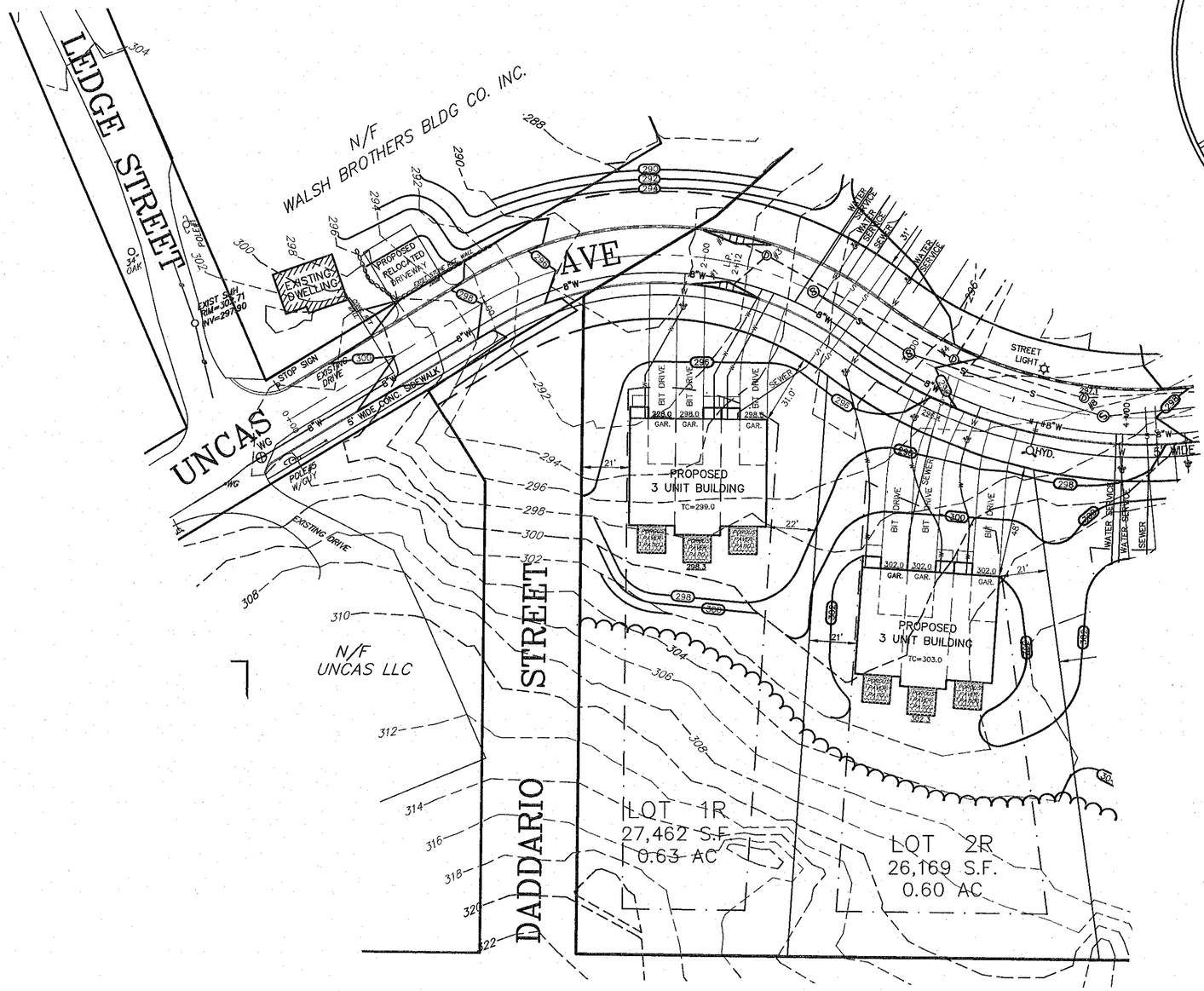
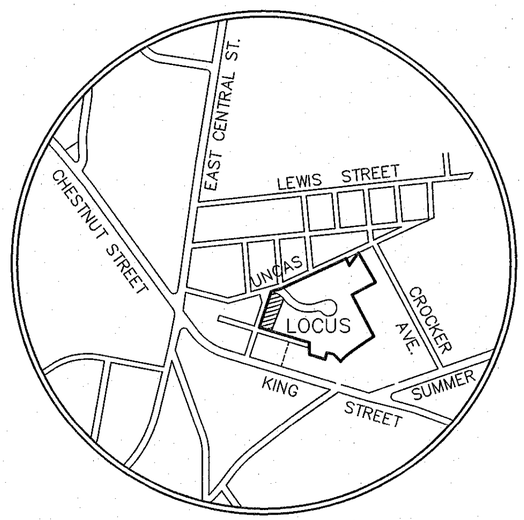




LOCUS MAP
SCALE: 1" = 800'

ASSESSOR REFERENCE:
PARCEL ID:
285-078-009
285-078-009

OWNER:
WALSH BROTHERS BUILDING CO. INC.
11 SADDLE WAY
WALPOLE, MA 02081

ZONING CLASSIFICATION
SINGLE FAMILY IV

LOT AREA(Single Family):	15,000 S.F.
LOT AREA(Multi Family):	18,750 S.F.
LOT FRONTAGE:	100'
LOT DEPTH:	100'
LOT WIDTH:	90' DIA.
FRONT SETBACK:	30'
SIDE SETBACK:	20'
REAR SETBACK:	20'

COMMONWEALTH OF MASSACHUSETTS
JOYCE E. HASTINGS
No. 39393
REGISTERED
PROFESSIONAL LAND SURVEYOR
10/24/23

REVISED: OCT. 24, 2023 New Building

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

GLM Engineering Consultants, Inc.
19 EXCHANGE STREET
HOLLISTON, MA 01746
P: 508-429-1100 F: 508-429-7160
www.GLMengineering.com

FLD.:
DRW.:
CHKD.:

