Printed- TRUCKS

Start Time	US1 BYP From North					From East					US1 BYP From South					From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
11:15 AM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	2	0	3	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	4
12:00 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
01:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:15 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Grand Total	0	2	7	0	9	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	11
Apprch %	0	22.2	77.8	0		0	0	0	0		50	50	0	0		0	0	0	0		
Total %	0	18.2	63.6	0	81.8	0	0	0	0		9.1	9.1	0	0	18.2	0	0	0	0		

Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A SAT US1 BYP-U-Haul-Existing Site Driveways
Site Code : 1831A
Start Date : 5/26/2018
Page No : 2



Appendix D

Pedestrian Counts

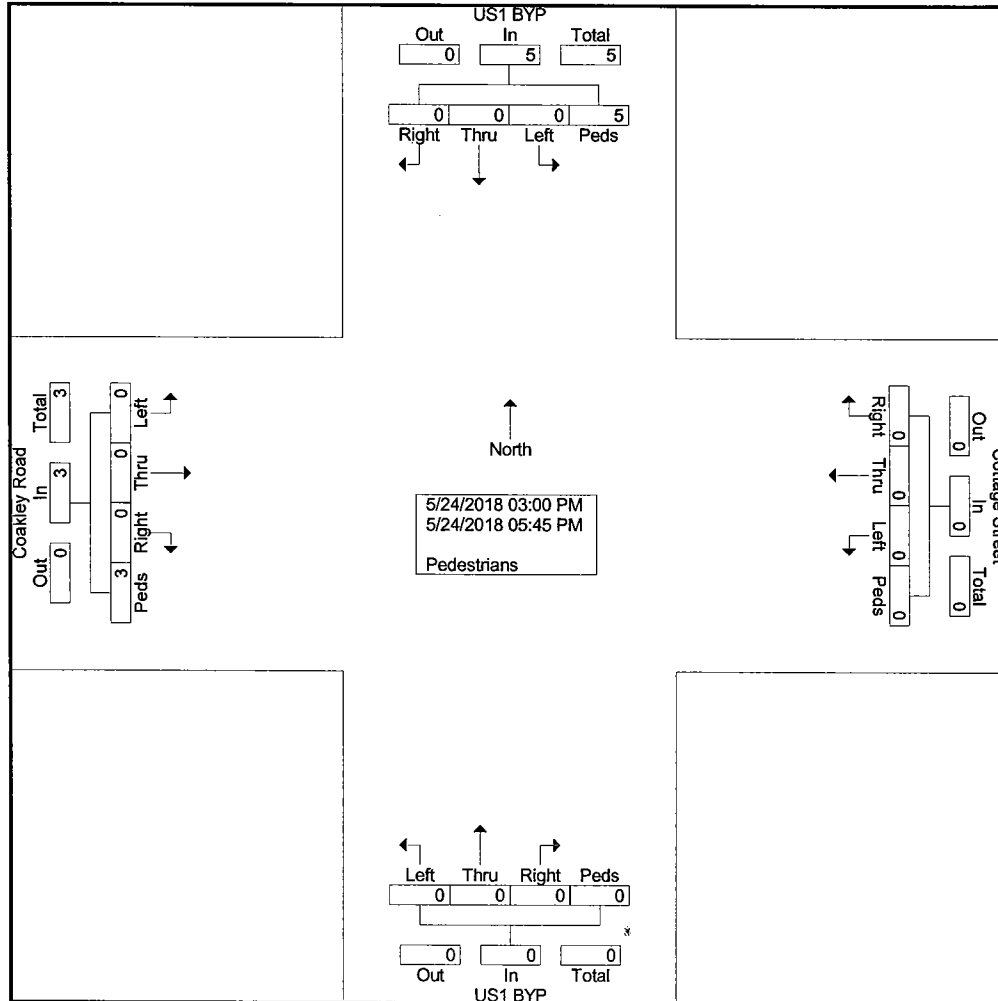
Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_Thurs_PM_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- Pedestrians

Start Time	US1 BYP From North					Cottage Street From East					US1 BYP From South					Coakley Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
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	0	0	0	0	0
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
05:45 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3
Total	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	6
Grand Total	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	8
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	100		
Total %	0	0	0	62.5	62.5	0	0	0	0	0	0	0	0	0	0	0	0	0	37.5	37.5	



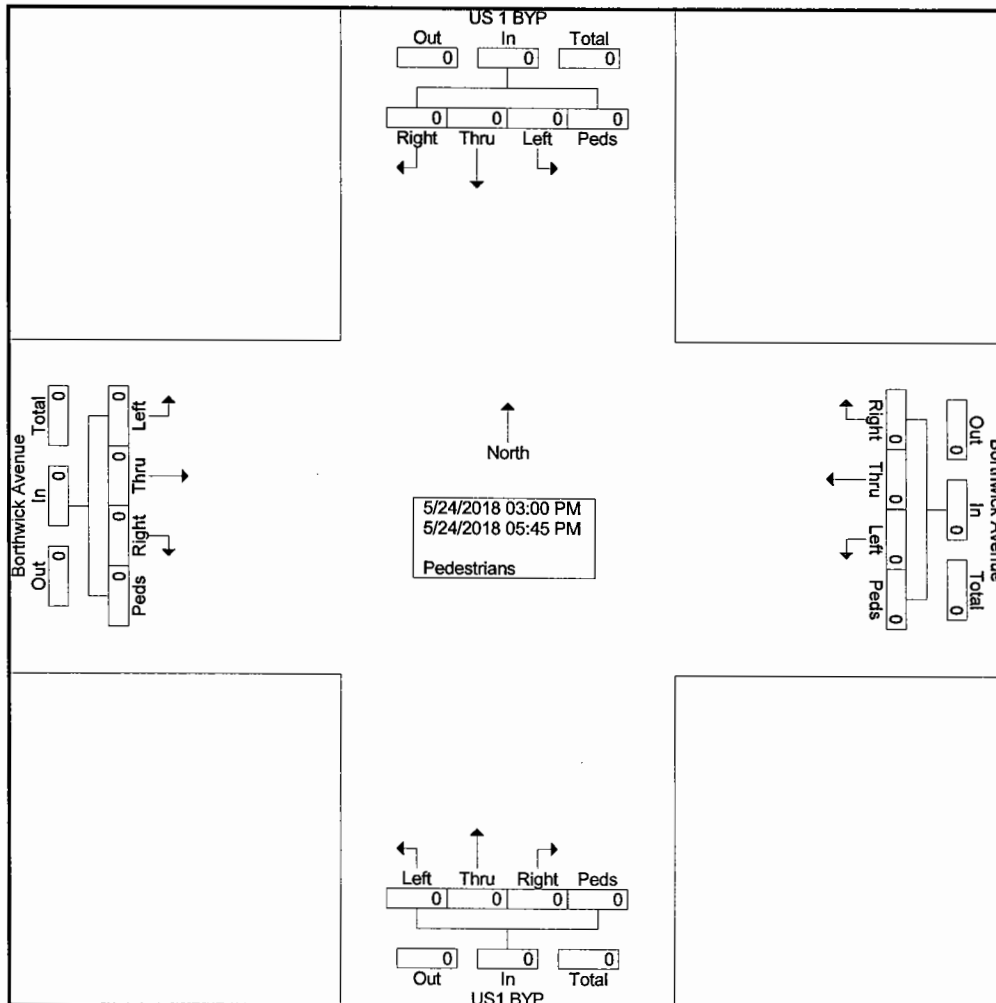
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P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_H_Thurs_PM_US1 BYP-Borthwick
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- Pedestrians

Start Time	US 1 BYP From North					Borthwick Avenue From East					US1 BYP From South					Borthwick Avenue From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	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	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
Total %																					



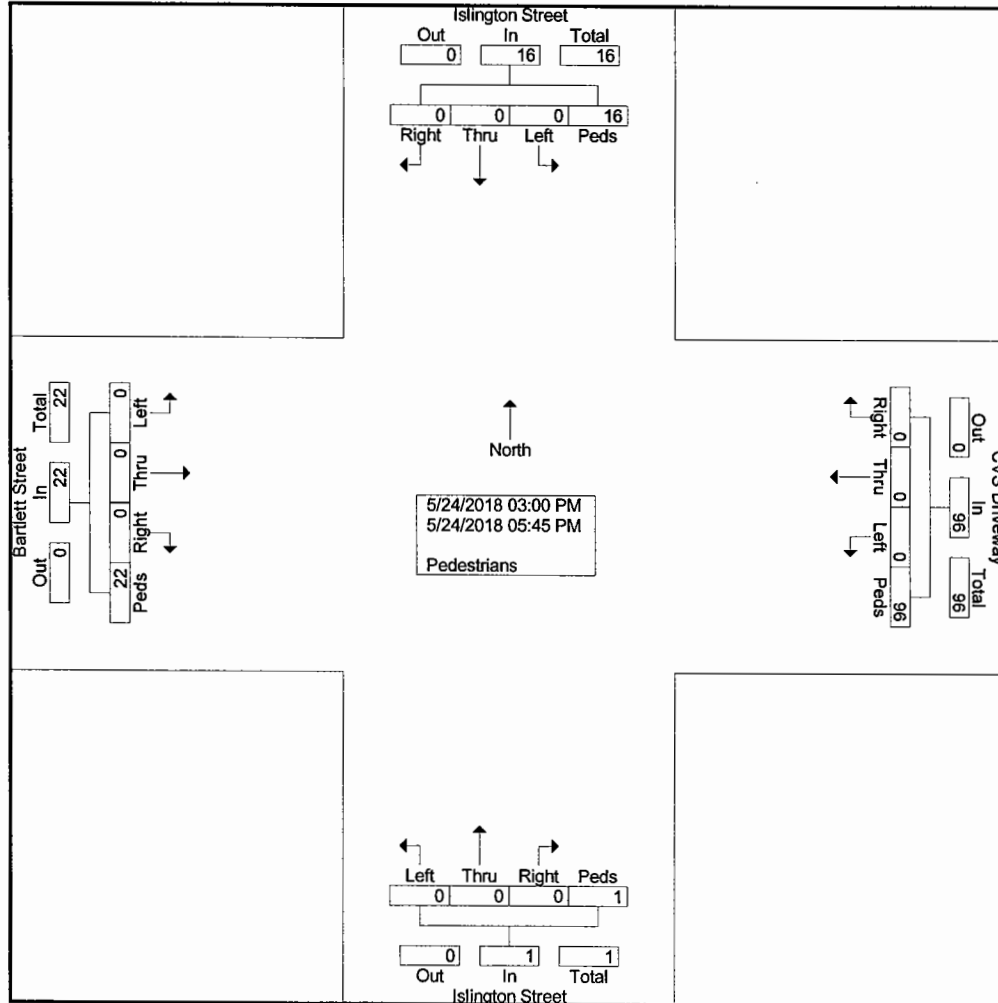
Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_E_Thurs_PM_Islington-Bartlett
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- Pedestrians

Start Time	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	0	0	0	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0	8
03:15 PM	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	1	1	8
03:30 PM	0	0	0	0	0	0	0	0	9	9	0	0	0	0	0	0	0	0	2	2	11
03:45 PM	0	0	0	1	1	0	0	0	10	10	0	0	0	0	0	0	0	0	2	2	13
Total	0	0	0	1	1	0	0	0	34	34	0	0	0	0	0	0	0	0	5	5	40
04:00 PM	0	0	0	4	4	0	0	0	10	10	0	0	0	0	0	0	0	0	0	0	14
04:15 PM	0	0	0	2	2	0	0	0	9	9	0	0	0	0	0	0	0	0	2	2	13
04:30 PM	0	0	0	2	2	0	0	0	6	6	0	0	0	1	1	0	0	0	1	1	10
04:45 PM	0	0	0	2	2	0	0	0	14	14	0	0	0	0	0	0	0	0	1	1	17
Total	0	0	0	10	10	0	0	0	39	39	0	0	0	1	1	0	0	0	4	4	54
05:00 PM	0	0	0	1	1	0	0	0	6	6	0	0	0	0	0	0	0	0	5	5	12
05:15 PM	0	0	0	2	2	0	0	0	3	3	0	0	0	0	0	0	0	0	5	5	10
05:30 PM	0	0	0	0	0	0	0	0	8	8	0	0	0	0	0	0	0	0	3	3	11
05:45 PM	0	0	0	2	2	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	8
Total	0	0	0	5	5	0	0	0	23	23	0	0	0	0	0	0	0	0	13	13	41
Grand Total	0	0	0	16	16	0	0	0	96	96	0	0	0	1	1	0	0	0	22	22	135
Apprch %	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100		
Total %	0	0	0	11.9	11.9	0	0	0	71.1	71.1	0	0	0	0.7	0.7	0	0	0	16.3	16.3	



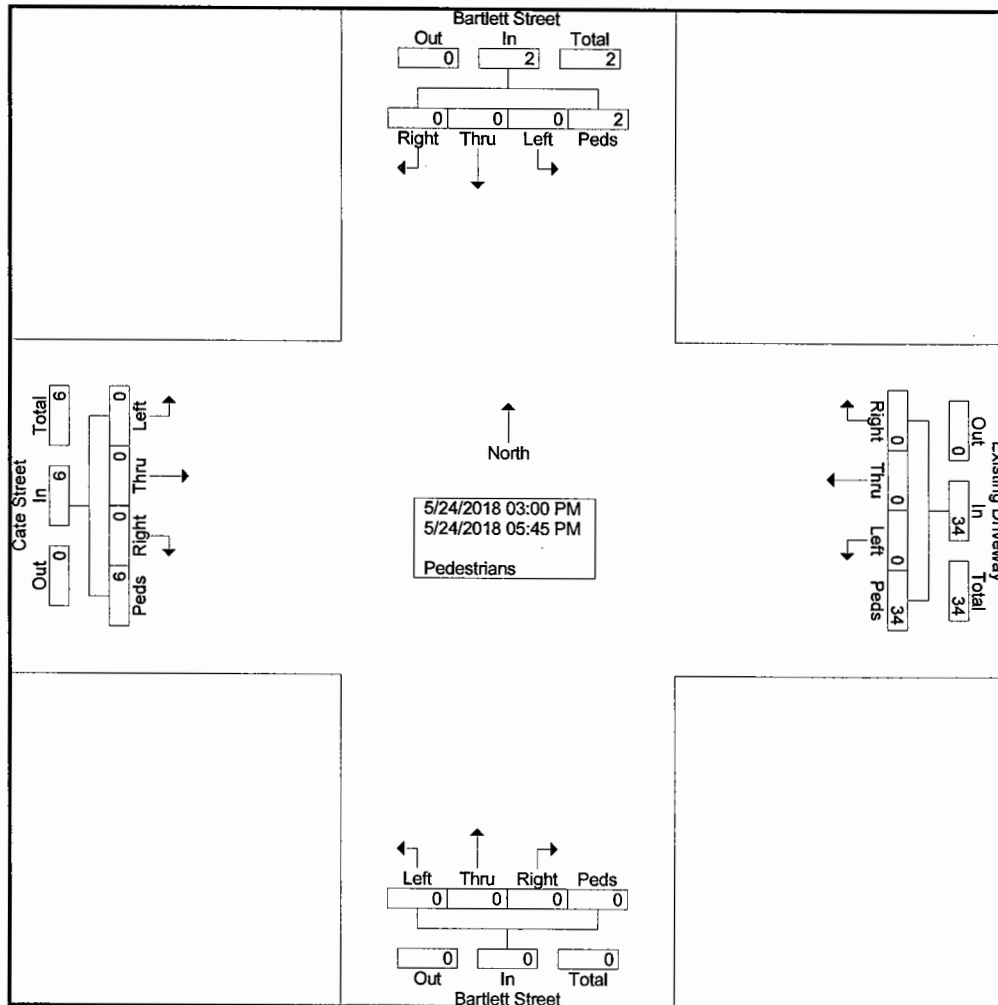
Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_Thurs_PM_Bartlett-Cate
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- Pedestrians

Start Time	Bartlett Street From North					Existing Driveway From East					Bartlett Street From South					Cate Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
03:00 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
03:45 PM	0	0	0	2	2	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	2	2	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	7
04:00 PM	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	1	1	4
04:15 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	5
Total	0	0	0	0	0	0	0	0	13	13	0	0	0	0	0	0	0	0	1	1	14
05:00 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	2
05:15 PM	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	7
05:30 PM	0	0	0	0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	2	2	8
05:45 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	2	2	4
Total	0	0	0	0	0	0	0	0	16	16	0	0	0	0	0	0	0	0	5	5	21
Grand Total	0	0	0	2	2	0	0	0	34	34	0	0	0	0	0	0	0	0	6	6	42
Apprch %	0	0	0	100		0	0	0	100		0	0	0	0		0	0	0	100		
Total %	0	0	0	4.8	4.8	0	0	0	81	81	0	0	0	0	0	0	0	0	14.3	14.3	



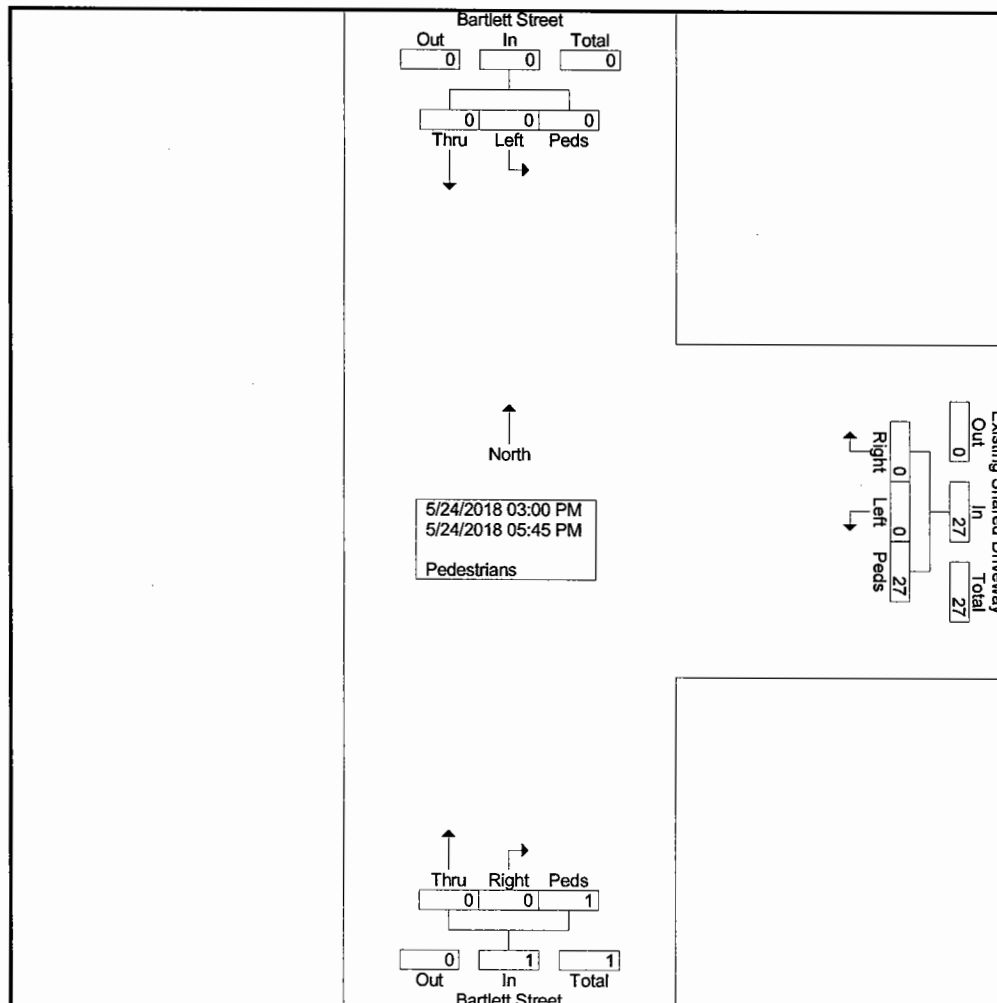
Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_C_Thurs_PM_Bart-Shared
Site Code : 1831A
Start Date : 5/24/2018
Page No : 1

Groups Printed- Pedestrians

Start Time	Bartlett Street From North				Existing Shared Driveway From East				Bartlett Street From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	2	2	0	0	0	0	2
03:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	1
Total	0	0	0	0	0	0	3	3	0	0	0	0	3
04:00 PM	0	0	0	0	0	0	3	3	0	0	0	0	3
04:15 PM	0	0	0	0	0	0	2	2	0	0	0	0	2
04:30 PM	0	0	0	0	0	0	4	4	0	0	0	0	4
04:45 PM	0	0	0	0	0	0	5	5	0	0	1	1	6
Total	0	0	0	0	0	0	14	14	0	0	1	1	15
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	5	5	0	0	0	0	5
05:30 PM	0	0	0	0	0	0	4	4	0	0	0	0	4
05:45 PM	0	0	0	0	0	0	1	1	0	0	0	0	1
Total	0	0	0	0	0	0	10	10	0	0	0	0	10
Grand Total	0	0	0	0	0	0	27	27	0	0	1	1	28
Apprch %	0	0	0		0	0	100		0	0	100		
Total %	0	0	0		0	0	96.4	96.4	0	0	3.6	3.6	



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Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_G_SAT_US1 BYP-Cottage
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

Groups Printed- Pedestrians

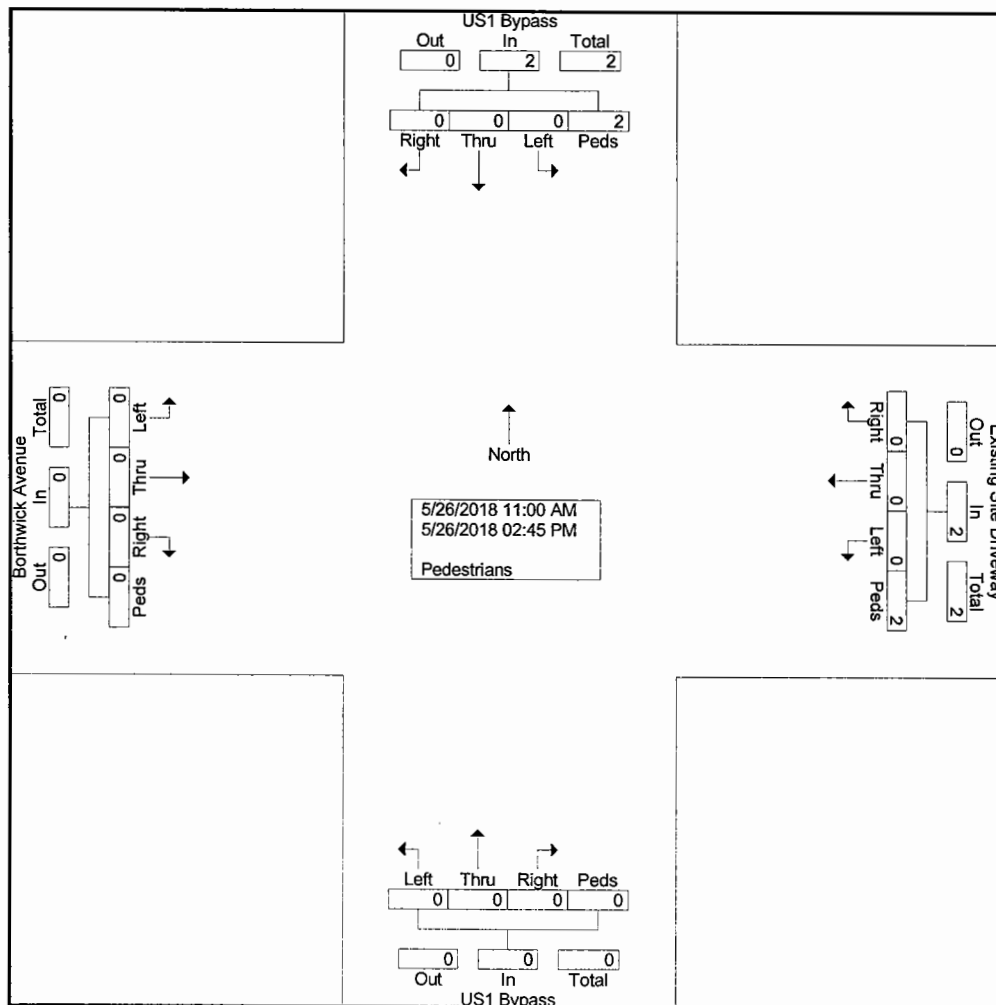
Start Time	US1 Bypass From North					Cottage Street From East					US1 Bypass From South					Coakley Road From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	5
Total	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	7
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	9
Apprch %	0	0	0	100		0	0	0	0		0	0	0	0		0	0	0	100		
Total %	0	0	0	66.7	66.7	0	0	0	0	0	0	0	0	0	0	0	0	0	33.3	33.3	

Weather: Clear
 Collected By: MV
 Job Number: 1831A
 Town/State: Portsmouth, NH

File Name : 1831A_INT_H_SAT_US1 BYP-Borthwick
 Site Code : 1831A
 Start Date : 5/26/2018
 Page No : 1

Groups Printed- Pedestrians

	US1 Bypass From North					Existing Site Driveway From East					US1 Bypass From South					Borthwick Avenue From West					
Start Time	Peds	Right	Thru	Left	App. Total	Peds	Right	Thru	Left	App. Total	Peds	Right	Thru	Left	App. Total	Peds	Right	Thru	Left	App. Total	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:15 PM	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
02:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
02:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
Grand Total	2	0	0	0	2	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
Apprch %	100	0	0	0		100	0	0	0		0	0	0	0		0	0	0	0		
Total %	50	0	0	0	50	50	0	0	0	50	0	0	0	0	0	0	0	0	0	0	



Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_E_SAT_Islington-Bartlett
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

Groups Printed- Pedestrians

	Islington Street From North					CVS Driveway From East					Islington Street From South					Bartlett Street From West						
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total	
11:00 AM	0	0	0	4	4	0	0	0	13	13	0	0	0	0	0	0	0	0	0	0	0	17
11:15 AM	0	0	0	2	2	0	0	0	9	9	0	0	0	0	0	0	0	0	2	2	2	13
11:30 AM	0	0	0	2	2	0	0	0	4	4	0	0	0	0	0	0	0	0	6	6	6	12
11:45 AM	0	0	0	0	0	0	0	0	11	11	0	0	0	0	0	0	0	0	1	1	1	12
Total	0	0	0	8	8	0	0	0	37	37	0	0	0	0	0	0	0	0	9	9	9	54
12:00 PM	0	0	0	0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	1	1	1	7
12:15 PM	0	0	0	1	1	0	0	0	8	8	0	0	0	0	0	0	0	0	6	6	6	15
12:30 PM	0	0	0	2	2	0	0	0	10	10	0	0	0	0	0	0	0	0	2	2	2	14
12:45 PM	0	0	0	1	1	0	0	0	15	15	0	0	0	0	0	0	0	0	6	6	6	22
Total	0	0	0	4	4	0	0	0	39	39	0	0	0	0	0	0	0	0	15	15	15	58
01:00 PM	0	0	0	1	1	0	0	0	9	9	0	0	0	0	0	0	0	0	1	1	1	11
01:15 PM	0	0	0	1	1	0	0	0	9	9	0	0	0	0	0	0	0	0	1	1	1	11
01:30 PM	0	0	0	1	1	0	0	0	15	15	0	0	0	0	0	0	0	0	0	0	0	16
01:45 PM	0	0	0	1	1	0	0	0	12	12	0	0	0	0	0	0	0	0	3	3	3	16
Total	0	0	0	4	4	0	0	0	45	45	0	0	0	0	0	0	0	0	5	5	5	54
02:00 PM	0	0	0	0	0	0	0	0	8	8	0	0	0	1	1	0	0	0	7	7	7	16
02:15 PM	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	2	2	2	9
02:30 PM	0	0	0	0	0	0	0	0	10	10	0	0	0	0	0	0	0	0	4	4	4	14
02:45 PM	0	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	5	5	5	7
Total	0	0	0	1	1	0	0	0	26	26	0	0	0	1	1	0	0	0	18	18	18	46
Grand Total	0	0	0	17	17	0	0	0	147	147	0	0	0	1	1	0	0	0	47	47	47	212
Apprch %	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100			
Total %	0	0	0	8	8	0	0	0	69.3	69.3	0	0	0	0.5	0.5	0	0	0	22.2	22.2		

Stephen G. Pernaw & Co., Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 1831A
Town/State: Portsmouth, NH

File Name : 1831A_INT_D_SAT_Bartlett-Cate
Site Code : 1831A
Start Date : 5/26/2018
Page No : 1

Groups Printed- Pedestrians

Start Time	Bartlett Street From North					Private Driveway From East					Bartlett Street From South					Cate Street From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
11:00 AM	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	2	2	9
11:15 AM	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	6	6	9
11:30 AM	0	0	0	0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	1	1	7
11:45 AM	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	1	1	8
Total	0	0	0	0	0	0	0	0	23	23	0	0	0	0	0	0	0	0	10	10	33
12:00 PM	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	1	1	4
12:15 PM	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	4
12:30 PM	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	5
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	12	12	0	0	0	0	0	0	0	0	1	1	13
01:00 PM	0	0	0	2	2	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	9
01:15 PM	0	0	0	0	0	0	0	0	6	6	0	0	0	0	0	0	0	0	1	1	7
01:30 PM	0	0	0	0	0	0	0	0	7	7	0	0	0	0	0	0	0	0	0	0	7
01:45 PM	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	0	2
Total	0	0	0	2	2	0	0	0	21	21	0	0	0	0	1	1	0	0	0	1	25
02:00 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	1	1	0	0	0	0	0	3
02:15 PM	0	0	0	0	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	5
02:30 PM	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	3
02:45 PM	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	0	0	0	12	12	0	0	0	1	1	0	0	0	0	0	13
Grand Total	0	0	0	2	2	0	0	0	68	68	0	0	0	2	2	0	0	0	12	12	84
Apprch %	0	0	0	100		0	0	0	100		0	0	0	100		0	0	0	100		
Total %	0	0	0	2.4	2.4	0	0	0	81	81	0	0	0	2.4	2.4	0	0	0	14.3	14.3	

Appendix E

Seasonal Adjustment Factors / Historical Growth Rates



STEPHEN G. PERNAW & COMPANY, INC.

PROJECT: Proposed Mixed-Use Site, Portsmouth, New Hampshire

NUMBER: 1821A

STATION: 02331001

SEASONAL ADJUSTMENT FACTOR - SUMMARY

CASE: Peak Hour Data (May to Peak Month)

LOCATION : US4/NH16 - East/South of General Sullivan Bridge, Newington, NH

	<u>PM</u>	<u>SAT</u>
2017 Monthly Data	1.08	1.08
2016 Monthly Data	1.10	1.10
2015 Monthly Data	NA	NA
2014 Monthly Data	NA	NA
2013 Monthly Data	1.02	1.07
Average	1.07	1.08
Use	1.07	1.08

Year 2017 Monthly Data

Town: Newington
 Station: 02331001
 Location: US 4/NH 16 (Spaulding TPK) east/south of General Sullivan Bridge (Exit 4-5)
 Group: 3

<u>Month</u>	<u>ADT</u>	<u>Adjustment to</u>	
		<u>Average</u>	<u>Peak</u>
January	60,218	1.17	1.29
February	69,482	1.01	1.11
March	65,848	1.07	1.18
April	68,406	1.03	1.13
May	71,759	0.98	1.08
June	75,074	0.94	1.03
July	74,839	0.94	1.04
August	77,466	0.91	1.00
September	73,005	0.96	1.06
October	72,519	0.97	1.07
November	68,986	1.02	1.12
December	64,695	1.09	1.20

AADT: 70,335

Peak Month: 77,466

Notes: XX A box around data indicates an estimated value. Do not use as data.
 NA Data Not Available for consecutive months. Estimates not provided.

Year 2016 Monthly Data

Town: Newington
 Station: 02331001
 Location: US 4/NH 16 (Spaulding TPK) east/south of General Sullivan Bridge (Exit 4-5)
 Group: 3

<u>Month</u>	<u>ADT</u>	<u>Adjustment to</u>	
		<u>Average</u>	<u>Peak</u>
January	62,174	1.13	1.26
February	65,447	1.08	1.19
March	67,316	1.05	1.16
April	68,975	1.02	1.13
May	71,099	0.99	1.10
June	75,185	0.94	1.04
July	75,497	0.93	1.04
August	78,156	0.90	1.00
September	73,373	0.96	1.07
October	72,103	0.98	1.08
November	68,579	1.03	1.14
December	66,463	1.06	1.18

AADT: 70,393
 Peak Month: 78,156

Notes: XX A box around data indicates an estimated value. Do not use as data.
 NA Data Not Available for consecutive months. Estimates not provided.

Year 2015 Monthly Data									
Peak Hour Data									
Stations :	331003	Newington, US 4 and NH 16 WB E of Gen. Sullivan Bridge							
	331001	Newington, US 4 and NH 16 E of Gen. Sullivan Bridge							
	331002	Newington, US 4 and NH 16 EB E of Gen Sullivan Bridge							
Data					Factors				Number
Month	AM	Mid	PM	Sat Mid	AM	Mid	PM	Sat Mid	of Days
Jan	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Feb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Mar	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Apr	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
May	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Jun	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Jul	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Aug	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Sep	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Oct	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Nov	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Dec	5131	4349	5936	5310	1.00	1.00	1.00	1.00	31
Average	5131	4349	5936	5310					
Average Daily Data									
Data					Factors				
Month	AveSun	AveWD	AveSat	AveDay	AveSun	AveWD	AveSat	AveDay	
Jan	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Feb	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Mar	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Apr	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
May	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Jun	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Jul	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Aug	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Sep	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Oct	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Nov	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Dec	51443	71270	65846	68012	1.00	1.00	1.00	1.00	
Average	51443	71270	65846	68012					
Notes:									
1. A box around the data indicates a calculated value. Do not use as data.									
2. Yearly average days may not match the published report									
3. Factors are based on Average Month									



Year 2014 Monthly Data									
Peak Hour Data									
	331003	Newington, US 4 and NH 16 WB E of Gen. Sullivan Bridge							
Stations =	331001	Newington, US 4 and NH 16 E of Gen. Sullivan E Group:							03
	331002	Newington, US 4 and NH 16 EB E of Gen Sullivan Bridge							
	Data				Factors				Number
Month	AM	Mid	PM	Sat Mid	AM	Mid	PM	Sat Mid	of Days
Jan	4838	3543	5617	4428	1.10	1.13	1.07	1.11	31
Feb	5005	3601	5341	4825	1.06	1.11	1.12	1.02	28
Mar	5405	3536	5917	4779	0.99	1.13	1.02	1.03	31
Apr	5476	3866	6188	4810	0.97	1.03	0.97	1.02	30
May	5533	4058	6245	4843	0.96	0.98	0.96	1.02	31
Jun	5489	4180	6223	4944	0.97	0.96	0.97	1.00	30
Jul	5186	4454	6101	5178	1.03	0.90	0.98	0.95	31
Aug	5361	4636	6271	5427	0.99	0.86	0.96	0.91	31
Sep	5628	4060	6168	5078	0.95	0.98	0.97	0.97	25
Oct	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Nov	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Dec	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Average	5325	3993	6008	4924					
Average Daily Data									
	Data				Factors				
Month	AveSun	AveWD	AveSat	AveDay	AveSun	AveWD	AveSat	AveDay	
Jan	44967	62378	50587	58610	1.19	1.13	1.23	1.14	
Feb	48350	62848	58292	60126	1.11	1.12	1.06	1.11	
Mar	49619	66528	60632	62850	1.08	1.06	1.02	1.06	
Apr	48985	70291	61380	66262	1.10	1.00	1.01	1.01	
May	53853	71763	62887	68020	1.00	0.98	0.99	0.98	
Jun	58659	74335	65260	70512	0.92	0.95	0.95	0.95	
Jul	61500	75471	66432	72502	0.87	0.93	0.93	0.92	
Aug	61652	77918	68643	73798	0.87	0.90	0.90	0.91	
Sep	55907	72421	63885	69081	0.96	0.97	0.97	0.97	
Oct	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Nov	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Dec	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	
Average	53721	70439	62000	66862					
Notes:									
	1. A box around the data indicates a calculated value. Do not use as data.								
	2. Yearly average days may not match the published report								
	3. Factors are based on Average Month								

Newington US4

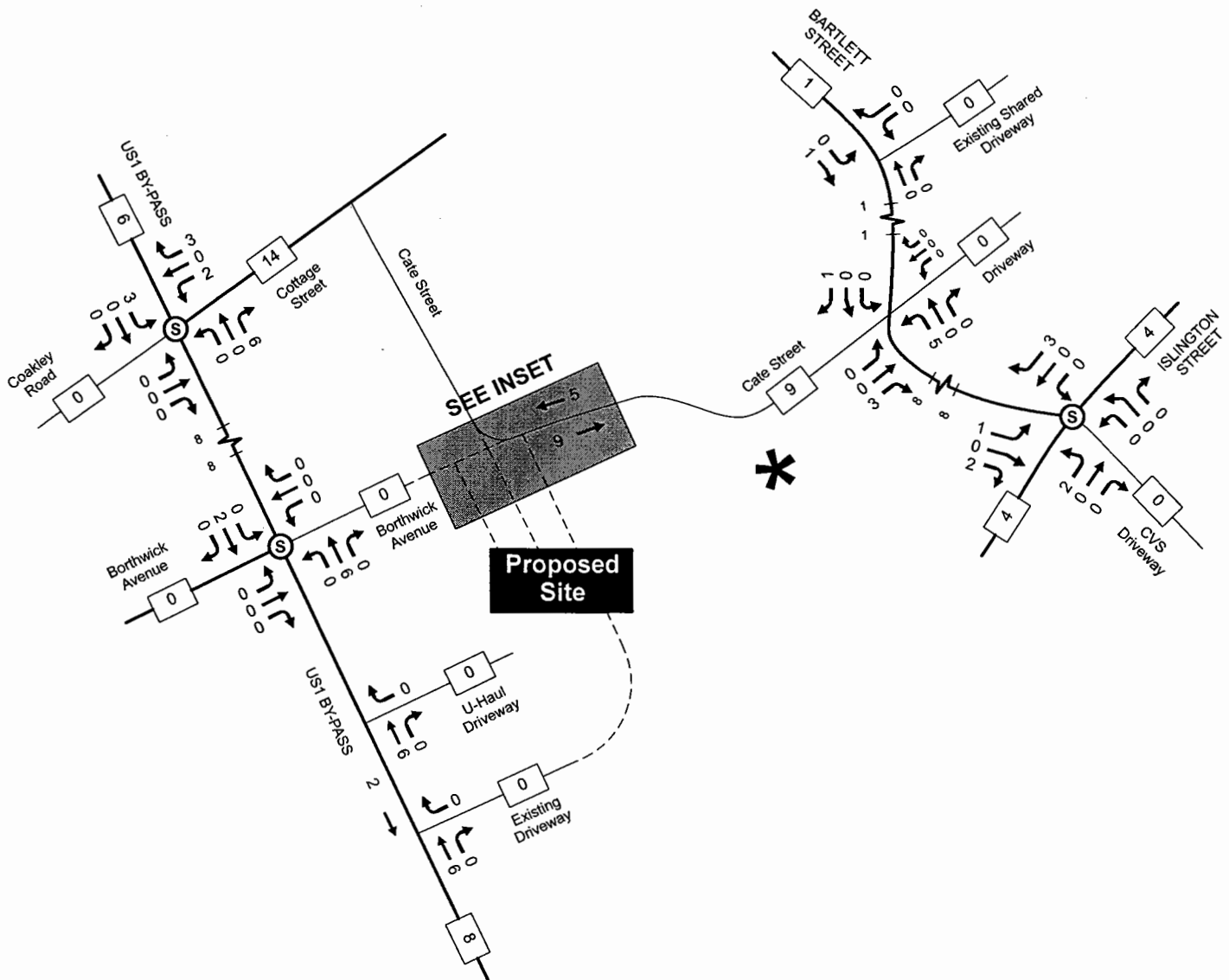


Year 2013 Monthly Data									
Peak Hour Data									
Stations :	331003	Newington, US 4 and NH 16 WB E of Gen. Sullivan Bridge							
	331001	Newington, US 4 and NH 16 E of Gen. Sullivan E Group: 03							
	331002	Newington, US 4 and NH 16 EB E of Gen Sullivan Bridge							
Month	Data				Factors				Number of Days
	AM	Mid	PM	Sat Mid	AM	Mid	PM	Sat Mid	
Jan	4932	3613	5645	4507	1.06	1.12	1.07	1.08	31
Feb	5191	3721	5722	3796	1.01	1.09	1.06	1.29	28
Mar	5176	3606	5885	4919	1.01	1.12	1.03	0.99	31
Apr	5424	3801	6166	4823	0.97	1.06	0.98	1.01	30
May	5434	4061	6248	5023	0.96	0.99	0.97	0.97	31
Jun	5455	4204	6212	4969	0.96	0.96	0.97	0.98	30
Jul	5049	4458	6133	5197	1.04	0.91	0.99	0.94	31
Aug	5235	4702	6305	5377	1.00	0.86	0.96	0.91	31
Sep	5511	4055	6218	4974	0.95	1.00	0.97	0.98	30
Oct	5636	4037	6349	5104	0.93	1.00	0.95	0.96	31
Nov	5202	3999	6040	4764	1.01	1.01	1.00	1.03	30
Dec	4604	4210	5711	5172	1.14	0.96	1.06	0.94	31
Average	5237	4039	6053	4885					