COMMONWEALTH OF MASSACHUSETTS
ROBERT S. TRUAX
CIVIL
NO. 56567
REGISTERED
PROFESSIONAL ENGINEER
10/24/23

PROPOSED HOUSE LOCATION PLAN
LOTS 1R & 2R - UNCAS AVE. EXTENSION
FRANKLIN, MASSACHUSETTS

APPLICANT:
J. WALSH CORPORATION
55 LAVENDER LANE
WALPOLE, MA 02081

JOB No.	11,528
DATE:	AUG. 29, 2023
SCALE:	1"=40'
PLAN No.	20,493

Town of Franklin

355 East Central Street
Franklin, Massachusetts 02038-1352

Phone: (508) 520-4907
www.franklinma.gov

DEPARTMENT OF PLANNING AND COMMUNITY DEVELOPMENT

MEMORANDUM

DATE: **January 17, 2024**

TO: **Franklin Planning Board**

FROM: **Department of Planning and Community Development**

RE: **Uncas Ave**
Special Permit & Site Plan Modification

The DPCD has reviewed the above referenced Site Plan Modification application for the Monday, January 22, 2024 Planning Board meeting and offers the following commentary:

General:

1. The site is located at Uncas Ave Extension in the Single Family IV Zoning District.
2. The Subdivision was approved on January 27, 2014 for several lots for duplex housing.
3. The Applicant is requesting to construct 3-family units on 2 lots.
4. Special Permit is required under Section 185 Attachment 7.6.1.b – Three Units

Comments from November 20 meeting:

1. The Board expressed concern about the common driveways. The Applicant has since changed the plans for individual driveways for each lot.
2. The Planning Board expressed concerns that there is no turn around at the end of the street for trash trucks and delivery trucks.
3. Planning Board requested a full traffic study to include recent developments in the area.
4. DPW and BETA will be reviewing the stormwater management.

ROLE CALL VOTE:

This determination shall be in addition to the following specific findings:

If you vote NO on any of the following, please state reason why you are voting NO:

(1) Special Permit: To allow multi-family with Three housing units 185 Attachment 7.6.1.b

(a) Proposed project addresses or is consistent with neighborhood or Town need.

Gregory Rondeau	YES	NO
Beth Wierling	YES	NO
Jennifer Williams	YES	NO

(b) Vehicular traffic flow, access and parking and pedestrian safety are properly addressed.

Gregory Rondeau	YES	NO
Beth Wierling	YES	NO
Jennifer Williams	YES	NO

(c) Public roadways, drainage, utilities and other infrastructure are adequate or will be upgraded to accommodate development.

Gregory Rondeau	YES	NO
Beth Wierling	YES	NO
Jennifer Williams	YES	NO

(d) Neighborhood character and social structure will not be negatively impacted.

Gregory Rondeau	YES	NO
Beth Wierling	YES	NO
Jennifer Williams	YES	NO

(e) Project will not destroy or cause substantial damage to any environmentally-significant natural resource, habitat, or feature or, if it will, proposed mitigation, remediation, replication or compensatory measures are adequate.

Gregory Rondeau	YES	NO
Beth Wierling	YES	NO
Jennifer Williams	YES	NO

(f) Number, height, bulk, location and siting of building(s) and structure(s) will not result in abutting properties being deprived of light or fresh air circulation or being exposed to flooding or subjected to excessive noise, odor, light, vibrations, or airborne particulates.

Gregory Rondeau	YES	NO
Beth Wierling	YES	NO
Jennifer Williams	YES	NO

(g) Water consumption and sewer use, taking into consideration current and projected future local water supply and demand and wastewater treatment capacity, will not be excessive.

Gregory Rondeau	YES	NO
Beth Wierling	YES	NO
Jennifer Williams	YES	NO

The proposed use will not have adverse effects which overbalance its beneficial effects on either the neighborhood or the Town, in view of the particular characteristics of the site and of the proposal in relation to that site.

Gregory Rondeau	YES	NO
Beth Wierling	YES	NO
Jennifer Williams	YES	NO

January 17, 2024

Mr. Gregory Rondeau, Chairman
Franklin Planning Board
355 East Central Street
Franklin, MA 02038

Re: Uncas Avenue Extension Residential Development
Traffic Assessment Peer Review

Dear Mr. Rondeau:

BETA Group, Inc. reviewed the Traffic Assessment associated with the proposed Uncas Avenue Extension Residential Development in Franklin, MA. This letter is provided to outline our findings, comments, and recommendations relative to the proposed project.

Basis of Review

The following documents were received by BETA and formed the basis of the review:

- Uncas Avenue Extension Residential Development ***Traffic Assessment,*** prepared by Kimley Horn dated January 2, 2024

Introduction

The project consists of a proposed residential development project located at Uncas Avenue in the Town of Franklin, Massachusetts just east of King Street. The development site is located along Uncas Avenue where the subdivision road, Uncas Avenue Extension, breaks off from Uncas Avenue. A sidewalk will be provided along one side of the Extension connecting to the existing sidewalk that exists on Uncas Avenue. The currently approved subdivision defines nine (9) lots. It is our understanding that the nine (9) duplexes building option (18 dwelling units) has been approved and the alternative development program would consist of nine (9) triplexes (27 dwelling units).

Findings, Comments, and Recommendations

Data Collection

New traffic volume and speed data was collected on Hill Avenue on Wednesday December 13 and Thursday December 14, 2023. The counts show the average daily traffic volume to be approximately 100 vehicles with 11 vehicles in the AM peak hour and 15 vehicles in the PM peak hour. The average travel speed was 20 MPH and the 85th percentile speed was approximately 25 MPH. The posted speed limit is 25 MPH.

A spot 30-minute traffic turning movement count was conducted at the intersection of East Central Street and Uncas Avenue during the morning peak period. The 30-minute volumes were adjusted to

represent peak hour volumes. The PM peak hour volumes were estimated by reversing the AM peak hour volumes.

Traffic turning movements volumes at the intersection of East Central Street and King Street were conducted on December 1, 2022 for a previous study and were increased by 1.0 percent to represent 2023 volumes.

Comment 1. Identify the time and date of the 30-minue spot traffic volume count.

Comment 2. The collected traffic data is adequate to evaluate existing conditions.

Future and No-Build Conditions

Comment 3. The locations of the Taj Estates Franklin I &II background development projects are listed as west of the project site. Both are located east of the project. The peak hour vehicle trip assignments for these projects are correct.

Trip Generation

The TIAS estimated project vehicle trip generation using Land Use Code 215 – Single Family Attached Housing from the Institute of Transportation Engineer's *Trip Generation Manual, 11th Edition.* The project is estimated to generate 8 to 12 trips in the peak hours for the Build A scenario and between 4 and 7 trips for the Build B scenario.

Comment 4. The estimated trip generation using Land Use Code 220 – Multi-Family Housing (Low Rise) would result in a few more vehicle trips in the peak hours. These additional trips would not change the analysis results. Therefore, the project trip generation presented in the TIAS is reasonable.

Trip Distribution

Comment 5. The distribution and assignment of peak hour project trips are correct, except that no project-generated trips are shown on Figure 7 (Build A) or Figure 8 (Build B) traveling south on Uncas Avenue to Ledge Street, Hill Avenue, Crocket Street, Summer Street to King Street southbound. The project-generated traffic volumes using the neighborhood streets would be considered low volume.

Future Build Conditions

Comment 6. The intersection capacity analysis results are reasonable. The following are noted:

- The westbound vehicle queue for the through movement on East Central Street at King Street and Chestnut Street is currently 290 feet long in the AM peak hour and 380 feet long in the PM peak hour and will extend beyond Uncas Avenue, blocking vehicles turning left onto East Central

Street westbound. The vehicle queue lengths will be exacerbated by additional background traffic.

- The Uncas Avenue northbound approach to East Central Street will operate at LOS E in the PM Peak hour with long delays, although the total approach volume will be low (10 vehicles for less for both Build scenarios).

Comment 7. Do Not Block intersection pavement markings should be considered for the intersection of East Central Street and Uncas Avenue to help allow vehicles to make a left from Uncas Avenue to East Central Street westbound.

Comment 8. Has the Fire Department reviewed and approved the cul-de-sac roadway dimensions?

If we can be of any further assistance regarding this matter, please contact us at our office.

Very truly yours,
BETA Group, Inc.

Jeff Maxtutis
Senior Associate

cc: Amy Love, Planner

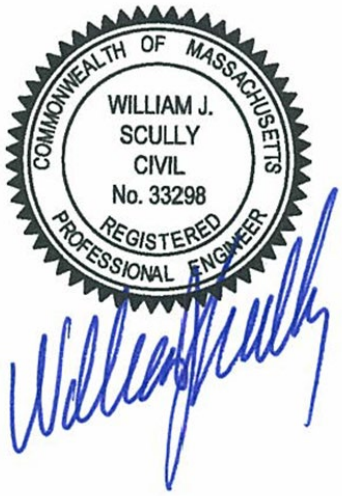
Kimley»Horn

MEMORANDUM

To: JT Walsh Corp.
11 Saddle Way
Walpole, MA 02081

From: William J, Scully, P.E.
Peyton Graham

Date: January 2, 2024



Subject: Uncas Avenue Extension Residential Development
Traffic Assessment
Franklin, Massachusetts

INTRODUCTION

The purpose of this memorandum is to review the traffic access regarding the proposed development located at Uncas Avenue in the Town of Franklin, Massachusetts just east of King Street. The development site is located along Uncas Avenue where the subdivision road, Uncas Avenue Extension, breaks off from Uncas Avenue, as shown in **Figure 1** (see after page 7 for figures). A sidewalk will be provided along one side of the Extension connecting to the existing sidewalk that exists on Uncas Avenue. The currently approved subdivision defines nine (9) lots and the alternative sites plan can be found in **Appendix A**. It is our understanding that the nine (9) duplexes building option has been approved and the alternative development program would consist of nine (9) triplexes. The study scope was reviewed with the Town staff and traffic peer review consultant before pssroceeding.

STUDY AREA

The traffic assessment focused on Uncas Avenue which is a north-south, two-lane undivided roadway without a posted speed limit. It is classified as a Local Road and is under the jurisdiction of the Town of Franklin. A short segment of a five (5) foot sidewalk is located along the west side from East Central Street to Ledge Street. With the exception of Devita's Market at East Central, the land uses along Uncas Avenue and some of the connecting streets are made up of residential uses along Uncas Avenue including a small apartment building just to the north of the project site. Uncas Avenue intersects with East Central Street at Devita's Market and about 100 feet east of King Street forming a T-type intersection under STOP control. East Central Street (Route 140), in the project area, is a two-lane undivided Urban Principal Arterial Roadway with a posted speed limit of 40 miles per hour (MPH) although the travel speeds are much lower on the approaches to the traffic signal. From East Street to Lewis Street, East Central Street (Route 140) is under the jurisdiction of the Town of Franklin. Five (5) foot sidewalk facilities are located on both sides and are in good condition. The MBTA commuter rail station is located to the west, less than a mile from the proposed development. Land uses along East Central Street in the project area consist primarily of commercial uses including banks, coffee shops, restaurants, supermarkets, and other uses. Residential uses also are located along the street including the rental units under construction at 230 East Central and 330 East Central Street that is in the midst of leasing.

DATA COLLECTION

A new automatic traffic recorder (ATR) count was conducted on Wednesday, December 12, 2023, along Hill Avenue, south of Ledge Street to obtain travel speeds as well as providing volume information within the neighborhood area that could be affected by the project traffic. This street was selected for the observation as it was noted by the public for potential through travel connecting to Lewis Street and potentially Summer Street. The posted speed limit on Hill Avenue was noted to be 25 MPH. The collected data showed that the average travel speed was measured to be 20 MPH while the 85th percentile speed was observed to be approximately 25 MPH depending on the travel direction. Both the average travel speed and 85th percentile speed are at or below the posted speed limit showing high compliance with the desired speeds. The average daily traffic volume observed on Hill Avenue was measured to be approximately 100 vehicles per day (VPD) (total of both directions) which in general, would classify Hill Avenue as a low volume.