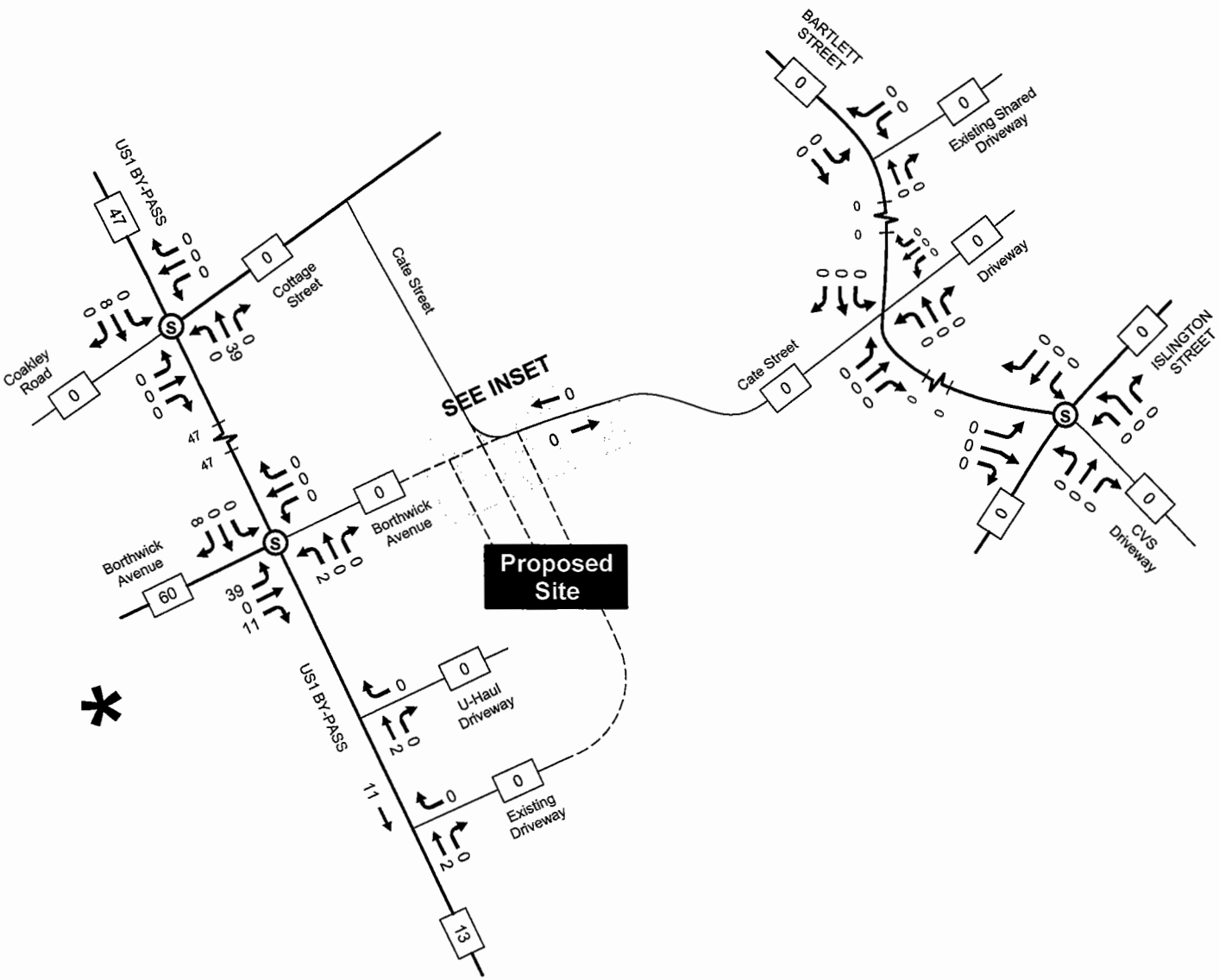
FACTOR = 1.02 1.07

Appendix F

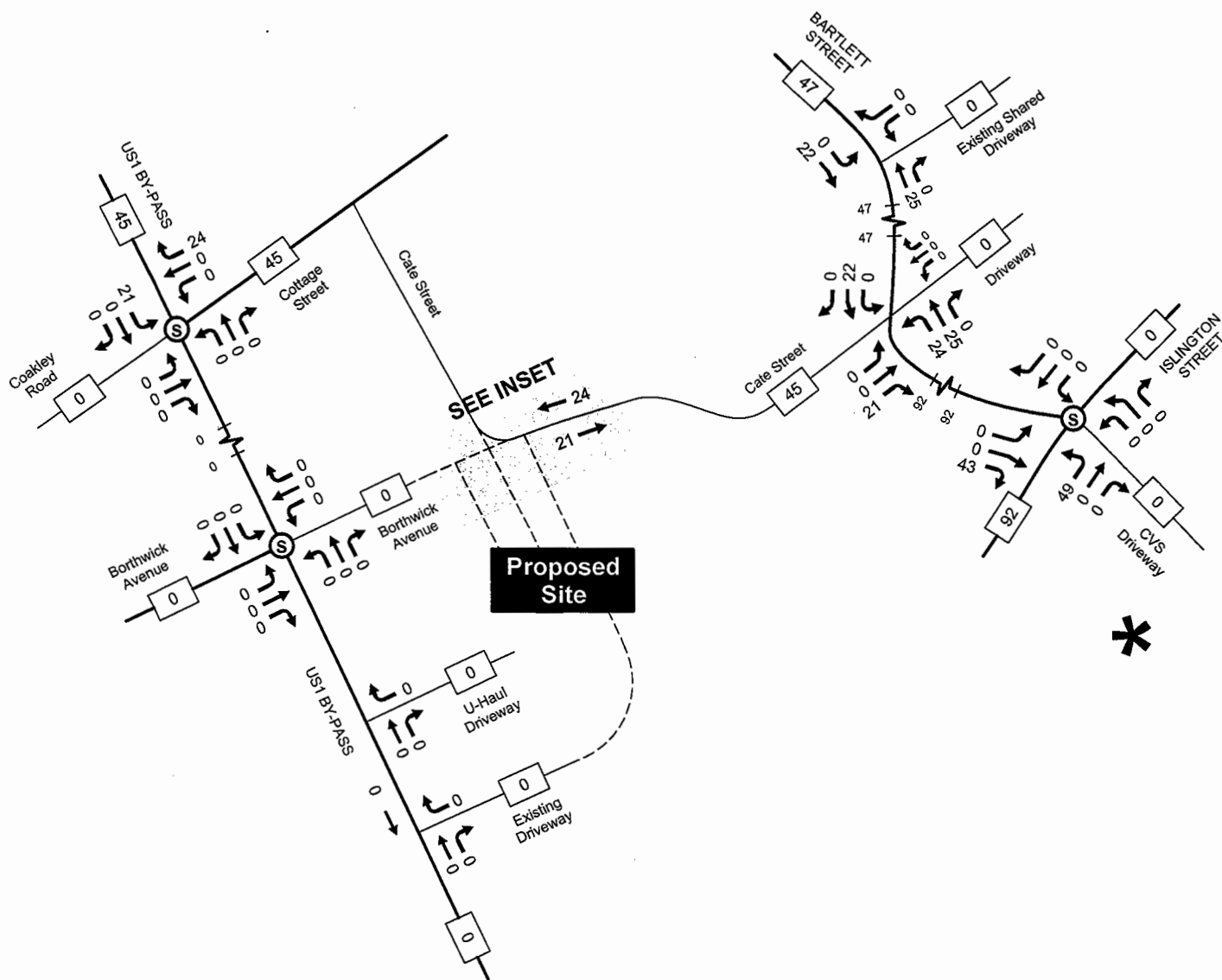
Other Development Traffic Volumes

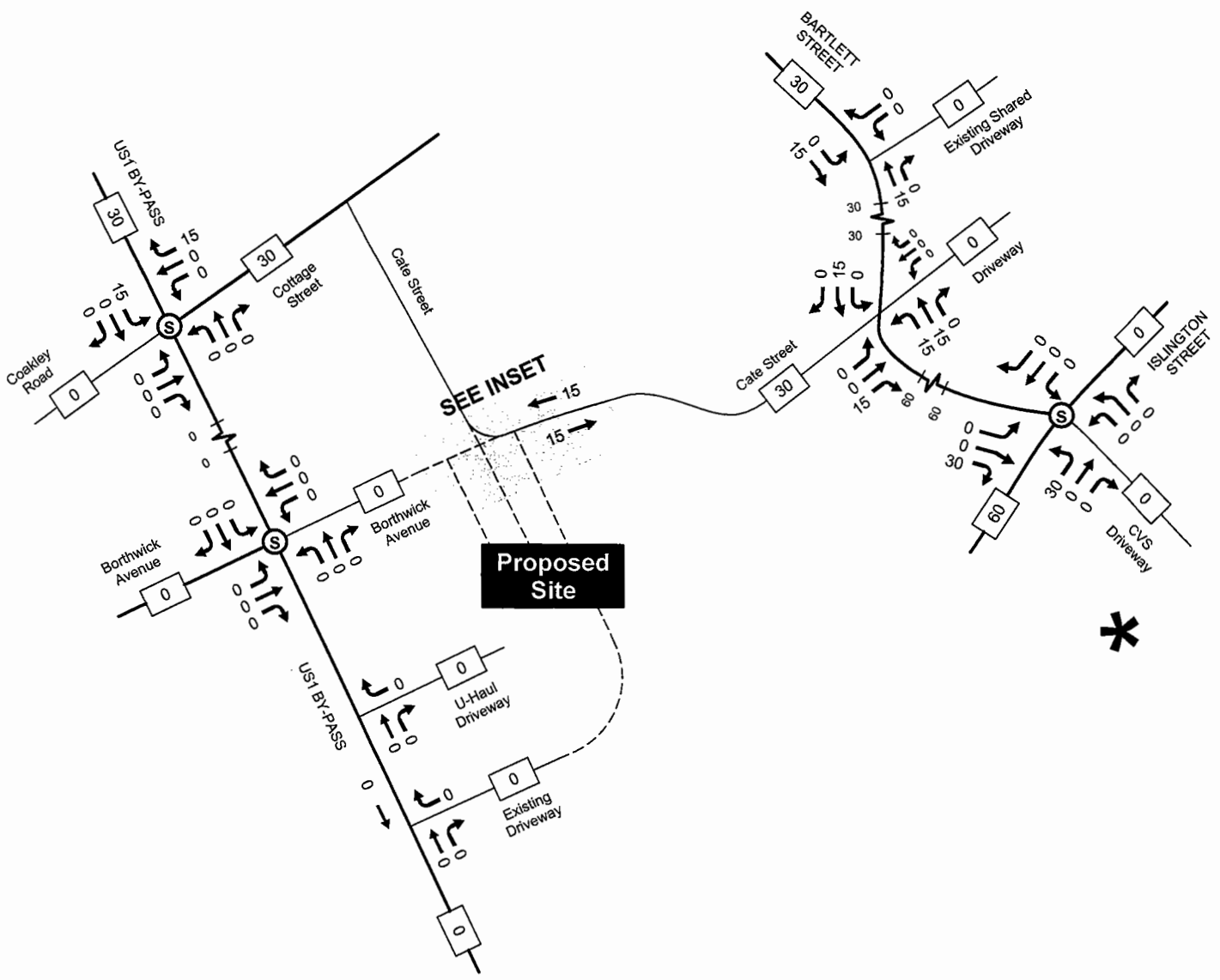


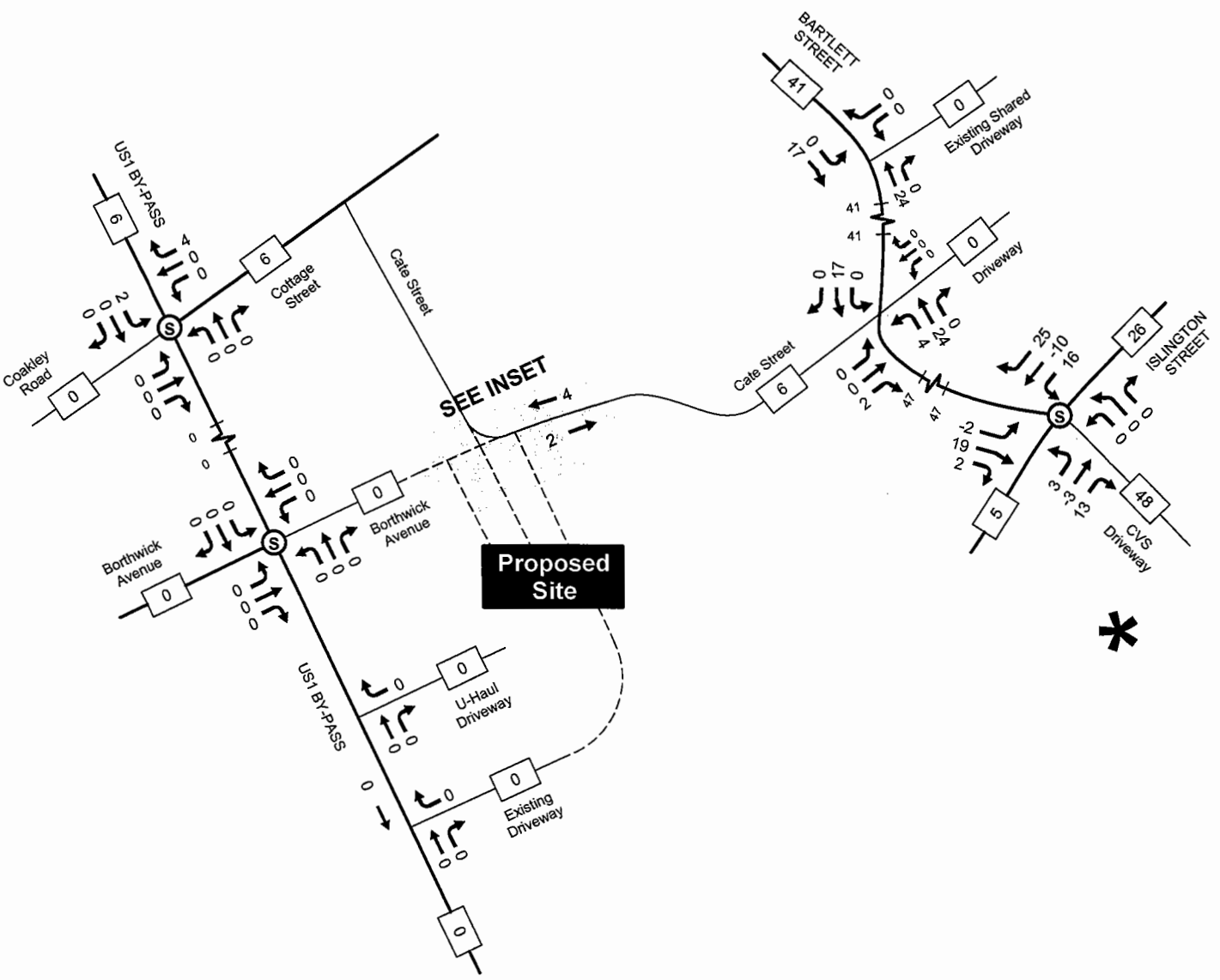


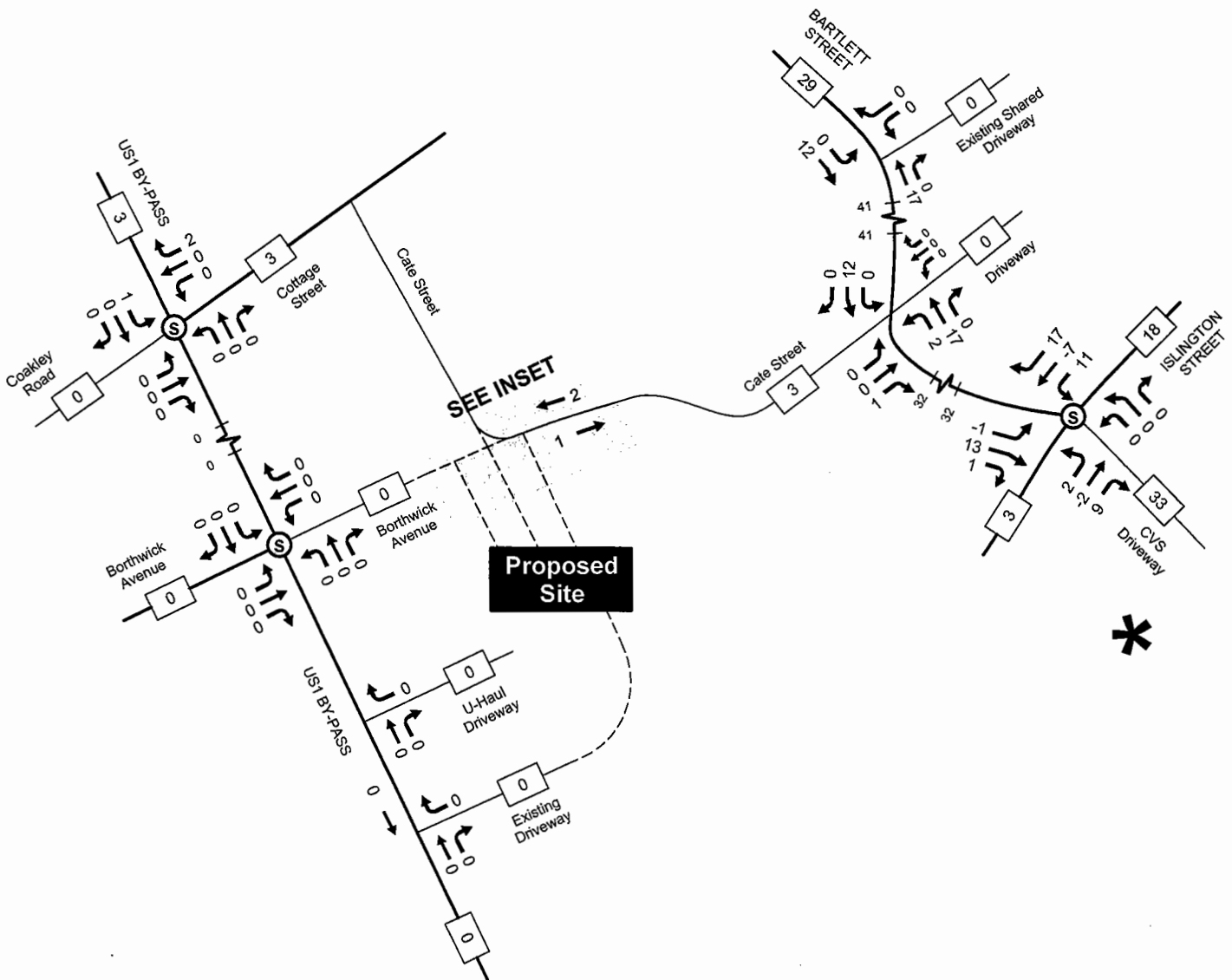


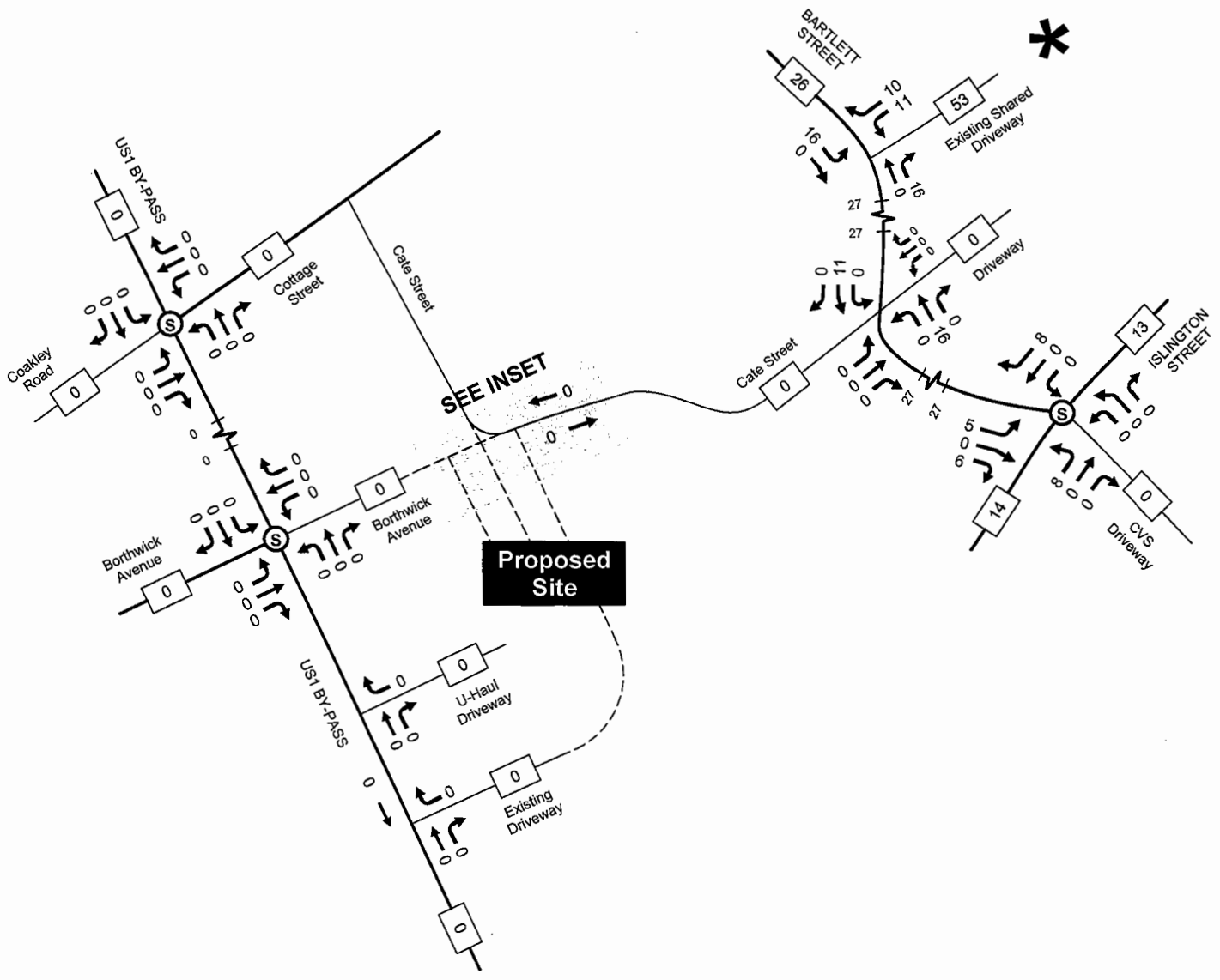


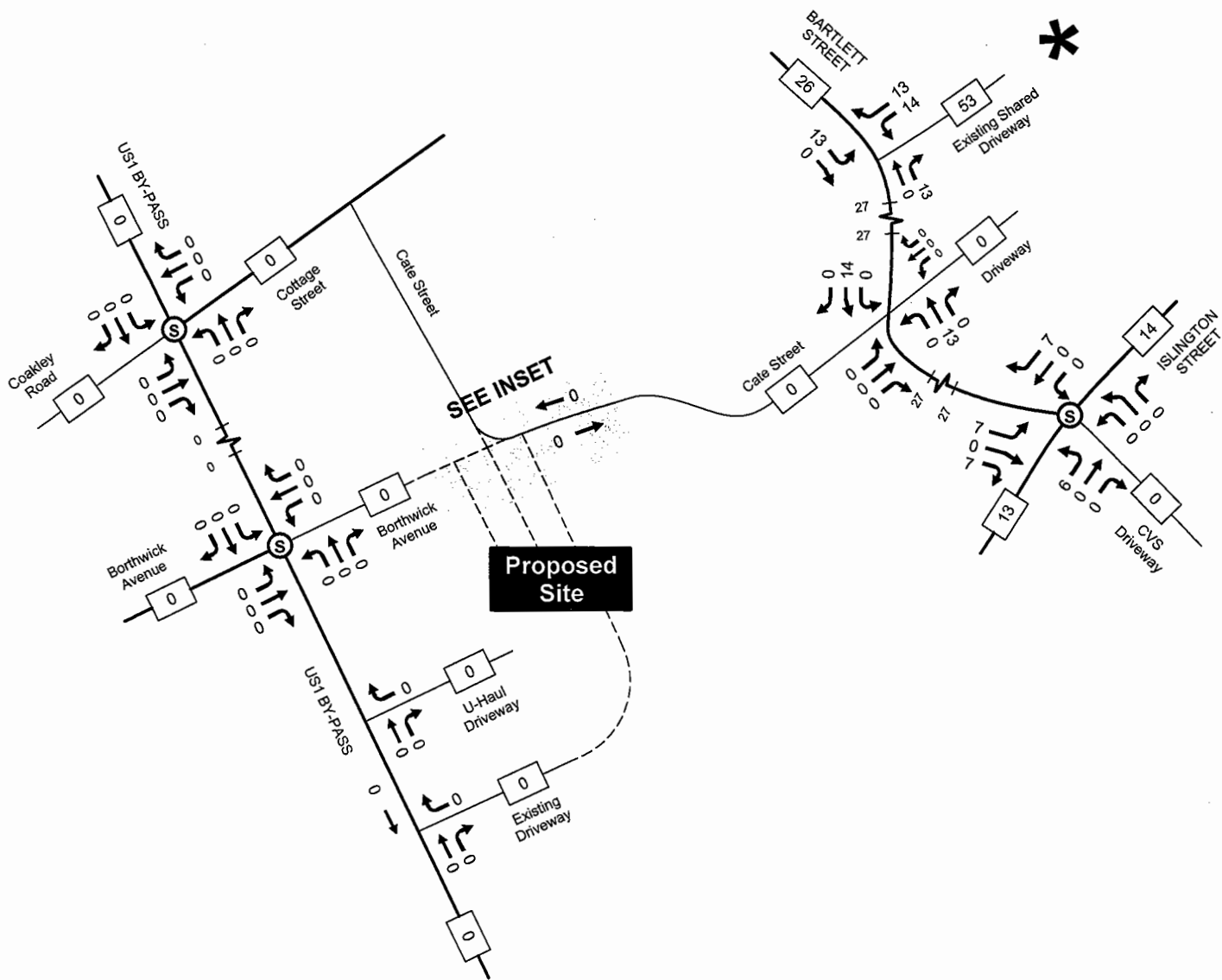






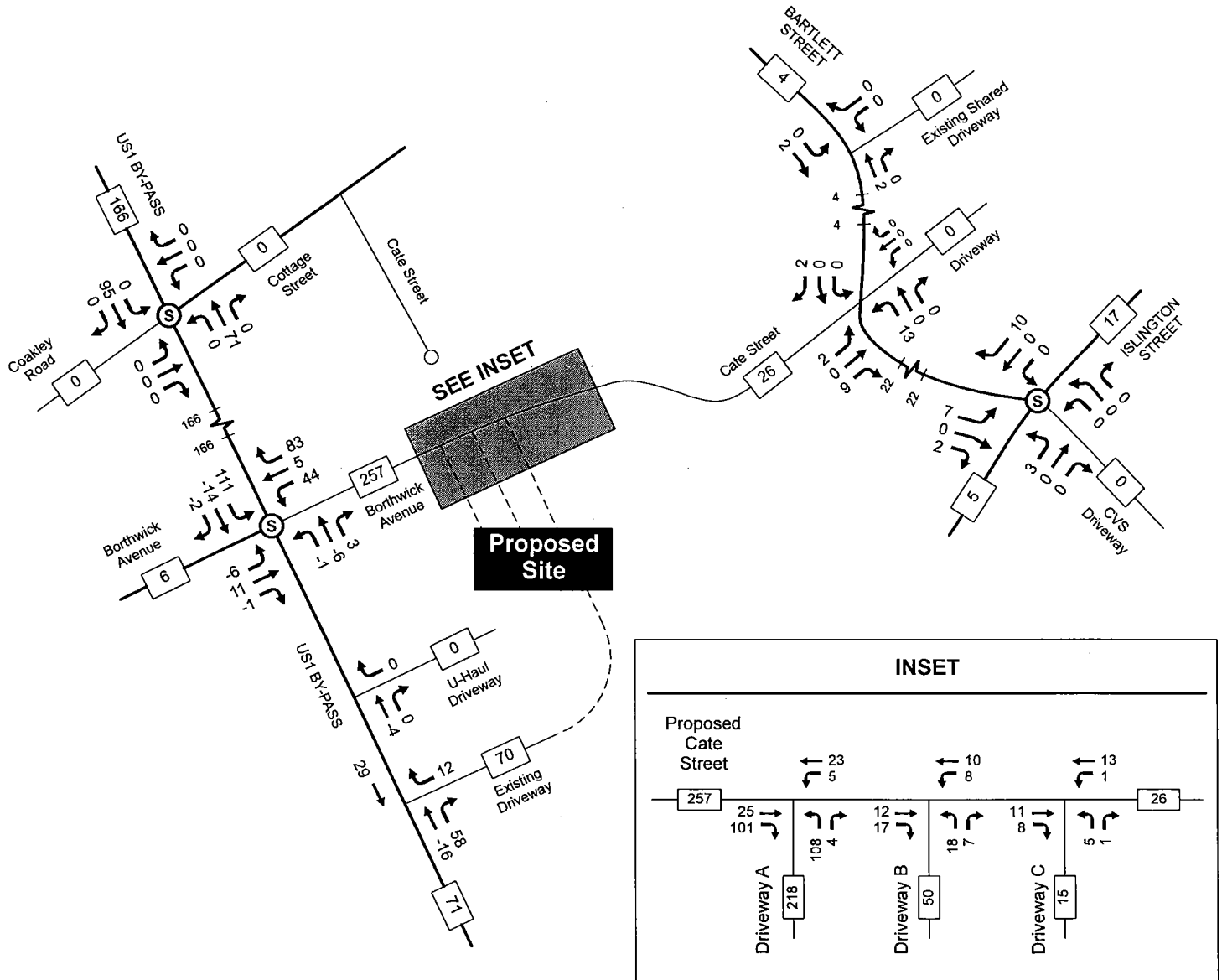


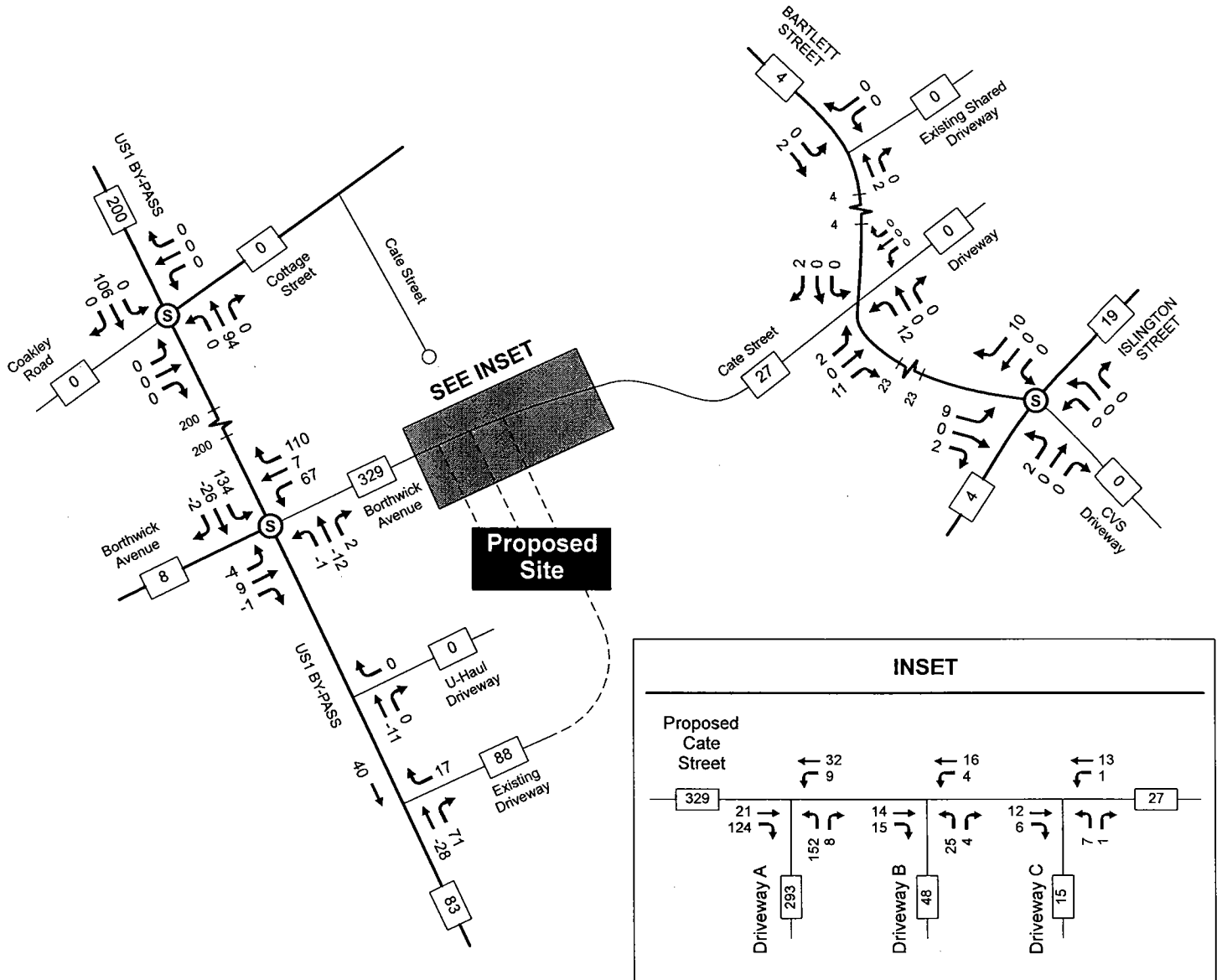




Appendix G

Site Generated Traffic Volumes / Trip Distribution / Traffic Diversion





DATA SOURCE:

Trip Generation Manual, 10th Ed

SEARCH BY LAND USE CODE:

221

LAND USE CATEGORY:

(200-299) Residential

LAND USE:

221 - Multifamily Housing (Mid-Rise)

INDEPENDENT VARIABLE (IV):

Dwelling Units

TIME PERIOD:

Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION:

General Urban/Suburban

TRIP TYPE:

Vehicle

ENTER IV VALUE TO CALCULATE TRIP S:

250

Calculate

Land Use:

Multifamily Housing (Mid-Rise) (221): 2.00 (100%)

Details

Independent Variable:

Dwelling Units

Time Period:

Weekday

Peak Hour of Adjacent Street Traffic

One Hour Between 4 and 6 p.m.

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

60

Avg. Num. of Dwelling Units:

203

Average Rate:

0.44

Range of Rates:

0.15 - 1.11

Standard Deviation:

0.19

Fitted Curve Equation:

$\ln(T) = 0.95 \ln(X) + 0.65$

R²:

0.72

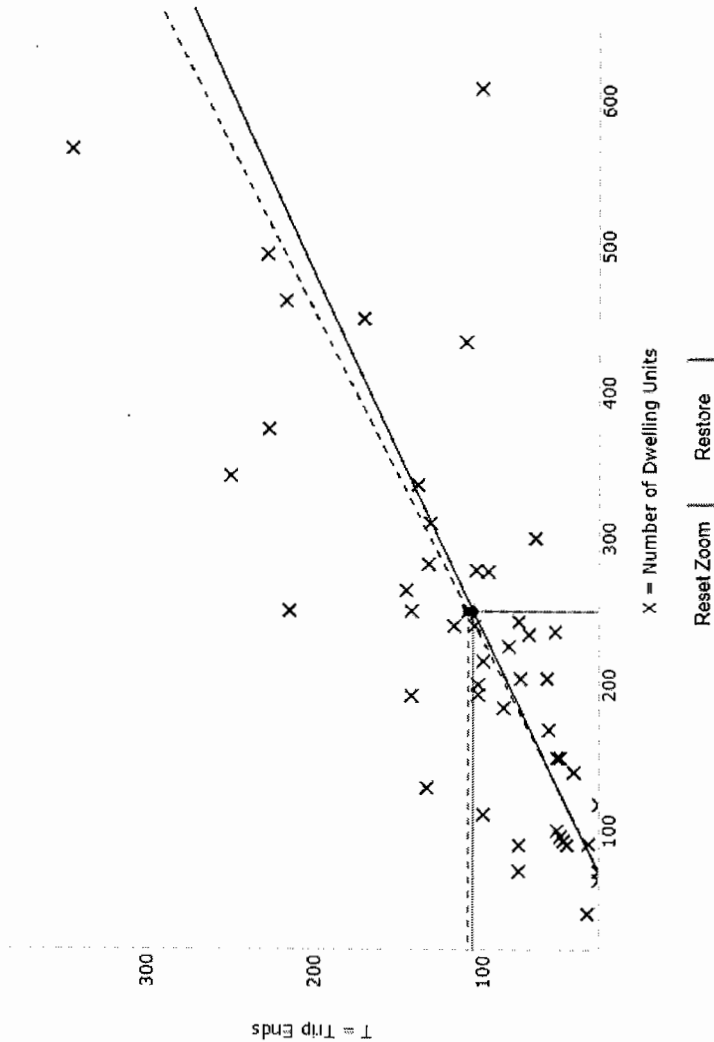
Directional Distribution:

81% entering, 30% exiting

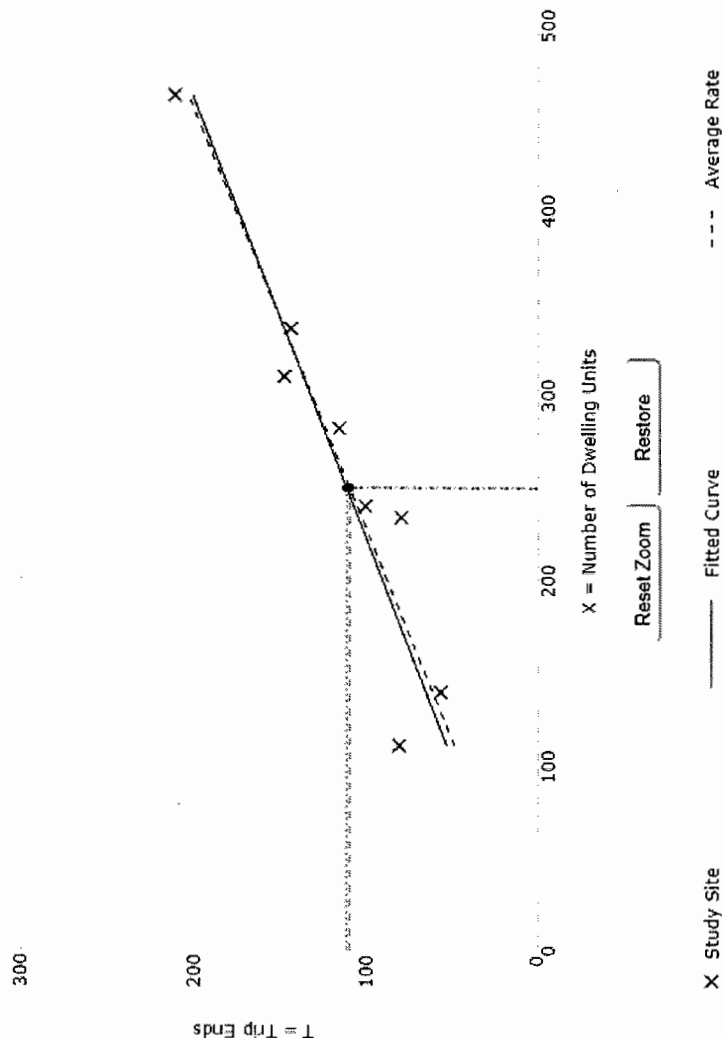
Calculated Trip Ends:

Average Rate: 110 (Total), 67 (Entry), 43 (Exit)

Fitted Curve: 107 (Total), 65 (Entry), 42 (Exit)



Calculate



Query

DATA SOURCE: Trip Generation Manual, 10th Ed

SEARCH BY LAND USE CODE: 220

LAND USE CATEGORY: (200-299) Residential

LAND USE: 220 - Multifamily Housing (Low-Rise)

INDEPENDENT VARIABLE (IV): Dwelling Units

TIME PERIOD: Weekday, Peak Hour of Adjacent Street Traffic

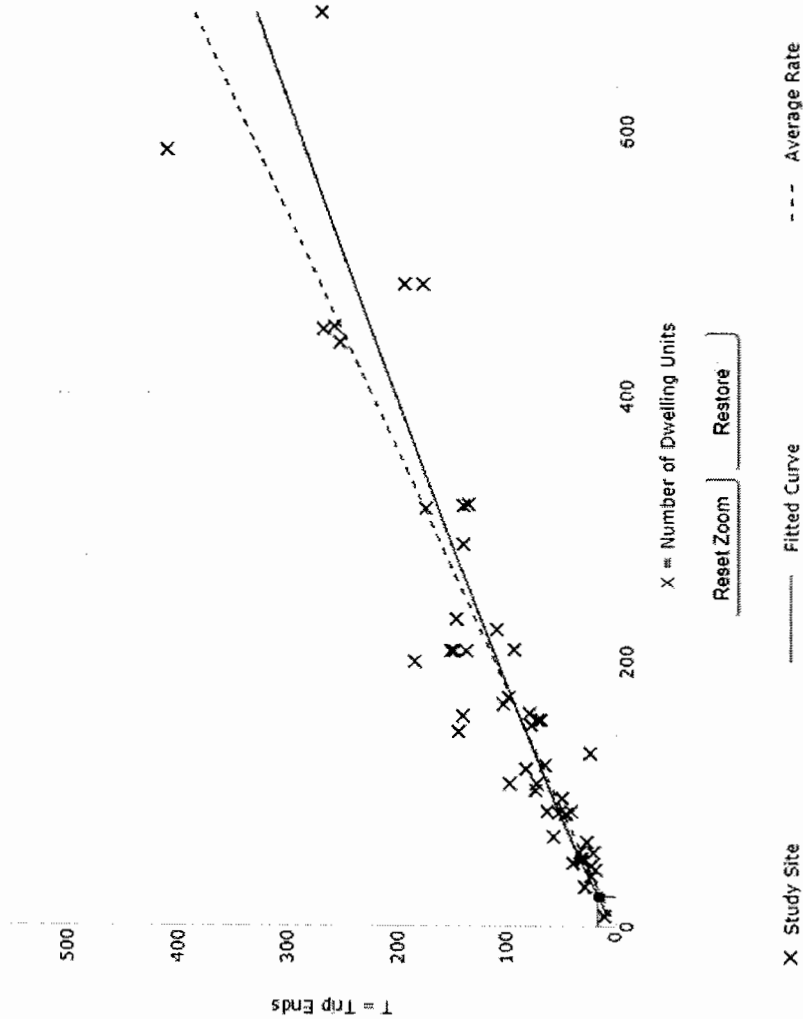
SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 23

Calculate

Data Plot and Equation



DATA STATISTICS

Land Use: Multifamily Housing (Low-Rise) (220) (Click to Enlarge)

Independent Variable: Dwelling Units

Time Period: Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 5 p.m.