Existing traffic volumes at the study intersection of East Central Street at King Street were based upon previously collected[1] turning movement counts (TMCs) for a Turn Lane Evaluation at Chestnut Street. Traffic volumes were collected on Thursday, December 1, 2022, and were grown by a factor of 1.0 percent (1.0%) to reflect volumes in 2023.

A short sample count (30 minute duration) was conducted at East Central Street at Uncas Avenue during the morning peak period to provide a basis for estimating traffic volume patterns entering and exiting Uncas Avenue. The data was expanded using the traffic data from the traffic signal. The PM peak conditions were estimated using the AM levels and reversing patterns. General observations made during this short sample count showed very low volumes exiting or entering Uncas Avenue with a portion of that volume related the Devita's Market parking lot to patronize the shop.

Figure 2 presents the existing turning movement volumes at the study intersections during the AM and PM peak hour. The data collected is included in **Appendix B**.

FUTURE NO-BUILD CONDITIONS

Future No-Build traffic conditions are defined as the expected traffic conditions on the roadway network in the year 2030 without the construction of the proposed development. Future No-Build traffic volumes used in the analysis are the sum of the existing traffic, vicinity development traffic, and additional traffic generated by the general overall background growth in the Town that could affect the project area. In working out the scope for No-Build and Build with the Town's peer review consultant, the assumptions noted below were assumed part of the future No-Build while the two Build options (duplexes and triplexes) were examined separately although the duplex option could be built but it was requested not to include it as part of the No-Build.

Traffic growth on the transportation network was determined based upon (a) historic growth trends at nearby MassDOT traffic count stations and population census data from the year 2010 and 2020. An annual growth of 1.0 percent (1.0%) was selected as a reasonable background growth rate and will be

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[1] Beta Group, Chestnut Street Left Turn Evaluation, East Central Street (Route 140) at King Street/Chestnut Street, prepared for Town of Franklin, May 2023.

applied annually to the Existing (2023) traffic volumes in developing Future (2030) No-Build Conditions. The growth calculations are contained in **Appendix C**.

Based on the information provided by the Town, two (2) vicinity developments were included in the analysis. Traffic generation associated with these two developments were taken directly from their respective studies[2,3] completed during the local review process.

- Taj Estates of Franklin – 104 multifamily residential units located at 330 East Central Street, which is west of the site.
- Taj Estates of Franklin II – 35 residential units and 900 square feet (SF) of office space located at 230 East Central Street, which is west of the site.

Figure 3 and **Figure 4** present the vehicle trip assignments from those two vicinity developments and **Figure 5** presents the overall Future No-Build traffic volume conditions on East Central Street between King Street and Uncas Avenue.

TRAFFIC GENERATION

The proposed development project's site generated trips were estimated using the trip generation models published by the Institute of Transportation Engineers (ITE) for Land Use Code (LUC) 215 (Single-Family Attached Housing) documented in the ITE *Trip Generation Manual, 11th Edition*. The development was evaluated for each Build scenarios:

- Build A - nine (9) triplexes (27 units)
- Build B - nine (9) duplexes (18 units)

Multimodal factors, internal captures, or pass-by trip reduction were not applied to the trip generation estimated for the proposed development. It is noted, however, that with multiple commercial businesses in close proximity to the proposed development and the town center and train station a short walk from the project, the project is situated in a location that could in fact result in a high proportion of walk trips for all trip purposes. As such, the estimates presented below in **Table 1** could be somewhat conservative with lower vehicle traffic generation actually experienced.

A summary of the daily and weekday peak hour estimates is included in **Table 1**. As shown, the proposed development of nine (9) triplexes (27 units) is expected to general a total of 156 net new vehicles on a typical weekday, eight (8) net new vehicle trips (2 entering and 6 exiting) during the AM peak hour, and 12 net new vehicle trips (7 entering and 5 exiting) during the PM peak hour. The development of nine (9) duplexes (18 units) is expected to general a total of 88 net new vehicles on a typical weekday, four (4) net new vehicle trips (1 entering and 3 exiting) during the AM peak hour, and seven (7) net new vehicle trips (4 entering and 3 exiting) during the PM peak hour. The trip generation calculations are provided in **Appendix D**. The proposed development project, evaluated as either

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[2] Vanasse and Associates, Inc., Transportation Impact Assessment, Central Square Mixed-Use Development. 340 East Central Street, Franklin, MA prepared for 340 East Central Street, LLC, May 2020.
[3] Vanasse and Associates, Inc., Transportation Impact Assessment, Taj Estates of Franklin II, 230 East Central Street, Franklin, MA, January 19, 2022.

triplexes or duplexes, can be characterized as a low traffic generator, generating less than 15 trips during each of the AM and PM peak hours.

Comparing the two alternative Build options, increasing the number of units from 18 to 27 will result in fairly small increases in traffic including over the average weekday, from 88 to 156; AM peak hour from 4 to 8 vehicle trips; PM peak hour from 7 to 12 vehicle trips. During the peak hours without assuming any adjustment due to walk trips, the increase in trips between the duplex and triplex buildouts would be between 4 and 5 vehicle trips during the peak hours and not likely noticeable.

Table 1. Summary of Site Generated Trip Generation
Build A vs. Build B Options

Scenario	Land Use	ITE Code	Size	Weekday	AM Peak Hour			PM Peak Hour		
					In	Out	Total	In	Out	Total
Build A	Single Family Attached Housing	215	27 dwelling units	156	2	6	8	7	5	12
Build B	Single Family Attached Housing	215	18 dwelling units	88	1	3	4	4	3	7

TRIP DISTRIBUTION

The distribution and assignment of site related traffic was estimated. For the development's general traffic, the trip distribution estimate was based on the US Census Bureau's Journey to Work and consistent with the previously cited traffic studies. The trip distribution along the roadway network for the AM and PM peak hours are forecast to be the following.

- 40% coming to/from the west (East Central Street (Route 140))
- 30% coming to/from the east (East Central Street (Route 140))
- 25% coming to/from the south (King Street)
- 5% coming to/from the north (Chestnut Street)

Figure 6 presents the peak hour trip distribution for the 2030 Build A and 2030 Build B Conditions. Trip assignments for Build A and B are shown in **Figure 7** and **Figure 8**.

As shown in the estimated trip patterns, it has been assumed that those project related residents driving towards I-495 would utilize Ledge Street to Hill Street to Crocker Street and then Summer Street to reach King Street avoiding the left turn exit from Uncas Avenue onto East Central Street during the peak hours. Based on the estimate of trip generation and the above patterns, this would result in an estimated 1 to 2 vehicle trips during the peak hours under either Build option. Residents returning home from that direction (I-495) would tend to remain on King Street, turn right on East Central Street, and then turn right onto Uncas Street.

FUTURE BUILD CONDITIONS

Future Build traffic conditions are defined as the expected traffic conditions on the roadway network in the year 2030 after the opening of the project. The total traffic volume considered in the analysis for this project are the sum of the background growth related to traffic volumes unrelated to this specific project, and the expected site-generate traffic volumes. **Figure 9** and **Figure 10** present the future total turning movement volumes at the study intersections for 2030 Build A Conditions and 2030 Build B Conditions. Volume Development worksheets are included in **Appendix E**.

ANALYSIS

Intersection capacity analyses were performed for Existing, 2030 Future No-Build, and 2030 Future Build traffic volumes for the study area intersections. The analyses were performed using the Synchro Software Package (Version 11), which utilizes methodologies contained in the *Highway Capacity Manual (6th Edition)* for signalized and unsignalized intersections. For intersections with timing configurations that are incompatible with *HCM 6th Edition*, the built-in Synchro analysis methodology is used. According to the *HCM 6th Edition*, capacity is defined as the maximum number of vehicles that can pass over a particular road segment or through a particular intersection within a fixed time duration. The analyses is described qualitatively by Level of Service (LOS) to indicate the operating characteristics of a road segment or intersection. LOS is defined as a qualitative measure that describes operational conditions and motorist perceptions within a traffic stream and relates to the level of delay experienced. The *HCM 6th Edition* defines six levels of service, LOS A through LOS F, with A being the best and F being the worst. Typically, a LOS "D" or better at signalized and unsignalized intersections is preferred, although lower levels are tolerated during peak travel hours. The ranges of delay for each level of service are shown in **Table 2**.

Table 2. Level of Service Range of Delay

Level of Service (LOS)	Delay per Vehicle (seconds per vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10	≤ 10
B	10 -20	10 -15
C	20 – 35	15 – 25
D	35 – 55	25 – 35
E	55 – 80	35 – 50
F	≥ 80	≥ 50

Intersection Capacity Analysis Summary

A summary of the intersection capacity analysis for the weekday AM and PM peak hours for the Existing Conditions, 2030 Future No-Build Conditions, and 2030 Future Conditions and can be found in **Table 3** and **Table 4**. The intersection analysis worksheets are contained in **Appendix F**.

The key findings of the intersection capacity analysis as it pertains to the proposed project are as follows:

- The project adds a small amount of traffic to the system under either the duplex or triplex options but does not result in significant changes in vehicle delays or operations at the two intersections studied.
- The analysis has shown that under either the Build A and Build B Conditions, operations remain similar to No-Build Conditions for both the AM and PM peak hours.
- The Uncas Avenue exiting movement is anticipated to operate at LOS C under both Build options during the AM peak hour and LOS E during the PM peak hour,

Table 3. AM Peak Hour Intersection Capacity Analysis

Intersection	Traffic Control	Movement	Existing Conditions		No Build (2030)		Build A (2030)		Build B (2030)	
			LOS (Delay)	95th % Queue Lengths (feet)	LOS (Delay)	95th % Queue Lengths (feet)	LOS (Delay)	95th % Queue Lengths (feet)	LOS (Delay)	95th % Queue Lengths (feet)
East Central Street (Route 140) & King Street/Chestnut Street	Signalized	EBL	B (10.4)	50	B (10.7)	50	B (10.7)	50	B (10.7)	50
		EBT	C (30.6)	290	C (31.7)	320	C (31.7)	320	C (31.7)	320
		WBL	B (14.4)	110	B (16.8)	125	B (16.8)	125	B (16.8)	125
		WBT	C (21.8)	255	C (23.3)	300	C (23.2)	305	C (23.2)	300
		NBT	C (27.4)	230	C (28.3)	250	C (28.4)	250	C (28.3)	250
		NBR	A (5.5)	80	A (5.7)	90	A (5.7)	90	A (5.7)	90
		SBT	C (28.9)	240	C (29.4)	260	C (29.4)	260	C (29.4)	260
		Intersection	C (22.0)	-	C (22.8)	-	C (22.9)	-	C (22.8)	-
East Central Street (Route 140) & Uncas Avenue	One-Way Stop Control	NB Exit	C (17.8)	25	C (19.1)	25	C (20.5)	25	C (20.0)	25
		WBL	A (0.0)	-	A (0.0)	-	A (9.1)	-	A (0.0)	-

CONCLUSIONS

The analysis of traffic with respect to the development of two (2) build scenarios at Uncas Avenue was completed following standard practice. The key findings of this traffic assessment are as follows:

- There will be negligible differences in additional peak hour traffic between the duplex or triplex Build options with both resulting in small amounts of new traffic.