Setting/Location: General Urban/Suburban

Trip Type: Vehicle

Number of Studies: 50

Avg. Num. of Dwelling Units: 187

Average Rate: 0.56

Range of Rates: 0.18 - 1.25

Standard Deviation: 0.16

Fitted Curve Equation: $\ln(T) = 0.89 \ln(X) - 0.02$

R²: 0.86

Directional Distribution: 63% entering, 37% exiting

Calculated Trip Ends:
Average Rate: 13 (Total), 5 (Entry), 5 (Exit)
Fitted Curve: 16 (Total), 10 (Entry), 6 (Exit)

DATA SOURCE:

Trip Generation Manual, 10th Ed

SEARCH BY LAND USE CODE:

220



LAND USE CATEGORY:

(200-299) Residential

LAND USE:

220 - Multifamily Housing (Low-Rise)

INDEPENDENT VARIABLE (IV):

Dwelling Units

TIME PERIOD:

Saturday, Peak Hour of Generator

SETTING/LOCATION:

General Urban/Suburban

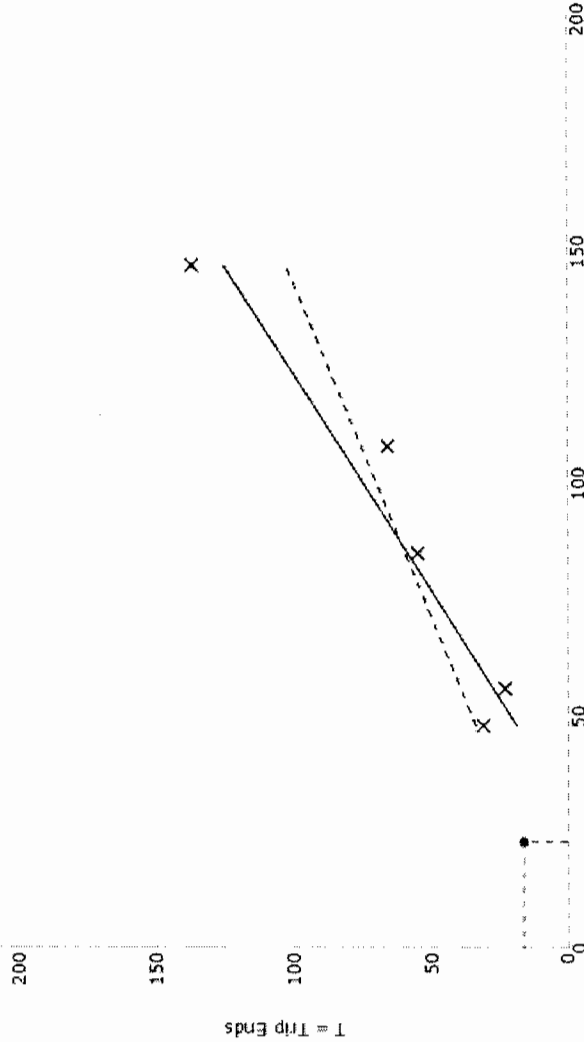
TRIP TYPE:

Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

23

Calculate



X = Number of Dwelling Units

Reset Zoom

Restore

Land Use:

Multifamily Housing (Low-Rise) (220) (200-299)

Independent Variable:

Dwelling Units

Time Period:

Saturday, Peak Hour of Generator

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

5

Avg. Num. of Dwelling Units:

89

Average Rate:

0.70

Range of Rates:

0.41 - 0.93

Standard Deviation:

0.20

Fitted Curve Equation:

$T = 1.08(X) - 33.24$

R²:

0.92

Directional Distribution:

Not available

Calculated Trip Ends:

$23 \times 0.70 = 16.1$

16 TOTAL, ENTRY, EXIT

DATA SOURCE:
ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:
710

LAND USE CATEGORY:
(700-799) Office

LAND USE:
710 - General Office Building

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
22 Calculate

DATA STATISTICS

Independent Variable:
1000 Sq. Ft. GFA

Time Period:

Weekday

Peak Hour of Adjacent Street Traffic

One Hour Between 4 and 6 p.m.

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

32

Avg. 1000 Sq. Ft. GFA:

114

Average Rate:

1.15

Range of Rates:

0.47 - 3.23

Standard Deviation:

0.42

Fitted Curve Equation:

$\ln(T) = 0.95 \ln(X) + 0.36$

R²:

0.88

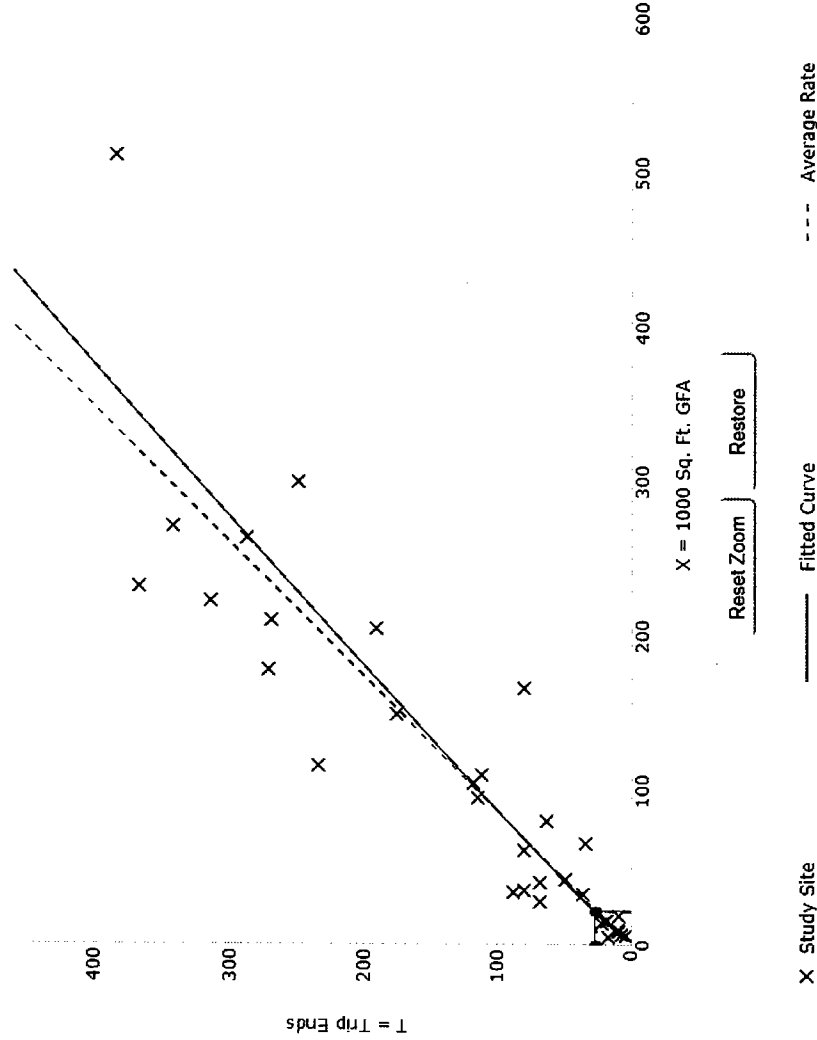
Directional Distribution:

16% entering, 84% exiting

Calculated Trip Ends:

Average Rate: 25 (Total), 4 (Entry), 21 (Exit)

Fitted Curve: 27 (Total), 4 (Entry), 23 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA SOURCE:
ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:
710

LAND USE CATEGORY:
(700-799) Office

LAND USE:
710 - General Office Building

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Saturday, Peak Hour of Generator

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIP S:
22 Calculate

DATA STATISTICS

Land Use:
General Office Building (710) [Click for more details](#)

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Saturday

Peak Hour of Generator

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
3

Avg. 1000 Sq. Ft. GFA:
82

Average Rate:
0.53

Range of Rates:
0.30 - 1.57

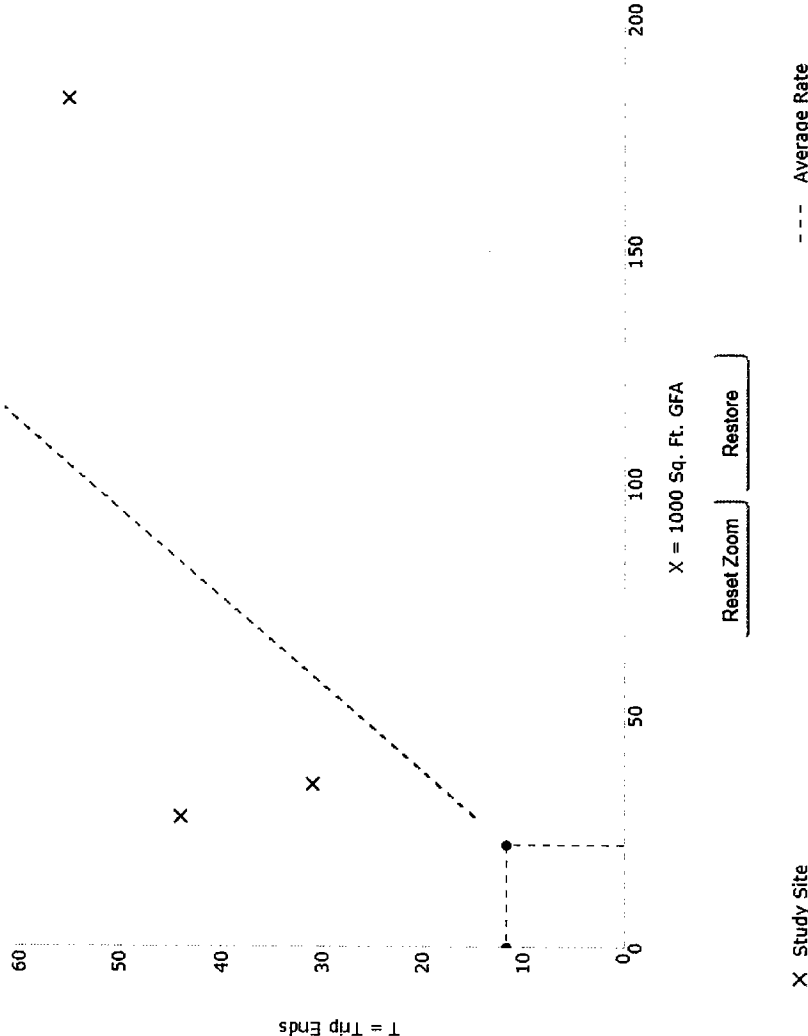
Standard Deviation:
0.52

Fitted Curve Equation:
Not Given

R²:

Directional Distribution:
54% entering, 46% exiting

Calculated Trip Ends:
Average Rate: 12 (Total), 6 (Entry), 6 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA SOURCE:
ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:
932

LAND USE CATEGORY:
(900-999) Services

LAND USE:
932 - High-Turnover (Sit-Down) Restaurant

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
7.0 Calculate

DATA STATISTICS

for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:

Weekday

Peak Hour of Adjacent Street Traffic

One Hour Between 4 and 6 p.m.

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

107

Avg. 1000 Sq. Ft. GFA:

6

Average Rate:

9.77

Range of Rates:

0.92 - 62.00

Standard Deviation:

7.37

Fitted Curve Equation:

Not Given

R²:

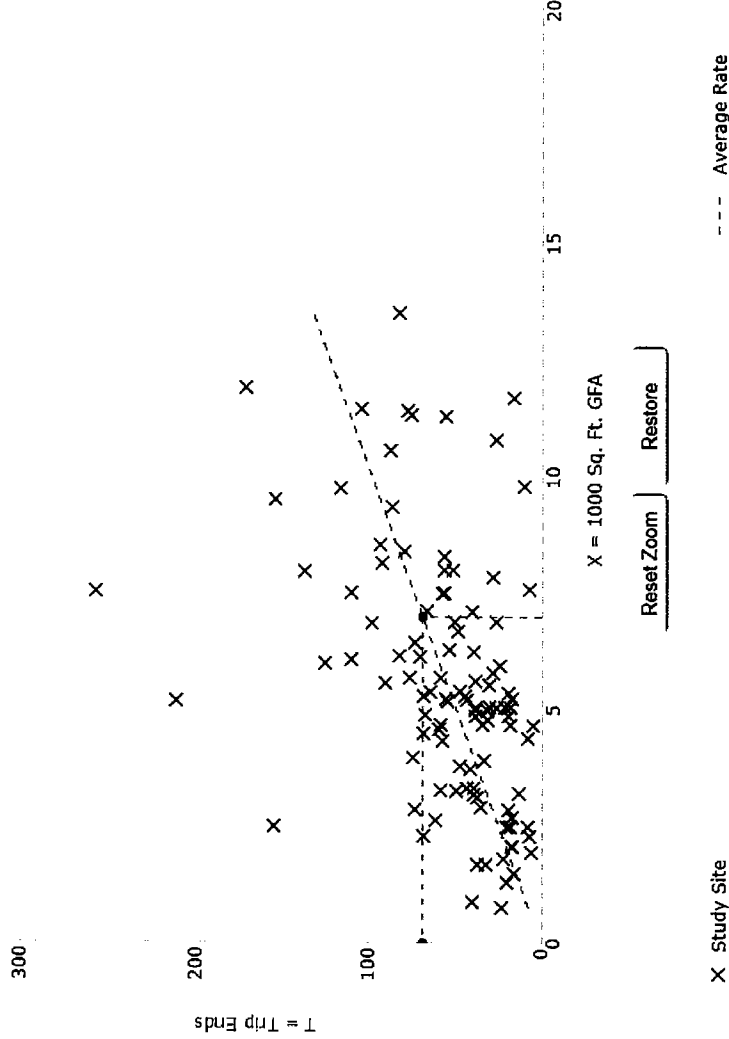
0.0000

Directional Distribution:

62% entering, 38% exiting

Calculated Trip Ends:

Average Rate: 68 (Total), 42 (Entry), 26 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA SOURCE:

ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:

932

LAND USE CATEGORY:

(900-999) Services

LAND USE :

932 - High-Turnover (Sit-Down) Restaurant

INDEPENDENT VARIABLE (IV):

1000 Sq. Ft. GFA

TIME PERIOD:

Saturday, Peak Hour of Generator

SETTING/LOCATION:

General Urban/Suburban

TRIP TYPE:

Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

7.0

Calculate

DATA STATISTICS

High-Turnover (Sit-Down) Restaurant (932) [Click for more details](#)

Independent Variable:

1000 Sq. Ft. GFA

Time Period:

Saturday

Peak Hour of Generator

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

22

Avg. 1000 Sq. Ft. GFA:

5

Average Rate:

11.19

Range of Rates:

1.63 - 50.40

Standard Deviation:

8.30

Fitted Curve Equation:

Not Given

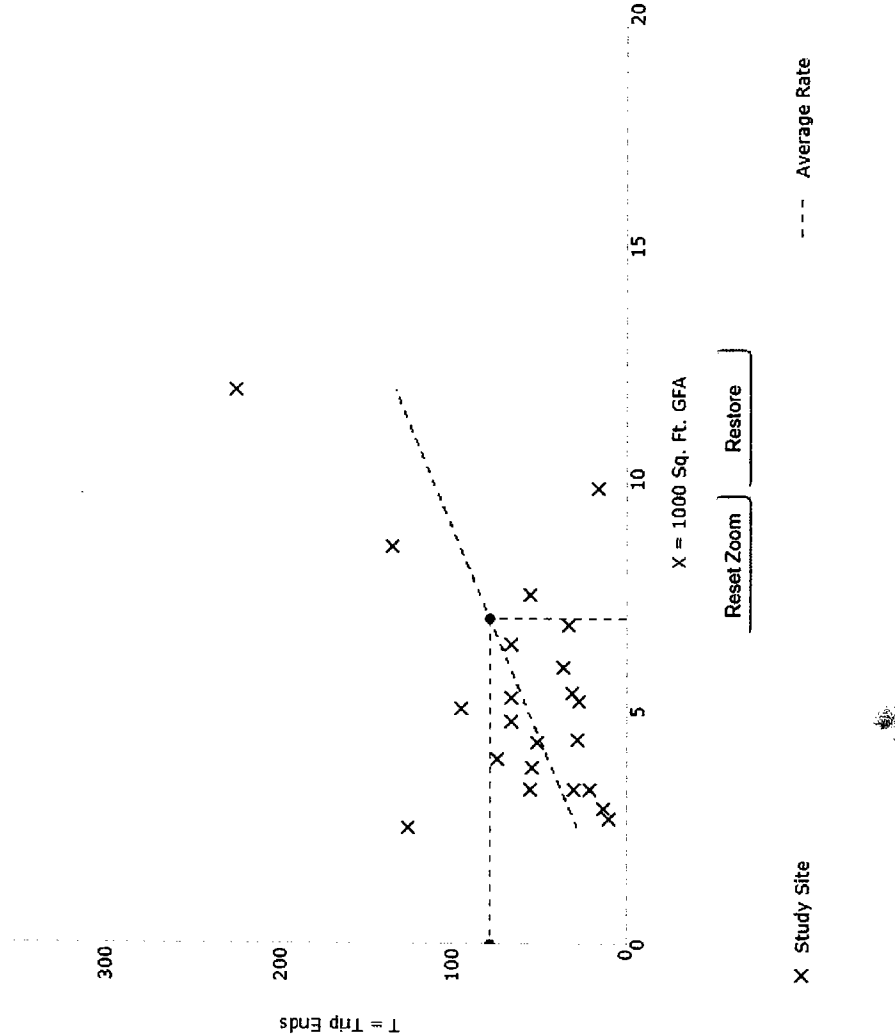
R²:

Directional Distribution:

51% entering, 49% exiting

Calculated Trip Ends:

Average Rate: 78 (Total), 40 (Entry), 38 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA SOURCE:
ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:
930

LAND USE CATEGORY:
(900-999) Services

LAND USE:
930 - Fast Casual Restaurant

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIP S:
4.0 Calculate

DATA STATISTICS

Fast Casual Restaurant (930) [Click for more details](#)

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
15

Avg. 1000 Sq. Ft. GFA:
3

Average Rate:
14.13

Range of Rates:
5.94 - 34.83

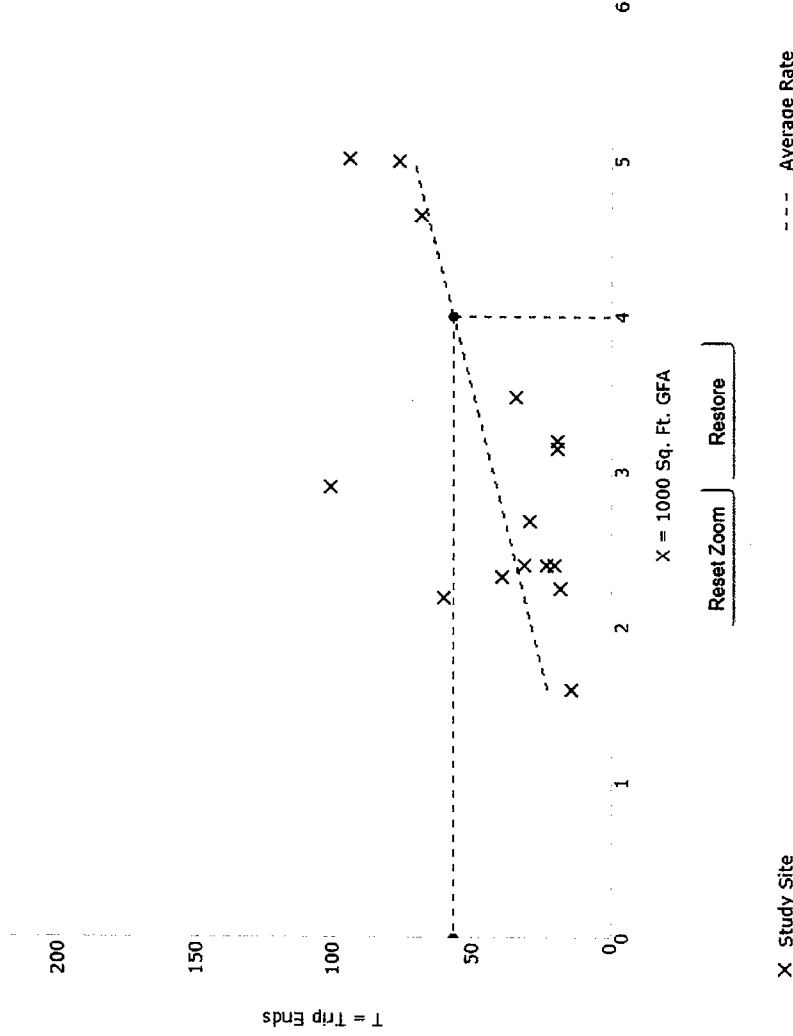
Standard Deviation:
7.72

Fitted Curve Equation:
Not Given

R²:
0.00

Directional Distribution:
55% entering, 45% exiting

Calculated Trip Ends:
Average Rate: 57 (Total), 31 (Entry), 26 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA SOURCE:

ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:

930

LAND USE CATEGORY:

(900-999) Services

LAND USE:

930 - Fast Casual Restaurant

INDEPENDENT VARIABLE (IV):

1000 Sq. Ft. GFA

TIME PERIOD:

Saturday, Peak Hour of Generator

SETTING/LOCATION:

General Urban/Suburban

TRIP TYPE:

Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

4.0

Calculate

DATA STATISTICS

Land Use:

Fast Casual Restaurant (930) [Click for more details](#)

Independent Variable:

1000 Sq. Ft. GFA

Time Period:

Saturday

Peak Hour of Generator

General Urban/Suburban

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

3

Avg. 1000 Sq. Ft. GFA:

4

Average Rate:

34.02

Range of Rates:

32.26 - 38.62

Standard Deviation:

3.11

Fitted Curve Equation:

Not Given

R²:

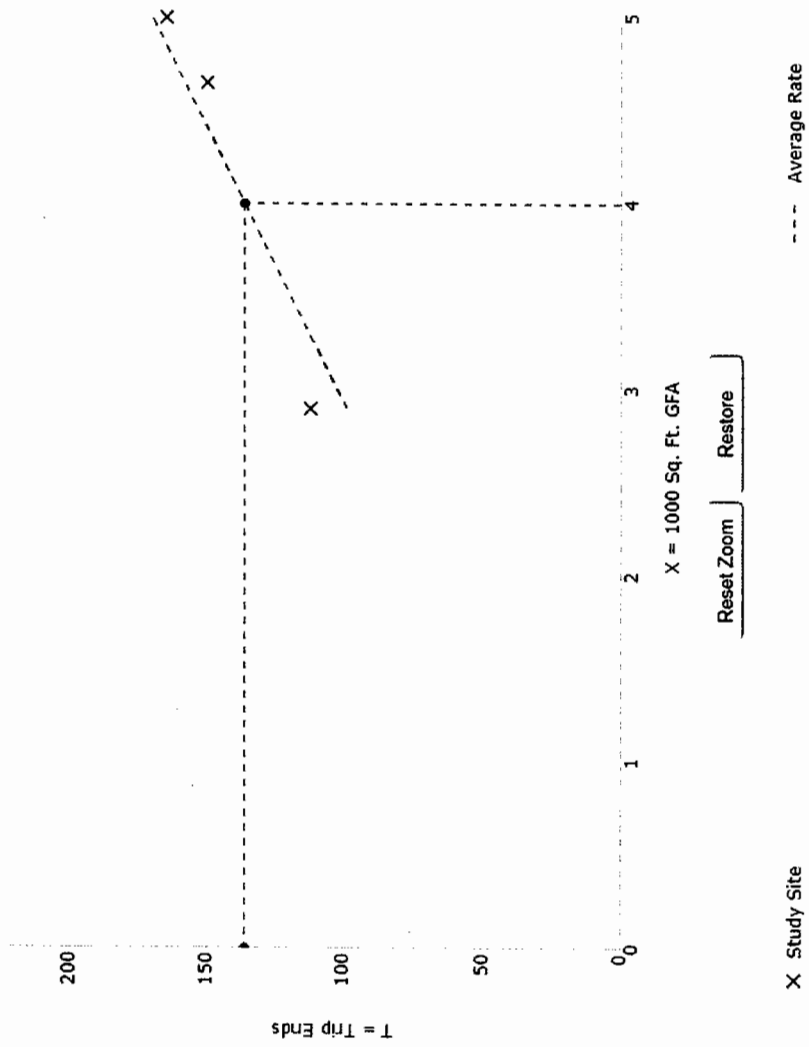
0.000

Directional Distribution:

55% entering, 45% exiting

Calculated Trip Ends:

Average Rate: 136 (Total), 75 (Entry), 61 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
 Hover the mouse pointer on data points to view X and T values.

DATA SOURCE:
ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:
820

LAND USE CATEGORY:
(800-899) Retail

LAND USE:
820 - Shopping Center

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GLA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
5.0 Calculate

DATA STATISTICS

Independent Variable:
1000 Sq. Ft. GLA

Time Period:
Weekday

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

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
261

Avg. 1000 Sq. Ft. GLA:
327

Average Rate:
3.81

Range of Rates:
0.74 - 18.69

Standard Deviation:
2.04

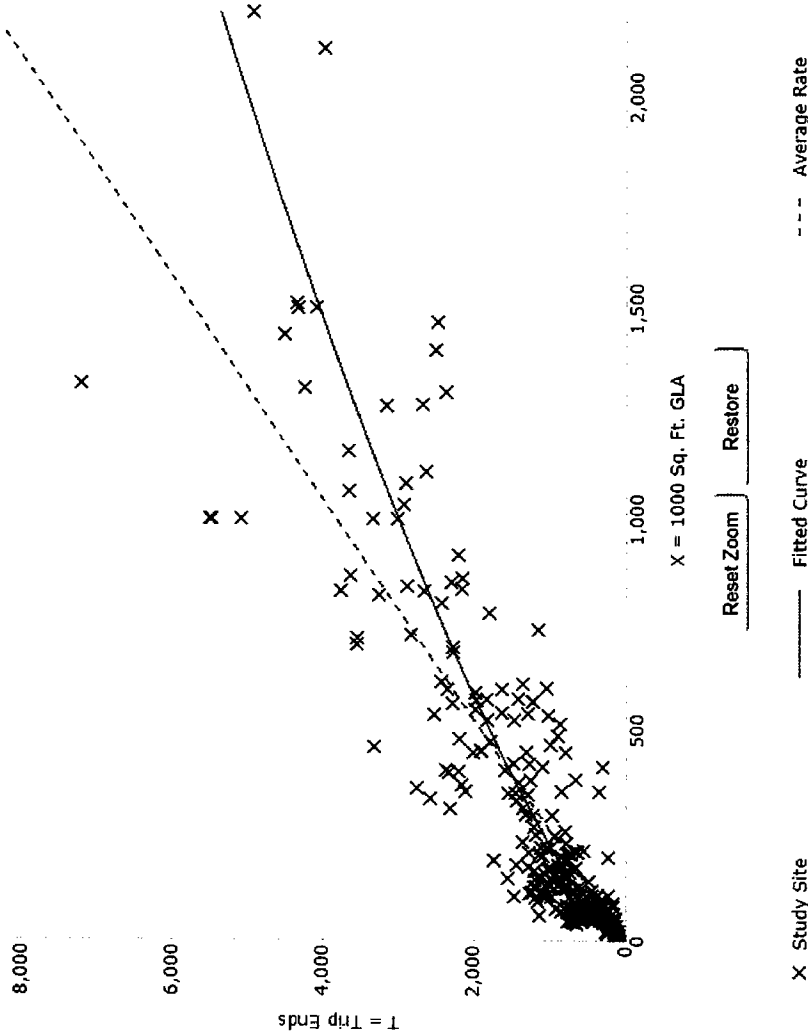
Fitted Curve Equation:
 $\ln(T) = 0.74 \ln(X) + 2.89$

R²:
0.82

Directional Distribution:
48% entering, 52% exiting

Calculated Trip Ends:

Average Rate: 19 (Total), 9 (Entry), 10 (Exit)
Fitted Curve: 59 (Total), 28 (Entry), 31 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

DATA SOURCE: ITE-TGM 10th Edition

SEARCH BY LAND USE CODE: 820

LAND USE CATEGORY: (800-899) Retail

LAND USE: 820 - Shopping Center

INDEPENDENT VARIABLE (IV): 1000 Sq. Ft. GLA

TIME PERIOD: Saturday, Peak Hour of Generator

SETTING/LOCATION: General Urban/Suburban

TRIP TYPE: Vehicle

ENTER IV VALUE TO CALCULATE TRIPS: 5.0 Calculate

DATA STATISTICS

Shopping Center (820) [Click for more details](#)

Independent Variable:
1000 Sq. Ft. GLA

Time Period:
Saturday
Peak Hour of Generator

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
119

Avg. 1000 Sq. Ft. GLA:
416

Average Rate:
4.50

Range of Rates:
1.42 - 15.10

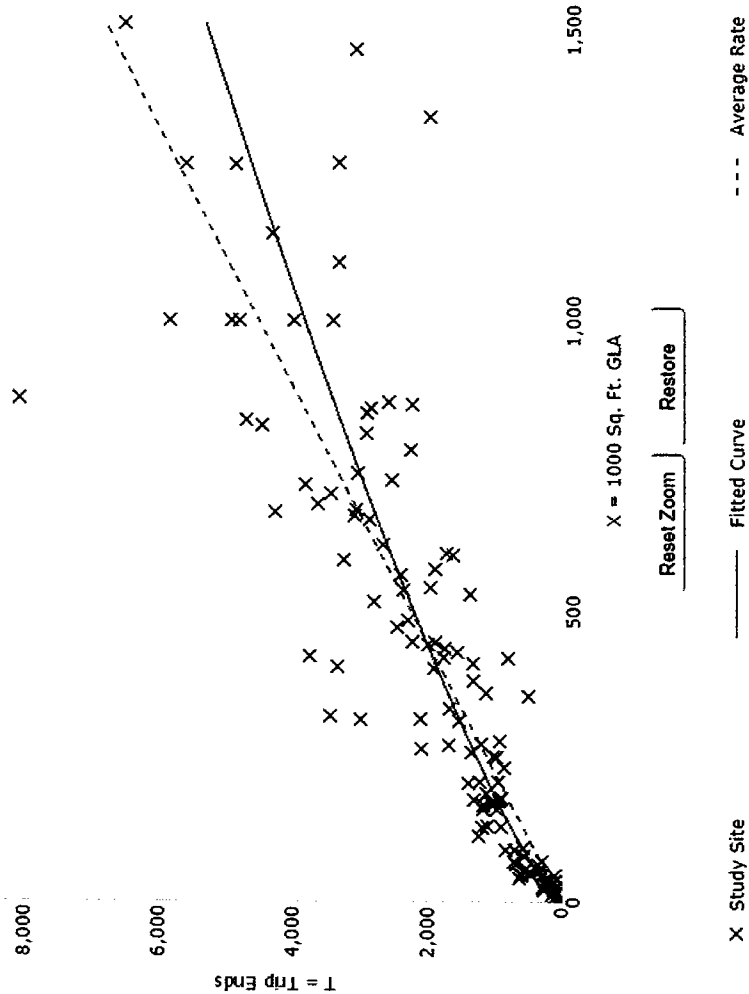
Standard Deviation:
1.88

Fitted Curve Equation:
 $\ln(T) = 0.79 \ln(X) + 2.79$

R²:
0.87

Directional Distribution:
52% entering, 48% exiting

Calculated Trip Ends:
Average Rate: 23 (Total), 12 (Entry), 11 (Exit)
Fitted Curve: 58 (Total), 30 (Entry), 28 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and Y values.

Query

DATA SOURCE:
ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:
932

LAND USE CATEGORY:
(900-999) Services

LAND USE:
932 - High-Turnover (Sit-Down) Restaurant

INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA

TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffic

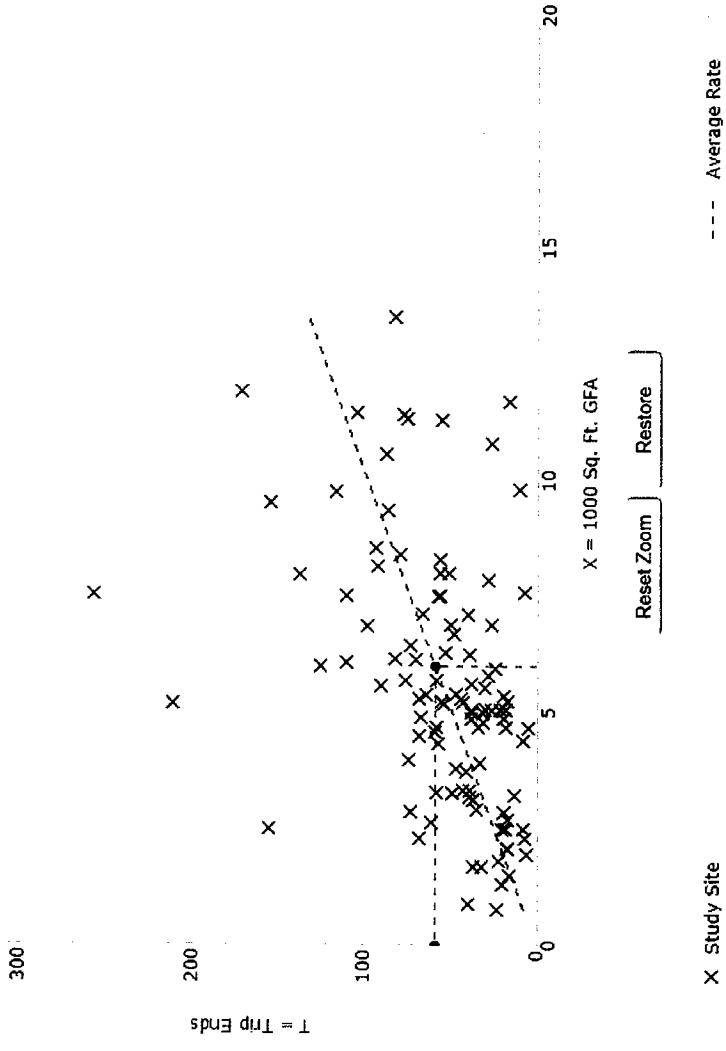
SETTING/LOCATION:
General Urban/Suburban

TRIP TYPE:
Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:
6.0

Calculate

Data Plot and Equation



DATA STATISTICS

for more details

Independent Variable:
1000 Sq. Ft. GFA

Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.

Setting/Location:
General Urban/Suburban

Trip Type:
Vehicle

Number of Studies:
107

Avg. 1000 Sq. Ft. GFA:
6

Average Rate:
9.77

Range of Rates:
0.92 - 62.00

Standard Deviation:
7.37

Fitted Curve Equation:
Not Given

R²:
0.88

Directional Distribution:
62% entering, 38% exiting

Calculated Trip Ends:
Average Rate: 58 (Total), 36 (Entry), 22 (Exit)

DATA SOURCE:

ITE-TGM 10th Edition

SEARCH BY LAND USE CODE:

932

LAND USE CATEGORY:

(900-999) Services

LAND USE:

932 - High-Turnover (Sit-Down) Restaurant

INDEPENDENT VARIABLE (IV):

1000 Sq. Ft. GFA

TIME PERIOD:

Saturday, Peak Hour of Generator

SETTING/LOCATION:

General Urban/Suburban

TRIP TYPE:

Vehicle

ENTER IV VALUE TO CALCULATE TRIPS:

6.0

Calculate

DATA STATISTICS

High-Turnover (Sit-Down) Restaurant (932) [Click](#) for more details

Independent Variable:

1000 Sq. Ft. GFA

Time Period:

Saturday

Peak Hour of Generator

Setting/Location:

General Urban/Suburban

Trip Type:

Vehicle

Number of Studies:

22

Avg. 1000 Sq. Ft. GFA:

5

Average Rate:

11.19

Range of Rates:

1.63 - 50.40

Standard Deviation:

8.30

Fitted Curve Equation:

Not Given

R²:

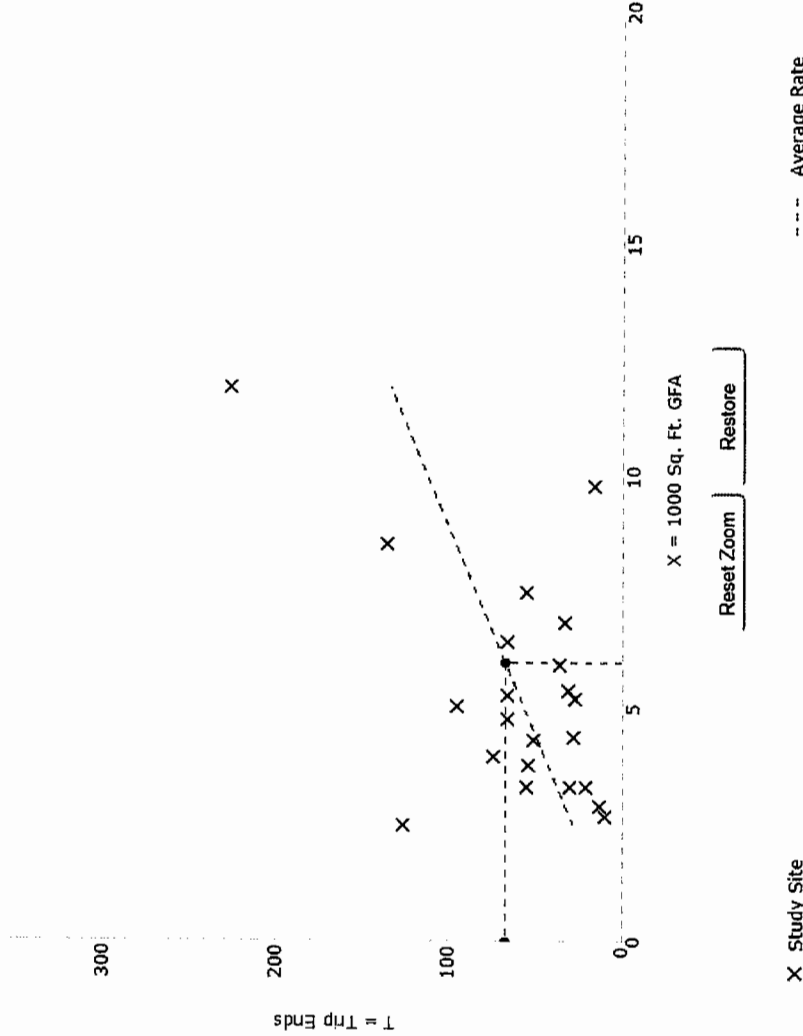
0.00

Directional Distribution:

51% entering, 49% exiting

Calculated Trip Ends:

Average Rate: 67 (Total), 34 (Entry), 33 (Exit)



Use the mouse wheel to Zoom Out or Zoom In.
Hover the mouse pointer on data points to view X and T values.