Table 4. PM Peak Hour Intersection Capacity Analysis										
Intersection	Traffic Control	Movement	Existing Conditions		No Build (2030)		Build A (2030)		Build B (2030)	
			LOS (Delay)	95th % Queue Lengths (feet)	LOS (Delay)	95th % Queue Lengths (feet)	LOS (Delay)	95th % Queue Lengths (feet)	LOS (Delay)	95th % Queue Lengths (feet)
East Central Street (Route 140) & King Street/Chestnut Street	Signalized	EBL	B (16.3)	80	B (17.2)	85	B (17.2)	85	B (17.2)	85
		EBT	D (38.1)	380	D (36.6)	425	D (36.6)	430	D (36.6)	430
		WBL	F (100.0)	#390	F (154.4)	#460	F (156.0)	#460	F (156.0)	#460
		WBT	D (35.1)	390	D (36.5)	450	D (36.5)	450	D (36.5)	450
		NBT	C (30.9)	290	D (35.2)	320	D (35.4)	320	D (35.3)	320
		NBR	A (7.6)	115	A (8.5)	135	A (8.6)	135	A (8.6)	135
		SBT	D (39.2)	#515	E (62.6)	#580	E (63.8)	#580	E (63.1)	#580
		Intersection	D (40.2)	-	D (53.5)	-	D (53.9)	-	D (53.8)	-
East Central Street (Route 140) & Uncas Avenue	One-Way Stop Control	NB Exit	E (46.5)	25	F (57.3)	25	E (46.1)	25	E (36.6)	25
		WBL	A (9.6)	-	A (9.8)	-	A (9.9)	-	A (9.8)	-

- The exiting movements from Uncas Avenue operate similarly under Existing, No Build, and Build Conditions during the peak hours with a small improvement calculated during the PM peak hour due to the increase in right turn exit movements. There is virtually no difference between the two (2) Build scenarios in terms of traffic operations.
- The project will result in minimal changes in operating conditions and average vehicle delays at the intersection of East Central Street (Route 140) & King Street/Chestnut Street
- It is anticipated based on the analysis that only a small amount of site traffic would tend to utilize the adjoining neighborhood streets such as Hill Avenue, Lewis Street and Crocker Avenue to reach the major streets.
- The project includes a sidewalk that will connect to the existing network and thereby encourage safe pedestrian movement from the site to East Central and the nearby land uses.

In conclusion, the proposed project will have minimal impact on the operating conditions of the surrounding roadways and intersections. Furthermore, the 27 unit triplex option that provides more housing opportunities, will have similar impacts on traffic as the previously approved duplex option.