Home Destination Report - Where Workers Live Who are Employed in the Selection Area - by County Subdivisions

Jobs Counts by County Subdivisions Where Workers Live - All Jobs

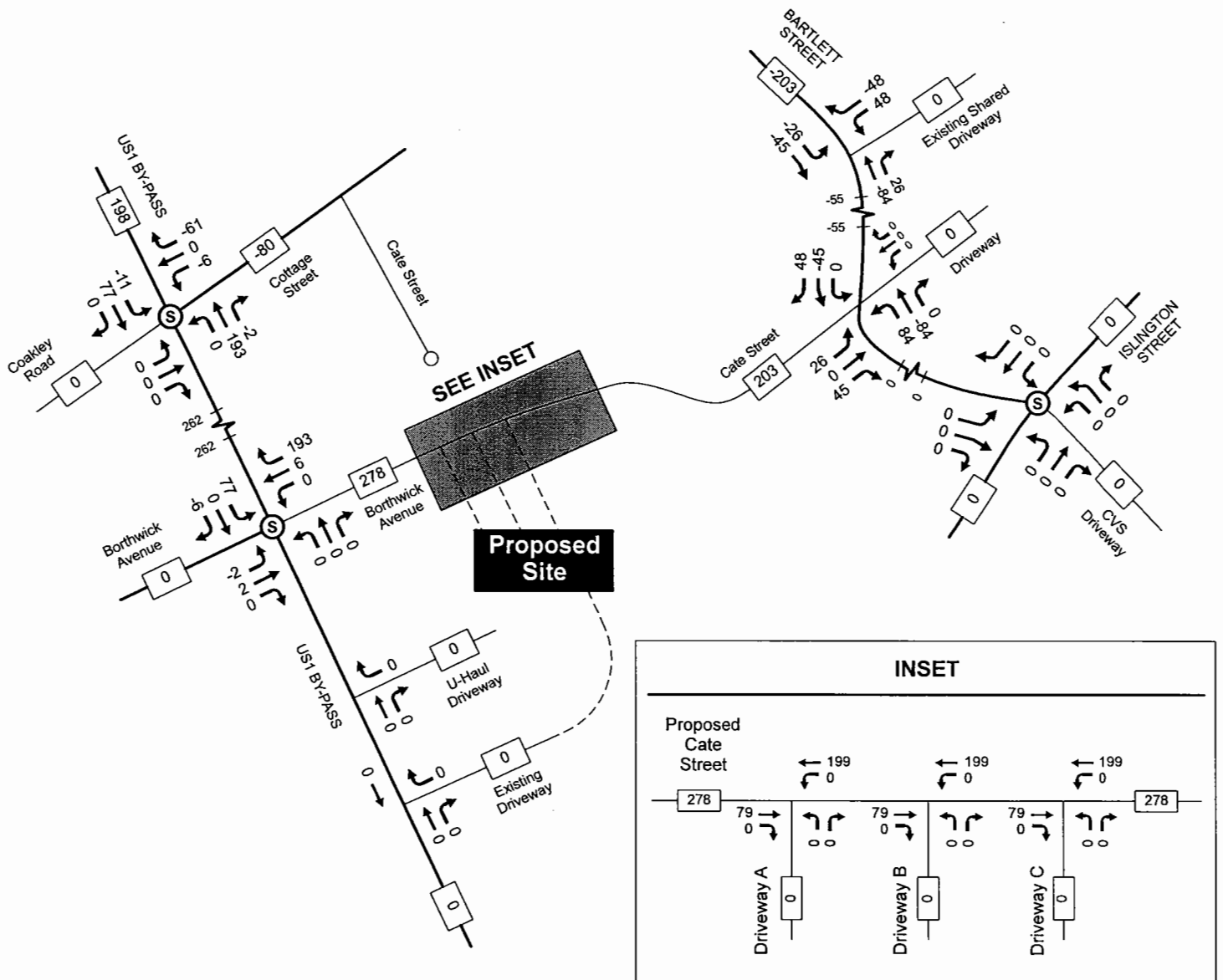
	2015 Count	Share	GATEWAY PERCENTAGE							GATEWAY ALLOCATION						
			A	B	C	D	E	F	G	A	B	C	D	E	F	G
Portsmouth city (Rockingham, NH)	4,324	13.6%	0.55	0.05	0.00	0.20	0.02	0.15	0.03	2378	216	0	865	86	649	130
Dover city (Strafford, NH)	3,007	9.5%				1.00				0	0	0	3007	0	0	0
Rochester city (Strafford, NH)	1,762	5.5%				1.00				0	0	0	1762	0	0	0
Hampton town (Rockingham, NH)	978	3.1%	0.40			0.60				391	0	0	587	0	0	0
Somersworth city (Strafford, NH)	953	3.0%				1.00				0	0	0	953	0	0	0
Exeter town (Rockingham, NH)	839	2.6%				1.00				0	0	0	839	0	0	0
Newmarket town (Rockingham, NH)	819	2.6%				1.00				0	0	0	819	0	0	0
Kittery town (York, ME)	732	2.3%				1.00				0	0	0	732	0	0	0
Stratham town (Rockingham, NH)	705	2.2%				1.00				0	0	0	705	0	0	0
Rye town (Rockingham, NH)	616	1.9%	0.50	0.20		0.30				308	123	0	185	0	0	0
	14,735									3077	339	0	10454	86	649	130
										21%	2%	0%	71%	1%	4%	1%
																100%

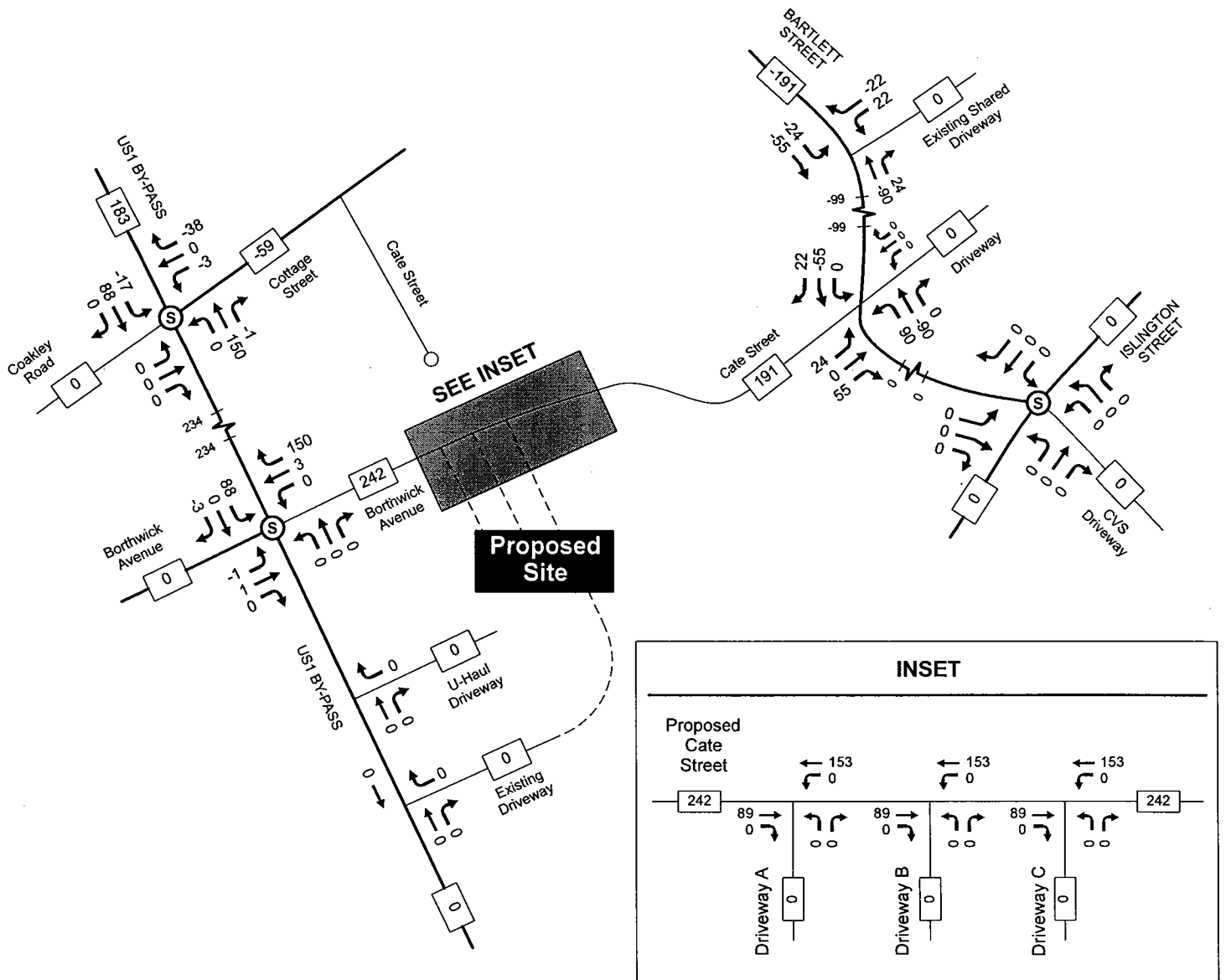
Gateway A = US1 Bypass (South)
 Gateway B = Borthwick Avenue (West)
 Gateway C = Coakly Road (West)
 Gateway D = US1 Bypass (North)
 Gateway E = Bartlett Street (North)
 Gateway F = Islington Street (East)
 Gateway G = Islington Street (West)

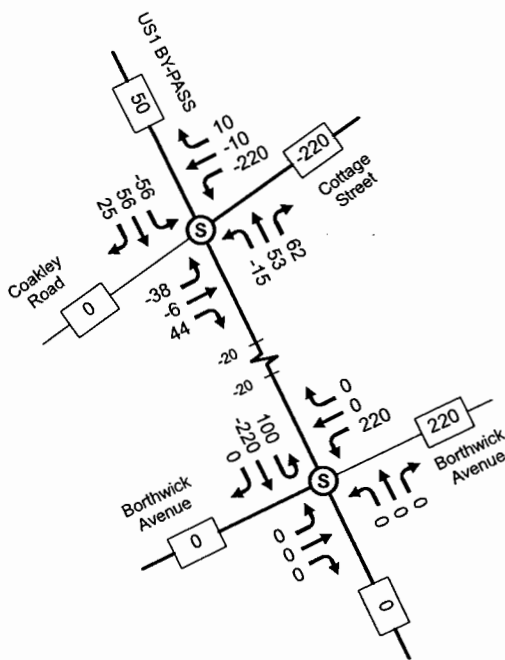
Work Destination Report - Where Workers are Employed Who Live in the Selection Area - by County Subdivisions

Total All Jobs	2015 Count	Share	GATEWAY PERCENTAGE							GATEWAY ALLOCATION						
			A	B	C	D	E	F	G	A	B	C	D	E	F	G
Portsmouth city (Rockingham, NH)	4,324	36.4%	0.55	0.05	0.00	0.20	0.02	0.15	0.03	2378	216	0	865	86	649	130
Dover city (Strafford, NH)	578	4.9%				1.00				0	0	0	578	0	0	0
Exeter town (Rockingham, NH)	387	3.3%				1.00				0	0	0	387	0	0	0
Manchester city (Hillsborough, NH)	334	2.8%				1.00				0	0	0	334	0	0	0
Boston city (Suffolk, MA)	327	2.8%				1.00				0	0	0	327	0	0	0
Newington town (Rockingham, NH)	296	2.5%				1.00				0	0	0	296	0	0	0
Hampton town (Rockingham, NH)	288	2.4%	0.40			0.60				115	0	0	173	0	0	0
Durham town (Strafford, NH)	281	2.4%				1.00				0	0	0	281	0	0	0
Nashua city (Hillsborough, NH)	235	2.0%				1.00				0	0	0	235	0	0	0
Salem town (Rockingham, NH)	208	1.8%				1.00				0	0	0	208	0	0	0
	7,258									2493	216	0	3684	86	649	130
										34%	3%	0%	51%	1%	9%	2%
																100%

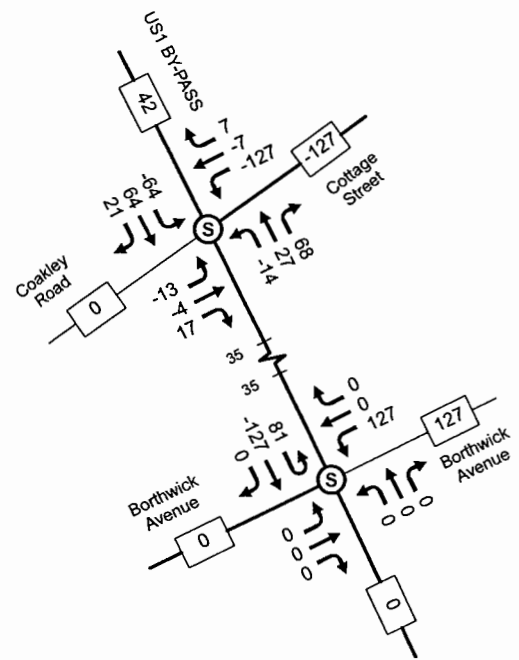
Gateway A = US1 Bypass (South)
 Gateway B = Borthwick Avenue (West)
 Gateway C = Coakly Road (West)
 Gateway D = US1 Bypass (North)
 Gateway E = Bartlett Street (North)
 Gateway F = Islington Street (East)
 Gateway G = Islington Street (West)







PM Peak Hour



Saturday Peak Hour

Appendix H

Lane Utilization Factors

CALCULATION SHEET



Project:	<u>Torrington Properties</u>	Job Number:	<u>1831A</u>
Calculated By:	<u>SP</u>	Date:	<u>7/2/2018</u>
Checked By:	<u>CA</u>	Date:	<u>7/2/2018</u>
Sheet No:	<u>1</u>	Of:	<u>1</u>
Subject:	<u>Lane Utilization Factors</u>		

Given: US1 Bypass northbound through lanes at the Cottage/Coakley intersection are not utilized equally due to upstream constraints.

Calculate: The appropriate Lane Utilization Factors for use in the intersection capacity and Level of Service analyses.

PM Peak Hour Calculation:

	<u>Right Thru Lane</u>	<u>Left Thru Lane</u>	<u>Sum</u>	<u>Utilization Factor</u>	
4:30 - 4:45 PM	163	215	378	$= 378 / 2 / 215 =$	<u>0.88</u> Use
4:45 - 5:00 PM	166	192	358	$= 358 / 2 / 192 =$	0.93
5:00 - 5:15 PM	210	215	425	$= 425 / 2 / 215 =$	0.99
5:15 - 5:30 PM	167	181	348	$= 348 / 2 / 181 =$	0.96
Total:	706	803	1509		0.94

SAT Peak Hour Calculation:

	<u>Right Thru Lane</u>	<u>Left Thru Lane</u>	<u>Sum</u>	<u>Utilization Factor</u>	
11:45 - 12:00 PM	86	171	257	$= 257 / 2 / 171 =$	<u>0.75</u> Use
12:00 - 12:15 PM	121	154	275	$= 275 / 2 / 154 =$	0.89
12:15 - 12:30 PM	107	155	262	$= 262 / 2 / 155 =$	0.85
12:30 - 12:45 PM	93	163	256	$= 256 / 2 / 163 =$	0.79
Total:	407	643	1050		0.82

Appendix I

Capacity and Level of Service Calculations – Signalized

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SEB	SEB
Lane Configurations	31	5	8	186	8	86	13	1325	177	34	789	8
Traffic Volume (vph)	31	5	8	186	8	86	13	1325	177	34	789	8
Future Volume (vph)	31	5	8	186	8	86	13	1325	177	34	789	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.88		1.00	0.95	
Frt		0.98			1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1753			1763	1615	1805	3220		1805	3535	
Flt Permitted		0.58			0.72	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1048			1325	1615	1805	3220		1805	3535	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.90	0.90	0.90	0.99	0.99	0.99
Adj. Flow (vph)	39	6	10	245	11	113	14	1472	197	34	797	8
RTOR Reduction (vph)	0	7	0	0	0	64	0	7	0	0	0	0
Lane Group Flow (vph)	0	48	0	0	256	49	14	1662	0	34	805	0
Heavy Vehicles (%)	3%	0%	0%	3%	0%	0%	0%	2%	2%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		26.1			26.1	26.1	2.0	72.8		3.1	73.9	
Effective Green, g (s)		28.1			28.1	26.1	4.0	74.8		5.1	75.9	
Actuated g/C Ratio		0.23			0.23	0.22	0.03	0.62		0.04	0.63	
Clearance Time (s)		6.0			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)		245			310	351	60	2007		76	2235	
v/s Ratio Prot							0.01	0.52		0.02	0.23	
v/s Ratio Perm		0.05			0.19	0.03						
v/c Ratio		0.20			0.83	0.14	0.23	0.83		0.45	0.36	
Uniform Delay, d1		36.9			43.6	37.9	56.5	17.6		56.1	10.5	
Progression Factor		1.00			1.00	1.00	1.12	0.87		1.00	1.00	
Incremental Delay, d2		0.4			16.2	0.2	1.8	3.6		4.1	0.5	
Delay (s)		37.3			59.9	38.1	65.3	18.9		60.2	10.9	
Level of Service		D			E	D	E	B		E	B	
Approach Delay (s)		37.3			53.2			19.3			12.9	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	22.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Timings

1: US1 Bypass & Coakly Road/Cottage Street

	EBL	EBT	YBL	NBT	WBR	NBL	NBT	SBL	SBT
Lane Group									
Lane Configurations		↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	31	5	186	8	86	13	1325	34	789
Future Volume (vph)	31	5	186	8	86	13	1325	34	789
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	11.0	16.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	11.0	74.0	11.0	74.0
Total Split (%)	29.2%	29.2%	29.2%	29.2%	29.2%	9.2%	61.7%	9.2%	61.7%
Yellow Time (s)	4.0	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)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)		28.1		28.1	26.1	7.3	77.2	7.5	79.5
Actuated g/C Ratio		0.23		0.23	0.22	0.06	0.64	0.06	0.66
v/c Ratio		0.22		0.83	0.27	0.13	0.80	0.30	0.34
Control Delay		32.7		65.3	14.5	62.8	18.8	61.5	10.5
Queue Delay		0.0		0.0	0.0	0.0	0.6	0.0	0.0
Total Delay		32.7		65.3	14.5	62.8	19.3	61.5	10.5
LOS		C		E	B	E	B	E	B
Approach Delay		32.7		49.8			19.7		12.5
Approach LOS		C		D			B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%): Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 21.7

Intersection Capacity Utilization 62.6%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service B

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

Ø1	Ø2 (R)	Ø4
Ø5	Ø6 (R)	Ø8

Queues

1: US1 Bypass & Coakly Road/Cottage Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	60	282	164	16	1871	64	887
v/c Ratio	0.28	0.93	0.40	0.15	0.92	0.59	0.38
Control Delay	36.4	82.8	23.4	59.0	27.9	77.2	10.1
Queue Delay	0.0	0.0	0.0	0.0	1.9	0.0	0.0
Total Delay	36.4	82.8	23.4	59.0	29.8	77.2	10.1
Queue Length 50th (ft)	32	215	53	12	597	49	129
Queue Length 95th (ft)	63	#283	88	m21	#972	#112	220
Internal Link Dist (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	217	306	414	106	2033	109	2353
Starvation Cap Reductn	0	0	0	0	75	0	0
Spillback Cap Reductn	0	0	0	0	0	0	1
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.92	0.40	0.15	0.96	0.59	0.38

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	38	6	10	226	10	135	15	1637	219	67	959	10
Future Volume (vph)	38	6	10	226	10	135	15	1637	219	67	959	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	*0.88		1.00	0.95	
Flt		0.97			1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1753			1762	1615	1805	3220		1805	3535	
Flt Permitted		0.43			0.70	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		783			1296	1615	1805	3220		1805	3535	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.90	0.90	0.90	0.99	0.99	0.99
Adj. Flow (vph)	48	8	13	297	13	178	17	1819	243	68	969	10
RTOR Reduction (vph)	0	7	0	0	0	64	0	8	0	0	1	0
Lane Group Flow (vph)	0	62	0	0	310	114	17	2054	0	68	978	0
Heavy Vehicles (%)	3%	0%	0%	3%	0%	0%	0%	2%	2%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		26.0			26.0	26.0	2.0	72.0		4.0	74.0	
Effective Green, g (s)		28.0			28.0	26.0	4.0	74.0		6.0	76.0	
Actuated g/C Ratio		0.23			0.23	0.22	0.03	0.62		0.05	0.63	
Clearance Time (s)		6.0			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)		182			302	349	60	1985		90	2238	
v/s Ratio Prot							0.01	c0.64		c0.04	0.28	
v/s Ratio Perm		0.08			c0.24	0.07						
v/c Ratio		0.34			1.03	0.33	0.28	1.03		0.76	0.44	
Uniform Delay, d1		38.3			46.0	39.6	56.6	23.0		56.3	11.2	
Progression Factor		1.00			1.00	1.00	0.99	0.84		1.00	1.00	
Incremental Delay, d2		1.1			58.8	0.5	1.9	27.3		29.7	0.6	
Delay (s)		39.4			104.8	40.2	58.1	46.5		86.0	11.8	
Level of Service		D			F	D	E	D		F	B	
Approach Delay (s)		39.4			81.2			46.6			16.6	
Approach LOS		D			F			D			B	
Intersection Summary												
HCM 2000 Control Delay		42.5										
HCM 2000 Volume to Capacity ratio		1.01										
Actuated Cycle Length (s)		120.0										
Intersection Capacity Utilization		79.0%										
Analysis Period (min)		15										
c Critical Lane Group												
HCM 2000 Level of Service										D		
Sum of lost time (s)										12.0		
ICU Level of Service										D		

Timings

1: US1 Bypass & Coakly Road/Cottage Street

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔	↔	↔	↔	↔
Traffic Volume (vph)	38	6	226	10	135	15	1637	67
Future Volume (vph)	38	6	226	10	135	15	1637	67
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot
Protected Phases		4		8		5		2
Permitted Phases	4		8		8		1	
Detector Phase	4	4	8	8	8	5	2	6
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	16.0
Total Split (s)	32.0	32.0	32.0	32.0	32.0	11.0	77.0	77.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	9.2%	64.2%	9.2%
Yellow Time (s)	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
Lost Time Adjust (s)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lag
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	None	None	C-Min	None
Act Effect Green (s)		28.0		28.0	26.0	7.0	75.2	7.0
Actuated g/C Ratio		0.23		0.23	0.22	0.06	0.63	0.06
v/c Ratio		0.37		1.03	0.43	0.16	1.02	0.65
Control Delay		39.9		104.4	25.1	56.2	42.3	82.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.1
Total Delay		39.9		104.4	25.1	56.2	42.3	82.9
LOS		D		F	C	E	D	F
Approach Delay		39.9		75.5			42.4	15.5
Approach LOS		D		E			D	B

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.03
 Intersection Signal Delay: 39.1
 Intersection Capacity Utilization 79.0%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service D

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

 Ø1  Ø2 (R)	 Ø4
 Ø5  Ø6 (R)	 Ø8

Queues

1: US1 Bypass & Coakly Road/Cottage Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	69	310	178	17	2062	68	979
v/c Ratio	0.37	1.03	0.43	0.16	1.02	0.65	0.42
Control Delay	39.9	104.4	25.1	56.2	42.3	82.9	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	39.9	104.4	25.1	56.2	42.3	82.9	10.8
Queue Length 50th (ft)	39	~256	62	12	~996	53	147
Queue Length 95th (ft)	73	#330	98	m20	#1123	#121	250
Internal Link Dist (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	189	302	414	105	2025	105	2344
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	388
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	1.03	0.43	0.16	1.02	0.65	0.50

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

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	5	9	199	9	64	14	1749	197	52	1041	9
Future Volume (vph)	34	5	9	199	9	64	14	1749	197	52	1041	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	*0.88		1.00	0.95	
Frt		0.98			1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1751			1763	1615	1805	3229		1805	3535	
Flt Permitted		0.43			0.71	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		773			1318	1615	1805	3229		1805	3535	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.90	0.90	0.90	0.99	0.99	0.99
Adj. Flow (vph)	43	6	11	262	12	84	16	1943	219	53	1052	9
RTOR Reduction (vph)	0	6	0	0	0	67	0	6	0	0	0	0
Lane Group Flow (vph)	0	54	0	0	274	17	16	2156	0	53	1061	0
Heavy Vehicles (%)	3%	0%	0%	3%	0%	0%	0%	2%	2%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		22.0			22.0	22.0	2.0	76.0		4.0	78.0	
Effective Green, g (s)		24.0			24.0	22.0	4.0	78.0		6.0	80.0	
Actuated g/C Ratio		0.20			0.20	0.18	0.03	0.65		0.05	0.67	
Clearance Time (s)		6.0			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)		154			263	296	60	2098		90	2356	
v/s Ratio Prot							0.01	c0.67		c0.03	0.30	
v/s Ratio Perm		0.07			c0.21	0.01						
v/c Ratio		0.35			1.04	0.06	0.27	1.03		0.59	0.45	
Uniform Delay, d1		41.3			48.0	40.4	56.6	21.0		55.8	9.5	
Progression Factor		1.00			1.00	1.00	0.90	0.77		1.00	1.00	
Incremental Delay, d2		1.4			66.8	0.1	1.0	20.5		9.5	0.6	
Delay (s)		42.6			114.8	40.5	52.1	36.6		65.3	10.1	
Level of Service		D			F	D	D	D		E	B	
Approach Delay (s)		42.6			97.4			36.7			12.8	
Approach LOS		D			F			D			B	
Intersection Summary												
HCM 2000 Control Delay		35.5										
HCM 2000 Volume to Capacity ratio		1.00										
Actuated Cycle Length (s)		120.0										
Intersection Capacity Utilization		75.9%										
Analysis Period (min)		15										
c Critical Lane Group												

Timings

1: US1 Bypass & Coakly Road/Cottage Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	34	5	199	9	64	14	1749	52	1041
Future Volume (vph)	34	5	199	9	64	14	1749	52	1041
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	11.0	16.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	11.0	81.0	11.0	81.0
Total Split (%)	23.3%	23.3%	23.3%	23.3%	23.3%	9.2%	67.5%	9.2%	67.5%
Yellow Time (s)	4.0	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)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		24.0		24.0	22.0	7.0	79.2	7.0	83.6
Actuated g/C Ratio		0.20		0.20	0.18	0.06	0.66	0.06	0.70
v/c Ratio		0.37		1.04	0.23	0.15	1.01	0.50	0.43
Control Delay		43.9		113.8	11.0	50.2	33.0	71.8	9.1
Queue Delay		0.0		0.0	0.0	0.0	9.2	0.0	0.0
Total Delay		43.9		113.8	11.0	50.2	42.2	71.8	9.2
LOS		D		F	B	D	D	E	A
Approach Delay		43.9		89.7			42.2		12.2
Approach LOS		D		F			D		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 37.8

Intersection LOS: D

Intersection Capacity Utilization 75.9%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

	01		02 (R)		04
11s		81s		28s	
	05		06 (R)		08
11s		81s		28s	

Queues

1: US1 Bypass & Coakly Road/Cottage Street

							
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	60	274	84	16	2162	53	1061
v/c Ratio	0.37	1.04	0.23	0.15	1.01	0.50	0.43
Control Delay	43.9	113.8	11.0	50.2	33.0	71.8	9.1
Queue Delay	0.0	0.0	0.0	0.0	9.2	0.0	0.0
Total Delay	43.9	113.8	11.0	50.2	42.2	71.8	9.2
Queue Length 50th (ft)	35	~229	1	13	~1047	41	144
Queue Length 95th (ft)	68	#305	30	m14	#1177	#86	251
Internal Link Dist (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	161	263	363	105	2137	105	2463
Starvation Cap Reductn	0	0	0	0	56	0	0
Spillback Cap Reductn	0	0	0	0	0	0	161
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	1.04	0.23	0.15	1.04	0.50	0.46

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

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	6	10	220	10	74	15	1901	217	56	1131	10
Future Volume (vph)	38	6	10	220	10	74	15	1901	217	56	1131	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	*0.88		1.00	0.95	
Frt		0.97			1.00	0.85	1.00	0.98		1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1753			1763	1615	1805	3228		1805	3535	
Flt Permitted		0.34			0.70	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		625			1298	1615	1805	3228		1805	3535	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.90	0.90	0.90	0.99	0.99	0.99
Adj. Flow (vph)	48	8	13	289	13	97	17	2112	241	57	1142	10
RTOR Reduction (vph)	0	7	0	0	0	67	0	6	0	0	0	0
Lane Group Flow (vph)	0	62	0	0	302	30	17	2347	0	57	1152	0
Heavy Vehicles (%)	3%	0%	0%	3%	0%	0%	0%	2%	2%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		22.0			22.0	22.0	2.0	76.0		4.0	78.0	
Effective Green, g (s)		24.0			24.0	22.0	4.0	78.0		6.0	80.0	
Actuated g/C Ratio		0.20			0.20	0.18	0.03	0.65		0.05	0.67	
Clearance Time (s)		6.0			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)		125			259	296	60	2098		90	2356	
v/s Ratio Prot							0.01	c0.73		c0.03	0.33	
v/s Ratio Perm		0.10			c0.23	0.02						
v/c Ratio		0.49			1.17	0.10	0.28	1.12		0.63	0.49	
Uniform Delay, d1		42.6			48.0	40.8	56.6	21.0		55.9	9.9	
Progression Factor		1.00			1.00	1.00	0.90	0.70		1.00	1.00	
Incremental Delay, d2		3.1			108.4	0.2	0.8	55.6		13.7	0.7	
Delay (s)		45.7			156.4	40.9	51.7	70.3		69.6	10.6	
Level of Service		D			F	D	D	E		E	B	
Approach Delay (s)		45.7			128.3			70.1			13.4	
Approach LOS		D			F			E			B	
Intersection Summary												
HCM 2000 Control Delay		58.5										
HCM 2000 Volume to Capacity ratio		1.10										
Actuated Cycle Length (s)		120.0								12.0		
Intersection Capacity Utilization		82.3%								E		
Analysis Period (min)		15										
c Critical Lane Group												

Timings

1: US1 Bypass & Coakly Road/Cottage Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	38	6	220	10	74	15	1901	56	1131
Future Volume (vph)	38	6	220	10	74	15	1901	56	1131
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	11.0	16.0
Total Split (s)	28.0	28.0	28.0	28.0	28.0	11.0	81.0	11.0	81.0
Total Split (%)	23.3%	23.3%	23.3%	23.3%	23.3%	9.2%	67.5%	9.2%	67.5%
Yellow Time (s)	4.0	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)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		24.0		24.0	22.0	7.0	79.2	7.0	83.6
Actuated g/C Ratio		0.20		0.20	0.18	0.06	0.66	0.06	0.70
v/c Ratio		0.52		1.17	0.27	0.16	1.10	0.54	0.47
Control Delay		52.9		151.2	14.0	49.7	65.5	74.3	9.6
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.1
Total Delay		52.9		151.2	14.0	49.7	65.5	74.3	9.7
LOS		D		F	B	D	E	E	A
Approach Delay		52.9		117.8			65.4		12.7
Approach LOS		D		F			E		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 54.6

Intersection LOS: D

Intersection Capacity Utilization 82.3%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

		
Q1	Q2 (R)	Q4
11s	31s	28s
		
Q5	Q6 (R)	Q3
11s	31s	28s

Queues

1: US1 Bypass & Coakly Road/Cottage Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	69	302	97	17	2353	57	1152
v/c Ratio	0.52	1.17	0.27	0.16	1.10	0.54	0.47
Control Delay	52.9	151.2	14.0	49.7	65.5	74.3	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	52.9	151.2	14.0	49.7	65.5	74.3	9.7
Queue Length 50th (ft)	42	~278	10	13	~1193	44	162
Queue Length 95th (ft)	80	#353	39	m13	m#1227	#97	282
Internal Link Dist (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	132	259	363	105	2137	105	2463
Starvation Cap Reductn	0	0	0	0	18	0	0
Spillback Cap Reductn	0	0	0	0	0	0	293
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	1.17	0.27	0.16	1.11	0.54	0.53

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

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SET	SEB
Lane Configurations		↕		↕	↕	↕	↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	11	4	13	105	5	46	12	955	94	51	766	15
Future Volume (vph)	11	4	13	105	5	46	12	955	94	51	766	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.75		1.00	0.95	
Frt		0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1747			1814	1615	1805	2781		1805	3565	
Flt Permitted		0.87			0.77	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1544			1458	1615	1805	2781		1805	3565	
Peak-hour factor, PHF	0.70	0.70	0.70	0.85	0.85	0.85	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	16	6	19	124	6	54	13	1016	100	55	833	16
RTOR Reduction (vph)	0	16	0	0	0	47	0	5	0	0	1	0
Lane Group Flow (vph)	0	25	0	0	130	7	13	1111	0	55	848	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		15.1			15.1	15.1	2.7	69.9		7.0	74.2	
Effective Green, g (s)		17.1			17.1	15.1	4.7	71.9		9.0	76.2	
Actuated g/C Ratio		0.16			0.16	0.14	0.04	0.65		0.08	0.69	
Clearance Time (s)		6.0			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)		240			226	221	77	1817		147	2469	
v/s Ratio Prot							0.01	0.40		0.03	0.24	
v/s Ratio Perm		0.02			0.09	0.00						
v/c Ratio		0.10			0.58	0.03	0.17	0.61		0.37	0.34	
Uniform Delay, d1		39.9			43.1	41.1	50.8	11.0		47.8	6.8	
Progression Factor		1.00			1.00	1.00	1.40	0.72		1.00	1.00	
Incremental Delay, d2		0.2			3.5	0.1	1.0	1.5		1.6	0.4	
Delay (s)		40.1			46.6	41.2	72.3	9.4		49.4	7.2	
Level of Service		D			D	D	E	A		D	A	
Approach Delay (s)		40.1			45.0			10.1			9.8	
Approach LOS		D			D			B			A	

Intersection Summary

HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Timings

1: US1 Bypass & Coakly Road/Cottage Street

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group									
Lane Configurations		↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	11	4	105	5	46	12	955	51	766
Future Volume (vph)	11	4	105	5	46	12	955	51	766
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	11.0	16.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	11.0	72.0	13.0	74.0
Total Split (%)	22.7%	22.7%	22.7%	22.7%	22.7%	10.0%	65.5%	11.8%	67.3%
Yellow Time (s)	4.0	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)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		17.1		17.1	15.1	8.2	73.1	10.1	79.8
Actuated g/C Ratio		0.16		0.16	0.14	0.07	0.66	0.09	0.73
v/c Ratio		0.16		0.58	0.18	0.10	0.60	0.33	0.33
Control Delay		25.2		52.3	3.9	68.0	10.2	52.1	7.3
Queue Delay		0.0		0.0	0.0	0.0	0.2	0.0	0.0
Total Delay		25.2		52.3	3.9	68.0	10.4	52.1	7.3
LOS		C		D	A	E	B	D	A
Approach Delay		25.2		38.1			11.0		10.0
Approach LOS		C		D			B		A

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 13.1

Intersection LOS: B

Intersection Capacity Utilization 55.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

Ø1	Ø2 (R)	Ø4
Ø5	Ø6 (R)	Ø8

Queues

1: US1 Bypass & Coakly Road/Cottage Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EBT	WB	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	130	54	13	1116	55	849
v/c Ratio	0.16	0.58	0.18	0.10	0.60	0.33	0.33
Control Delay	25.2	52.3	3.9	68.0	10.2	52.1	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	25.2	52.3	3.9	68.0	10.4	52.1	7.3
Queue Length 50th (ft)	14	86	0	7	300	37	77
Queue Length 95th (ft)	30	131	9	m25	458	78	195
Internal Link Dist (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	316	284	358	134	1883	169	2615
Starvation Cap Reductn	0	0	0	0	178	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.46	0.15	0.10	0.65	0.33	0.32

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

	EBL	EBT	EBR	NBL	NBT	NBR	NEL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	12	4	14	118	6	70	13	1055	106	75	847	17
Traffic Volume (vph)	12	4	14	118	6	70	13	1055	106	75	847	17
Future Volume (vph)	12	4	14	118	6	70	13	1055	106	75	847	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.75		1.00	0.95	
Frt		0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1746			1814	1615	1805	2781		1805	3565	
Flt Permitted		0.86			0.76	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1529			1447	1615	1805	2781		1805	3565	
Peak-hour factor, PHF	0.70	0.70	0.70	0.85	0.85	0.85	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	17	6	20	139	7	82	14	1122	113	82	921	18
RTOR Reduction (vph)	0	17	0	0	0	71	0	5	0	0	1	0
Lane Group Flow (vph)	0	26	0	0	146	11	14	1230	0	82	938	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		15.3			15.3	15.3	2.4	68.7		8.0	74.3	
Effective Green, g (s)		17.3			17.3	15.3	4.4	70.7		10.0	76.3	
Actuated g/C Ratio		0.16			0.16	0.14	0.04	0.64		0.09	0.69	
Clearance Time (s)		6.0			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)		240			227	224	72	1787		164	2472	
v/s Ratio Prot							0.01	0.44		0.05	0.26	
v/s Ratio Perm		0.02			0.10	0.01						
v/c Ratio		0.11			0.64	0.05	0.19	0.69		0.50	0.38	
Uniform Delay, d1		39.7			43.5	41.1	51.1	12.6		47.6	7.0	
Progression Factor		1.00			1.00	1.00	1.27	0.71		1.00	1.00	
Incremental Delay, d2		0.2			6.1	0.1	1.2	2.0		2.4	0.4	
Delay (s)		39.9			49.6	41.1	66.2	11.0		50.0	7.5	
Level of Service		D			D	D	E	B		D	A	
Approach Delay (s)		39.9			46.5			11.6			10.9	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Timings

1: US1 Bypass & Coakly Road/Cottage Street

Lane Group	EBL	EB	WBL	WB	WBR	NBL	NB	SBL	SB
Lane Configurations		↕		↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	12	4	118	6	70	13	1055	75	847
Future Volume (vph)	12	4	118	6	70	13	1055	75	847
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4		8		5		1	
Permitted Phases	4		8		8		2		6
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	11.0	16.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0	11.0	71.0	15.0	75.0
Total Split (%)	21.8%	21.8%	21.8%	21.8%	21.8%	10.0%	64.5%	13.6%	68.2%
Yellow Time (s)	4.0	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)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		17.3		17.3	15.3	7.9	71.9	11.3	79.9
Actuated g/C Ratio		0.16		0.16	0.14	0.07	0.65	0.10	0.73
v/c Ratio		0.17		0.64	0.27	0.11	0.68	0.45	0.36
Control Delay		25.7		56.2	9.8	62.9	11.8	54.1	7.2
Queue Delay		0.0		0.0	0.0	0.0	0.2	0.0	0.0
Total Delay		25.7		56.2	9.8	62.9	12.0	54.1	7.2
LOS		C		E	A	E	B	D	A
Approach Delay		25.7		39.5			12.5		10.9
Approach LOS		C		D			B		B

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 14.5

Intersection Capacity Utilization 60.2%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service B

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

Ø1	Ø2 (R)	Ø4
Ø5	Ø6 (R)	Ø8

Queues

1: US1 Bypass & Coakly Road/Cottage Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EB	WB	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	146	82	14	1235	82	939
v/c Ratio	0.17	0.64	0.27	0.11	0.68	0.45	0.36
Control Delay	25.7	56.2	9.8	62.9	11.8	54.1	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Total Delay	25.7	56.2	9.8	62.9	12.0	54.1	7.2
Queue Length 50th (ft)	14	97	0	7	371	55	94
Queue Length 95th (ft)	33	152	33	m25	90	106	192
Internal Link Dist (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	297	265	341	129	1840	194	2607
Starvation Cap Reductn	0	0	0	0	117	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.55	0.24	0.11	0.72	0.42	0.36

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 1: US1 Bypass & Coakly Road/Cottage Street

Movement	EBL	EBT	EBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	13	4	15	130	7	75	14	1165	117
Future Volume (vph)	13	4	15	130	7	75	14	1165	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	0.75	
Frt		0.94			1.00	0.85	1.00	0.99	
Flt Protected		0.98			0.95	1.00	0.95	1.00	
Satd. Flow (prot)		1747			1814	1615	1805	2781	
Flt Permitted		0.83			0.75	1.00	0.95	1.00	
Satd. Flow (perm)		1471			1429	1615	1805	2781	
Peak-hour factor, PHF	0.70	0.70	0.70	0.85	0.85	0.85	0.94	0.94	0.94
Adj. Flow (vph)	19	6	21	153	8	88	15	1239	124
RTOR Reduction (vph)	0	18	0	0	0	75	0	5	0
Lane Group Flow (vph)	0	28	0	0	161	13	15	1358	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2	
Permitted Phases	4			8		8			
Actuated Green, G (s)		15.8			15.8	15.8	2.0	69.4	
Effective Green, g (s)		17.8			17.8	15.8	4.0	71.4	
Actuated g/C Ratio		0.16			0.16	0.14	0.04	0.65	
Clearance Time (s)		6.0			6.0	6.0	6.0	6.0	
Vehicle Extension (s)		3.0			3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		238			231	231	65	1805	
v/s Ratio Prot							0.01	0.49	
v/s Ratio Perm		0.02			0.11	0.01			
v/c Ratio		0.12			0.70	0.05	0.23	0.75	
Uniform Delay, d1		39.4			43.6	40.7	51.5	13.2	
Progression Factor		1.00			1.00	1.00	1.28	0.82	
Incremental Delay, d2		0.2			8.8	0.1	1.6	2.7	
Delay (s)		39.6			52.4	40.8	67.4	13.5	
Level of Service		D			D	D	E	B	
Approach Delay (s)		39.6			48.3		14.1		
Approach LOS		D			D		B		
Intersection Summary									
HCM 2000 Control Delay	16.6			HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio	0.73								
Actuated Cycle Length (s)	110.0			Sum of lost time (s)			12.0		
Intersection Capacity Utilization	64.7%			ICU Level of Service			C		
Analysis Period (min)	15								
c Critical Lane Group									

Timings

1: US1 Bypass & Coakly Road/Cottage Street

	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group									
Lane Configurations		↔		↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	13	4	130	7	75	14	1165	81	936
Future Volume (vph)	13	4	130	7	75	14	1165	81	936
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	11.0	16.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0	11.0	73.0	13.0	75.0
Total Split (%)	21.8%	21.8%	21.8%	21.8%	21.8%	10.0%	66.4%	11.8%	68.2%
Yellow Time (s)	4.0	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)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		17.8		17.8	15.8	7.5	72.6	10.1	79.8
Actuated g/C Ratio		0.16		0.16	0.14	0.07	0.66	0.09	0.73
v/c Ratio		0.18		0.70	0.29	0.12	0.74	0.53	0.40
Control Delay		26.2		59.7	10.9	64.1	14.1	60.2	7.3
Queue Delay		0.0		0.0	0.0	0.0	0.3	0.0	0.0
Total Delay		26.2		59.7	10.9	64.1	14.3	60.2	7.3
LOS		C		E	B	E	B	E	A
Approach Delay		26.2		42.5			14.9		11.5
Approach LOS		C		D			B		B

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.1

Intersection LOS: B

Intersection Capacity Utilization 64.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

Ø1	Ø2 (R)	Ø4
Ø5	Ø6 (R)	Ø8

Queues

1: US1 Bypass & Coakly Road/Cottage Street



Lane Group	EBT	WBT	WBR	WBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	161	88	15	1363	88	1038
v/c Ratio	0.18	0.70	0.29	0.12	0.74	0.53	0.40
Control Delay	26.2	59.7	10.9	64.1	14.1	60.2	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0
Total Delay	26.2	59.7	10.9	64.1	14.3	60.2	7.3
Queue Length 50th (ft)	15	106	0	8	453	59	115
Queue Length 95th (ft)	34	167	38	m24	139	#124	220
Internal Link Dist. (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	284	259	338	122	1857	167	2587
Starvation Cap Reductn	0	0	0	0	105	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.62	0.26	0.12	0.78	0.53	0.40

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	4	14	115	6	32	13	1299	105	58	1041	17
Future Volume (vph)	12	4	14	115	6	32	13	1299	105	58	1041	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	*0.75		1.00	0.95	
Frt		0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1746			1814	1615	1805	2788		1805	3566	
Flt Permitted		0.86			0.75	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1530			1426	1615	1805	2788		1805	3566	
Peak-hour factor, PHF	0.70	0.70	0.70	0.85	0.85	0.85	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	17	6	20	135	7	38	14	1382	112	63	1132	18
RTOR Reduction (vph)	0	17	0	0	0	33	0	3	0	0	1	0
Lane Group Flow (vph)	0	26	0	0	142	5	14	1491	0	63	1149	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		16.0			16.0	16.0	2.0	80.1		5.9	84.0	
Effective Green, g (s)		18.0			18.0	16.0	4.0	82.1		7.9	86.0	
Actuated g/C Ratio		0.15			0.15	0.13	0.03	0.68		0.07	0.72	
Clearance Time (s)		6.0			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)		229			213	215	60	1907		118	2555	
v/s Ratio Prot							0.01	c0.53		c0.03	c0.32	
v/s Ratio Perm		0.02			c0.10	0.00						
v/c Ratio		0.11			0.67	0.02	0.23	0.78		0.53	0.45	
Uniform Delay, d1		44.1			48.2	45.2	56.5	12.9		54.3	7.1	
Progression Factor		1.00			1.00	1.00	1.18	0.52		1.00	1.00	
Incremental Delay, d2		0.2			7.7	0.0	1.4	2.2		4.6	0.6	
Delay (s)		44.3			55.8	45.3	67.8	8.9		58.9	7.7	
Level of Service		D			E	D	E	A		E	A	
Approach Delay (s)		44.3			53.6			9.5			10.3	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM 2000 Control Delay		13.0										
HCM 2000 Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		120.0								12.0		
Intersection Capacity Utilization		65.9%								C		
Analysis Period (min)		15										
c Critical Lane Group												

Timings

1: US1 Bypass & Coakly Road/Cottage Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	12	4	115	6	32	13	1299	58	1041
Future Volume (vph)	12	4	115	6	32	13	1299	58	1041
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	11.0	16.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	11.0	83.0	12.0	84.0
Total Split (%)	20.8%	20.8%	20.8%	20.8%	20.8%	9.2%	69.2%	10.0%	70.0%
Yellow Time (s)	4.0	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)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		18.0		18.0	16.0	7.5	83.3	9.1	89.6
Actuated g/C Ratio		0.15		0.15	0.13	0.06	0.69	0.08	0.75
v/c Ratio		0.17		0.67	0.13	0.12	0.77	0.46	0.43
Control Delay		28.5		63.2	1.0	64.8	9.3	64.9	7.3
Queue Delay		0.0		0.6	0.0	0.0	0.5	0.0	0.0
Total Delay		28.6		63.9	1.0	64.8	9.8	64.9	7.3
LOS		C		E	A	E	A	E	A
Approach Delay		28.6		50.6			10.3		10.3
Approach LOS		C		D			B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 13.0

Intersection LOS: B

Intersection Capacity Utilization 65.9%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

		
01	02 (R)	04
12 s	83 s	25 s
		
05	06 (R)	03
11 s	84 s	25 s

Queues

1: US1 Bypass & Coakly Road/Cottage Street

							
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	142	38	14	1494	63	1150
v/c Ratio	0.17	0.67	0.13	0.12	0.77	0.46	0.43
Control Delay	28.5	63.2	1.0	64.8	9.3	64.9	7.3
Queue Delay	0.0	0.6	0.0	0.0	0.5	0.0	0.0
Total Delay	28.6	63.9	1.0	64.8	9.8	64.9	7.3
Queue Length 50th (ft)	15	104	0	11	126	47	131
Queue Length 95th (ft)	34	161	0	m15	135	#98	256
Internal Link Dist (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	284	249	324	112	1948	136	2665
Starvation Cap Reductn	0	0	0	0	151	0	0
Spillback Cap Reductn	15	14	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.60	0.12	0.13	0.83	0.46	0.43

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Movement												
Lane Configurations		↔	↔		↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	13	4	15	127	7	37	14	1409	116	64	1130	19
Future Volume (vph)	13	4	15	127	7	37	14	1409	116	64	1130	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	*0.75		1.00	0.95	
Frt		0.94			1.00	0.85	1.00	0.99		1.00	1.00	
Flt Protected		0.98			0.95	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1747			1814	1615	1805	2788		1805	3566	
Flt Permitted		0.77			0.74	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1382			1410	1615	1805	2788		1805	3566	
Peak-hour factor, PHF	0.70	0.70	0.70	0.85	0.85	0.85	0.94	0.94	0.94	0.92	0.92	0.92
Adj. Flow (vph)	19	6	21	149	8	44	15	1499	123	70	1228	21
RTOR Reduction (vph)	0	18	0	0	0	38	0	4	0	0	1	0
Lane Group Flow (vph)	0	28	0	0	157	6	15	1618	0	70	1248	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8						
Actuated Green, G (s)		15.7			15.7	15.7	2.0	81.0		5.3	84.3	
Effective Green, g (s)		17.7			17.7	15.7	4.0	83.0		7.3	86.3	
Actuated g/C Ratio		0.15			0.15	0.13	0.03	0.69		0.06	0.72	
Clearance Time (s)		6.0			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)		203			207	211	60	1928		109	2564	
v/s Ratio Prot							0.01	c0.58		c0.04	c0.35	
v/s Ratio Perm		0.02			c0.11	0.00						
v/c Ratio		0.14			0.76	0.03	0.25	0.84		0.64	0.49	
Uniform Delay, d1		44.5			49.1	45.5	56.5	13.6		55.1	7.3	
Progression Factor		1.00			1.00	1.00	1.01	0.64		1.00	1.00	
Incremental Delay, d2		0.3			14.7	0.1	1.3	2.7		12.2	0.7	
Delay (s)		44.8			63.8	45.5	58.3	11.4		67.3	7.9	
Level of Service		D			E	D	E	B		E	A	
Approach Delay (s)		44.8			59.8			11.8			11.1	
Approach LOS		D			E			B			B	
Intersection Summary												
HCM 2000 Control Delay		15.0										
HCM 2000 Volume to Capacity ratio		0.80										
Actuated Cycle Length (s)		120.0										
Intersection Capacity Utilization		70.3%										
Analysis Period (min)		15										
c Critical Lane Group												