FIGURES

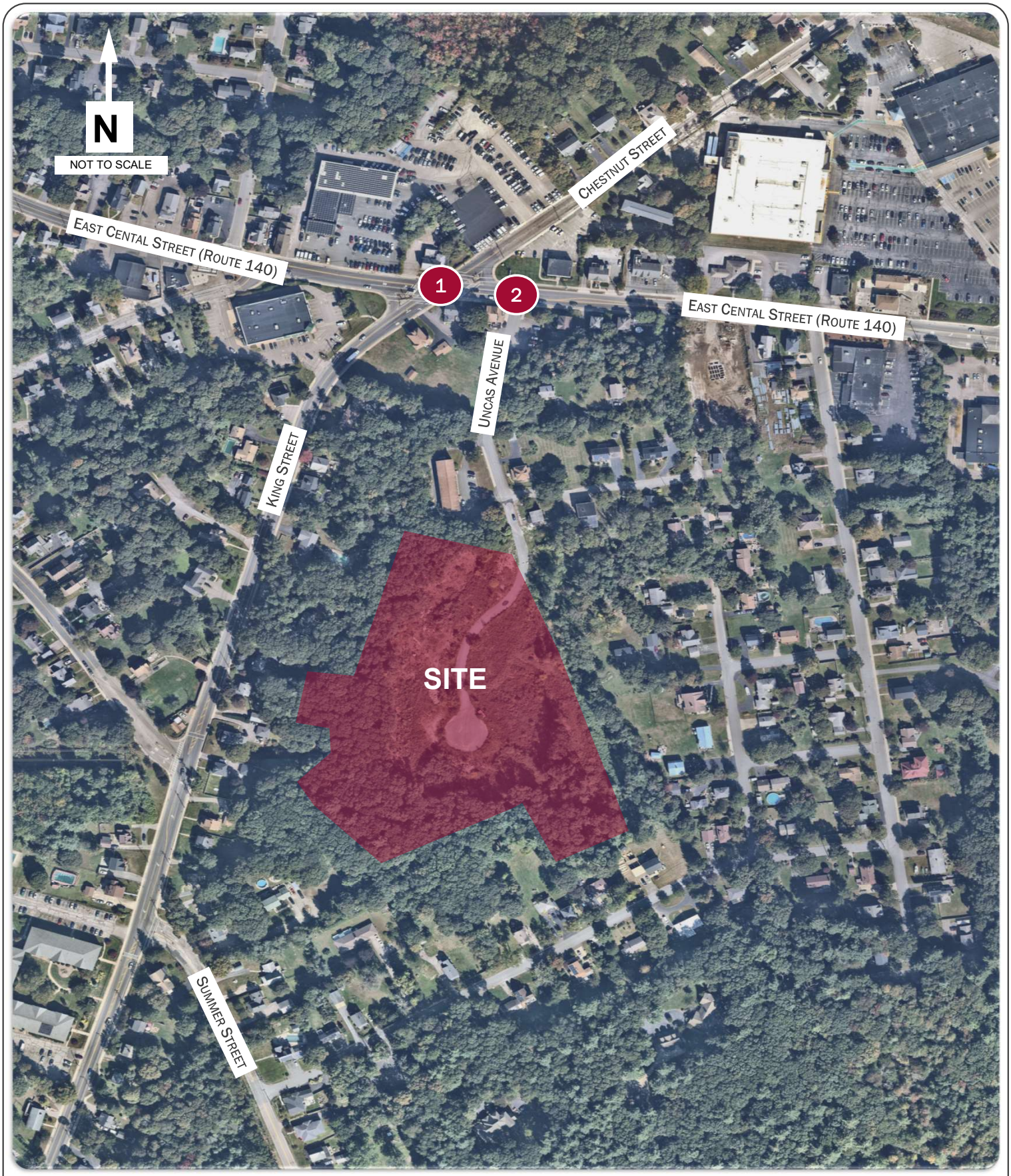


Figure 1

Site Location

Uncas Avenue Extension Residential Development Traffic Assessment

Kimley»Horn

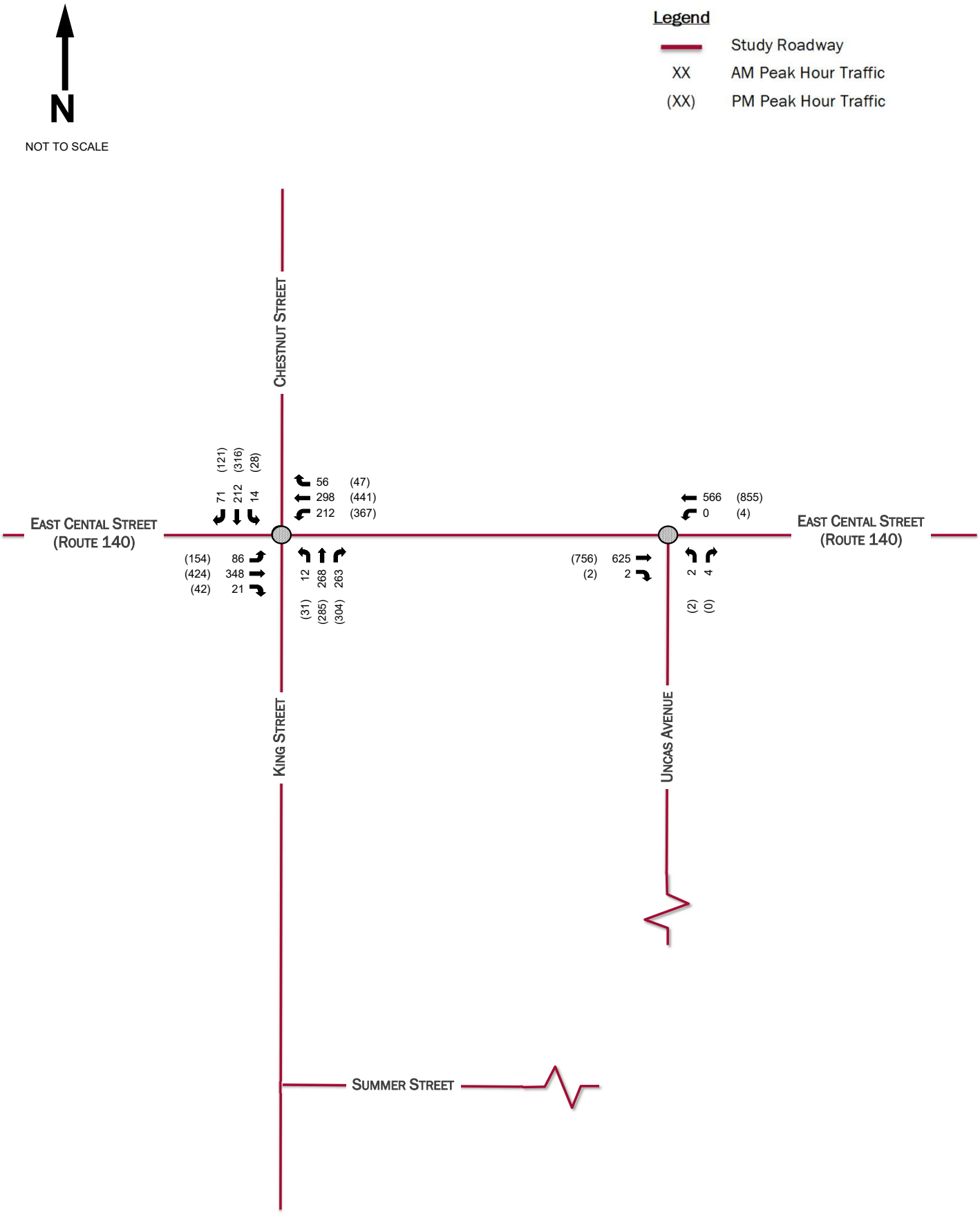


Figure 2

2023 Existing Condition Volumes

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