Timings

1: US1 Bypass & Coakly Road/Cottage Street

									
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	13	4	127	7	37	14	1409	64	1130
Future Volume (vph)	13	4	127	7	37	14	1409	64	1130
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Prot	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8				
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	11.0	16.0
Total Split (s)	23.0	23.0	23.0	23.0	23.0	11.0	85.0	12.0	86.0
Total Split (%)	19.2%	19.2%	19.2%	19.2%	19.2%	9.2%	70.8%	10.0%	71.7%
Yellow Time (s)	4.0	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)		-2.0		-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)		17.7		17.7	15.7	7.2	84.1	8.6	89.9
Actuated g/C Ratio		0.15		0.15	0.13	0.06	0.70	0.07	0.75
v/c Ratio		0.21		0.75	0.16	0.14	0.83	0.54	0.47
Control Delay		30.4		71.5	3.0	56.1	11.8	70.3	7.3
Queue Delay		0.0		0.0	0.0	0.0	0.6	0.0	0.0
Total Delay		30.4		71.5	3.0	56.1	12.4	70.3	7.3
LOS		C		E	A	E	B	E	A
Approach Delay		30.4		56.5			12.8		10.7
Approach LOS		C		E			B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 14.9

Intersection LOS: B

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

 01	 02 (R)	 04
12 s	85 s	23 s
 05	 06 (R)	 03
11 s	86 s	23 s

Queues

1: US1 Bypass & Coakly Road/Cottage Street

	→	←	↖	↗	↑	↘	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	157	44	15	1622	70	1249
v/c Ratio	0.21	0.75	0.16	0.14	0.83	0.54	0.47
Control Delay	30.4	71.5	3.0	56.1	11.8	70.3	7.3
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0	0.0
Total Delay	30.4	71.5	3.0	56.1	12.4	70.3	7.3
Queue Length 50th (ft)	17	117	0	12	132	54	147
Queue Length 95th (ft)	37	#191	4	m15	213	#114	272
Internal Link Dist (ft)	998	606			304		719
Turn Bay Length (ft)			50	100		150	
Base Capacity (vph)	236	223	299	108	1966	129	2669
Starvation Cap Reductn	0	0	0	0	103	0	0
Spillback Cap Reductn	0	0	0	0	0	0	108
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.70	0.15	0.14	0.87	0.54	0.49

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	377	1	64	6	0	10	29	1144	6	10	868	116
Future Volume (vph)	377	1	64	6	0	10	29	1144	6	10	868	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1702	1615	1805	1615		1752	3500		1752	3503	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1702	1615	1805	1615		1752	3500		1752	3503	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	454	1	77	7	0	11	30	1179	6	10	904	121
RTOR Reduction (vph)	0	0	63	0	11	0	0	0	0	0	7	0
Lane Group Flow (vph)	227	228	14	7	0	0	30	1185	0	10	1018	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	21.6	21.6	21.6	2.3	2.3		4.2	71.1		1.0	67.9	
Effective Green, g (s)	23.6	23.6	21.6	4.3	4.3		6.2	73.1		3.0	69.9	
Actuated g/C Ratio	0.20	0.20	0.18	0.04	0.04		0.05	0.61		0.02	0.58	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	333	334	290	64	57		90	2132		43	2040	
v/s Ratio Prot	0.13	c0.13	0.01	c0.00	0.00		c0.02	c0.34		0.01	0.29	
v/s Ratio Perm												
v/c Ratio	0.68	0.68	0.05	0.11	0.01		0.33	0.56		0.23	0.50	
Uniform Delay, d1	44.7	44.7	40.7	56.0	55.8		54.9	13.9		57.4	14.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.07	0.68	
Incremental Delay, d2	5.7	5.7	0.1	0.8	0.0		2.2	1.1		2.5	0.8	
Delay (s)	50.4	50.4	40.8	56.8	55.8		57.1	14.9		63.7	10.9	
Level of Service	D	D	D	E	E		E	B		E	B	
Approach Delay (s)		49.0			56.2			15.9			11.4	
Approach LOS		D			E			B			B	

Intersection Summary			
HCM 2000 Control Delay	20.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group									
Lane Configurations									
Traffic Volume (vph)	377	1	64	6	0	29	1144	10	868
Future Volume (vph)	377	1	64	6	0	29	1144	10	868
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA
Protected Phases	7	7	7	8	8	5	2	1	6
Permitted Phases									
Detector Phase	7	7	7	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	34.0	34.0	34.0	11.0	11.0	11.0	64.0	11.0	64.0
Total Split (%)	28.3%	28.3%	28.3%	9.2%	9.2%	9.2%	53.3%	9.2%	53.3%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	23.6	23.6	21.6	7.7	7.7	8.6	81.5	7.8	75.9
Actuated g/C Ratio	0.20	0.20	0.18	0.06	0.06	0.07	0.68	0.06	0.63
v/c Ratio	0.68	0.68	0.19	0.06	0.05	0.24	0.50	0.09	0.46
Control Delay	54.5	54.6	1.3	54.3	0.4	57.7	12.8	58.2	10.5
Queue Delay	0.4	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.4
Total Delay	54.9	54.9	1.3	54.3	0.4	57.7	12.9	58.2	10.9
LOS	D	D	A	D	A	E	B	E	B
Approach Delay		47.2			21.4		14.0		11.4
Approach LOS		D			C		B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 100 (83%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 19.4

Intersection Capacity Utilization 55.6%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service B

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Ø1	Ø2 (R)	Ø7	Ø8
Ø5	Ø6 (R)		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	NBL	NBT	NBR	NBT	SEB	SEB
Lane Group Flow (vph)	227	228	77	7	11	30	1185	10	1025
v/c Ratio	0.68	0.68	0.19	0.06	0.05	0.24	0.50	0.09	0.46
Control Delay	54.5	54.6	1.3	54.3	0.4	57.7	12.8	58.2	10.5
Queue Delay	0.4	0.4	0.0	0.0	0.0	0.0	0.1	0.0	0.4
Total Delay	54.9	54.9	1.3	54.3	0.4	57.7	12.9	58.2	10.9
Queue Length 50th (ft)	172	172	0	5	0	22	171	8	143
Queue Length 95th (ft)	224	225	0	21	0	55	431	m19	242
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	424	425	481	115	230	125	2376	113	2236
Starvation Cap Reductn	0	0	0	0	0	0	0	0	668
Spillback Cap Reductn	28	28	0	0	0	0	178	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.57	0.16	0.06	0.05	0.24	0.54	0.09	0.65

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations												
Traffic Volume (vph)	450	1	81	7	0	11	34	1255	7	11	949	135
Future Volume (vph)	450	1	81	7	0	11	34	1255	7	11	949	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1702	1615	1805	1615		1752	3499		1752	3499	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1702	1615	1805	1615		1752	3499		1752	3499	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	542	1	98	8	0	12	35	1294	7	11	989	141
RTOR Reduction (vph)	0	0	78	0	12	0	0	0	0	0	8	0
Lane Group Flow (vph)	271	272	20	8	0	0	35	1301	0	11	1122	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	24.3	24.3	24.3	2.3	2.3		4.4	68.4		1.0	65.0	
Effective Green, g (s)	26.3	26.3	24.3	4.3	4.3		6.4	70.4		3.0	67.0	
Actuated g/C Ratio	0.22	0.22	0.20	0.04	0.04		0.05	0.59		0.02	0.56	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	372	373	327	64	57		93	2052		43	1953	
v/s Ratio Prot	0.16	c0.16	0.01	c0.00	0.00		c0.02	c0.37		0.01	0.32	
v/s Ratio Perm												
v/c Ratio	0.73	0.73	0.06	0.12	0.01		0.38	0.63		0.26	0.57	
Uniform Delay, d1	43.5	43.5	38.6	56.0	55.8		54.9	16.3		57.4	17.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.24	0.78	
Incremental Delay, d2	7.0	7.0	0.1	0.9	0.1		2.5	1.5		2.8	1.1	
Delay (s)	50.5	50.5	38.7	56.9	55.8		57.4	17.8		73.7	14.6	
Level of Service	D	D	D	E	E		E	B		E	B	
Approach Delay (s)		48.7			56.3			18.9			15.1	
Approach LOS		D			E			B			B	

Intersection Summary

HCM 2000 Control Delay	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group									
Lane Configurations									
Traffic Volume (vph)	450	1	81	7	0	34	1255	11	949
Future Volume (vph)	450	1	81	7	0	34	1255	11	949
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA
Protected Phases	7	7	7	8	8	5	2	1	6
Permitted Phases									
Detector Phase	7	7	7	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	34.0	34.0	34.0	11.0	11.0	11.0	64.0	11.0	64.0
Total Split (%)	28.3%	28.3%	28.3%	9.2%	9.2%	9.2%	53.3%	9.2%	53.3%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	26.3	26.3	24.3	7.7	7.7	8.8	78.8	7.8	73.1
Actuated g/C Ratio	0.22	0.22	0.20	0.06	0.06	0.07	0.66	0.06	0.61
v/c Ratio	0.73	0.73	0.23	0.07	0.05	0.27	0.57	0.10	0.53
Control Delay	55.1	55.1	3.6	54.4	0.5	58.4	15.0	67.3	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.2
Total Delay	55.1	55.1	3.6	54.4	0.5	58.4	16.8	67.3	14.0
LOS	E	E	A	D	A	E	B	E	B
Approach Delay		47.2			22.0		17.9		14.5
Approach LOS		D			C		B		B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 5 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 22.7

Intersection Capacity Utilization 60.7%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service B

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Ø1	Ø2 (R)	Ø8	Ø7
Ø5	Ø6 (R)		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL
Lane Group Flow (vph)	271	272	98	8	12	35	1301	11	1130
v/c Ratio	0.73	0.73	0.23	0.07	0.05	0.27	0.57	0.10	0.53
Control Delay	55.1	55.1	3.6	54.4	0.5	58.4	15.0	67.3	13.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.2
Total Delay	55.1	55.1	3.6	54.4	0.5	58.4	16.8	67.3	14.0
Queue Length 50th (ft)	203	204	0	6	0	26	226	8	195
Queue Length 95th (ft)	269	269	12	23	0	61	496	m20	m185
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	427	428	484	115	230	128	2299	114	2176
Starvation Cap Reductn	0	0	0	0	0	0	0	0	336
Spillback Cap Reductn	0	0	0	0	0	0	783	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.64	0.20	0.07	0.05	0.27	0.86	0.10	0.61

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	493	1	88	8	0	12	37	1386	8	12	1048	148
Future Volume (vph)	493	1	88	8	0	12	37	1386	8	12	1048	148
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.85		1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1702	1615	1805	1615		1752	3499		1752	3499	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1702	1615	1805	1615		1752	3499		1752	3499	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	594	1	106	9	0	13	38	1429	8	12	1092	154
RTOR Reduction (vph)	0	0	84	0	12	0	0	0	0	0	8	0
Lane Group Flow (vph)	297	298	22	9	1	0	38	1437	0	13	1238	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	25.4	25.4	25.4	3.2	3.2		3.6	65.4		2.0	63.8	
Effective Green, g (s)	27.4	27.4	25.4	5.2	5.2		5.6	67.4		4.0	65.8	
Actuated g/C Ratio	0.23	0.23	0.21	0.04	0.04		0.05	0.56		0.03	0.55	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	387	388	341	78	69		81	1965		58	1918	
v/s Ratio Prot	0.17	0.18	0.01	0.00	0.00		0.02	0.41		0.01	0.35	
v/s Ratio Perm												
v/c Ratio	0.77	0.77	0.07	0.12	0.01		0.47	0.73		0.22	0.65	
Uniform Delay, d1	43.3	43.3	37.8	55.2	54.9		55.8	19.6		56.5	18.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.24	0.93	
Incremental Delay, d2	8.8	8.8	0.1	0.7	0.0		4.2	2.4		1.6	1.4	
Delay (s)	52.2	52.2	37.9	55.8	55.0		60.0	22.0		71.6	19.0	
Level of Service	D	D	D	E	D		E	C		E	B	
Approach Delay (s)		50.0			55.3			23.0			19.5	
Approach LOS		D			E			C			B	

Intersection Summary

HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	493	1	88	8	0	37	1386	12
Future Volume (vph)	493	1	88	8	0	37	1386	12
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot
Protected Phases	7	7	7	8	8	5	2	1
Permitted Phases								
Detector Phase	7	7	7	8	8	5	2	1
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	16.0
Total Split (s)	35.0	35.0	35.0	11.0	11.0	11.0	63.0	11.0
Total Split (%)	29.2%	29.2%	29.2%	9.2%	9.2%	9.2%	52.5%	9.2%
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes			
Recall Mode	None	None	None	None	None	None	C-Min	None
Act Effct Green (s)	27.4	27.4	25.4	7.4	7.4	8.1	73.4	7.5
Actuated g/C Ratio	0.23	0.23	0.21	0.06	0.06	0.07	0.61	0.06
v/c Ratio	0.77	0.77	0.24	0.08	0.06	0.32	0.67	0.12
Control Delay	56.6	56.7	4.1	55.1	0.5	61.5	20.5	68.5
Queue Delay	1.4	1.4	0.0	0.0	0.0	0.0	1.1	0.0
Total Delay	58.0	58.1	4.1	55.1	0.5	61.5	21.5	68.5
LOS	E	E	A	E	A	E	C	E
Approach Delay		49.9			22.8		22.6	19.2
Approach LOS		D			C		C	B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 14 (12%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 26.9

Intersection Capacity Utilization 65.6%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Ø1	Ø2 (R)	Ø8	Ø7
Ø5	Ø6 (R)		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBR
Lane Group Flow (vph)	297	298	106	9	13	38	1437	13	1246
v/c Ratio	0.77	0.77	0.24	0.08	0.06	0.32	0.67	0.12	0.60
Control Delay	56.6	56.7	4.1	55.1	0.5	61.5	20.5	68.5	18.5
Queue Delay	1.4	1.4	0.0	0.0	0.0	0.0	1.1	0.0	0.2
Total Delay	58.0	58.1	4.1	55.1	0.5	61.5	21.5	68.5	18.7
Queue Length 50th (ft)	222	223	0	7	0	28	388	9	363
Queue Length 95th (ft)	292	293	17	24	0	66	593	m21	m495
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	438	439	493	111	227	117	2141	109	2081
Starvation Cap Reductn	0	0	0	0	0	0	0	0	185
Spillback Cap Reductn	41	42	0	0	0	0	426	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.75	0.22	0.08	0.06	0.32	0.84	0.12	0.66

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	14	80	51	11	287	33	1249	10	199	935	127
Future Volume (vph)	442	14	80	51	11	287	33	1249	10	199	935	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.86		1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1708	1615	1805	1625		1752	3497		1752	3502	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1708	1615	1805	1625		1752	3497		1752	3502	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	533	17	96	57	12	319	34	1288	10	207	974	132
RTOR Reduction (vph)	0	0	80	0	112	0	0	1	0	0	9	0
Lane Group Flow (vph)	277	273	16	57	219	0	34	1297	0	207	1097	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	19.8	19.8	19.8	15.9	15.9		3.0	46.2		14.1	57.3	
Effective Green, g (s)	21.8	21.8	19.8	17.9	17.9		5.0	48.2		16.1	59.3	
Actuated g/C Ratio	0.18	0.18	0.17	0.15	0.15		0.04	0.40		0.13	0.49	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	308	310	266	269	242		73	1404		235	1730	
v/s Ratio Prot	c0.16	0.16	0.01	0.03	c0.13		0.02	c0.37		c0.12	0.31	
v/s Ratio Perm												
v/c Ratio	0.90	0.88	0.06	0.21	0.90		0.47	0.92		0.88	0.63	
Uniform Delay, d1	48.0	47.8	42.2	44.9	50.2		56.2	34.2		51.0	22.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.98	0.90	
Incremental Delay, d2	27.0	23.9	0.1	0.4	33.2		4.6	11.6		26.0	1.5	
Delay (s)	75.0	71.8	42.3	45.2	83.4		60.8	45.8		76.1	21.6	
Level of Service	E	E	D	D	F		E	D		E	C	
Approach Delay (s)		68.8			77.8			46.2			30.2	
Approach LOS		E			E			D			C	
Intersection Summary												
HCM 2000 Control Delay			47.8			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			90.1%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	442	14	80	51	11	33	1249	199	935
Future Volume (vph)	442	14	80	51	11	33	1249	199	935
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA
Protected Phases	7	7	7	8	8	5	2	1	6
Permitted Phases									
Detector Phase	7	7	7	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	26.0	26.0	26.0	22.0	22.0	11.0	52.0	20.0	61.0
Total Split (%)	21.7%	21.7%	21.7%	18.3%	18.3%	9.2%	43.3%	16.7%	50.8%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	21.8	21.8	19.8	17.9	17.9	7.1	48.2	16.1	61.8
Actuated g/C Ratio	0.18	0.18	0.16	0.15	0.15	0.06	0.40	0.13	0.52
v/c Ratio	0.90	0.88	0.23	0.21	0.94	0.33	0.92	0.88	0.61
Control Delay	79.8	76.8	1.2	47.2	64.9	63.2	46.2	81.3	20.6
Queue Delay	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.4
Total Delay	79.8	76.8	1.2	47.2	114.9	63.2	46.2	81.3	21.0
LOS	E	E	A	D	F	E	D	F	C
Approach Delay		66.9			104.9		46.6		30.5
Approach LOS		E			F		D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 20 (17%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 50.6

Intersection Capacity Utilization 90.1%

Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service E

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

 Q1	 Q2 (R)	 Q7	 Q8
20 s	52 s	26 s	22 s
 Q5	 Q6 (R)		
11 s	61 s		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	277	273	96	57	331	34	1298	207	1106
v/c Ratio	0.90	0.88	0.23	0.21	0.94	0.33	0.92	0.88	0.61
Control Delay	79.8	76.8	1.2	47.2	64.9	63.2	46.2	81.3	20.6
Queue Delay	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.4
Total Delay	79.8	76.8	1.2	47.2	114.9	63.2	46.2	81.3	21.0
Queue Length 50th (ft)	223	218	0	39	160	26	497	152	254
Queue Length 95th (ft)	#336	#328	0	80	#341	61	#646	m#260	m426
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	311	313	428	270	355	103	1405	235	1810
Starvation Cap Reductn	0	0	0	0	0	0	0	0	266
Spillback Cap Reductn	0	0	0	0	139	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.87	0.22	0.21	1.53	0.33	0.92	0.88	0.72

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	485	14	87	52	11	288	36	1380	11	200	1034	140
Future Volume (vph)	485	14	87	52	11	288	36	1380	11	200	1034	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.86		1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1708	1615	1805	1625		1752	3497		1752	3502	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1708	1615	1805	1625		1752	3497		1752	3502	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	584	17	105	58	12	320	37	1423	11	208	1077	146
RTOR Reduction (vph)	0	0	88	0	96	0	0	1	0	0	9	0
Lane Group Flow (vph)	298	303	18	58	236	0	37	1433	0	208	1215	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	20.0	20.0	20.0	15.0	15.0		3.0	48.0		13.0	58.0	
Effective Green, g (s)	22.0	22.0	20.0	17.0	17.0		5.0	50.0		15.0	60.0	
Actuated g/C Ratio	0.18	0.18	0.17	0.14	0.14		0.04	0.42		0.12	0.50	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	311	313	269	255	230		73	1457		219	1751	
v/s Ratio Prot	0.18	c0.18	0.01	0.03	c0.15		0.02	c0.41		c0.12	0.35	
v/s Ratio Perm												
v/c Ratio	0.96	0.97	0.07	0.23	1.03		0.51	0.98		0.95	0.69	
Uniform Delay, d1	48.5	48.7	42.1	45.7	51.5		56.3	34.6		52.1	23.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.98	0.92	
Incremental Delay, d2	39.4	41.8	0.1	0.5	66.1		5.4	20.0		40.4	1.8	
Delay (s)	88.0	90.4	42.2	46.1	117.6		61.7	54.6		91.5	22.9	
Level of Service	F	F	D	D	F		E	D		F	C	
Approach Delay (s)		82.2			107.0			54.8			32.9	
Approach LOS		F			F			D			C	
Intersection Summary												
HCM 2000 Control Delay			56.9			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			95.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	485	14	87	52	11	36	1380	200	1034
Future Volume (vph)	485	14	87	52	11	36	1380	200	1034
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA
Protected Phases	7	7	7	8	8	5	2	1	6
Permitted Phases									
Detector Phase	7	7	7	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	26.0	26.0	26.0	21.0	21.0	11.0	54.0	19.0	62.0
Total Split (%)	21.7%	21.7%	21.7%	17.5%	17.5%	9.2%	45.0%	15.8%	51.7%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	22.0	22.0	20.0	17.0	17.0	7.0	50.0	15.0	62.4
Actuated g/C Ratio	0.18	0.18	0.17	0.14	0.14	0.06	0.42	0.12	0.52
v/c Ratio	0.96	0.97	0.25	0.23	1.02	0.36	0.98	0.95	0.67
Control Delay	90.5	92.5	1.4	48.3	88.7	64.7	54.9	94.7	21.8
Queue Delay	0.0	0.0	0.0	0.0	39.0	0.0	0.0	0.0	0.4
Total Delay	90.5	92.5	1.4	48.3	127.7	64.7	54.9	94.7	22.2
LOS	F	F	A	D	F	E	D	F	C
Approach Delay		78.1			115.9		55.1		32.8
Approach LOS		E			F		E		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 20 (17%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 57.1

Intersection LOS: E

Intersection Capacity Utilization 95.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

			
19 s	54 s	26 s	21 s
			
11 s	62 s		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	298	303	105	58	332	37	1434	208	1223
v/c Ratio	0.96	0.97	0.25	0.23	1.02	0.36	0.98	0.95	0.67
Control Delay	90.5	92.5	1.4	48.3	88.7	64.7	54.9	94.7	21.8
Queue Delay	0.0	0.0	0.0	0.0	39.0	0.0	0.0	0.0	0.4
Total Delay	90.5	92.5	1.4	48.3	127.7	64.7	54.9	94.7	22.2
Queue Length 50th (ft)	243	247	0	40	~187	28	568	154	326
Queue Length 95th (ft)	#375	#382	0	82	#379	65	#738	m#268	m469
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	311	313	428	255	326	102	1458	219	1829
Starvation Cap Reductn	0	0	0	0	0	0	0	0	207
Spillback Cap Reductn	0	0	0	0	181	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.97	0.25	0.23	2.29	0.36	0.98	0.95	0.75

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

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	2	22	2	2	15	18	912	5	14	798	76
Future Volume (vph)	137	2	22	2	2	15	18	912	5	14	798	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1665	1583	1805	1649		1703	3572		1770	3521	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1665	1583	1805	1649		1703	3572		1770	3521	
Peak-hour factor, PHF	0.65	0.65	0.65	0.68	0.68	0.68	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	211	3	34	3	3	22	19	950	5	15	867	83
RTOR Reduction (vph)	0	0	30	0	21	0	0	0	0	0	5	0
Lane Group Flow (vph)	108	106	4	3	4	0	19	955	0	15	945	0
Heavy Vehicles (%)	2%	50%	2%	0%	0%	0%	6%	1%	0%	2%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	12.4	12.4	12.4	4.1	4.1		3.2	66.5		3.0	66.3	
Effective Green, g (s)	14.4	14.4	12.4	6.1	6.1		5.2	68.5		5.0	68.3	
Actuated g/C Ratio	0.13	0.13	0.11	0.06	0.06		0.05	0.62		0.05	0.62	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	220	217	178	100	91		80	2224		80	2186	
v/s Ratio Prot	c0.06	0.06	0.00	0.00	c0.00		c0.01	0.27		0.01	c0.27	
v/s Ratio Perm												
v/c Ratio	0.49	0.49	0.02	0.03	0.05		0.24	0.43		0.19	0.43	
Uniform Delay, d1	44.4	44.4	43.4	49.2	49.2		50.5	10.7		50.5	10.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.07	0.71	
Incremental Delay, d2	1.7	1.7	0.0	0.1	0.2		1.5	0.6		1.1	0.6	
Delay (s)	46.1	46.1	43.5	49.3	49.4		52.0	11.3		55.0	8.3	
Level of Service	D	D	D	D	D		D	B		E	A	
Approach Delay (s)		45.7			49.4			12.1			9.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	42.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Lane Configurations									
Traffic Volume (vph)	137	2	22	2	2	18	912	14	798
Future Volume (vph)	137	2	22	2	2	18	912	14	798
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA
Protected Phases	4	4	4	8	8	5	2	1	6
Permitted Phases									
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	1.0	4.0	1.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	24.0	24.0	24.0	13.0	13.0	13.0	60.0	13.0	60.0
Total Split (%)	21.8%	21.8%	21.8%	11.8%	11.8%	11.8%	54.5%	11.8%	54.5%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	14.4	14.4	12.4	8.3	8.3	8.8	74.6	8.5	74.3
Actuated g/C Ratio	0.13	0.13	0.11	0.08	0.08	0.08	0.68	0.08	0.68
v/c Ratio	0.49	0.49	0.11	0.02	0.17	0.14	0.39	0.11	0.40
Control Delay	51.3	51.3	0.7	46.5	23.5	48.8	11.3	51.6	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	51.3	51.3	0.7	46.5	23.5	48.8	11.3	51.6	8.4
LOS	D	D	A	D	C	D	B	D	A
Approach Delay		44.4			25.9		12.0		9.1
Approach LOS		D			C		B		A

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

Offset: 107 (97%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.49

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 42.8%

ICU Level of Service A

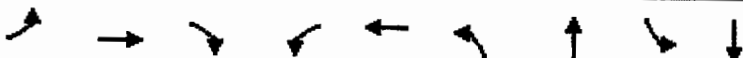
Analysis Period (min) 15

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Ø1	Ø2 (R)		Ø4	Ø8
Ø5	Ø6 (R)			

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

										
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	108	106	34	3	25	19	955	15	950	
v/c Ratio	0.49	0.49	0.11	0.02	0.17	0.14	0.39	0.11	0.40	
Control Delay	51.3	51.3	0.7	46.5	23.5	48.8	11.3	51.6	8.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	
Total Delay	51.3	51.3	0.7	46.5	23.5	48.8	11.3	51.6	8.4	
Queue Length 50th (ft)	75	73	0	2	2	13	133	10	115	
Queue Length 95th (ft)	90	88	0	9	18	36	294	m30	175	
Internal Link Dist (ft)		916			388		250		304	
Turn Bay Length (ft)	225		225	150		200		150		
Base Capacity (vph)	305	302	383	151	158	146	2429	148	2397	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	519	
Spillback Cap Reductn	0	0	0	0	0	0	148	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.35	0.35	0.09	0.02	0.16	0.13	0.42	0.10	0.51	

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰	↰
Traffic Volume (vph)	154	2	25	2	2	17	21	1007	6	15	881	87
Future Volume (vph)	154	2	25	2	2	17	21	1007	6	15	881	87
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1668	1583	1805	1646		1703	3571		1770	3520	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1668	1583	1805	1646		1703	3571		1770	3520	
Peak-hour factor, PHF	0.65	0.65	0.65	0.68	0.68	0.68	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	237	3	38	3	3	25	22	1049	6	16	958	95
RTOR Reduction (vph)	0	0	33	0	24	0	0	0	0	0	5	0
Lane Group Flow (vph)	121	119	5	3	4	0	22	1055	0	16	1048	0
Heavy Vehicles (%)	2%	50%	2%	0%	0%	0%	6%	1%	0%	2%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.4	13.4	13.4	4.1	4.1		3.3	65.5		3.0	65.2	
Effective Green, g (s)	15.4	15.4	13.4	6.1	6.1		5.3	67.5		5.0	67.2	
Actuated g/C Ratio	0.14	0.14	0.12	0.06	0.06		0.05	0.61		0.05	0.61	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	235	233	192	100	91		82	2191		80	2150	
v/s Ratio Prot	c0.07	0.07	0.00	0.00	c0.00		c0.01	0.30		0.01	c0.30	
v/s Ratio Perm												
v/c Ratio	0.51	0.51	0.02	0.03	0.05		0.27	0.48		0.20	0.49	
Uniform Delay, d1	43.8	43.8	42.5	49.2	49.2		50.5	11.7		50.6	11.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.16	0.74	
Incremental Delay, d2	1.9	1.9	0.1	0.1	0.2		1.8	0.8		1.2	0.7	
Delay (s)	45.7	45.7	42.6	49.3	49.4		52.2	12.4		59.6	9.5	
Level of Service	D	D	D	D	D		D	B		E	A	
Approach Delay (s)		45.3			49.4			13.2			10.3	
Approach LOS		D			D			B			B	

Intersection Summary		
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.46	
Actuated Cycle Length (s)	110.0	Sum of lost time (s) 18.0
Intersection Capacity Utilization	45.7%	ICU Level of Service A
Analysis Period (min)	15	
c Critical Lane Group		

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	ABT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	154	2	25	2	2	21	1007	15	881
Future Volume (vph)	154	2	25	2	2	21	1007	15	881
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA
Protected Phases	4	4	4	8	8	5	2	1	6
Permitted Phases									
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	1.0	4.0	1.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	23.0	23.0	23.0	13.0	13.0	13.0	63.0	11.0	61.0
Total Split (%)	20.9%	20.9%	20.9%	11.8%	11.8%	11.8%	57.3%	10.0%	55.5%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effect Green (s)	15.4	15.4	13.4	8.3	8.3	9.0	73.5	8.5	73.2
Actuated g/C Ratio	0.14	0.14	0.12	0.08	0.08	0.08	0.67	0.08	0.67
v/c Ratio	0.52	0.51	0.12	0.02	0.19	0.16	0.44	0.12	0.45
Control Delay	50.9	50.8	0.8	46.5	22.7	49.0	12.5	55.9	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	50.9	50.8	0.8	46.5	22.7	49.0	12.5	55.9	9.7
LOS	D	D	A	D	C	D	B	E	A
Approach Delay		44.0			25.0		13.2		10.4
Approach LOS		D			C		B		B

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

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: 0.52

Intersection Signal Delay: 15.6

Intersection Capacity Utilization 45.7%

Analysis Period (min): 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

 Ø1	 Ø2 (R)	 Ø4	 Ø8
 Ø5	 Ø6 (R)		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	121	119	38	3	28	22	1055	16	1053
v/c Ratio	0.52	0.51	0.12	0.02	0.19	0.16	0.44	0.12	0.45
Control Delay	50.9	50.8	0.8	46.5	22.7	49.0	12.5	55.9	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Total Delay	50.9	50.8	0.8	46.5	22.7	49.0	12.5	55.9	9.7
Queue Length 50th (ft)	84	83	0	2	2	15	157	11	92
Queue Length 95th (ft)	96	95	0	9	19	39	349	m31	160
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	297	295	376	151	161	147	2429	137	2380
Starvation Cap Reductn	0	0	0	0	0	0	0	0	417
Spillback Cap Reductn	0	0	0	0	0	0	42	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.40	0.10	0.02	0.17	0.15	0.44	0.12	0.54

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	2	28	2	2	19	23	1113	7	17	973	96
Future Volume (vph)	170	2	28	2	2	19	23	1113	7	17	973	96
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.86		1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1669	1583	1805	1643		1703	3571		1770	3520	
Flt Permitted	0.95	0.95	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1669	1583	1805	1643		1703	3571		1770	3520	
Peak-hour factor, PHF	0.65	0.65	0.65	0.68	0.68	0.68	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	262	3	43	3	3	28	24	1159	7	18	1058	104
RTOR Reduction (vph)	0	0	37	0	27	0	0	0	0	0	5	0
Lane Group Flow (vph)	134	131	6	3	4	0	24	1166	0	18	1157	0
Heavy Vehicles (%)	2%	50%	2%	0%	0%	0%	6%	1%	0%	2%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	14.1	14.1	14.1	3.7	3.7		2.8	65.7		2.5	65.4	
Effective Green, g (s)	16.1	16.1	14.1	5.7	5.7		4.8	67.7		4.5	67.4	
Actuated g/C Ratio	0.15	0.15	0.13	0.05	0.05		0.04	0.62		0.04	0.61	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	246	244	202	93	85		74	2197		72	2156	
v/s Ratio Prot	c0.08	0.08	0.00	0.00	c0.00		c0.01	0.33		0.01	c0.33	
v/s Ratio Perm												
w/c Ratio	0.54	0.54	0.03	0.03	0.05		0.32	0.53		0.25	0.54	
Uniform Delay, d1	43.6	43.5	42.0	49.5	49.6		51.0	12.1		51.1	12.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.14	0.72	
Incremental Delay, d2	2.5	2.3	0.1	0.1	0.3		2.5	0.9		1.7	0.9	
Delay (s)	46.0	45.8	42.0	49.7	49.8		53.6	13.0		60.0	9.7	
Level of Service	D	D	D	D	D		D	B		E	A	
Approach Delay (s)		45.3			49.8			13.8			10.5	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	2	28	2	2	23	1113	17	973	17	973	973
Future Volume (vph)	170	2	28	2	2	23	1113	17	973	17	973	973
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA	Prot	NA	NA
Protected Phases	4	4	4	8	8	5	2	1	6	1	6	6
Permitted Phases												
Detector Phase	4	4	4	8	8	5	2	1	6	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	1.0	4.0	1.0	4.0	1.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0	11.0	16.0	16.0
Total Split (s)	24.0	24.0	24.0	12.0	12.0	12.0	63.0	11.0	62.0	11.0	62.0	62.0
Total Split (%)	21.8%	21.8%	21.8%	10.9%	10.9%	10.9%	57.3%	10.0%	56.4%	10.0%	56.4%	56.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	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	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag							Lead	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	None	None	C-Min
Act Effect Green (s)	16.1	16.1	14.1	7.9	7.9	8.5	73.8	8.0	73.5	8.0	73.5	73.5
Actuated g/C Ratio	0.15	0.15	0.13	0.07	0.07	0.08	0.67	0.07	0.67	0.07	0.67	0.67
v/c Ratio	0.55	0.54	0.13	0.02	0.22	0.18	0.49	0.14	0.49	0.14	0.49	0.49
Control Delay	51.3	51.0	0.8	47.5	23.0	50.9	12.6	57.2	9.4	57.2	9.4	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1
Total Delay	51.3	51.0	0.8	47.5	23.0	50.9	12.7	57.2	9.5	57.2	9.5	9.5
LOS	D	D	A	D	C	D	B	E	A	E	A	A
Approach Delay		44.1			25.2		13.4		10.2			
Approach LOS		D			C		B		B			B

Intersection Summary

Cycle Length: 110

Actuated Cycle Length: 110

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: 0.55

Intersection Signal Delay: 15.7

Intersection Capacity Utilization 49.1%

Analysis Period (min): 15

Intersection LOS: B

ICU Level of Service A

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

Ø1	Ø2 (R)	Ø4	Ø8
Ø5	Ø6 (R)		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL
Lane Group Flow (vph)	134	131	43	3	31	24	1166	18	1162
v/c Ratio	0.55	0.54	0.13	0.02	0.22	0.18	0.49	0.14	0.49
Control Delay	51.3	51.0	0.8	47.5	23.0	50.9	12.6	57.2	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1
Total Delay	51.3	51.0	0.8	47.5	23.0	50.9	12.7	57.2	9.5
Queue Length 50th (ft)	93	91	0	2	2	16	187	12	150
Queue Length 95th (ft)	105	103	0	9	19	44	365	m32	160
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	310	308	387	134	147	132	2415	128	2373
Starvation Cap Reductn	0	0	0	0	0	0	0	0	309
Spillback Cap Reductn	0	0	0	0	2	0	261	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.43	0.11	0.02	0.21	0.18	0.54	0.14	0.56

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	149	12	24	69	12	277	20	995	8	237	855	82
Future Volume (vph)	149	12	24	69	12	277	20	995	8	237	855	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.86		1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1588	1583	1805	1627		1703	3570		1770	3521	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1588	1583	1805	1627		1703	3570		1770	3521	
Peak-hour factor, PHF	0.65	0.65	0.65	0.68	0.68	0.68	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	229	18	37	101	18	407	21	1036	8	258	929	89
RTOR Reduction (vph)	0	0	34	0	236	0	0	1	0	0	5	0
Lane Group Flow (vph)	124	123	3	101	189	0	21	1043	0	258	1013	0
Heavy Vehicles (%)	2%	50%	2%	0%	0%	0%	6%	1%	0%	2%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	11.0	11.0	16.9	16.9		2.0	47.7		20.4	66.1	
Effective Green, g (s)	13.0	13.0	11.0	18.9	18.9		4.0	49.7		22.4	68.1	
Actuated g/C Ratio	0.11	0.11	0.09	0.16	0.16		0.03	0.41		0.19	0.57	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	182	172	145	284	256		56	1478		330	1998	
v/s Ratio Prot	0.07	c0.08	0.00	0.06	c0.12		0.01	c0.29		c0.15	0.29	
v/s Ratio Perm												
v/c Ratio	0.68	0.72	0.02	0.36	0.74		0.38	0.71		0.78	0.51	
Uniform Delay, d1	51.5	51.7	49.6	45.1	48.2		56.8	29.1		46.5	15.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.11	0.76	
Incremental Delay, d2	10.0	13.2	0.1	0.8	10.6		4.2	2.9		10.5	0.8	
Delay (s)	61.5	64.9	49.7	45.9	58.8		61.0	32.0		62.3	12.8	
Level of Service	E	E	D	D	E		E	C		E	B	
Approach Delay (s)		61.5			56.3			32.5			22.8	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			35.2			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			76.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	149	12	24	69	12	20	995	237	855
Future Volume (vph)	149	12	24	69	12	20	995	237	855
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA
Protected Phases	4	4	4	8	8	5	2	1	6
Permitted Phases									
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	1.0	4.0	1.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	17.0	17.0	17.0	28.0	28.0	11.0	47.0	28.0	64.0
Total Split (%)	14.2%	14.2%	14.2%	23.3%	23.3%	9.2%	39.2%	23.3%	53.3%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	13.0	13.0	11.0	18.9	18.9	7.7	49.7	22.4	71.7
Actuated g/C Ratio	0.11	0.11	0.09	0.16	0.16	0.06	0.41	0.19	0.60
v/c Ratio	0.68	0.72	0.12	0.36	0.87	0.19	0.71	0.78	0.48
Control Delay	70.9	74.8	0.8	47.0	34.2	58.0	34.0	67.2	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2
Total Delay	70.9	74.8	0.8	47.0	34.2	58.0	34.0	67.3	12.6
LOS	E	E	A	D	C	E	C	E	B
Approach Delay		63.5			36.7		34.5		23.7
Approach LOS		E			D		C		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 4 (3%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 33.1

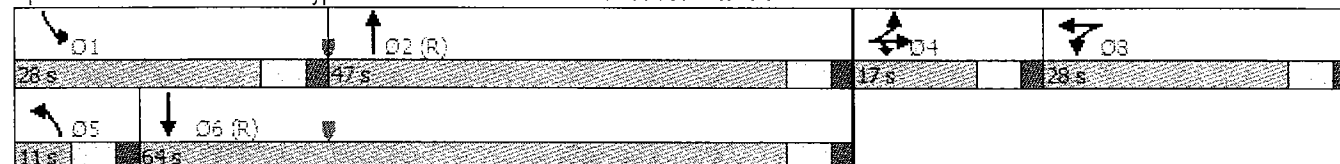
Intersection LOS: C

Intersection Capacity Utilization 76.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension



Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	124	123	37	101	425	21	1044	258	1018
v/c Ratio	0.68	0.72	0.12	0.36	0.87	0.19	0.71	0.78	0.48
Control Delay	70.9	74.8	0.8	47.0	34.2	58.0	34.0	67.2	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.2
Total Delay	70.9	74.8	0.8	47.0	34.2	58.0	34.0	67.3	12.6
Queue Length 50th (ft)	98	98	0	69	110	16	373	147	142
Queue Length 95th (ft)	117	117	0	88	98	43	470	#310	208
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	187	176	322	361	549	109	1480	356	2110
Starvation Cap Reductn	0	0	0	0	0	0	0	2	406
Spillback Cap Reductn	0	0	0	0	2	0	30	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.70	0.11	0.28	0.78	0.19	0.72	0.73	0.60

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	12	27	69	12	279	22	1101	9	239	947	91
Future Volume (vph)	165	12	27	69	12	279	22	1101	9	239	947	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.86		1.00	1.00		1.00	0.99	
Flt Protected	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1681	1597	1583	1805	1627		1703	3570		1770	3521	
Flt Permitted	0.95	0.96	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1681	1597	1583	1805	1627		1703	3570		1770	3521	
Peak-hour factor, PHF	0.65	0.65	0.65	0.68	0.68	0.68	0.96	0.96	0.96	0.92	0.92	0.92
Adj. Flow (vph)	254	18	42	101	18	410	23	1147	9	260	1029	99
RTOR Reduction (vph)	0	0	38	0	201	0	0	1	0	0	6	0
Lane Group Flow (vph)	135	137	4	101	227	0	23	1155	0	260	1123	0
Heavy Vehicles (%)	2%	50%	2%	0%	0%	0%	6%	1%	0%	2%	1%	3%
Turn Type	Split	NA	Prot	Split	NA		Prot	NA		Prot	NA	
Protected Phases	4	4	4	8	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.8	11.8	11.8	18.2	18.2		3.0	46.7		19.3	63.0	
Effective Green, g (s)	13.8	13.8	11.8	20.2	20.2		5.0	48.7		21.3	65.0	
Actuated g/C Ratio	0.12	0.12	0.10	0.17	0.17		0.04	0.41		0.18	0.54	
Clearance Time (s)	6.0	6.0	6.0	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		3.0	3.0	
Lane Grp Cap (vph)	193	183	155	303	273		70	1448		314	1907	
v/s Ratio Prot	0.08	c0.09	0.00	0.06	c0.14		0.01	c0.32		c0.15	0.32	
v/s Ratio Perm												
v/c Ratio	0.70	0.75	0.03	0.33	0.83		0.33	0.80		0.83	0.59	
Uniform Delay, d1	51.1	51.4	48.9	44.0	48.2		55.9	31.3		47.6	18.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.11	0.82	
Incremental Delay, d2	10.6	15.4	0.1	0.7	18.9		2.7	4.7		14.6	1.2	
Delay (s)	61.7	66.8	49.0	44.6	67.1		58.6	36.0		67.7	16.3	
Level of Service	E	E	D	D	E		E	D		E	B	
Approach Delay (s)		62.2			62.8			36.4			26.0	
Approach LOS		E			E			D			C	
Intersection Summary												
HCM 2000 Control Delay			38.6			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			80.1%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	165	12	27	69	12	22	1101	239	947
Future Volume (vph)	165	12	27	69	12	22	1101	239	947
Turn Type	Split	NA	Prot	Split	NA	Prot	NA	Prot	NA
Protected Phases	4	4	4	8	8	5	2	1	6
Permitted Phases									
Detector Phase	4	4	4	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	1.0	4.0	1.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	18.0	18.0	18.0	27.0	27.0	11.0	49.0	26.0	64.0
Total Split (%)	15.0%	15.0%	15.0%	22.5%	22.5%	9.2%	40.8%	21.7%	53.3%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?									
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	13.8	13.8	11.8	20.2	20.2	7.3	48.7	21.3	67.4
Actuated g/C Ratio	0.12	0.12	0.10	0.17	0.17	0.06	0.41	0.18	0.56
v/c Ratio	0.70	0.75	0.13	0.33	0.90	0.22	0.80	0.83	0.57
Control Delay	70.8	76.2	0.8	46.0	43.7	59.4	37.4	73.0	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	70.8	76.2	0.8	46.0	43.7	59.4	37.4	73.0	16.5
LOS	E	E	A	D	D	E	D	E	B
Approach Delay		63.8			44.2		37.9		27.1
Approach LOS		E			D		D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 14 (12%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 36.8