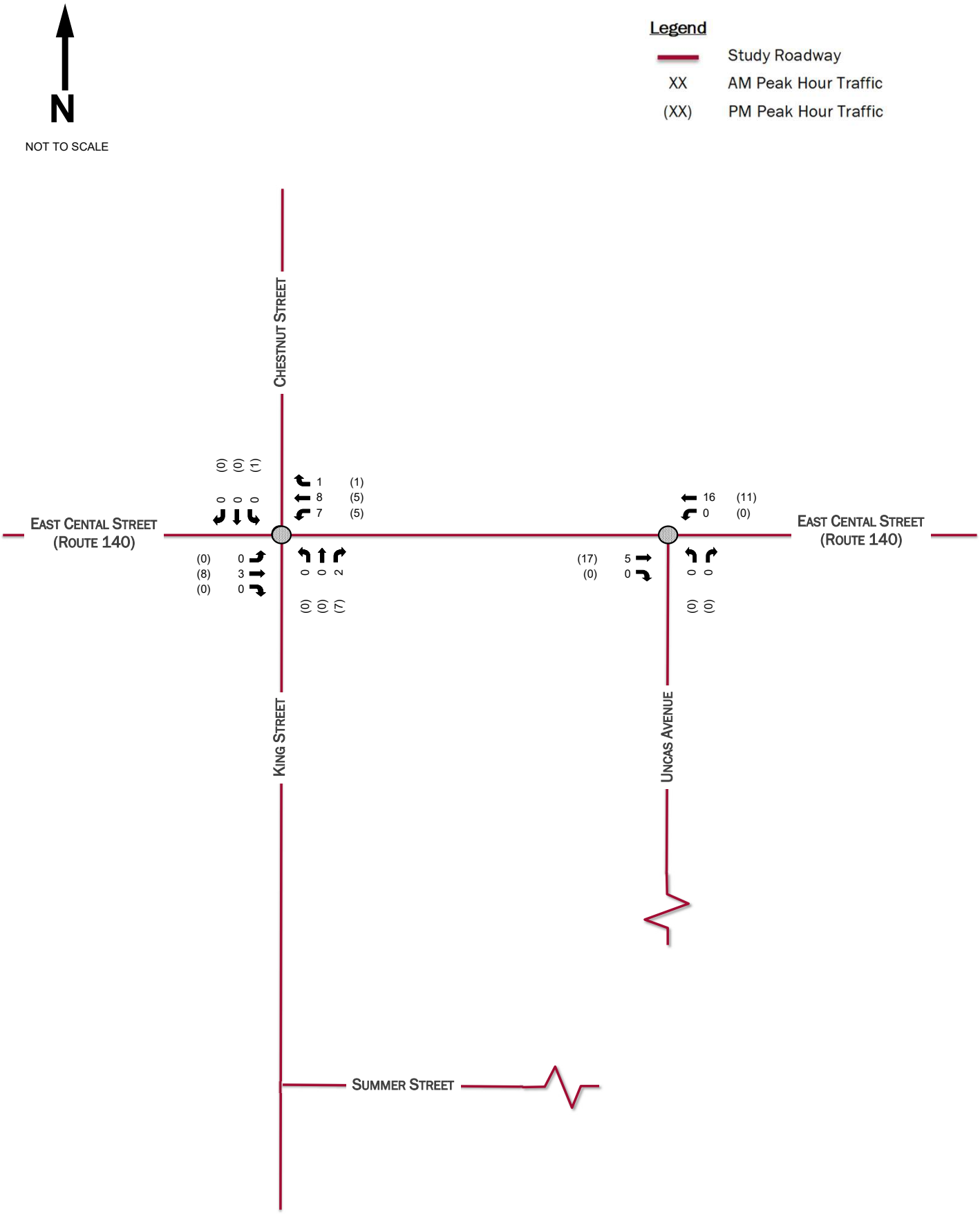


Figure 3

Taj Estates Background Trips

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

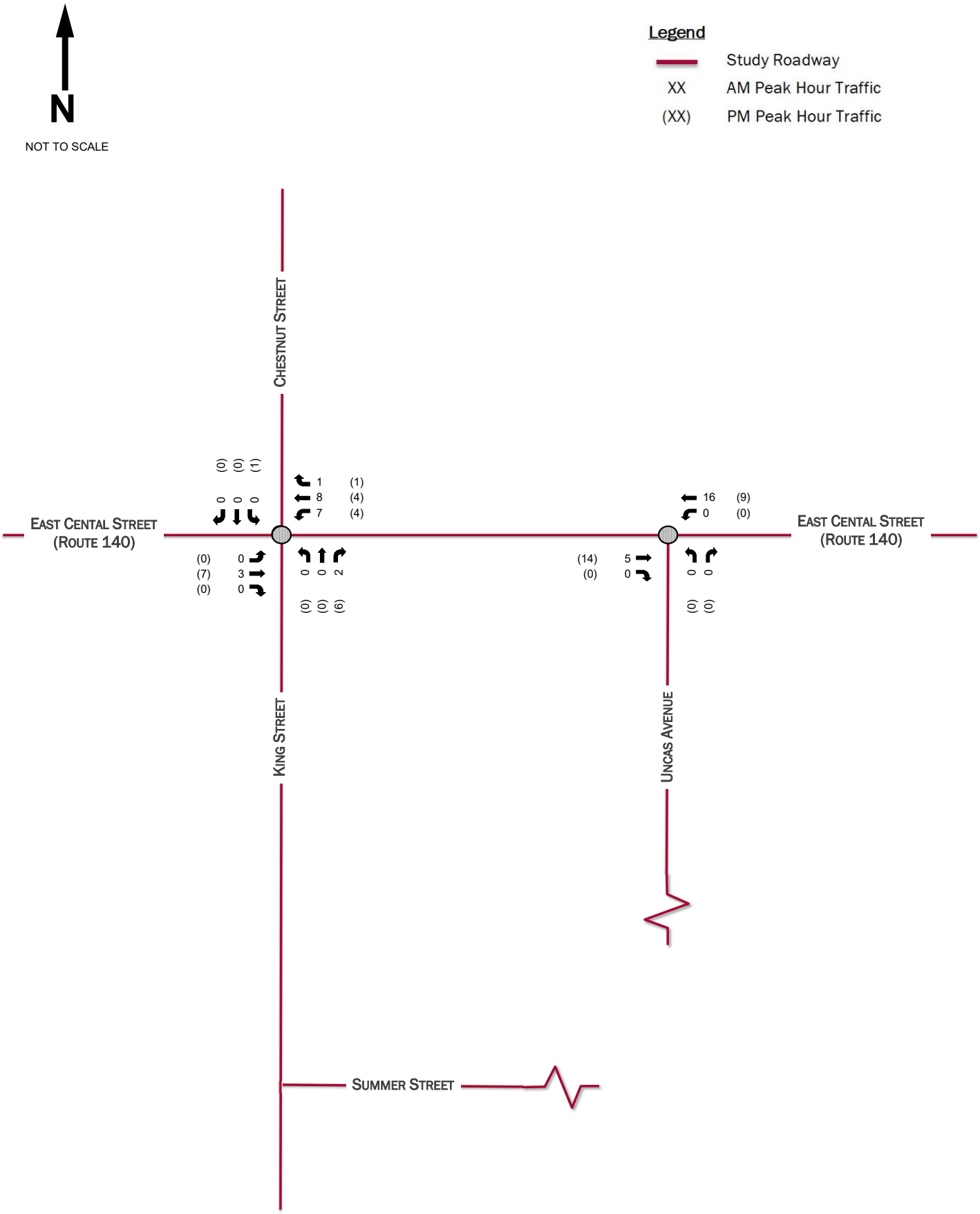


Figure 4

Taj Estates II Background Trips

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