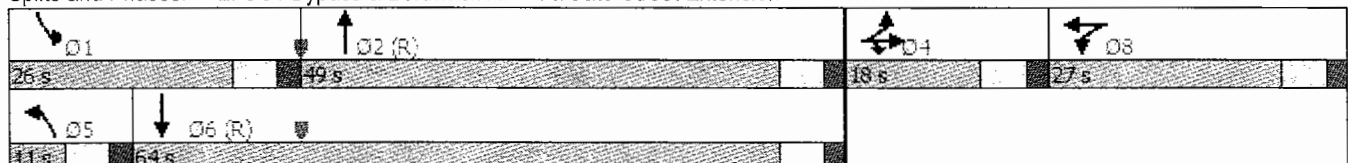
Intersection LOS: D

Intersection Capacity Utilization 80.1%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension



Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	135	137	42	101	428	23	1156	260	1128
v/c Ratio	0.70	0.75	0.13	0.33	0.90	0.22	0.80	0.83	0.57
Control Delay	70.8	76.2	0.8	46.0	43.7	59.4	37.4	73.0	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay	70.8	76.2	0.8	46.0	43.7	59.4	37.4	73.0	16.5
Queue Length 50th (ft)	107	109	0	68	146	17	430	151	310
Queue Length 95th (ft)	125	127	0	89	136	45	525	#320	187
Internal Link Dist (ft)		916			388		250		304
Turn Bay Length (ft)	225		225	150		200		150	
Base Capacity (vph)	198	188	332	345	507	103	1450	325	1983
Starvation Cap Reductn	0	0	0	0	0	0	0	0	256
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.73	0.13	0.29	0.84	0.22	0.80	0.80	0.65

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

4: Islington Street & CVS Driveway

Movement	EPL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↑		↕		↑	↑			↑	↑
Traffic Volume (vph)	271	✓ 11	✓ 293	✓ 10	✓ 18	✓ 12	✓ 282	✓ 268	✓ 3	✓ 9	✓ 290	✓ 285
Future Volume (vph)	271	11	293	10	18	12	282	268	3	9	290	285
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.96		1.00	1.00			1.00	0.85
Flt Protected		0.95	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1796	1583		1803		1770	1860			1861	1599
Flt Permitted		0.70	1.00		0.90		0.95	1.00			0.99	1.00
Satd. Flow (perm)		1316	1583		1642		1770	1860			1837	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.83	0.83	0.83	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	288	12	312	12	22	14	328	312	3	10	337	331
RTOR Reduction (vph)	0	0	228	0	10	0	0	0	0	0	0	252
Lane Group Flow (vph)	0	300	84	0	38	0	328	315	0	0	347	79
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		17.7	17.7		17.7		14.0	35.7			15.7	15.7
Effective Green, g (s)		19.7	17.7		19.7		16.0	37.7			17.7	15.7
Actuated g/C Ratio		0.30	0.27		0.30		0.24	0.58			0.27	0.24
Clearance Time (s)		6.0	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)		396	428		494		433	1072			497	383
v/s Ratio Prot							c0.19					
v/s Ratio Perm		c0.23	0.05		0.02			0.17			c0.19	0.05
v/c Ratio		0.76	0.20		0.08		0.76	0.29			0.70	0.21
Uniform Delay, d1		20.7	18.4		16.3		22.9	7.1			21.4	19.9
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		8.1	0.2		0.1		7.4	0.2			4.3	0.3
Delay (s)		28.8	18.6		16.4		30.3	7.2			25.7	20.1
Level of Service		C	B		B		C	A			C	C
Approach Delay (s)		23.6			16.4			19.0			23.0	
Approach LOS		C			B			B			C	

Intersection Summary

HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	19.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Timings

4: Islington Street & CVS Driveway

	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	29
Lane Group											
Lane Configurations											
Traffic Volume (vph)	271	11	293	10	18	282	268	9	290	285	
Future Volume (vph)	271	11	293	10	18	282	268	9	290	285	
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom	
Protected Phases						5					9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6	
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0
Total Split (s)	24.0	24.0	24.0	24.0	24.0	20.0	42.0		22.0	22.0	24.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	22.2%	46.7%		24.4%	24.4%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0	
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0	
Lead/Lag						Lag			Lead	Lead	
Lead-Lag Optimize?						Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None
Act Effct Green (s)		19.7	17.7		19.7	16.0	37.8		17.7	15.7	
Actuated g/C Ratio		0.30	0.27		0.30	0.24	0.58		0.27	0.24	
v/c Ratio		0.76	0.48		0.10	0.76	0.29		0.70	0.52	
Control Delay		35.7	5.4		13.5	36.8	8.0		30.4	6.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		35.7	5.4		13.5	36.8	8.0		30.4	6.2	
LOS		D	A		B	D	A		C	A	
Approach Delay		20.3			13.5		22.7		18.6		
Approach LOS		C			B		C		B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 65.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 20.3

Intersection Capacity Utilization 63.6%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service B

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
Ø6	Ø5	Ø8

Queues

4: Islington Street & CVS Driveway

	→	↘	←	↙	↑	↓	↗
Lane Group	EBT	EBR	WBT	WBL	NBT	NBR	SEB
Lane Group Flow (vph)	300	312	48	328	315	347	331
v/c Ratio	0.76	0.48	0.10	0.76	0.29	0.70	0.52
Control Delay	35.7	5.4	13.5	36.8	8.0	30.4	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.7	5.4	13.5	36.8	8.0	30.4	6.2
Queue Length 50th (ft)	108	0	10	123	58	125	0
Queue Length 95th (ft)	#224	53	28	#221	92	196	48
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	401	661	511	432	1080	505	641
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.47	0.09	0.76	0.29	0.69	0.52

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 4: Islington Street & CVS Driveway

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↱		↰	↱		↰	↱	↱
Traffic Volume (vph)	300	30	373	10	18	12	370	289	16	25	307	347
Future Volume (vph)	300	30	373	10	18	12	370	289	16	25	307	347
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99			1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1801	1583		1803		1770	1850			1859	1599
Flt Permitted		0.71	1.00		0.77		0.95	1.00			0.95	1.00
Satd. Flow (perm)		1338	1583		1412		1770	1850			1779	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.83	0.83	0.83	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	319	32	397	12	22	14	430	336	19	29	357	403
RTOR Reduction (vph)	0	0	253	0	11	0	0	1	0	0	0	281
Lane Group Flow (vph)	0	351	144	0	37	0	430	354	0	0	386	122
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		14.0	14.0		14.0		14.0	40.0			20.0	20.0
Effective Green, g (s)		16.0	14.0		16.0		16.0	42.0			22.0	20.0
Actuated g/C Ratio		0.24	0.21		0.24		0.24	0.64			0.33	0.30
Clearance Time (s)		6.0	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)		324	335		342		429	1177			593	484
v/s Ratio Prot							c0.24					
v/s Ratio Perm		c0.26	0.09		0.03			0.19			c0.22	0.08
v/c Ratio		1.08	0.43		0.11		1.00	0.30			0.65	0.25
Uniform Delay, d1		25.0	22.5		19.5		25.0	5.4			18.7	17.4
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		74.1	0.9		0.1		44.0	0.1			2.6	0.3
Delay (s)		99.1	23.4		19.6		69.0	5.5			21.3	17.6
Level of Service		F	C		B		E	A			C	B
Approach Delay (s)		58.9			19.6			40.3			19.4	
Approach LOS		E			B			D			B	
Intersection Summary												
HCM 2000 Control Delay		38.8										
HCM 2000 Volume to Capacity ratio		1.01										
Actuated Cycle Length (s)		66.0										
Intersection Capacity Utilization		72.9%										
Analysis Period (min)		15										
c Critical Lane Group												
HCM 2000 Level of Service											D	
Sum of lost time (s)											19.0	
ICU Level of Service											C	

Timings

4: Islington Street & CVS Driveway

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB	SEB	SEB	SEB
Lane Group															
Lane Configurations		↖	↗		↖	↗	↖	↗	↖	↗	↖	↗	↖	↗	
Traffic Volume (vph)	300	30	373	10	18	370	289	25	307	347					
Future Volume (vph)	300	30	373	10	18	370	289	25	307	347					
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom					
Protected Phases						5									9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6					
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6					
Switch Phase															
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0					7.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0					24.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	46.0		26.0	26.0					24.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	51.1%		28.9%	28.9%					27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0					3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0					0.0
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0					
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0					
Lead/Lag						Lag			Lead	Lead					
Lead-Lag Optimize?						Yes			Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min		Min	Min					None
Act Effect Green (s)		16.0	14.0		16.0	16.0	42.0		22.0	20.0					
Actuated g/C Ratio		0.24	0.21		0.24	0.24	0.64		0.33	0.30					
v/c Ratio		1.08	0.68		0.14	1.00	0.30		0.65	0.53					
Control Delay		102.5	12.2		16.4	72.8	6.2		24.9	5.1					
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0					
Total Delay		102.5	12.2		16.4	72.8	6.2		24.9	5.1					
LOS		F	B		B	E	A		C	A					
Approach Delay		54.6			16.4		42.7		14.8						
Approach LOS		D			B		D		B						

Intersection Summary															
Cycle Length: 90															
Actuated Cycle Length: 66															
Natural Cycle: 130															
Control Type: Actuated-Uncoordinated															
Maximum v/c Ratio: 1.08															
Intersection Signal Delay: 36.6															
Intersection Capacity Utilization 72.9%															
Analysis Period (min) 15															
Intersection LOS: D															
ICU Level of Service C															

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
Ø6	Ø5	Ø8

Queues

4: Islington Street & CVS Driveway

	→	↘	←	↙	↑	↓	↗
Lane Group	EBT	EBR	WBT	WBL	NBT	SBT	SBR
Lane Group Flow (vph)	351	397	48	430	355	386	403
v/c Ratio	1.08	0.68	0.14	1.00	0.30	0.65	0.53
Control Delay	102.5	12.2	16.4	72.8	6.2	24.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	102.5	12.2	16.4	72.8	6.2	24.9	5.1
Queue Length 50th (ft)	~163	26	11	~174	54	130	0
Queue Length 95th (ft)	#309	107	32	#321	85	204	47
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	324	588	353	429	1179	593	765
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.08	0.68	0.14	1.00	0.30	0.65	0.53

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 4: Islington Street & CVS Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SEB
Lane Configurations		↕	↕		↕		↕	↕			↕	↕
Traffic Volume (vph)	331	30	407	10	18	12	402	320	16	25	340	380
Future Volume (vph)	331	30	407	10	18	12	402	320	16	25	340	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99			1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1800	1583		1803		1770	1851			1859	1599
Flt Permitted		0.71	1.00		0.70		0.95	1.00			0.95	1.00
Satd. Flow (perm)		1335	1583		1272		1770	1851			1780	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.83	0.83	0.83	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	352	32	433	12	22	14	467	372	19	29	395	442
RTOR Reduction (vph)	0	0	252	0	11	0	0	1	0	0	0	308
Lane Group Flow (vph)	0	384	181	0	37	0	467	390	0	0	424	134
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		14.0	14.0		14.0		14.0	40.0			20.0	20.0
Effective Green, g (s)		16.0	14.0		16.0		16.0	42.0			22.0	20.0
Actuated g/C Ratio		0.24	0.21		0.24		0.24	0.64			0.33	0.30
Clearance Time (s)		6.0	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)		323	335		308		429	1177			593	484
v/s Ratio Prot							0.26					
v/s Ratio Perm		0.29	0.11		0.03			0.21			0.24	0.08
v/c Ratio		1.19	0.54		0.12		1.09	0.33			0.72	0.28
Uniform Delay, d1		25.0	23.1		19.5		25.0	5.5			19.3	17.5
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		111.7	1.7		0.2		69.5	0.2			4.1	0.3
Delay (s)		136.7	24.8		19.7		94.5	5.7			23.3	17.8
Level of Service		F	C		B		F	A			C	B
Approach Delay (s)		77.4			19.7			54.0			20.5	
Approach LOS		E			B			D			C	

Intersection Summary			
HCM 2000 Control Delay	49.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	78.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Timings

4: Islington Street & CVS Driveway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	CG
Lane Configurations													
Traffic Volume (vph)	331	30	407	10	18	402	320	25	340	380			
Future Volume (vph)	331	30	407	10	18	402	320	25	340	380			
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom			
Protected Phases						5							9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6			
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6			
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0		
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0		
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	46.0		26.0	26.0	24.0		
Total Split (%)	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	51.1%		28.9%	28.9%	27%		
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0		
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0		
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0			
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0			
Lead/Lag						Lag			Lead	Lead			
Lead-Lag Optimize?						Yes			Yes	Yes			
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None		
Act Effct Green (s)		16.0	14.0		16.0	16.0	42.0		22.0	20.0			
Actuated g/C Ratio		0.24	0.21		0.24	0.24	0.64		0.33	0.30			
v/c Ratio		1.19	0.74		0.15	1.09	0.33		0.72	0.56			
Control Delay		139.2	16.1		16.8	97.5	6.4		27.6	5.2			
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0			
Total Delay		139.2	16.1		16.8	97.5	6.4		27.6	5.2			
LOS		F	B		B	F	A		C	A			
Approach Delay		74.0			16.8		56.0		16.2				
Approach LOS		E			B		E		B				

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 66
 Natural Cycle: 140
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 1.19
 Intersection Signal Delay: 47.6
 Intersection Capacity Utilization 78.1%
 Analysis Period (min) 15

Intersection LOS: D
 ICU Level of Service D

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
Ø6	Ø5	Ø8

Queues

4: Islington Street & CVS Driveway

	→	↘	←	↙	↑	↓	↗
Lane Group	EBT	EBR	WBT	WBL	NBT	SBT	SBR
Lane Group Flow (vph)	384	433	48	467	391	424	442
v/c Ratio	1.19	0.74	0.15	1.09	0.33	0.72	0.56
Control Delay	139.2	16.1	16.8	97.5	6.4	27.6	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	139.2	16.1	16.8	97.5	6.4	27.6	5.2
Queue Length 50th (ft)	~192	39	11	~218	61	147	0
Queue Length 95th (ft)	#343	#164	32	#356	95	227	48
Internal Link Dist. (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	323	587	319	429	1179	593	792
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.19	0.74	0.15	1.09	0.33	0.72	0.56

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

4: Islington Street & CVS Driveway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	✓ 30	✓ 375	✓ 10	✓ 18	✓ 12	✓ 373	✓ 289	✓ 16	✓ 25	✓ 307	✓ 357
Future Volume (vph)	307	30	375	10	18	12	373	289	16	25	307	357
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99			1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1801	1583		1803		1770	1850			1859	1599
Flt Permitted		0.71	1.00		0.76		0.95	1.00			0.95	1.00
Satd. Flow (perm)		1337	1583		1379		1770	1850			1777	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.83	0.83	0.83	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	327	32	399	12	22	14	434	336	19	29	357	415
RTOR Reduction (vph)	0	0	249	0	11	0	0	1	0	0	0	296
Lane Group Flow (vph)	0	359	150	0	37	0	434	354	0	0	386	119
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		14.0	14.0		14.0		15.0	40.0			19.0	19.0
Effective Green, g (s)		16.0	14.0		16.0		17.0	42.0			21.0	19.0
Actuated g/C Ratio		0.24	0.21		0.24		0.26	0.64			0.32	0.29
Clearance Time (s)		6.0	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)		324	335		334		455	1177			565	460
v/s Ratio Prot							c0.25					
v/s Ratio Perm		c0.27	0.09		0.03			0.19			c0.22	0.07
v/c Ratio		1.11	0.45		0.11		0.95	0.30			0.68	0.26
Uniform Delay, d1		25.0	22.6		19.5		24.1	5.4			19.6	18.1
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		82.3	1.0		0.1		30.5	0.1			3.4	0.3
Delay (s)		107.3	23.6		19.6		54.6	5.5			23.0	18.4
Level of Service		F	C		B		D	A			C	B
Approach Delay (s)		63.2			19.6			32.5			20.6	
Approach LOS		E			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			38.0				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			66.0				Sum of lost time (s)			19.0		
Intersection Capacity Utilization			73.5%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

4: Islington Street & CVS Driveway

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø9
Lane Configurations											
Traffic Volume (vph)	307	30	375	10	18	373	289	25	307	357	
Future Volume (vph)	307	30	375	10	18	373	289	25	307	357	
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom	
Protected Phases						5					9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6	
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	21.0	46.0		25.0	25.0	24.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	22.2%	23.3%	51.1%		27.8%	27.8%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0	
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0	
Lead/Lag						Lag			Lead	Lead	
Lead-Lag Optimize?						Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None
Act Effct Green (s)		16.0	14.0		16.0	17.0	42.0		21.0	19.0	
Actuated g/C Ratio		0.24	0.21		0.24	0.26	0.64		0.32	0.29	
v/c Ratio		1.11	0.68		0.14	0.95	0.30		0.68	0.55	
Control Delay		110.7	12.8		16.5	59.7	6.2		27.0	5.4	
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		110.7	12.8		16.5	59.7	6.2		27.0	5.4	
LOS		F	B		B	E	A		C	A	
Approach Delay		59.2			16.5		35.6		15.8		
Approach LOS		E			B		D		B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 66

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 36.1

Intersection Capacity Utilization 73.5%

Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service D

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
46 s	20 s	24 s
Ø6	Ø5	Ø8
25 s	21 s	20 s

Queues

4: Islington Street & CVS Driveway

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	359	399	48	434	355	386	415
v/c Ratio	1.11	0.68	0.14	0.95	0.30	0.68	0.55
Control Delay	110.7	12.8	16.5	59.7	6.2	27.0	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.7	12.8	16.5	59.7	6.2	27.0	5.4
Queue Length 50th (ft)	~170	28	11	172	54	133	0
Queue Length 95th (ft)	#317	111	32	#313	85	209	49
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	324	584	344	455	1178	565	755
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	0.68	0.14	0.95	0.30	0.68	0.55

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

4: Islington Street & CVS Driveway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	338	30	409	10	18	12	405	320	16	25	340	390
Future Volume (vph)	338	30	409	10	18	12	405	320	16	25	340	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99			1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1800	1583		1803		1770	1851			1859	1599
Flt Permitted		0.71	1.00		0.68		0.95	1.00			0.95	1.00
Satd. Flow (perm)		1334	1583		1237		1770	1851			1780	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.83	0.83	0.83	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	360	32	435	12	22	14	471	372	19	29	395	453
RTOR Reduction (vph)	0	0	248	0	11	0	0	1	0	0	0	316
Lane Group Flow (vph)	0	392	187	0	37	0	471	390	0	0	424	137
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		14.0	14.0		14.0		14.0	40.0			20.0	20.0
Effective Green, g (s)		16.0	14.0		16.0		16.0	42.0			22.0	20.0
Actuated g/C Ratio		0.24	0.21		0.24		0.24	0.64			0.33	0.30
Clearance Time (s)		6.0	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)		323	335		299		429	1177			593	484
v/s Ratio Prot							c0.27					
v/s Ratio Perm		c0.29	0.12		0.03			0.21			c0.24	0.09
v/c Ratio		1.21	0.56		0.13		1.10	0.33			0.72	0.28
Uniform Delay, d1		25.0	23.2		19.5		25.0	5.5			19.3	17.5
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		121.2	2.0		0.2		72.6	0.2			4.1	0.3
Delay (s)		146.2	25.2		19.7		97.6	5.7			23.3	17.9
Level of Service		F	C		B		F	A			C	B
Approach Delay (s)		82.6			19.7			55.9			20.5	
Approach LOS		F			B			E			C	
Intersection Summary												
HCM 2000 Control Delay			51.8				HCM 2000 Level of Service			D		
HCM 2000 Volume to Capacity ratio			1.12									
Actuated Cycle Length (s)			66.0				Sum of lost time (s)		19.0			
Intersection Capacity Utilization			78.7%				ICU Level of Service		D			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

4: Islington Street & CVS Driveway

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø9
Lane Configurations											
Traffic Volume (vph)	338	30	409	10	18	405	320	25	340	390	
Future Volume (vph)	338	30	409	10	18	405	320	25	340	390	
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom	
Protected Phases						5					9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6	
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0
Total Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	46.0		26.0	26.0	24.0
Total Split (%)	22.2%	22.2%	22.2%	22.2%	22.2%	22.2%	51.1%		28.9%	28.9%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0	
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0	
Lead/Lag						Lag			Lead	Lead	
Lead-Lag Optimize?						Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None
Act Effct Green (s)		16.0	14.0		16.0	16.0	42.0		22.0	20.0	
Actuated g/C Ratio		0.24	0.21		0.24	0.24	0.64		0.33	0.30	
v/c Ratio		1.21	0.75		0.15	1.10	0.33		0.72	0.57	
Control Delay		148.5	16.9		16.9	100.6	6.4		27.6	5.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		148.5	16.9		16.9	100.6	6.4		27.6	5.3	
LOS		F	B		B	F	A		C	A	
Approach Delay		79.3			16.9		57.9		16.0		
Approach LOS		E			B		E		B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 66

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.21

Intersection Signal Delay: 49.9

Intersection Capacity Utilization 78.7%

Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service D

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
16 s	20 s	24 s
Ø6	Ø5	Ø8
26 s	20 s	20 s

Queues

4: Islington Street & CVS Driveway

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	392	435	48	471	391	424	453
v/c Ratio	1.21	0.75	0.15	1.10	0.33	0.72	0.57
Control Delay	148.5	16.9	16.9	100.6	6.4	27.6	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	148.5	16.9	16.9	100.6	6.4	27.6	5.3
Queue Length 50th (ft)	~198	42	11	~221	61	147	0
Queue Length 95th (ft)	#352	#169	32	#360	95	227	49
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	323	583	310	429	1179	593	800
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.21	0.75	0.15	1.10	0.33	0.72	0.57

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 4: Islington Street & CVS Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰	↱	↰	↱	↰	↰	↱	↱	↰	↱	↱
Traffic Volume (vph)	238	12	232	5	7	9	186	249	4	11	253	247
Future Volume (vph)	238	12	232	5	7	9	186	249	4	11	253	247
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Flt Protected		1.00	0.85		0.94		1.00	1.00			1.00	0.85
Satd. Flow (prot)		1814	1599		1768		1805	1871			1896	1599
Flt Permitted		0.72	1.00		0.91		0.95	1.00			0.98	1.00
Satd. Flow (perm)		1360	1599		1632		1805	1871			1860	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.75	0.75	0.75	0.93	0.93	0.93	0.86	0.86	0.86
Adj. Flow (vph)	262	13	255	7	9	12	200	268	4	13	294	287
RTOR Reduction (vph)	0	0	182	0	8	0	0	0	0	0	0	217
Lane Group Flow (vph)	0	275	73	0	20	0	200	272	0	0	307	70
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	25%	0%	0%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		15.4	15.4		15.4		7.1	26.1			13.0	13.0
Effective Green, g (s)		17.4	15.4		17.4		9.1	28.1			15.0	13.0
Actuated g/C Ratio		0.33	0.29		0.33		0.17	0.53			0.28	0.24
Clearance Time (s)		6.0	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)		442	460		530		307	982			521	388
v/s Ratio Prot							0.11					
v/s Ratio Perm		0.20	0.05		0.01			0.15			0.17	0.04
v/c Ratio		0.62	0.16		0.04		0.65	0.28			0.59	0.18
Uniform Delay, d1		15.3	14.2		12.3		20.7	7.1			16.6	16.0
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		2.7	0.2		0.0		4.9	0.2			1.7	0.2
Delay (s)		18.0	14.4		12.4		25.6	7.2			18.3	16.3
Level of Service		B	B		B		C	A			B	B
Approach Delay (s)		16.3			12.4			15.0			17.3	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay		16.2					HCM 2000 Level of Service		B			
HCM 2000 Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		53.5					Sum of lost time (s)		19.0			
Intersection Capacity Utilization		57.8%					ICU Level of Service		B			
Analysis Period (min)		15										
c Critical Lane Group												

Timings

4: Islington Street & CVS Driveway



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø9
Lane Configurations		↰	↱		↰	↱	↰	↱	↰	↱	
Traffic Volume (vph)	238	12	232	5	7	186	249	11	253	247	
Future Volume (vph)	238	12	232	5	7	186	249	11	253	247	
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom	
Protected Phases						5					9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6	
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0
Total Split (s)	22.0	22.0	22.0	22.0	22.0	13.0	34.0		21.0	21.0	24.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%	16.3%	42.5%		26.3%	26.3%	30%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0	
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0	
Lead/Lag						Lag			Lead	Lead	
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None
Act Effct Green (s)		17.4	15.4		17.4	9.0	28.1		15.0	13.0	
Actuated g/C Ratio		0.33	0.29		0.33	0.17	0.53		0.28	0.24	
v/c Ratio		0.62	0.40		0.05	0.66	0.28		0.59	0.47	
Control Delay		23.2	4.7		10.1	34.7	8.1		21.9	5.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		23.2	4.7		10.1	34.7	8.1		21.9	5.6	
LOS		C	A		B	C	A		C	A	
Approach Delay		14.3			10.1		19.4		14.0		
Approach LOS		B			B		B		B		

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 53.5

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 15.6

Intersection LOS: B

Intersection Capacity Utilization: 57.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
Ø6	Ø5	Ø8

Queues

4: Islington Street & CVS Driveway

	→	↘	←	↙	↑	↓	↗
Lane Group	EBT	EBR	WBT	WBL	NBT	SBT	SBR
Lane Group Flow (vph)	275	255	28	200	272	307	287
v/c Ratio	0.62	0.40	0.05	0.66	0.28	0.59	0.47
Control Delay	23.2	4.7	10.1	34.7	8.1	21.9	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.2	4.7	10.1	34.7	8.1	21.9	5.6
Queue Length 50th (ft)	74	0	4	62	44	84	0
Queue Length 95th (ft)	#151	43	14	#147	80	141	41
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	459	658	558	304	1052	593	656
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.39	0.05	0.66	0.26	0.52	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

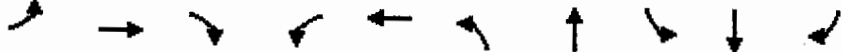
HCM Signalized Intersection Capacity Analysis 4: Islington Street & CVS Driveway

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗	↖	↗			↖	↗
Traffic Volume (vph)	270	25	295	5	7	9	244	272	13	22	272	298
Future Volume (vph)	270	25	295	5	7	9	244	272	13	22	272	298
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.94		1.00	0.99			1.00	0.85
Flt-Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1817	1599		1768		1805	1848			1893	1599
Flt-Permitted		0.72	1.00		0.91		0.95	1.00			0.96	1.00
Satd. Flow (perm)		1375	1599		1630		1805	1848			1818	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.75	0.75	0.75	0.93	0.93	0.93	0.86	0.86	0.86
Adj. Flow (vph)	297	27	324	7	9	12	262	292	14	26	316	347
RTOR Reduction (vph)	0	0	216	0	8	0	0	1	0	0	0	255
Lane Group Flow (vph)	0	324	108	0	20	0	262	305	0	0	342	92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	25%	0%	0%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		19.0	19.0		19.0		11.0	34.3			17.3	17.3
Effective Green, g (s)		21.0	19.0		21.0		13.0	36.3			19.3	17.3
Actuated g/C Ratio		0.32	0.29		0.32		0.20	0.56			0.30	0.26
Clearance Time (s)		6.0	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)		442	465		524		359	1027			537	423
v/s Ratio Prot							0.15					
v/s Ratio Perm		0.24	0.07		0.01			0.16			0.19	0.06
v/c Ratio		0.73	0.23		0.04		0.73	0.30			0.64	0.22
Uniform Delay, d1		19.7	17.6		15.2		24.5	7.7			20.0	18.7
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		6.2	0.3		0.0		7.3	0.2			2.5	0.3
Delay (s)		25.9	17.9		15.2		31.8	7.9			22.4	19.0
Level of Service		C	B		B		C	A			C	B
Approach Delay (s)		21.9			15.2			18.9			20.7	
Approach LOS		C			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	65.3	Sum of lost time (s)	19.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
o Critical Lane Group			

Timings

4: Islington Street & CVS Driveway

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	28'
Lane Configurations												
Traffic Volume (vph)	270	25	295	5	7	244	272	22	272	298		
Future Volume (vph)	270	25	295	5	7	244	272	22	272	298		
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom		
Protected Phases						5						9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6		
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6		
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	17.0	41.0		24.0	24.0	24.0	
Total Split (%)	27.8%	27.8%	27.8%	27.8%	27.8%	18.9%	45.6%		26.7%	26.7%	27%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0	
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0		
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0		
Lead/Lag						Lag			Lead	Lead		
Lead-Lag Optimize?												
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None	
Act Effct Green (s)		21.0	19.0		21.0	13.0	36.3		19.3	17.3		
Actuated g/C Ratio		0.32	0.29		0.32	0.20	0.56		0.30	0.26		
v/c Ratio		0.73	0.48		0.05	0.73	0.30		0.64	0.51		
Control Delay		32.1	5.9		11.8	39.0	8.6		26.3	5.6		
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0		
Total Delay		32.1	5.9		11.8	39.0	8.6		26.3	5.6		
LOS		C	A		B	D	A		C	A		
Approach Delay		19.0			11.8		22.6		15.9			
Approach LOS		B			B		C		B			

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 65.3

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 18.8

Intersection Capacity Utilization 63.6%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service B

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
Ø6	Ø5	Ø8

Queues

4: Islington Street & CVS Driveway

	→	↘	←	↙	↑	↓	↗
Lane Group	EBT	EBR	WBT	WBL	NBT	SBT	SBR
Lane Group Flow (vph)	324	324	28	262	306	342	347
v/c Ratio	0.73	0.48	0.05	0.73	0.30	0.64	0.51
Control Delay	32.1	5.9	11.8	39.0	8.6	26.3	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.1	5.9	11.8	39.0	8.6	26.3	5.6
Queue Length 50th (ft)	115	6	4	100	58	117	0
Queue Length 95th (ft)	#233	60	16	#203	99	185	47
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	442	680	533	359	1049	556	692
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.48	0.05	0.73	0.29	0.62	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 4: Islington Street & CVS Driveway

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (vph)	298	25	322	5	7	9	266	301	13	22	301	327
Future Volume (vph)	298	25	322	5	7	9	266	301	13	22	301	327
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.94		1.00	0.99			1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1816	1599		1768		1805	1851			1893	1599
Flt Permitted		0.72	1.00		0.91		0.95	1.00			0.96	1.00
Satd. Flow (perm)		1372	1599		1621		1805	1851			1820	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.75	0.75	0.75	0.93	0.93	0.93	0.86	0.86	0.86
Adj. Flow (vph)	327	27	354	7	9	12	286	324	14	26	350	380
RTOR Reduction (vph)	0	0	216	0	8	0	0	1	0	0	0	276
Lane Group Flow (vph)	0	354	138	0	20	0	286	337	0	0	376	104
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	25%	0%	0%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		19.0	19.0		19.0		11.0	35.0			18.0	18.0
Effective Green, g (s)		21.0	19.0		21.0		13.0	37.0			20.0	18.0
Actuated g/C Ratio		0.32	0.29		0.32		0.20	0.56			0.30	0.27
Clearance Time (s)		6.0	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)		436	460		515		355	1037			551	436
v/s Ratio Prot							c0.16					
v/s Ratio Perm		c0.26	0.09		0.01			0.18			c0.21	0.06
v/c Ratio		0.81	0.30		0.04		0.81	0.32			0.68	0.24
Uniform Delay, d1		20.7	18.3		15.5		25.3	7.8			20.2	18.7
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		11.0	0.4		0.0		12.5	0.2			3.5	0.3
Delay (s)		31.7	18.7		15.6		37.8	8.0			23.7	18.9
Level of Service		C	B		B		D	A			C	B
Approach Delay (s)		25.2			15.6			21.6			21.3	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	66.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Timings

4: Islington Street & CVS Driveway

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEB	SEB	SEB	29
Lane Configurations		↰	↱		↰	↱	↰	↱	↰	↱	↰	↱	
Traffic Volume (vph)	298	25	322	5	7	266	301	22	301	327			
Future Volume (vph)	298	25	322	5	7	266	301	22	301	327			
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom			
Protected Phases						5							9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6			
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6			
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0		
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0		
Total Split (s)	25.0	25.0	25.0	25.0	25.0	17.0	41.0		24.0	24.0	24.0		
Total Split (%)	27.8%	27.8%	27.8%	27.8%	27.8%	18.9%	45.6%		26.7%	26.7%	27%		
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0		
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0		
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0			
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0			
Lead/Lag						Lag			Lead	Lead			
Lead-Lag Optimize?													
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None		
Act Effect Green (s)		21.0	19.0		21.0	13.0	37.0		20.0	18.0			
Actuated g/C Ratio		0.32	0.29		0.32	0.20	0.56		0.30	0.27			
v/c Ratio		0.81	0.52		0.05	0.81	0.33		0.68	0.53			
Control Delay		38.2	7.3		11.8	45.2	8.8		27.8	5.6			
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0			
Total Delay		38.2	7.3		11.8	45.2	8.8		27.8	5.6			
LOS		D	A		B	D	A		C	A			
Approach Delay		22.7			11.8		25.5		16.6				
Approach LOS		C			B		C		B				

Phase Sequence Summary

Cycle Length: 90

Actuated Cycle Length: 66

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 21.2

Intersection Capacity Utilization: 68.2%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
Ø6	Ø5	Ø8

Queues

4: Islington Street & CVS Driveway



Lane Group	EBT	EBR	WBT	WBL	NBT	SBT	SEB
Lane Group Flow (vph)	354	354	28	286	338	376	380
v/c Ratio	0.81	0.52	0.05	0.81	0.33	0.68	0.53
Control Delay	38.2	7.3	11.8	45.2	8.8	27.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.2	7.3	11.8	45.2	8.8	27.8	5.6
Queue Length 50th (ft)	129	15	4	111	66	132	0
Queue Length 95th (ft)	#264	75	16	#228	110	205	49
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	436	676	524	355	1039	551	712
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.81	0.52	0.05	0.81	0.33	0.68	0.53

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

4: Islington Street & CVS Driveway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	279	25	297	5	7	9	246	272	13	22	272	308
Future Volume (vph)	279	25	297	5	7	9	246	272	13	22	272	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.94		1.00	0.99			1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1817	1599		1768		1805	1848			1893	1599
Flt Permitted		0.72	1.00		0.91		0.95	1.00			0.96	1.00
Satd. Flow (perm)		1373	1599		1631		1805	1848			1817	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.75	0.75	0.75	0.93	0.93	0.93	0.86	0.86	0.86
Adj. Flow (vph)	307	27	326	7	9	12	265	292	14	26	316	358
RTOR Reduction (vph)	0	0	210	0	8	0	0	1	0	0	0	266
Lane Group Flow (vph)	0	334	116	0	20	0	265	305	0	0	342	92
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	25%	0%	0%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		20.0	20.0		20.0		11.0	34.0			17.0	17.0
Effective Green, g (s)		22.0	20.0		22.0		13.0	36.0			19.0	17.0
Actuated g/C Ratio		0.33	0.30		0.33		0.20	0.55			0.29	0.26
Clearance Time (s)		6.0	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)		457	484		543		355	1008			523	411
v/s Ratio Prot							c0.15					
v/s Ratio Perm		c0.24	0.07		0.01			0.16			c0.19	0.06
v/c Ratio		0.73	0.24		0.04		0.75	0.30			0.65	0.22
Uniform Delay, d1		19.4	17.3		14.8		24.9	8.2			20.6	19.3
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		5.9	0.3		0.0		8.3	0.2			2.9	0.3
Delay (s)		25.3	17.5		14.9		33.2	8.3			23.6	19.6
Level of Service		C	B		B		C	A			C	B
Approach Delay (s)		21.5			14.9			19.9			21.5	
Approach LOS		C			B			B			C	
Intersection Summary												
HCM 2000 Control Delay			20.9				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			66.0				Sum of lost time (s)		19.0			
Intersection Capacity Utilization			64.1%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

4: Islington Street & CVS Driveway

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø9
Lane Configurations											
Traffic Volume (vph)	279	25	297	5	7	246	272	22	272	308	
Future Volume (vph)	279	25	297	5	7	246	272	22	272	308	
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom	
Protected Phases						5					9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6	
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0
Total Split (s)	26.0	26.0	26.0	26.0	26.0	17.0	40.0		23.0	23.0	24.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	28.9%	18.9%	44.4%		25.6%	25.6%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0	
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0	
Lead/Lag						Lag			Lead	Lead	
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None
Act Effct Green (s)		22.0	20.0		22.0	13.0	36.0		19.0	17.0	
Actuated g/C Ratio		0.33	0.30		0.33	0.20	0.55		0.29	0.26	
v/c Ratio		0.73	0.47		0.05	0.75	0.30		0.66	0.53	
Control Delay		31.0	5.8		11.3	40.3	9.1		27.6	5.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		31.0	5.8		11.3	40.3	9.1		27.6	5.9	
LOS		C	A		B	D	A		C	A	
Approach Delay		18.5			11.3		23.6		16.5		
Approach LOS		B			B		C		B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 66

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 64.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
40 s	26 s	24 s
Ø6	Ø5	Ø8
23 s	17 s	26 s

Queues

4: Islington Street & CVS Driveway

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	334	326	28	265	306	342	358
v/c Ratio	0.73	0.47	0.05	0.75	0.30	0.66	0.53
Control Delay	31.0	5.8	11.3	40.3	9.1	27.6	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.0	5.8	11.3	40.3	9.1	27.6	5.9
Queue Length 50th (ft)	117	7	4	102	60	120	0
Queue Length 95th (ft)	#234	60	16	#206	103	190	49
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	458	694	551	355	1009	522	677
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.47	0.05	0.75	0.30	0.66	0.53

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

4: Islington Street & CVS Driveway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	307	25	324	5	7	9	268	301	13	22	301	337
Future Volume (vph)	307	25	324	5	7	9	268	301	13	22	301	337
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.94		1.00	0.99			1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1816	1599		1768		1805	1851			1893	1599
Flt Permitted		0.72	1.00		0.90		0.95	1.00			0.96	1.00
Satd. Flow (perm)		1371	1599		1619		1805	1851			1820	1599
Peak-hour factor, PHF	0.91	0.91	0.91	0.75	0.75	0.75	0.93	0.93	0.93	0.86	0.86	0.86
Adj. Flow (vph)	337	27	356	7	9	12	288	324	14	26	350	392
RTOR Reduction (vph)	0	0	212	0	8	0	0	1	0	0	0	285
Lane Group Flow (vph)	0	364	144	0	20	0	288	337	0	0	376	107
Heavy Vehicles (%)	0%	0%	1%	0%	0%	0%	0%	1%	25%	0%	0%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		19.0	19.0		19.0		11.0	35.0			18.0	18.0
Effective Green, g (s)		21.0	19.0		21.0		13.0	37.0			20.0	18.0
Actuated g/C Ratio		0.32	0.29		0.32		0.20	0.56			0.30	0.27
Clearance Time (s)		6.0	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)		436	460		515		355	1037			551	436
v/s Ratio Prot							c0.16					
v/s Ratio Perm		c0.27	0.09		0.01			0.18			c0.21	0.07
v/c Ratio		0.83	0.31		0.04		0.81	0.32			0.68	0.25
Uniform Delay, d1		20.9	18.4		15.5		25.3	7.8			20.2	18.7
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		12.9	0.4		0.0		13.1	0.2			3.5	0.3
Delay (s)		33.8	18.8		15.6		38.5	8.0			23.7	19.0
Level of Service		C	B		B		D	A			C	B
Approach Delay (s)		26.4			15.6			22.0			21.3	
Approach LOS		C			B			C			C	
Intersection Summary												
HCM 2000 Control Delay			23.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			66.0				Sum of lost time (s)		19.0			
Intersection Capacity Utilization			68.7%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

Timings

4: Islington Street & CVS Driveway

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø9
Lane Configurations											
Traffic Volume (vph)	307	25	324	5	7	268	301	22	301	337	
Future Volume (vph)	307	25	324	5	7	268	301	22	301	337	
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom	
Protected Phases						5					9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6	
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	17.0	41.0		24.0	24.0	24.0
Total Split (%)	27.8%	27.8%	27.8%	27.8%	27.8%	18.9%	45.6%		26.7%	26.7%	27%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0	
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0	
Lead/Lag						Lag			Lead	Lead	
Lead-Lag Optimize?											
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None
Act Effct Green (s)		21.0	19.0		21.0	13.0	37.0		20.0	18.0	
Actuated g/C Ratio		0.32	0.29		0.32	0.20	0.56		0.30	0.27	
v/c Ratio		0.84	0.53		0.05	0.81	0.33		0.68	0.54	
Control Delay		40.7	7.6		11.8	45.7	8.8		27.8	5.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		40.7	7.6		11.8	45.7	8.8		27.8	5.6	
LOS		D	A		B	D	A		C	A	
Approach Delay		24.4			11.8		25.8		16.5		
Approach LOS		C			B		C		B		

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 66

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 21.8

Intersection Capacity Utilization 68.7%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
41s	25s	24s
Ø6	Ø5	Ø8
24s	17s	25s

Queues

4: Islington Street & CVS Driveway

	→	↘	←	↙	↑	↓	↗
Lane Group	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	364	356	28	288	338	376	392
v/c Ratio	0.84	0.53	0.05	0.81	0.33	0.68	0.54
Control Delay	40.7	7.6	11.8	45.7	8.8	27.8	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	7.6	11.8	45.7	8.8	27.8	5.6
Queue Length 50th (ft)	134	17	4	112	66	132	0
Queue Length 95th (ft)	#274	79	16	#230	110	205	49
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	435	672	523	355	1039	551	721
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.53	0.05	0.81	0.33	0.68	0.54

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	6	10	220	10	74	15	1901	217	56	1131	10
Future Volume (vph)	38	6	10	220	10	74	15	1901	217	56	1131	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0	6.0	4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	*0.88	*0.88	1.00	0.95	
Frt		0.97			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1753			1763	1615	1805	3278	1393	1805	3535	
Flt Permitted		0.40			0.70	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		725			1297	1615	1805	3278	1393	1805	3535	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.90	0.90	0.90	0.99	0.99	0.99
Adj. Flow (vph)	48	8	13	289	13	97	17	2112	241	57	1142	10
RTOR Reduction (vph)	0	7	0	0	0	66	0	0	31	0	0	0
Lane Group Flow (vph)	0	62	0	0	302	31	17	2112	210	57	1152	0
Heavy Vehicles (%)	3%	0%	0%	3%	0%	0%	0%	2%	2%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)		24.0			24.0	24.0	2.0	74.0	74.0	4.0	76.0	
Effective Green, g (s)		26.0			26.0	24.0	4.0	76.0	74.0	6.0	78.0	
Actuated g/C Ratio		0.22			0.22	0.20	0.03	0.63	0.62	0.05	0.65	
Clearance Time (s)		6.0			6.0	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	3.0	
Lane Grp Cap (vph)		157			281	323	60	2076	859	90	2297	
v/s Ratio Prot							0.01	c0.64		c0.03	0.33	
v/s Ratio Perm		0.09			c0.23	0.02			0.15			
v/c Ratio		0.39			1.07	0.10	0.28	1.02	0.24	0.63	0.50	
Uniform Delay, d1		40.3			47.0	39.2	56.6	22.0	10.4	55.9	10.9	
Progression Factor		1.00			1.00	1.00	0.91	0.58	0.68	1.00	1.00	
Incremental Delay, d2		1.6			75.0	0.1	1.2	18.0	0.3	13.7	0.8	
Delay (s)		41.9			122.0	39.3	52.9	30.8	7.4	69.6	11.7	
Level of Service		D			F	D	D	C	A	E	B	
Approach Delay (s)		41.9			101.9			28.6			14.4	
Approach LOS		D			F			C			B	
Intersection Summary												
HCM 2000 Control Delay		31.8										
HCM 2000 Volume to Capacity ratio		1.01										
Actuated Cycle Length (s)		120.0							12.0			
Intersection Capacity Utilization		75.4%							D			
Analysis Period (min)		15										
c Critical Lane Group												

Timings

1: US1 Bypass & Coakly Road/Cottage Street

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	38	6	220	10	74	15	1901	217	56	1131
Future Volume (vph)	38	6	220	10	74	15	1901	217	56	1131
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases		4		8		5	2		1	6
Permitted Phases	4		8		8			2		
Detector Phase	4	4	8	8	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	16.0	11.0	16.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	11.0	79.0	79.0	11.0	79.0
Total Split (%)	25.0%	25.0%	25.0%	25.0%	25.0%	9.2%	65.8%	65.8%	9.2%	65.8%
Yellow Time (s)	4.0	4.0	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	2.0
Lost Time Adjust (s)		-2.0		-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	6.0	4.0	4.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)		26.0		26.0	24.0	7.0	77.2	75.2	7.0	81.6
Actuated g/C Ratio		0.22		0.22	0.20	0.06	0.64	0.63	0.06	0.68
v/c Ratio		0.42		1.07	0.25	0.16	1.00	0.27	0.54	0.48
Control Delay		44.2		119.9	13.3	51.0	28.4	5.1	74.3	10.6
Queue Delay		0.0		0.0	0.0	0.0	1.1	0.5	0.0	0.1
Total Delay		44.2		119.9	13.3	51.0	29.5	5.6	74.3	10.6
LOS		D		F	B	D	C	A	E	B
Approach Delay		44.2		94.0			27.2			13.6
Approach LOS		D		F			C			B

Intersection Summa

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 30.0

Intersection LOS: C

Intersection Capacity Utilization 75.4%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

		
11 s	29 s	30 s
		
11 s	29 s	30 s

Queues

1: US1 Bypass & Coakly Road/Cottage Street

								
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	69	302	97	17	2112	241	57	1152
v/c Ratio	0.42	1.07	0.25	0.16	1.00	0.27	0.54	0.48
Control Delay	44.2	119.9	13.3	51.0	28.4	5.1	74.3	10.6
Queue Delay	0.0	0.0	0.0	0.0	1.1	0.5	0.0	0.1
Total Delay	44.2	119.9	13.3	51.0	29.5	5.6	74.3	10.6
Queue Length 50th (ft)	40	~260	9	11	~1007	50	44	174
Queue Length 95th (ft)	76	#336	38	m13	#1133	m71	#97	297
Internal Link Dist (ft)	998	606			304			719
Turn Bay Length (ft)			50	100		100	150	
Base Capacity (vph)	164	281	388	105	2108	903	105	2404
Starvation Cap Reductn	0	0	0	0	9	348	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	235
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.07	0.25	0.16	1.01	0.43	0.54	0.53

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

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	485	14	87	52	11	288	36	1380	11	200	1034	140
Future Volume (vph)	485	14	87	52	11	288	36	1380	11	200	1034	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0		4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00		0.95	0.95	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85		0.90	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.95	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1708	1615		1606	1534	1752	3497		1752	3502	
Flt Permitted	0.95	0.95	1.00		0.99	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1708	1615		1606	1534	1752	3497		1752	3502	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	584	17	105	58	12	320	37	1423	11	208	1077	146
RTOR Reduction (vph)	0	0	87	0	55	175	0	1	0	0	8	0
Lane Group Flow (vph)	298	303	18	0	143	17	37	1433	0	208	1215	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	21.1	21.1	21.1		10.3	10.3	3.0	51.6		13.0	61.6	
Effective Green, g (s)	23.1	23.1	21.1		12.3	10.3	5.0	53.6		15.0	63.6	
Actuated g/C Ratio	0.19	0.19	0.18		0.10	0.09	0.04	0.45		0.12	0.53	
Clearance Time (s)	6.0	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	326	328	283		164	131	73	1561		219	1856	
v/s Ratio Prot	0.18	c0.18	0.01		c0.09		0.02	c0.41		c0.12	0.35	
v/s Ratio Perm						0.01						
v/c Ratio	0.91	0.92	0.07		0.87	0.13	0.51	0.92		0.95	0.65	
Uniform Delay, d1	47.5	47.6	41.2		53.1	50.7	56.3	31.1		52.1	20.3	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.03	0.87	
Incremental Delay, d2	28.8	30.6	0.1		36.6	0.5	5.4	10.2		40.6	1.5	
Delay (s)	76.3	78.2	41.3		89.6	51.2	61.7	41.3		94.1	19.0	
Level of Service	E	E	D		F	D	E	D		F	B	
Approach Delay (s)		71.9			70.7			41.8			29.9	
Approach LOS		E			E			D			C	
Intersection Summary												
HCM 2000 Control Delay			45.7									
HCM 2000 Volume to Capacity ratio			0.94									
Actuated Cycle Length (s)			120.0							18.0		
Intersection Capacity Utilization			80.0%							D		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	485	14	87	11	288	36	1380	200	1034
Future Volume (vph)	485	14	87	11	288	36	1380	200	1034
Turn Type	Split	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	7	7	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	7	7	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	27.0	27.0	27.0	16.0	16.0	11.0	58.0	19.0	66.0
Total Split (%)	22.5%	22.5%	22.5%	13.3%	13.3%	9.2%	48.3%	15.8%	55.0%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	23.1	23.1	21.1	12.3	10.3	7.0	53.5	15.0	66.0
Actuated g/C Ratio	0.19	0.19	0.18	0.10	0.09	0.06	0.45	0.12	0.55
v/c Ratio	0.91	0.92	0.24	0.90	0.63	0.36	0.92	0.95	0.63
Control Delay	80.1	81.7	1.3	77.3	17.2	64.6	41.8	96.6	18.0
Queue Delay	19.0	20.7	0.0	10.3	2.5	0.0	3.4	0.0	0.3
Total Delay	99.2	102.4	1.3	87.5	19.7	64.6	45.2	96.6	18.3
LOS	F	F	A	F	B	E	D	F	B
Approach Delay		86.0		54.1			45.7		29.7
Approach LOS		F		D			D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 16 (13%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 47.9

Intersection LOS: D

Intersection Capacity Utilization 80.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

			
19 s	58 s	16 s	27 s
			
11 s	66 s		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	298	303	105	198	192	37	1434	208	1223
v/c Ratio	0.91	0.92	0.24	0.90	0.63	0.36	0.92	0.95	0.63
Control Delay	80.1	81.7	1.3	77.3	17.2	64.6	41.8	96.6	18.0
Queue Delay	19.0	20.7	0.0	10.3	2.5	0.0	3.4	0.0	0.3
Total Delay	99.2	102.4	1.3	87.5	19.7	64.6	45.2	96.6	18.3
Queue Length 50th (ft)	240	245	0	113	1	28	533	140	285
Queue Length 95th (ft)	#363	#370	0	#268	77	65	#663	m#273	m455
Internal Link Dist (ft)		916		388			250		304
Turn Bay Length (ft)	225		225			200		150	
Base Capacity (vph)	326	328	441	219	306	103	1574	219	1933
Starvation Cap Reductn	0	0	0	0	0	0	0	0	220
Spillback Cap Reductn	32	32	0	14	44	0	84	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.01	1.02	0.24	0.97	0.73	0.36	0.96	0.95	0.71

Intersection Summary

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

Queue shown is maximum after two cycles.

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

HCM Signalized Intersection Capacity Analysis

4: Islington Street & CVS Driveway

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	338	30	409	10	18	12	405	320	16	25	340	390
Future Volume (vph)	338	30	409	10	18	12	405	320	16	25	340	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	6.0		4.0		4.0	4.0			4.0	6.0
Lane Util. Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt		1.00	0.85		0.96		1.00	0.99			1.00	0.85
Flt Protected		0.96	1.00		0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)		1800	1583		1803		1770	1851			1859	1599
Flt Permitted		0.74	1.00		0.84		0.95	1.00			0.95	1.00
Satd. Flow (perm)		1388	1583		1526		1770	1851			1779	1599
Peak-hour factor, PHF	0.94	0.94	0.94	0.83	0.83	0.83	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	360	32	435	12	22	14	471	372	19	29	395	453
RTOR Reduction (vph)	0	0	186	0	10	0	0	1	0	0	0	321
Lane Group Flow (vph)	0	392	249	0	38	0	471	390	0	0	424	132
Heavy Vehicles (%)	1%	0%	2%	0%	0%	0%	2%	2%	0%	0%	2%	1%
Turn Type	custom	NA	custom	custom	NA		Prot	NA		custom	NA	custom
Protected Phases							5					
Permitted Phases	4	4	4	8	8			2		2 5 6	6	6
Actuated Green, G (s)		26.0	26.0		26.0		24.0	58.0			28.0	28.0
Effective Green, g (s)		28.0	26.0		28.0		26.0	60.0			30.0	28.0
Actuated g/C Ratio		0.29	0.27		0.29		0.27	0.62			0.31	0.29
Clearance Time (s)		6.0	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)		404	428		445		479	1156			555	466
v/s Ratio Prot							c0.27					
v/s Ratio Perm		c0.28	0.16		0.02			0.21			c0.24	0.08
v/c Ratio		0.97	0.58		0.09		0.98	0.34			0.76	0.28
Uniform Delay, d1		33.6	30.3		24.7		34.8	8.6			29.8	26.3
Progression Factor		1.00	1.00		1.00		1.00	1.00			1.00	1.00
Incremental Delay, d2		36.9	2.0		0.1		36.5	0.2			6.2	0.3
Delay (s)		70.5	32.3		24.8		71.3	8.7			36.0	26.6
Level of Service		E	C		C		E	A			D	C
Approach Delay (s)		50.4			24.8			42.9			31.1	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			41.0				HCM 2000 Level of Service				D	
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			96.0				Sum of lost time (s)			19.0		
Intersection Capacity Utilization			78.7%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

4: Islington Street & CVS Driveway

											
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT	SBR	Ø9
Lane Configurations											
Traffic Volume (vph)	338	30	409	10	18	405	320	25	340	390	
Future Volume (vph)	338	30	409	10	18	405	320	25	340	390	
Turn Type	custom	NA	custom	custom	NA	Prot	NA	custom	NA	custom	
Protected Phases						5					9
Permitted Phases	4	4	4	8	8		2	2 5 6	6	6	
Detector Phase	4	4	4	8	8	5	2	2 5 6	6	6	
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	10.0		10.0	10.0	7.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0		16.0	16.0	24.0
Total Split (s)	32.0	32.0	32.0	32.0	32.0	30.0	64.0		34.0	34.0	24.0
Total Split (%)	26.7%	26.7%	26.7%	26.7%	26.7%	25.0%	53.3%		28.3%	28.3%	20%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)		-2.0	0.0		-2.0	-2.0	-2.0		-2.0	0.0	
Total Lost Time (s)		4.0	6.0		4.0	4.0	4.0		4.0	6.0	
Lead/Lag						Lag			Lead	Lead	
Lead-Lag Optimize?						Yes			Yes	Yes	
Recall Mode	None	None	None	None	None	None	Min		Min	Min	None
Act Effct Green (s)		28.0	26.0		28.0	26.0	60.0		30.0	28.0	
Actuated g/C Ratio		0.29	0.27		0.29	0.27	0.62		0.31	0.29	
v/c Ratio		0.97	0.71		0.11	0.98	0.34		0.76	0.58	
Control Delay		73.4	19.9		19.9	73.6	9.5		40.4	5.9	
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0	0.0	
Total Delay		73.4	19.9		19.9	73.6	9.5		40.4	5.9	
LOS		E	B		B	E	A		D	A	
Approach Delay		45.2			19.9		44.5		22.6		
Approach LOS		D			B		D		C		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 96

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 36.9

Intersection Capacity Utilization 78.7%

Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service D

Splits and Phases: 4: Islington Street & CVS Driveway

Ø2	Ø4	Ø9
64 s	32 s	24 s
Ø6	Ø5	Ø8
34 s	30 s	32 s

Queues

4: Islington Street & CVS Driveway

							
Lane Group	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	392	435	48	471	391	424	453
v/c Ratio	0.97	0.71	0.11	0.98	0.34	0.76	0.58
Control Delay	73.4	19.9	19.9	73.6	9.5	40.4	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.4	19.9	19.9	73.6	9.5	40.4	5.9
Queue Length 50th (ft)	235	96	15	285	102	232	0
Queue Length 95th (ft)	#421	212	38	#452	145	326	56
Internal Link Dist (ft)	212		69		292	271	
Turn Bay Length (ft)		125		150			
Base Capacity (vph)	404	614	455	479	1158	555	787
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.71	0.11	0.98	0.34	0.76	0.58

Intersection Summa

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: US1 Bypass & Coakly Road/Cottage Street

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	6	10	226	10	135	15	1707	219	67	1054	10
Future Volume (vph)	38	6	10	226	10	135	15	1707	219	67	1054	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0	6.0	4.0	4.0	6.0	4.0	4.0	
Lane Util. Factor		1.00			1.00	1.00	1.00	*0.88	*0.88	1.00	0.95	
Frt		0.97			1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97			0.95	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1753			1762	1615	1805	3278	1393	1805	3535	
Flt Permitted		0.48			0.70	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		873			1295	1615	1805	3278	1393	1805	3535	
Peak-hour factor, PHF	0.79	0.79	0.79	0.76	0.76	0.76	0.90	0.90	0.90	0.99	0.99	0.99
Adj. Flow (vph)	48	8	13	297	13	178	17	1897	243	68	1065	10
RTOR Reduction (vph)	0	7	0	0	0	63	0	0	34	0	0	0
Lane Group Flow (vph)	0	62	0	0	310	115	17	1897	209	68	1075	0
Heavy Vehicles (%)	3%	0%	0%	3%	0%	0%	0%	2%	2%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8		8			2			
Actuated Green, G (s)		28.4			28.4	28.4	2.0	69.6	69.6	4.0	71.6	
Effective Green, g (s)		30.4			30.4	28.4	4.0	71.6	69.6	6.0	73.6	
Actuated g/C Ratio		0.25			0.25	0.24	0.03	0.60	0.58	0.05	0.61	
Clearance Time (s)		6.0			6.0	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	3.0	
Lane Grp Cap (vph)		221			328	382	60	1955	807	90	2168	
v/s Ratio Prot							0.01	c0.58		c0.04	0.30	
v/s Ratio Perm		0.07			c0.24	0.07			0.15			
v/c Ratio		0.28			0.95	0.30	0.28	0.97	0.26	0.76	0.50	
Uniform Delay, d1		36.0			44.0	37.7	56.6	23.2	12.5	56.3	12.9	
Progression Factor		1.00			1.00	1.00	0.94	0.54	0.64	1.00	1.00	
Incremental Delay, d2		0.7			35.2	0.4	1.5	9.9	0.4	29.7	0.8	
Delay (s)		36.7			79.2	38.1	54.7	22.5	8.4	86.0	13.7	
Level of Service		D			E	D	D	C	A	F	B	
Approach Delay (s)		36.7			64.2			21.2			18.0	
Approach LOS		D			E			C			B	
Intersection Summary												
HCM 2000 Control Delay			26.0				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.95									
Actuated Cycle Length (s)			120.0				Sum of lost time (s)			12.0		
Intersection Capacity Utilization			77.6%				ICU Level of Service			D		
Analysis Period (min)			15									
c Critical Lane Group												

Timings

1: US1 Bypass & Coakly Road/Cottage Street

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	38	6	226	10	135	15	1707	219	67	1054
Future Volume (vph)	38	6	226	10	135	15	1707	219	67	1054
Turn Type	Perm	NA	Perm	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases		4		8		5	2		1	6
Permitted Phases	4		8		8			2		
Detector Phase	4	4	8	8	8	5	2	2	1	6
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	16.0	16.0	16.0	16.0	16.0	11.0	16.0	16.0	11.0	16.0
Total Split (s)	33.0	33.0	33.0	33.0	33.0	11.0	76.0	76.0	11.0	76.0
Total Split (%)	27.5%	27.5%	27.5%	27.5%	27.5%	9.2%	63.3%	63.3%	9.2%	63.3%
Yellow Time (s)	4.0	4.0	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	2.0
Lost Time Adjust (s)		-2.0		-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0
Total Lost Time (s)		4.0		4.0	6.0	4.0	4.0	6.0	4.0	4.0
Lead/Lag						Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Min	C-Min	None	C-Min
Act Effct Green (s)		30.4		30.4	28.4	7.1	72.8	70.8	7.3	77.2
Actuated g/C Ratio		0.25		0.25	0.24	0.06	0.61	0.59	0.06	0.64
v/c Ratio		0.30		0.95	0.40	0.16	0.95	0.28	0.62	0.47
Control Delay		36.7		83.3	24.1	52.8	21.1	5.6	79.7	12.2
Queue Delay		0.0		0.0	0.0	0.0	2.5	0.6	0.0	0.1
Total Delay		36.7		83.3	24.1	52.8	23.7	6.2	79.7	12.3
LOS		D		F	C	D	C	A	E	B
Approach Delay		36.7		61.7			21.9			16.3
Approach LOS		D		E			C			B

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green, Master Intersection

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 25.6

Intersection Capacity Utilization 77.6%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service D

Splits and Phases: 1: US1 Bypass & Coakly Road/Cottage Street

 01	 02 (R)	 04
11 s	26 s	33 s
 05	 06 (R)	 08
11 s	26 s	33 s

Queues

1: US1 Bypass & Coakly Road/Cottage Street

	→	←	↖	↗	↑	↘	↙	↓
Lane Group	EBT	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	69	310	178	17	1897	243	68	1075
v/c Ratio	0.30	0.95	0.40	0.16	0.95	0.28	0.62	0.47
Control Delay	36.7	83.3	24.1	52.8	21.1	5.6	79.7	12.2
Queue Delay	0.0	0.0	0.0	0.0	2.5	0.6	0.0	0.1
Total Delay	36.7	83.3	24.1	52.8	23.7	6.2	79.7	12.3
Queue Length 50th (ft)	38	241	62	12	309	43	53	174
Queue Length 95th (ft)	71	#322	97	m16	#974	m76	#121	290
Internal Link Dist (ft)	998	606			304			719
Turn Bay Length (ft)			50	100		100	150	
Base Capacity (vph)	227	327	444	106	1988	855	109	2275
Starvation Cap Reductn	0	0	0	0	48	315	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	260
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.95	0.40	0.16	0.98	0.45	0.62	0.53

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	487	12	87	52	5	94	36	1380	12	123	1034	146
Future Volume (vph)	487	12	87	52	5	94	36	1380	12	123	1034	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0		4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00		0.95	0.95	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85		0.96	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.95	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1707	1615		1676	1534	1752	3496		1752	3499	
Flt Permitted	0.95	0.95	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1707	1615		1676	1534	1752	3496		1752	3499	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	587	14	105	58	6	104	37	1423	12	128	1077	152
RTOR Reduction (vph)	0	0	84	0	11	75	0	1	0	0	9	0
Lane Group Flow (vph)	299	302	21	0	77	5	37	1434	0	128	1220	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	23.6	23.6	23.6		6.9	6.9	3.0	55.5		10.0	62.5	
Effective Green, g (s)	25.6	25.6	23.6		8.9	6.9	5.0	57.5		12.0	64.5	
Actuated g/C Ratio	0.21	0.21	0.20		0.07	0.06	0.04	0.48		0.10	0.54	
Clearance Time (s)	6.0	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	362	364	317		124	88	73	1675		175	1880	
v/s Ratio Prot	0.18	c0.18	0.01		c0.05		0.02	c0.41		c0.07	0.35	
v/s Ratio Perm						0.00						
v/c Ratio	0.83	0.83	0.07		0.62	0.05	0.51	0.86		0.73	0.65	
Uniform Delay, d1	45.1	45.1	39.2		53.9	53.5	56.3	27.6		52.4	19.7	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.14	0.86	
Incremental Delay, d2	14.2	14.4	0.1		9.3	0.2	5.4	5.9		12.3	1.5	
Delay (s)	59.3	59.5	39.3		63.2	53.7	61.7	33.5		71.8	18.4	
Level of Service	E	E	D		E	D	E	C		E	B	
Approach Delay (s)		56.4			58.7			34.2			23.4	
Approach LOS		E			E			C			C	
Intersection Summary												
HCM 2000 Control Delay			35.6									
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			120.0									
Intersection Capacity Utilization			75.8%									
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	487	12	87	5	94	36	1380	123	1034
Future Volume (vph)	487	12	87	5	94	36	1380	123	1034
Turn Type	Split	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	7	7	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	7	7	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	31.0	31.0	31.0	13.0	13.0	11.0	60.0	16.0	65.0
Total Split (%)	25.8%	25.8%	25.8%	10.8%	10.8%	9.2%	50.0%	13.3%	54.2%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	25.6	25.6	23.6	8.9	6.9	7.2	57.5	12.0	66.9
Actuated g/C Ratio	0.21	0.21	0.20	0.07	0.06	0.06	0.48	0.10	0.56
v/c Ratio	0.83	0.83	0.25	0.65	0.37	0.35	0.86	0.73	0.63
Control Delay	64.4	65.0	4.4	69.4	5.8	63.9	34.4	79.9	17.8
Queue Delay	1.7	1.8	0.0	0.0	0.2	0.0	1.3	0.0	0.2
Total Delay	66.1	66.7	4.4	69.4	6.0	63.9	35.6	79.9	18.0
LOS	E	E	A	E	A	E	D	E	B
Approach Delay		57.2		39.2			36.3		23.9
Approach LOS		E		D			D		C

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 14 (12%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 35.9

Intersection Capacity Utilization 75.8%

Analysis Period (min) 15

Intersection LOS: D

ICU Level of Service D

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

			
16 s	50 s	13 s	31 s
			
11 s	65 s		

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	299	302	105	88	80	37	1435	128	1229
v/c Ratio	0.83	0.83	0.25	0.65	0.37	0.35	0.86	0.73	0.63
Control Delay	64.4	65.0	4.4	69.4	5.8	63.9	34.4	79.9	17.8
Queue Delay	1.7	1.8	0.0	0.0	0.2	0.0	1.3	0.0	0.2
Total Delay	66.1	66.7	4.4	69.4	6.0	63.9	35.6	79.9	18.0
Queue Length 50th (ft)	230	233	0	61	0	28	516	80	334
Queue Length 95th (ft)	309	311	18	#140	7	65	623	m#166	m483
Internal Link Dist (ft)		916		388			250		304
Turn Bay Length (ft)	225		225			200		150	
Base Capacity (vph)	382	383	444	136	217	105	1676	177	1959
Starvation Cap Reductn	0	0	0	0	0	0	0	0	187
Spillback Cap Reductn	20	20	0	0	12	0	95	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.83	0.24	0.65	0.39	0.35	0.91	0.72	0.69

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM 2010 TWSC

1: US1 Bypass & Coakly Road/Cottage Street

Intersection

Int Delay, s/veh 1.8

Movement EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT SBR

Lane Configurations																								
Traffic Vol, veh/h	0	✓	0	✓	54	✓	0	✓	0	✓	84	✓	0	✓	1953	✓	217	✓	0	✓	1187	✓	35	✓
Future Vol, veh/h	0		0		54		0		0		84		0		1953		217		0		1187		35	
Conflicting Peds, #/hr	0		0		0		0		0		0		0		0		0		0		0		0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-	0	-	-	-	-
Peak Hour Factor	79	79	79	76	76	76	90	90	90	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99
Heavy Vehicles, %	3	0	0	3	0	0	0	2	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0
Mvmt Flow	0	0	68	0	0	111	0	2170	241	0	1199	35												

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	-	-	617	-	-	1206	-	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	6.9	-	-	6.9	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.3	-	-	3.3	-	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	438	0	0	179	0	-	-	0	-	-
Stage 1	0	0	-	0	0	-	0	-	-	0	-	-
Stage 2	0	0	-	0	0	-	0	-	-	0	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	438	-	-	179	-	-	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	14.7		53		0		0	
HCM LOS	B		F					

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBT	SBR
Capacity (veh/h)	-	-	438	179	-	-
HCM Lane V/C Ratio	-	-	0.156	0.617	-	-
HCM Control Delay (s)	-	-	14.7	53	-	-
HCM Lane LOS	-	-	B	F	-	-
HCM 95th %tile Q(veh)	-	-	0.5	3.5	-	-

HCM Signalized Intersection Capacity Analysis

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	485	14	87	272	11	287	36	1380	12	300	814	140
Future Volume (vph)	485	14	87	272	11	287	36	1380	12	300	814	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0		4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00		0.95	0.95	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85		0.99	0.85	1.00	1.00		1.00	0.98	
Flt Protected	0.95	0.95	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1708	1615		1706	1534	1752	3496		1752	3485	
Flt Permitted	0.95	0.95	1.00		0.96	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1708	1615		1706	1534	1752	3496		1752	3485	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	584	17	105	302	12	319	37	1423	12	312	848	146
RTOR Reduction (vph)	0	0	90	0	3	162	0	1	0	0	11	0
Lane Group Flow (vph)	298	303	15	0	343	125	37	1434	0	313	983	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	17.0	17.0	17.0		18.0	18.0	3.0	44.0		17.0	58.0	
Effective Green, g (s)	19.0	19.0	17.0		20.0	18.0	5.0	46.0		19.0	60.0	
Actuated g/C Ratio	0.16	0.16	0.14		0.17	0.15	0.04	0.38		0.16	0.50	
Clearance Time (s)	6.0	6.0	6.0		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		3.0	3.0	
Lane Grp Cap (vph)	268	270	228		284	230	73	1340		277	1742	
v/s Ratio Prot	0.18	c0.18	0.01		c0.20		0.02	c0.41		c0.18	0.28	
v/s Ratio Perm						0.08						
v/c Ratio	1.11	1.12	0.07		1.21	0.54	0.51	1.07		1.13	0.56	
Uniform Delay, d1	50.5	50.5	44.6		50.0	47.2	56.3	37.0		50.5	20.9	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	88.4	91.7	0.1		121.3	2.6	5.4	45.8		93.7	1.3	
Delay (s)	138.9	142.2	44.7		171.3	49.8	61.7	82.8		144.2	22.2	
Level of Service	F	F	D		F	D	E	F		F	C	
Approach Delay (s)		126.3			116.2			82.3			51.4	
Approach LOS		F			F			F			D	
Intersection Summary												
HCM 2000 Control Delay			85.3									
HCM 2000 Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			120.0									
Intersection Capacity Utilization			93.3%									
Analysis Period (min)			15									
c Critical Lane Group												

Timings

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	485	14	87	11	287	36	1380	300	814
Future Volume (vph)	485	14	87	11	287	36	1380	300	814
Turn Type	Split	NA	Prot	NA	Perm	Prot	NA	Prot	NA
Protected Phases	7	7	7	8		5	2	1	6
Permitted Phases					8				
Detector Phase	7	7	7	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0
Total Split (s)	23.0	23.0	23.0	24.0	24.0	11.0	50.0	23.0	62.0
Total Split (%)	19.2%	19.2%	19.2%	20.0%	20.0%	9.2%	41.7%	19.2%	51.7%
Yellow Time (s)	4.0	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)	-2.0	-2.0	0.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes				
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min
Act Effct Green (s)	19.0	19.0	17.0	20.0	18.0	7.0	46.0	19.0	62.4
Actuated g/C Ratio	0.16	0.16	0.14	0.17	0.15	0.06	0.38	0.16	0.52
v/c Ratio	1.11	1.12	0.27	1.21	0.73	0.36	1.07	1.13	0.55
Control Delay	134.8	137.8	1.7	163.2	28.7	64.7	81.7	139.5	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.8	137.8	1.7	163.2	28.7	64.7	81.7	139.5	21.0
LOS	F	F	A	F	C	E	F	F	C
Approach Delay		116.3		102.2			81.3		49.4
Approach LOS		F		F			F		D

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.21

Intersection Signal Delay: 80.4

Intersection Capacity Utilization 93.3%

Analysis Period (min) 15

Intersection LOS: F

ICU Level of Service F

Splits and Phases: 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

				
Q1	Q2 (R)		Q8	Q7
23 s	50 s		24 s	23 s
				
Q5	Q6 (R)			
41 s	62 s			

Queues

2: US1 Bypass & Borthwick Avenue/Cate Street Extension

									
Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	298	303	105	346	287	37	1435	313	994
v/c Ratio	1.11	1.12	0.27	1.21	0.73	0.36	1.07	1.13	0.55
Control Delay	134.8	137.8	1.7	163.2	28.7	64.7	81.7	139.5	21.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	134.8	137.8	1.7	163.2	28.7	64.7	81.7	139.5	21.0
Queue Length 50th (ft)	~277	~284	0	~342	72	28	~649	~281	277
Queue Length 95th (ft)	#411	#418	0	#544	#187	65	#790	#461	344
Internal Link Dist (ft)		916		388			250		304
Turn Bay Length (ft)	225		225			200		150	
Base Capacity (vph)	268	270	392	287	392	102	1341	277	1822
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.11	1.12	0.27	1.21	0.73	0.36	1.07	1.13	0.55

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.

NH DOT - SEQUENCE AND TIMING CHART

4/18/2018 12:18:09 PM

CITY/TOWN: PORTSMOUTH

SIGNAL ID#: S-379-07

LOCATION: US 1 BYPASS

INTERSECT: BORTHWICK AVE

CABINET TYPE: P TYPE-1

Meter Number 80097957

CONTROLLER MFG Econolite ASC 2100

and Mfr:

INSTALL DATE:

12/8 /1986

CONTROLLER TIMINGS

	PH 1	PH 2	PH 5	PH 6	PH 7	PH 8
INITIAL	4	4	4	4	4	4
PASSAGE	3	8	3	8	3	4
YELLOW	4	4	4	4	4	4
ALL RED	2	2	2	2	2	2
MAXIMUM 1	11	52	11	52	14	14
MAXIMUM 2	11	57	11	57	20	25
MAXIMUM 3						
MAXIMUM EXT						
RECALL	OFF	SOFT	OFF	SOFT	OFF	OFF
WALK						
DON'T WALK						
FL YEL ARROW						

NOTES::

NH DOT - SEQUENCE AND TIMING CHART

4/18/2018 12:18:09 PM

TBC COORDINATION	M - F 07:00 - 11:00 PLAN 1
	M - F 11:00 - 15:00 PLAN 2
	SAT 11:00 - 17:00 PLAN 2
	M - F 15:00 - 18:00 PLAN 3
	FREE ALL OTHER TIMES

PLAN 1 CYCLE = 130s OFF = 10 (END OF GREEN) FORCE OFF = FIXED PED SERVICE COORD = OFF
SPLIT = 19, 69, 21 SHORTWAY 10% LONGWAY 24%

PLAN 2 CYCLE = 110s OFF = 105 (END OF GREEN) FORCE OFF = FIXED PED SERVICE COORD = OFF
SPLIT = 12, 58, 20 SHORTWAY 10% LONGWAY 24%

PLAN 3 CYCLE = 120s OFF = 115 (END OF GREEN) FORCE OFF = FIXED PED SERVICE COORD = OFF
SPLIT = 15, 61, 29 SHORTWAY 10% LONGWAY 24%

NH DOT - SEQUENCE AND TIMING CHART

4/18/2018 12:17:43 PM

TBC COORDINATION	M - F 07:00 - 11:00 PLAN 1
	M - F 11:00 - 15:00 PLAN 2
	SAT 11:00 - 17:00 PLAN 2
	M - F 15:00 - 18:00 PLAN 3
	FREE ALL OTHER TIMES

PLAN 1 CYCLE = 130s OFF = 0 (END OF GREEN) FORCE OFF = FIXED PED SERVICE COORD = OFF
SPLIT = 15, 76, 39 SHORTWAY 10% LONGWAY 24%

PLAN 2 CYCLE = 110s OFF = 0 (END OF GREEN) FORCE OFF = FIXED PED SERVICE COORD = OFF
SPLIT = 15, 57, 38 SHORTWAY 10% LONGWAY 24%

PLAN 3 CYCLE = 120s OFF = 0 (END OF GREEN) FORCE OFF = FIXED PED SERVICE COORD = OFF
SPLIT = 12, 78, 30 SHORTWAY 10% LONGWAY 24%

NH DOT - SEQUENCE AND TIMING CHART

4/18/2018 12:17:43 PM

CITY/TOWN: PORTSMOUTH

SIGNAL ID#: S-379-11

LOCATION: US 1 BYPASS

INTERSECT: COTTAGE ST/COAKLEY AVE

CABINET TYPE: P TYPE-1

Meter Number 80063578
and Mfr:

CONTROLLER MFG Econolite ASC 2100

INSTALL DATE:

6 /24/1966

CONTROLLER TIMINGS

	PH 1	PH 2	PH 4	PH 5	PH 6	PH 8
INITIAL	4	4	4	4	4	4
PASSAGE	3	8	3	3	8	3
YELLOW	4	4	4	4	4	4
ALL RED	2	2	2	2	2	2
MAXIMUM 1	10	50	32	10	50	32
MAXIMUM 2		56			56	
MAXIMUM 3						
MAXIMUM EXT						
RECALL	NL	ON	OFF	VEH	OFF	
WALK						
DON'T WALK						
FL YEL ARROW						

NOTES::

Appendix J

Capacity and Level of Service Calculations - Unsignalized

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	2	1178	1	0	938
Future Vol, veh/h	0	2	1178	1	0	938
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	97	97	96	96
Heavy Vehicles, %	0	0	3	0	0	1
Mvmt Flow	0	2	1214	1	0	977

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	608	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	444	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	444	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B	-	-

Minor Lane Group	NBT	NBR	SBT
Capacity (veh/h)	-	444	-
HCM Lane V/C Ratio	-	0.005	-
HCM Control Delay (s)	-	13.1	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection						
Int Delay, s/veh	0'					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑			↑↑
Traffic Vol, veh/h	0	2	1295	1	0	1037
Future Vol, veh/h	0	2	1295	1	0	1037
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT-Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	97	97	96	96
Heavy Vehicles, %	0	0	3	0	0	1
Mvmt Flow	0	2	1335	1	0	1080

Major/Minor	Minor	Major1	Major2
Conflicting Flow All	- 668	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	- 6.9	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	- 3.3	-	-
Pot Cap-1 Maneuver	0 405	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	- 405	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.9	0	0
HCM LOS	B		

Minor Lane Approach Mvmt	NBT	NBR/EBL	SBT
Capacity (veh/h)	-	405	-
HCM Lane V/C Ratio	-	0.005	-
HCM Control Delay (s)	-	13.9	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0	-

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection

Int Delay, s/veh 0

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑			↑↑
Traffic Vol, veh/h	0	2	1430	1	0	1144
Future Vol, veh/h	0	2	1430	1	0	1144
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	97	97	96	96
Heavy Vehicles, %	0	0	3	0	0	1
Mvmt Flow	0	2	1474	1	0	1192

Major/Minor

	Minor1	Major1	Major2
Conflicting Flow All	738	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	6.9	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.3	-	-
Pot Cap-1 Maneuver	365	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	365	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	WB	EB	SB
HCM Control Delay, s	14.9	0	0
HCM LOS	B	-	-

Major Lane V/C Ratio

	NBT	NBR	WBL	SBT
Capacity (veh/h)	-	-	365	-
HCM Lane V/C Ratio	-	-	0.006	-
HCM Control Delay (s)	-	-	14.9	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑	✓	✓	↑↑
Traffic Vol, veh/h	0	14	1280	59	0	1066
Future Vol, veh/h	0	14	1280	59	0	1066
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	97	97	96	96
Heavy Vehicles, %	0	0	3	0	0	1
Mvmt Flow	0	16	1320	61	0	1110

Major/Minor

	Minor1	Major1	Major2
Conflicting Flow All	-	691	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	392	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	392	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

	WB	NB	SB
HCM Control Delay, s	14.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt

	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	392
HCM Lane V/C Ratio	-	-	0.04
HCM Control Delay (s)	-	-	14.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.1

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑			↑↑
Traffic Vol, veh/h	0	✓ 14	✓ 1415	✓ 59	✓ 0	✓ 1173
Future Vol, veh/h	0	14	1415	59	0	1173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	97	97	96	96
Heavy Vehicles, %	0	0	3	0	0	1
Mvmt Flow	0	16	1459	61	0	1222

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	760	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	353	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	353	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.7	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	- 353	-
HCM Lane V/C Ratio	-	- 0.044	-
HCM Control Delay (s)	-	- 15.7	-
HCM Lane LOS	-	- C	-
HCM 95th %tile Q(veh)	-	- 0.1	-

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBR
Lane Configurations		↗ ↘	↗ ↘	↗ ↘	↗ ↘	↗ ↘
Traffic Vol, veh/h	0	2	929	1	0	822
Future Vol, veh/h	0	2	929	1	0	822
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	90	90	95	95	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	2	978	1	0	893

Major W/Minor	W/Minor	Major1	Major2
Conflicting Flow All	- 490	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	- 6.9	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	- 3.3	-	-
Pot Cap-1 Maneuver	0 529	-	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	- 529	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.8	0	0
HCM LOS	B	-	-

Minor Lane Major W/Minor	NBT	NBR	EB	SB
Capacity (veh/h)	-	-	529	-
HCM Lane V/C Ratio	-	-	0.004	-
HCM Control Delay (s)	-	-	11.8	-
HCM Lane LOS	-	-	B	-
HCM 95th %tile Q(veh)	-	-	0	-

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

1/1/2020

Int Delay, s/veh 0

Movement	NB	WB	NB	WB	SB	SB
Lane Configurations	1	2	1	2	1	2
Traffic Vol, veh/h	0	2	1028	1	0	908
Future Vol, veh/h	0	2	1028	1	0	908
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	0	-
Grade, %	0	-	0	-	0	-
Peak Hour Factor	90	90	95	95	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	2	1082	1	0	987

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	542	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	6.9	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.3	-	-
Pot Cap-1 Maneuver	0	490	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	490	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B	-	-

Minor Lane	Major Mvmt	NB	WB	SB
Capacity (veh/h)	-	-	490	-
HCM Lane V/C Ratio	-	-	0.005	-
HCM Control Delay (s)	-	-	12.4	-
HCM Lane LOS	-	-	B	-
HCM 95th %ile Q(veh)	-	-	0	-

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection

Int Delay, s/veh 0

Movement WBL WBR NBT NBR SBL SBT

Lane Configurations

Traffic Vol, veh/h 0 2 1137 1 0 1003

Future Vol, veh/h 0 2 1137 1 0 1003

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length - 0 - - -

Veh in Median Storage, # 0 - 0 - - 0

Grade, % 0 - 0 - - 0

Peak Hour Factor 90 90 95 95 92 92

Heavy Vehicles, % 0 0 1 0 0 1

Mvmt Flow 0 2 1197 1 0 1090

Major Minor Major Major

Conflicting Flow All - 599 0 0 - -

Stage 1 - - - - -

Stage 2 - - - - -

Critical Hdwy - 6.9 - - -

Critical Hdwy Stg 1 - - - - -

Critical Hdwy Stg 2 - - - - -

Follow-up Hdwy - 3.3 - - -

Pot Cap-1 Maneuver 0 450 - - 0 -

Stage 1 0 - - - 0 -

Stage 2 0 - - - 0 -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver - 450 - - -

Mov Cap-2 Maneuver - - - - -

Stage 1 - - - - -

Stage 2 - - - - -

Approach WB NB SB

HCM Control Delay, s 13 0 0

HCM LOS B

Minor Lane Major Mvmt NBT NBR NBT NBR SBT

Capacity (veh/h) - - 450 - -

HCM Lane V/C Ratio - - 0.005 - -

HCM Control Delay (s) - - 13 - -

HCM Lane LOS - - B - -

HCM 95th %tile Q(veh) - - 0 - -

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑	↑		↑↑
Traffic Vol, veh/h	0	✓ 19	✓ 1000	✓ 72	✓ 0	✓ 948
Future Vol, veh/h	0	19	1000	72	0	948
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	95	95	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	21	1053	76	0	1030

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	565	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	473	0
Stage 1	0	-	0
Stage 2	0	-	0
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	473	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

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

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	473	-
HCM Lane V/C Ratio	-	0.045	-
HCM Control Delay (s)	-	13	-
HCM Lane LOS	-	B	-
HCM 95th %tile Q(veh)	-	0.1	-

HCM 2010 TWSC

3: US1 Bypass & Existing Site Driveway

Intersection

Int Delay, s/veh 0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑	↑↑	↑	↑	↑↑
Traffic Vol, veh/h	0	✓19	✓1109	✓72	✓0	✓1043
Future Vol, veh/h	0	19	1109	72	0	1043
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	95	95	92	92
Heavy Vehicles, %	0	0	1	0	0	1
Mvmt Flow	0	21	1167	76	0	1134

Major/Minor

	Minor1	Major1	Major2
Conflicting Flow All	-	622	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.9	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.3	-
Pot Cap-1 Maneuver	0	434	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	434	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach

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

Minor Lane/Major Mvmt

	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	434
HCM Lane V/C Ratio	-	-	0.049
HCM Control Delay (s)	-	-	13.7
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay, s/veh 1.5

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SEL	SEB	SEB
Lane Configurations												
Traffic Vol, veh/h	3	0	55	0	1	0	81	510	0	1	571	11
Future Vol, veh/h	3	0	55	0	1	0	81	510	0	1	571	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	90	90	90	83	83	83	91	91	91
Heavy Vehicles, %	0	0	2	0	0	0	0	2	0	0	1	9
Mvmt Flow	4	0	72	0	1	0	98	614	0	1	627	12

	Minor2	Minor4	Minor6	Minor8	Minor10	Minor12	Minor14	Minor16	Minor18	Minor20	Minor22	Minor24
Conflicting Flow All	1446	1445	633	1481	1451	614	639	0	0	614	0	0
Stage 1	635	635	-	810	810	-	-	-	-	-	-	-
Stage 2	811	810	-	671	641	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	111	133	480	105	132	496	955	-	-	975	-	-
Stage 1	470	476	-	377	396	-	-	-	-	-	-	-
Stage 2	376	396	-	449	473	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	97	112	480	78	111	496	955	-	-	975	-	-
Mov Cap-2 Maneuver	97	112	-	78	111	-	-	-	-	-	-	-
Stage 1	397	475	-	318	334	-	-	-	-	-	-	-
Stage 2	316	334	-	381	472	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.1	37.8	1.3	0
HCM LOS	C	E		

Minor Lane/Minor Vmt	NBL	NBT	NBR	EBL	EBT	EBR	SEL	SEB	SEB
Capacity (veh/h)	955	-	-	399	111	975	-	-	-
HCM Lane V/C Ratio	0.102	-	-	0.191	0.01	0.001	-	-	-
HCM Control Delay (s)	9.2	0	-	16.1	37.8	8.7	0	-	-
HCM Lane LOS	A	A	-	C	E	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.7	0	0	-	-	-

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay: s/veh 2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕	↕		↕	↕
Traffic Vol, veh/h	3	0	86	0	1	0	121	622	0	1	673	13
Future Vol, veh/h	3	0	86	0	1	0	121	622	0	1	673	13
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	90	90	90	83	83	83	91	91	91
Heavy Vehicles, %	0	0	2	0	0	0	0	2	0	0	1	9
Mvmt Flow	4	0	113	0	1	0	146	749	0	1	740	14

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1791	1790	747	1847	1797	749	754	0	0	749	0	0
Stage 1	749	749	-	1041	1041	-	-	-	-	-	-	-
Stage 2	1042	1041	-	806	756	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	63	82	413	58	81	415	865	-	-	869	-	-
Stage 1	407	422	-	280	310	-	-	-	-	-	-	-
Stage 2	280	310	-	379	419	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	48	58	413	33	58	415	865	-	-	869	-	-
Mov Cap-2 Maneuver	48	58	-	33	58	-	-	-	-	-	-	-
Stage 1	289	421	-	199	220	-	-	-	-	-	-	-
Stage 2	198	220	-	275	418	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.3	68.3	1.6	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	865	-	-	48	413	58	869	-	-
HCM Lane V/C Ratio	0.169	-	-	0.082	0.274	0.019	0.001	-	-
HCM Control Delay (s)	10	0	-	86.6	17	68.3	9.1	0	-
HCM Lane LOS	B	A	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0.3	1.1	0.1	0	-	-

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗		↖	↗		↖	↗		↖	↗
Traffic Vol, veh/h	3	0	92	0	1	0	130	680	0	1	738	14
Future Vol, veh/h	3	0	92	0	1	0	130	680	0	1	738	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	90	90	90	83	83	83	91	91	91
Heavy Vehicles, %	0	0	2	0	0	0	0	2	0	0	1	9
Mvmt Flow	4	0	121	0	1	0	157	819	0	1	811	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1955	1954	819	2014	1961	819	826	0	0	819	0	0
Stage 1	821	821	-	1133	1133	-	-	-	-	-	-	-
Stage 2	1134	1133	-	881	828	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	49	65	375	44	64	379	813	-	-	818	-	-
Stage 1	371	391	-	249	280	-	-	-	-	-	-	-
Stage 2	249	280	-	344	389	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	35	42	375	22	41	379	813	-	-	818	-	-
Mov Cap-2 Maneuver	35	42	-	22	41	-	-	-	-	-	-	-
Stage 1	240	390	-	161	181	-	-	-	-	-	-	-
Stage 2	160	181	-	232	388	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.3	95.2	1.7	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	813	-	-	35	375	41	818	-	-
HCM Lane V/C Ratio	0.193	-	-	0.113	0.323	0.027	0.001	-	-
HCM Control Delay (s)	10.5	0	-	120.5	19.1	95.2	9.4	0	-
HCM Lane LOS	B	A	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.3	1.4	0.1	0	-	-

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay, s/veh 13

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	0	140	0	1	0	218	538	0	1	628	63
Future Vol, veh/h	31	0	140	0	1	0	218	538	0	1	628	63
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	90	90	90	83	83	83	91	91	91
Heavy Vehicles, %	0	0	2	0	0	0	0	2	0	0	1	9
Mvmt Flow	41	0	184	0	1	0	263	648	0	1	690	69

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1902	1901	725	1993	1935	648	759	0	0	648	0	0
Stage 1	727	727	-	1174	1174	-	-	-	-	-	-	-
Stage 2	1175	1174	-	819	761	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	53	70	425	46	67	474	862	-	-	947	-	-
Stage 1	419	432	-	236	268	-	-	-	-	-	-	-
Stage 2	236	268	-	372	417	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 32	37	425	16	35	474	862	-	-	947	-	-
Mov Cap-2 Maneuver	~ 32	37	-	16	35	-	-	-	-	-	-	-
Stage 1	219	431	-	123	140	-	-	-	-	-	-	-
Stage 2	122	140	-	210	416	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	96.1	111.2	3.2	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	862	-	-	32	425	35	947	-	-
HCM Lane V/C Ratio	0.305	-	-	1.275	0.433	0.032	0.001	-	-
HCM Control Delay (s)	11	0	-	440.7	19.8	111.2	8.8	0	-
HCM Lane LOS	B	A	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	1.3	-	-	4.5	2.1	0.1	0	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay, s/veh 19.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	0	146	0	1	0	227	596	0	1	693	64
Future Vol, veh/h	31	0	146	0	1	0	227	596	0	1	693	64
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	90	90	90	83	83	83	91	91	91
Heavy Vehicles, %	0	0	2	0	0	0	0	2	0	0	1	9
Mvmt Flow	41	0	192	0	1	0	273	718	0	1	762	70

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2064	2063	797	2159	2098	718	832	0	0	718	0	0
Stage 1	799	799	-	1264	1264	-	-	-	-	-	-	-
Stage 2	1265	1264	-	895	834	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	41	55	387	35	53	432	809	-	-	892	-	-
Stage 1	382	401	-	210	243	-	-	-	-	-	-	-
Stage 2	210	243	-	338	386	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 22	24	387	10	23	432	809	-	-	892	-	-
Mov Cap-2 Maneuver	~ 22	24	-	10	23	-	-	-	-	-	-	-
Stage 1	168	400	-	92	107	-	-	-	-	-	-	-
Stage 2	91	107	-	170	385	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	155.2	169.3	3.2	0
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	809	-	-	22	387	23	892	-	-
HCM Lane V/C Ratio	0.338	-	-	1.854	0.496	0.048	0.001	-	-
HCM Control Delay (s)	11.7	0	-	777.3	23.1	169.3	9	0	-
HCM Lane LOS	B	A	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	1.5	-	-	5.3	2.7	0.1	0	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection													
Int Delay, s/veh	0.9												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	GBR	
Lane Configurations	1	0	20	1	1	0	50	387	1	1	479	4	
Traffic Vol, veh/h	1	0	20	1	1	0	50	387	1	1	479	4	
Future Vol, veh/h	1	0	20	1	1	0	50	387	1	1	479	4	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	75	75	75	50	50	50	88	88	88	92	92	92	
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0	
Mvmt Flow	1	0	27	2	2	0	57	440	1	1	521	4	
Map View													
Conflicting Flow All	1081	1080	523	1094	1082	441	525	0	0	441	0	0	
Stage 1	525	525	-	555	555	-	-	-	-	-	-	-	
Stage 2	556	555	-	539	527	-	-	-	-	-	-	-	
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-	
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-	
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-	
Pot Cap-1 Maneuver	197	220	558	193	219	621	1052	-	-	1130	-	-	
Stage 1	540	533	-	520	516	-	-	-	-	-	-	-	
Stage 2	519	516	-	530	532	-	-	-	-	-	-	-	
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-	
Mov Cap-1 Maneuver	185	204	558	174	203	621	1052	-	-	1130	-	-	
Mov Cap-2 Maneuver	185	204	-	174	203	-	-	-	-	-	-	-	
Stage 1	501	532	-	483	479	-	-	-	-	-	-	-	
Stage 2	480	479	-	504	531	-	-	-	-	-	-	-	
Approach													
HCM Control Delay, s	12.5			24.7			1			0			
HCM LOS	B			C									
Minor Lane Major Vmt													
	NBL	NBT	NBR	EBL	EBT	EBR	SBL	SBT	SBR				
Capacity (veh/h)	1052	-	-	509	187	1130	-	-	-				
HCM Lane V/C Ratio	0.054	-	-	0.055	0.021	0.001	-	-	-				
HCM Control Delay (s)	8.6	0	-	12.5	24.7	8.2	0	-	-				
HCM Lane LOS	A	A	-	B	C	A	A	-	-				
HCM 95th %tile Q(veh)	0.2	-	-	0.2	0.1	0	-	-	-				

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay, s/veh 1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕
Traffic Vol, veh/h	1	0	41	1	1	0	75	471	1	1	569	4
Future Vol, veh/h	1	0	41	1	1	0	75	471	1	1	569	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	50	50	50	88	88	88	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	1	0	55	2	2	0	85	535	1	1	618	4

Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	1329	1328	620	1356	1330	536	622	0	0	536	0	0
Stage 1	622	622	-	706	706	-	-	-	-	-	-	-
Stage 2	707	706	-	650	624	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	133	157	492	128	156	549	969	-	-	1042	-	-
Stage 1	478	482	-	430	442	-	-	-	-	-	-	-
Stage 2	429	442	-	461	481	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	119	137	492	103	136	549	969	-	-	1042	-	-
Mov Cap-2 Maneuver	119	137	-	103	136	-	-	-	-	-	-	-
Stage 1	418	482	-	376	387	-	-	-	-	-	-	-
Stage 2	373	387	-	409	481	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.7	36.9	1.2	0
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	969	-	-	119	492	117	1042	-	-
HCM Lane V/C Ratio	0.088	-	-	0.011	0.111	0.034	0.001	-	-
HCM Control Delay (s)	9.1	0	-	35.6	13.2	36.9	8.5	0	-
HCM Lane LOS	A	A	-	E	B	E	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	0.4	0.1	0	-	-

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay, s/veh 1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕	↕		↕	↕
Traffic Vol, veh/h	1	0	43	1	1	0	81	516	1	1	624	4
Future Vol, veh/h	1	0	43	1	1	0	81	516	1	1	624	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	50	50	50	88	88	88	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	1	0	57	2	2	0	92	586	1	1	678	4

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1454	1453	680	1482	1455	587	682	0	0	587	0	0
Stage 1	682	682	-	771	771	-	-	-	-	-	-	-
Stage 2	772	771	-	711	684	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	109	132	454	104	131	513	920	-	-	998	-	-
Stage 1	443	453	-	396	413	-	-	-	-	-	-	-
Stage 2	395	413	-	427	452	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	95	112	454	80	111	513	920	-	-	998	-	-
Mov Cap-2 Maneuver	95	112	-	80	111	-	-	-	-	-	-	-
Stage 1	377	452	-	337	352	-	-	-	-	-	-	-
Stage 2	335	352	-	372	451	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.8	45.4	1.3	0
HCM LOS	B	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	920	-	-	95	454	93	998	-	-
HCM Lane V/C Ratio	0.1	-	-	0.014	0.126	0.043	0.001	-	-
HCM Control Delay (s)	9.3	0	-	43.4	14.1	45.4	8.6	0	-
HCM Lane LOS	A	A	-	E	B	E	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	0.4	0.1	0	-	-

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay, s/veh 4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗	↘		↗	↘		↗	↘		↗	↘
Traffic Vol, veh/h	27	0	107	1	1	0	177	381	1	1	514	28
Future Vol, veh/h	27	0	107	1	1	0	177	381	1	1	514	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	50	50	50	88	88	88	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	36	0	143	2	2	0	201	433	1	1	559	30

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1413	1412	574	1484	1427	434	589	0	0	434	0	0
Stage 1	576	576	-	836	836	-	-	-	-	-	-	-
Stage 2	837	836	-	648	591	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	117	139	522	104	136	626	996	-	-	1136	-	-
Stage 1	506	505	-	364	385	-	-	-	-	-	-	-
Stage 2	364	385	-	462	498	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	91	102	522	60	100	626	996	-	-	1136	-	-
Mov Cap-2 Maneuver	91	102	-	60	100	-	-	-	-	-	-	-
Stage 1	371	504	-	267	283	-	-	-	-	-	-	-
Stage 2	265	283	-	335	498	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.4	55.7	3	0
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	996	-	-	91	522	75	1136	-	-
HCM Lane V/C Ratio	0.202	-	-	0.396	0.273	0.053	0.001	-	-
HCM Control Delay (s)	9.5	0	-	68.4	14.5	55.7	8.2	0	-
HCM Lane LOS	A	A	-	F	B	F	A	A	-
HCM 95th %tile Q(veh)	0.8	-	-	1.6	1.1	0.2	0	-	-

HCM 2010 TWSC

5: Cate Street/Parking Lot Driveway & Bartlett Street

Intersection

Int Delay, s/veh 5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕		↕	↕		↕	↕		↕	↕
Traffic Vol, veh/h	27	0	109	1	1	0	183	426	1	1	569	28
Future Vol, veh/h	27	0	109	1	1	0	183	426	1	1	569	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	50	50	50	88	88	88	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	36	0	145	2	2	0	208	484	1	1	618	30

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1537	1536	633	1609	1551	485	648	0	0	485	0	0
Stage 1	635	635	-	901	901	-	-	-	-	-	-	-
Stage 2	902	901	-	708	650	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	96	117	483	85	115	586	947	-	-	1088	-	-
Stage 1	470	476	-	335	360	-	-	-	-	-	-	-
Stage 2	335	360	-	429	468	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	72	82	483	46	80	586	947	-	-	1088	-	-
Mov Cap-2 Maneuver	72	82	-	46	80	-	-	-	-	-	-	-
Stage 1	329	476	-	234	252	-	-	-	-	-	-	-
Stage 2	232	252	-	300	468	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	31.8	71.6	3	0
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	947	-	-	72	483	58	1088	-	-
HCM Lane V/C Ratio	0.22	-	-	0.5	0.301	0.069	0.001	-	-
HCM Control Delay (s)	9.9	0	-	97.1	15.6	71.6	8.3	0	-
HCM Lane LOS	A	A	-	F	C	F	A	A	-
HCM 95th %tile Q(veh)	0.8	-	-	2.1	1.3	0.2	0	-	-

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection						
Int Delay, s/veh	2.1					
Movement						
	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	30	61	481	30	23	542
Future Vol, veh/h	30	61	481	30	23	542
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	82	82	93	93
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	38	78	587	37	25	583
Major/Minor						
	Major1	Major1	Major1	Major2	Major2	Major2
Conflicting Flow All	1239	606	0	0	624	0
Stage 1	606	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	196	501	-	-	967	-
Stage 1	548	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	189	501	-	-	967	-
Mov Cap-2 Maneuver	189	-	-	-	-	-
Stage 1	527	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Approach						
	WB	WB	NB	SB	SB	SB
HCM Control Delay, s	22.2		0	0.4	0.4	0.4
HCM LOS	C					
Minor Lane Major Mvmt						
	NBT	NBR	WBL	WBR	SBL	SBT
Capacity (veh/h)	-	-	324	967	-	-
HCM Lane V/C Ratio	-	-	0.36	0.026	-	-
HCM Control Delay (s)	-	-	22.2	8.8	0	0
HCM Lane LOS	-	-	C	A	A	A
HCM 95th %tile Q(veh)	-	-	1.6	0.1	-	-

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection						
Int Delay, s/veh	4.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	WT		TT		TT	
Traffic Vol, veh/h	41	71	574	46	39	632
Future Vol, veh/h	41	71	574	46	39	632
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	82	82	93	93
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	53	91	700	56	42	680
Major Inter						
	Major1	Major1	Major2	Major2	Major3	Major3
Conflicting Flow All	1492	728	0	0	756	0
Stage 1	728	-	-	-	-	-
Stage 2	764	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	137	427	-	-	864	-
Stage 1	482	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	126	427	-	-	864	-
Mov Cap-2 Maneuver	126	-	-	-	-	-
Stage 1	444	-	-	-	-	-
Stage 2	463	-	-	-	-	-
Approach						
	WB	WB	SB	SB	SB	SB
HCM Control Delay, s	44.3	0	0.5			
HCM LOS	E					
Minor Lane/Major Movmt						
	NBT	NBR	SBL	SBL	SBT	SBT
Capacity (veh/h)	-	-	228	864	-	-
HCM Lane V/C Ratio	-	-	0.63	0.049	-	-
HCM Control Delay (s)	-	-	44.3	9.4	0	-
HCM Lane LOS	-	-	E	A	A	-
HCM 95th %ile Q(veh)	-	-	3.8	0.2	-	-

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Approach

Int Delay, s/veh 5.3

Movement

WSL WBR NBT NBR SBL SBT

Lane Configurations

Traffic Vol, veh/h 41 71 629 46 39 694

Future Vol, veh/h 41 71 629 46 39 694

Conflicting Peds, #/hr 0 0 0 0 0 0

Sign Control Stop Stop Free Free Free Free

RT Channelized - None - None - None

Storage Length 0 - - - -

Veh in Median Storage, # 0 - 0 - - 0

Grade, % 0 - 0 - - 0

Peak Hour Factor 78 78 82 82 93 93

Heavy Vehicles, % 0 0 2 0 0 1

Mvmt Flow 53 91 767 56 42 746

Major Minor Major2 Major2

Conflicting Flow All 1625 795 0 0 823 0

Stage 1 795 - - - -

Stage 2 830 - - - -

Critical Hdwy 6.4 6.2 - - 4.1 -

Critical Hdwy Stg 1 5.4 - - - -

Critical Hdwy Stg 2 5.4 - - - -

Follow-up Hdwy 3.5 3.3 - - 2.2 -

Pot Cap-1 Maneuver 114 391 - - 816 -

Stage 1 448 - - - -

Stage 2 432 - - - -

Platoon blocked, % - - - - -

Mov Cap-1 Maneuver 104 391 - - 816 -

Mov Cap-2 Maneuver 104 - - - -

Stage 1 409 - - - -

Stage 2 432 - - - -

Approach

HCM Control Delay, s 62.3 0 0.5

HCM LOS F

Minor Lane Major Minor NBT NBR WBL WBR SBL SBT

Capacity (veh/h) - - 195 816 -

HCM Lane V/C Ratio - - 0.736 0.051 -

HCM Control Delay (s) - - 62.3 9.7 0

HCM Lane LOS - - F A A

HCM 95th %tile Q(veh) - - 4.8 0.2 -

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection

Int Delay, s/veh 5.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	89✓	23✓	491✓	72✓	13✓	589✓
Future Vol, veh/h	89	23	491	72	13	589
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	82	82	93	93
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	114	29	599	88	14	633

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1304	643	0
Stage 1	643	-	-
Stage 2	661	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	179	477	916
Stage 1	527	-	-
Stage 2	517	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	175	477	916
Mov Cap-2 Maneuver	175	-	-
Stage 1	527	-	-
Stage 2	505	-	-

Approach	WB	NB	SB
HCM Control Delay, s	58.1	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	201	916
HCM Lane V/C Ratio	-	-	0.714	0.015
HCM Control Delay (s)	-	-	58.1	9
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	4.6	0

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection

Int Delay, s/veh 8.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	T	T	T	T
Traffic Vol, veh/h	89	23	546	72	13	651
Future Vol, veh/h	89	23	546	72	13	651
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	78	78	82	82	93	93
Heavy Vehicles, %	0	0	2	0	0	1
Mvmt Flow	114	29	666	88	14	700

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1438	710	0
Stage 1	710	-	-
Stage 2	728	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	148	437	865
Stage 1	491	-	-
Stage 2	482	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	144	437	865
Mov Cap-2 Maneuver	144	-	-
Stage 1	491	-	-
Stage 2	469	-	-

Approach	WB	NB	SB
HCM Control Delay, s	91.6	0	0.2
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	167	865
HCM Lane V/C Ratio	-	-	0.86	0.016
HCM Control Delay (s)	-	-	91.6	9.2
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	6	0

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection						
Int Delay, s/veh	1.3					
Movement	NB	NBR	NBT	NBR	SB	SBT
Lane Configurations	Y	Y	Y	Y	Y	Y
Traffic Vol, veh/h	30	19	351	36	23	457
Future Vol, veh/h	30	19	351	36	23	457
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	87	87	94	94
Heavy Vehicles, %	0	0	0	3	4	1
Mvmt Flow	39	25	403	41	24	486
Major/Minor						
	Major1	Major1	Major1	Major2	Major2	Major2
Conflicting Flow All	958	424	0	0	444	0
Stage 1	424	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.14	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.236	-
Pot Cap-1 Maneuver	288	634	-	-	1106	-
Stage 1	664	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	279	634	-	-	1106	-
Mov Cap-2 Maneuver	279	-	-	-	-	-
Stage 1	644	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Approach						
	NB	NB	NB	SB	SB	SB
HCM Control Delay, s	17.3	-	0	-	0.4	-
HCM LOS	C	-	-	-	-	-
Main Lane Type						
	NBT	NBRW	NBT	SB	SB	SB
Capacity (veh/h)	-	-	356	1106	-	-
HCM Lane V/C Ratio	-	-	0.179	0.022	-	-
HCM Control Delay (s)	-	-	17.3	8.3	0	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0.1	-	-

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection

Int Delay, s/veh 2.2

Movement

	NBL	NBR	SBL	SBR	SEB	SEB

Lane Configurations	W	W	W	W	W	W
Traffic Vol, veh/h	44	32	419	49	36	530
Future Vol, veh/h	44	32	419	49	36	530
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	87	87	94	94
Heavy Vehicles, %	0	0	0	3	4	1
Mvmt Flow	57	42	482	56	38	564

Major/Minor

	Major	Minor	Major	Minor	Major	Minor

Conflicting Flow All	1150	510	0	0	538	0
Stage 1	510	-	-	-	-	-
Stage 2	640	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.14	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.236	-
Pot Cap-1 Maneuver	221	567	-	-	1020	-
Stage 1	607	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	209	567	-	-	1020	-
Mov Cap-2 Maneuver	209	-	-	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	529	-	-	-	-	-

Approach

	NB	SB	SEB

HCM Control Delay, s	24.2	0	0.6
HCM LOS	C		

Minor Lane Vector Mvmt

	NBL	NBR	SEB	SBL	SBR

Capacity (veh/h)	-	-	285	1020	-
HCM Lane V/C Ratio	-	-	0.346	0.038	-
HCM Control Delay (s)	-	-	24.2	8.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %ile Q(veh)	-	-	1.5	0.1	-

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection						
Int Delay, s/veh	2.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBR
Lane Configurations	Y	Y	Y	Y	Y	Y
Traffic Vol, veh/h	44	32	460	49	36	583
Future Vol, veh/h	44	32	460	49	36	583
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	87	87	94	94
Heavy Vehicles, %	0	0	0	3	4	1
Mvmt Flow	57	42	529	56	38	620
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1253	557	0	0	585	0
Stage 1	557	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.14	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.236	-
Pot Cap-1 Maneuver	192	534	-	-	980	-
Stage 1	578	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	181	534	-	-	980	-
Mov Cap-2 Maneuver	181	-	-	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	498	-	-	-	-	-
Approach	WB	WB	SB			
HCM Control Delay, s	28.3	0	0.5			
HCM LOS	D					
Major Lane	Major	NBT	NBR	SBL	SBR	
Capacity (veh/h)	-	-	251	980	-	-
HCM Lane V/C Ratio	-	-	0.393	0.039	-	-
HCM Control Delay (s)	-	-	28.3	8.8	0	-
HCM Lane LOS	-	-	D	A	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0.1	-	-

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection

Int Delay, s/veh 2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	Y	Y	Y	Y	Y
Traffic Vol, veh/h	66	10	331	73	12	477
Future Vol, veh/h	66	10	331	73	12	477
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	87	87	94	94
Heavy Vehicles, %	0	0	0	3	4	1
Mvmt Flow	86	13	380	84	13	507

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	955	422	0
Stage 1	422	-	-
Stage 2	533	-	-
Critical Hdwy	6.4	6.2	4.14
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.236
Pot Cap-1 Maneuver	289	636	1087
Stage 1	666	-	-
Stage 2	593	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	284	636	1087
Mov Cap-2 Maneuver	284	-	-
Stage 1	666	-	-
Stage 2	583	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.3	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	306	1087
HCM Lane V/C Ratio	-	-	0.323	0.012
HCM Control Delay (s)	-	-	22.3	8.4
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	1.4	0

HCM 2010 TWSC

6: Bartlett Street & Shared Access Road

Intersection

Int Delay, s/veh 2.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	66	10	372	73	12	530
Future Vol, veh/h	66	10	372	73	12	530
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	77	77	87	87	94	94
Heavy Vehicles, %	0	0	0	3	4	1
Mvmt Flow	86	13	428	84	13	564

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	1060	470	0
Stage 1	470	-	-
Stage 2	590	-	-
Critical Hdwy	6.4	6.2	-
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	-
Pot Cap-1 Maneuver	250	598	-
Stage 1	633	-	-
Stage 2	558	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	246	598	-
Mov Cap-2 Maneuver	246	-	-
Stage 1	633	-	-
Stage 2	548	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.2	0	0.2
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	267	1043
HCM Lane V/C Ratio	-	-	0.37	0.012
HCM Control Delay (s)	-	-	26.2	8.5
HCM Lane LOS	-	-	D	A
HCM 95th %tile Q(veh)	-	-	1.6	0

HCM 2010 TWSC

9: Site Driveway A & Cate Street Extension

Intersection

Int Delay, s/veh 2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Vol, veh/h	104	101	5	222	108	4
Future Vol, veh/h	104	101	5	222	108	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	116	112	6	247	120	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	228
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1352
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1352
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	589	-	-	1352	-
HCM Lane V/C Ratio	0.211	-	-	0.004	-
HCM Control Delay (s)	12.7	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

HCM 2010 TWSC

9: Site Driveway A & Cate Street Extension

Intersection

Int Delay, s/veh 2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Vol, veh/h	104	101	5	222	108	4
Future Vol, veh/h	104	101	5	222	108	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	116	112	6	247	120	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	228
Stage 1	-	-	172
Stage 2	-	-	259
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	1352	585
Stage 1	-	-	863
Stage 2	-	-	789
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1352	582
Mov Cap-2 Maneuver	-	-	582
Stage 1	-	-	863
Stage 2	-	-	785

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	589	-	-	1352	-
HCM Lane V/C Ratio	0.211	-	-	0.004	-
HCM Control Delay (s)	12.7	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0	-

HCM 2010 TWSC

9: Site Driveway A & Cate Street Extension

Intersection

Int Delay, s/veh 3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	
Traffic Vol, veh/h	110 ✓	124 ✓	9	185 ✓	152 ✓	8 ✓
Future Vol, veh/h	110	124	9	185	152	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	122	138	10	206	169	9

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	260
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1316
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1316
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	600	-	-	1316	-
HCM Lane V/C Ratio	0.296	-	-	0.008	-
HCM Control Delay (s)	13.5	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0	-

HCM 2010 TWSC

9: Site Driveway A & Cate Street Extension

Intersection

Int Delay, s/veh 3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Vol, veh/h	110	124	9	185	152	8
Future Vol, veh/h	110	124	9	185	152	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	122	138	10	206	169	9

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	260
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	4.1	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	2.2	-
Pot Cap-1 Maneuver	-	1316	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1316	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	13.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	600	-	-	1316	-
HCM Lane V/C Ratio	0.296	-	-	0.008	-
HCM Control Delay (s)	13.5	-	-	7.8	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	0	-

HCM 2010 TWSC

8: Site Driveway B & Cate Street Extension

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Vol, veh/h	91	17	8	209	18	7
Future Vol, veh/h	91	17	8	209	18	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	101	19	9	232	20	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	120
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1480
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1480
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	702	-	-	1480	-
HCM Lane V/C Ratio	0.04	-	-	0.006	-
HCM Control Delay (s)	10.3	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC

8: Site Driveway B & Cate Street Extension

Intersection

Int Delay, s/veh 0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Vol, veh/h	91	17	8	209	18	7
Future Vol, veh/h	91	17	8	209	18	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	101	19	9	232	20	8

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	120
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1480
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1480
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	702	-	-	1480	-
HCM Lane V/C Ratio	0.04	-	-	0.006	-
HCM Control Delay (s)	10.3	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC

8: Site Driveway B & Cate Street Extension

Intersection

Int Delay, s/veh 1.1

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	103	15	4	169	25	4
Future Vol, veh/h	103	15	4	169	25	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	114	17	4	188	28	4

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	131	0	319	123
Stage 1	-	-	-	-	123	-
Stage 2	-	-	-	-	196	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1467	-	678	933
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	842	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1467	-	676	933
Mov Cap-2 Maneuver	-	-	-	-	676	-
Stage 1	-	-	-	-	907	-
Stage 2	-	-	-	-	839	-

Approach EB WB NB

HCM Control Delay, s	0	0.2	10.4
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

Capacity (veh/h)	703	-	-	1467	-
HCM Lane V/C Ratio	0.046	-	-	0.003	-
HCM Control Delay (s)	10.4	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC

8: Site Driveway B & Cate Street Extension

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔		↔	↔	↔	↔
Traffic Vol, veh/h	103	✓ 15	✓ 4	✓ 169	✓ 25	✓ 4
Future Vol, veh/h	103	15	4	169	25	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	114	17	4	188	28	4

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	131
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1467
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1467
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	703	-	-	1467	-
HCM Lane V/C Ratio	0.046	-	-	0.003	-
HCM Control Delay (s)	10.4	-	-	7.5	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC

7: Site Driveway C & Cate Street Extension

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	1	1	1	1	1	1
Traffic Vol, veh/h	90	8	1	212	5	1
Future Vol, veh/h	90	8	1	212	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	100	9	1	236	6	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	109
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1494
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1494
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	692	-	-	1494	-
HCM Lane V/C Ratio	0.01	-	-	0.001	-
HCM Control Delay (s)	10.3	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 2010 TWSC

7: Site Driveway C & Cate Street Extension

Intersection

Int Delay, s/veh 0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	90	8	1	212	5	1
Future Vol, veh/h	90	8	1	212	5	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	100	9	1	236	6	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	109
Stage 1	-	-	105
Stage 2	-	-	238
Critical Hdwy	-	4.1	6.4
Critical Hdwy Stg 1	-	-	5.4
Critical Hdwy Stg 2	-	-	5.4
Follow-up Hdwy	-	2.2	3.5
Pot Cap-1 Maneuver	-	1494	657
Stage 1	-	-	924
Stage 2	-	-	806
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1494	656
Mov Cap-2 Maneuver	-	-	656
Stage 1	-	-	924
Stage 2	-	-	805

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	692	-	-	1494	-
HCM Lane V/C Ratio	0.01	-	-	0.001	-
HCM Control Delay (s)	10.3	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 2010 TWSC

7: Site Driveway C & Cate Street Extension

Intersection

Int Delay, s/veh 0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔	↗	↗	↗	↗	↗
Traffic Vol, veh/h	101	6	1	166	7	1
Future Vol, veh/h	101	6	1	166	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	112	7	1	184	8	1

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	119
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	4.1
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	2.2
Pot Cap-1 Maneuver	-	-	1482
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	1482
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	717	-	-	1482	-
HCM Lane V/C Ratio	0.012	-	-	0.001	-
HCM Control Delay (s)	10.1	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 2010 TWSC

7: Site Driveway C & Cate Street Extension

Intersection

Int Delay, s/veh 0.3

Movement EBT EBR WBL WBT NBL NBR

Lane Configurations	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	101	6	1	166	7	1
Future Vol, veh/h	101	6	1	166	7	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	112	7	1	184	8	1

Major/Minor Major1 Major2 Minor1

Conflicting Flow All	0	0	119	0	302	116
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	186	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1482	-	694	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	851	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1482	-	693	942
Mov Cap-2 Maneuver	-	-	-	-	693	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	850	-

Approach EB WB NB

HCM Control Delay, s	0	0	10.1
HCM LOS			B

Minor Lane/Major Mvmt NBLn1 EBT EBR WBL WBT

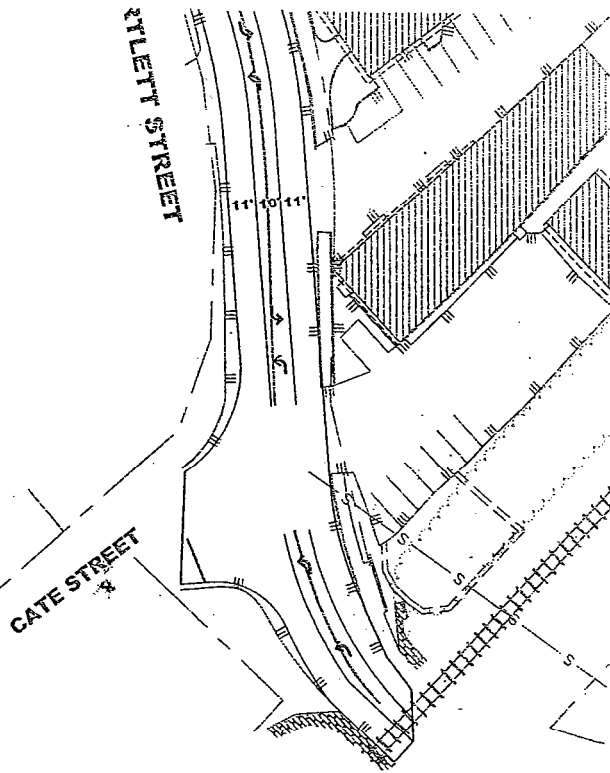
Capacity (veh/h)	717	-	-	1482	-
HCM Lane V/C Ratio	0.012	-	-	0.001	-
HCM Control Delay (s)	10.1	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Appendix K

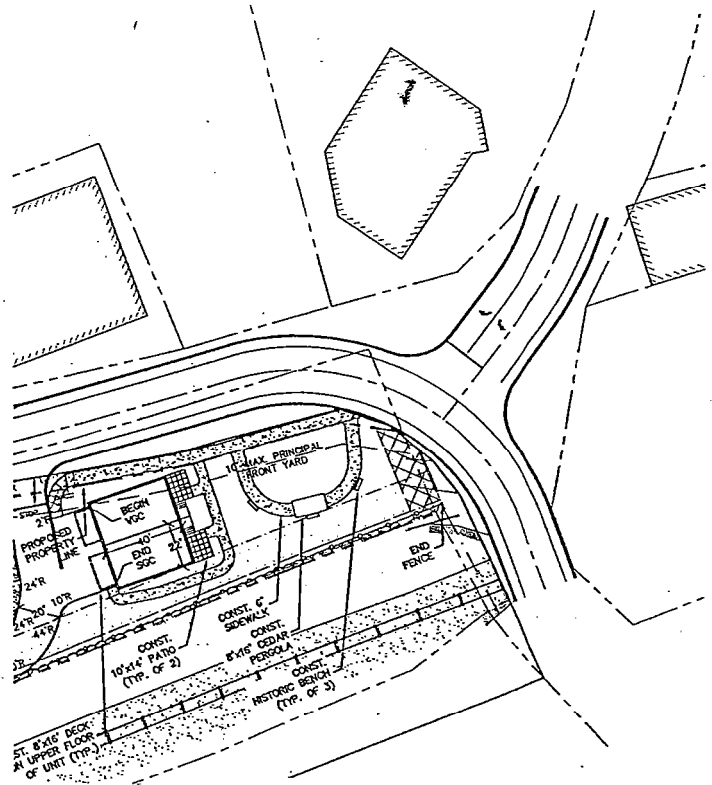
Bartlett Street / Cate Street Alternative Layouts & Analyses

ALTERNATIVE CONFIGURATION SKETCHES

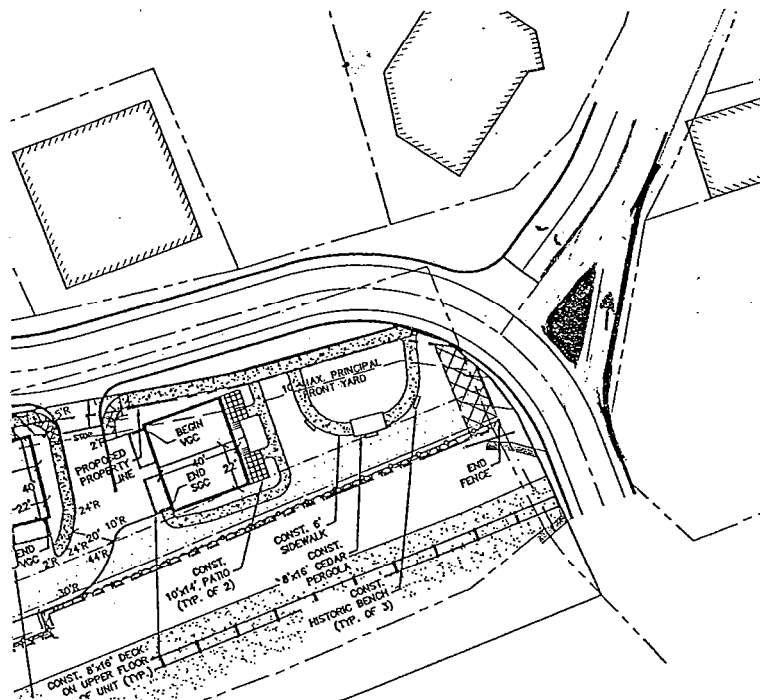
Stephen G. Parnaw & Company, Inc.



CONFIGURATION A



CONFIGURATION B



CONFIGURATION C

HCM 2010 TWSC

1: 2030 PM

Intersection

Int Delay, s/veh 37.2

Movement EBL EBR NBL NBT SBT SBR

Lane Configurations	Y	✓	✓	✓	✓	✓
Traffic Vol, veh/h	31	146	227	596	693	64
Future Vol, veh/h	31	146	227	596	693	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	100	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	76	76	83	83	91	91
Heavy Vehicles, %	0	2	0	2	1	9
Mvmt Flow	41	192	273	718	762	70

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	2061	797	832	0	-	0
Stage 1	797	-	-	-	-	-
Stage 2	1264	-	-	-	-	-
Critical Hdwy	6.4	6.22	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.318	2.2	-	-	-
Pot Cap-1 Maneuver	61	387	809	-	-	-
Stage 1	447	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	~ 40	387	809	-	-	-
Mov Cap-2 Maneuver	~ 40	-	-	-	-	-
Stage 1	296	-	-	-	-	-
Stage 2	268	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s\$	314.5	3.2	0
HCM LOS	F		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	809	-	154	-	-
HCM Lane V/C Ratio	0.338	-	1.512	-	-
HCM Control Delay (s)	11.7	-	\$ 314.5	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	1.5	-	15.5	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC
2: 2030 SAT

Intersection

Int Delay, s/veh 6.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖↗		↖↗	↑	↖↗	↖↗
Traffic Vol, veh/h	27	109	183	426	569	28
Future Vol, veh/h	27	109	183	426	569	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	75	75	85	85	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	36	145	215	501	618	30

Major/Minor Minor2 Major1 Major2

Conflicting Flow All	1564	633	648	0	-	0
Stage 1	633	-	-	-	-	-
Stage 2	931	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	124	483	947	-	-	-
Stage 1	533	-	-	-	-	-
Stage 2	387	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	96	483	947	-	-	-
Mov Cap-2 Maneuver	96	-	-	-	-	-
Stage 1	412	-	-	-	-	-
Stage 2	387	-	-	-	-	-

Approach EB NB SB

HCM Control Delay, s	42.5	3	0
HCM LOS	E		

Minor Lane/Major Mvmt NBL NBT EBLn1 SBT SBR

Capacity (veh/h)	947	-	268	-	-
HCM Lane V/C Ratio	0.227	-	0.677	-	-
HCM Control Delay (s)	9.9	-	42.5	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.9	-	4.4	-	-

HCM 2010 TWSC

3: 2030 PM

Intersection

Int Delay, s/veh 116.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↖	↖	↖	↖
Traffic Vol, veh/h	31	146	227	596	693	64
Future Vol, veh/h	31	146	227	596	693	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	76	76	83	83	91	91
Heavy Vehicles, %	0	2	0	2	1	9
Mvmt Flow	41	192	273	718	762	70

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	991	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	706	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	706	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	288
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	706	-	-	-	468	749
HCM Lane V/C Ratio	0.058	-	-	-	1.627	0.094
HCM Control Delay (s)	10.4	0	-	-	\$ 313.7	10.3
HCM Lane LOS	B	A	-	-	F	B
HCM 95th %tile Q(veh)	0.2	-	-	-	43.3	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC

4: 2030 SAT

Intersection

Int Delay, s/veh 38.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↖	↗
Traffic Vol, veh/h	27	✓109	✓183	✓426	✓569	✓28
Future Vol, veh/h	27	109	183	426	569	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	88	88	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	36	145	208	484	618	30

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	692	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	912	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	912	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	90
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	912	-	-	-	563	837
HCM Lane V/C Ratio	0.039	-	-	-	1.099	0.036
HCM Control Delay (s)	9.1	0	-	-	94	9.5
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.1	-	-	-	19.1	0.1

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC

5: Future Lanes PM

Intersection

Int Delay, s/veh 108.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↗	↑	↘	↗	↘
Traffic Vol, veh/h	31	146	227	596	693	64
Future Vol, veh/h	31	146	227	596	693	64
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	76	76	83	83	91	91
Heavy Vehicles, %	0	2	0	2	1	9
Mvmt Flow	41	192	273	718	762	70

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	273	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1302	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1302	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	267.3
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1302	-	-	-	483	749
HCM Lane V/C Ratio	0.031	-	-	-	1.577	0.094
HCM Control Delay (s)	7.9	0	-	-	291	10.3
HCM Lane LOS	A	A	-	-	F	B
HCM 95th %tile Q(veh)	0.1	-	-	-	41.7	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC
6: Future Lanes SAT

Intersection

Int Delay, s/veh 36.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↖	↖	↖	↖
Traffic Vol, veh/h	27	109	183	426	569	28
Future Vol, veh/h	27	109	183	426	569	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Yield	-	None
Storage Length	-	-	-	0	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	75	75	88	88	92	92
Heavy Vehicles, %	0	0	0	1	1	0
Mvmt Flow	36	145	208	484	618	30

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	208	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.1	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.2	-	-
Pot Cap-1 Maneuver	1375	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1375	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	1.5	0	84.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1375	-	-	-	572	837
HCM Lane V/C Ratio	0.026	-	-	-	1.081	0.036
HCM Control Delay (s)	7.7	0	-	-	87.9	9.5
HCM Lane LOS	A	A	-	-	F	A
HCM 95th %tile Q(veh)	0.1	-	-	-	18.4	0.1

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon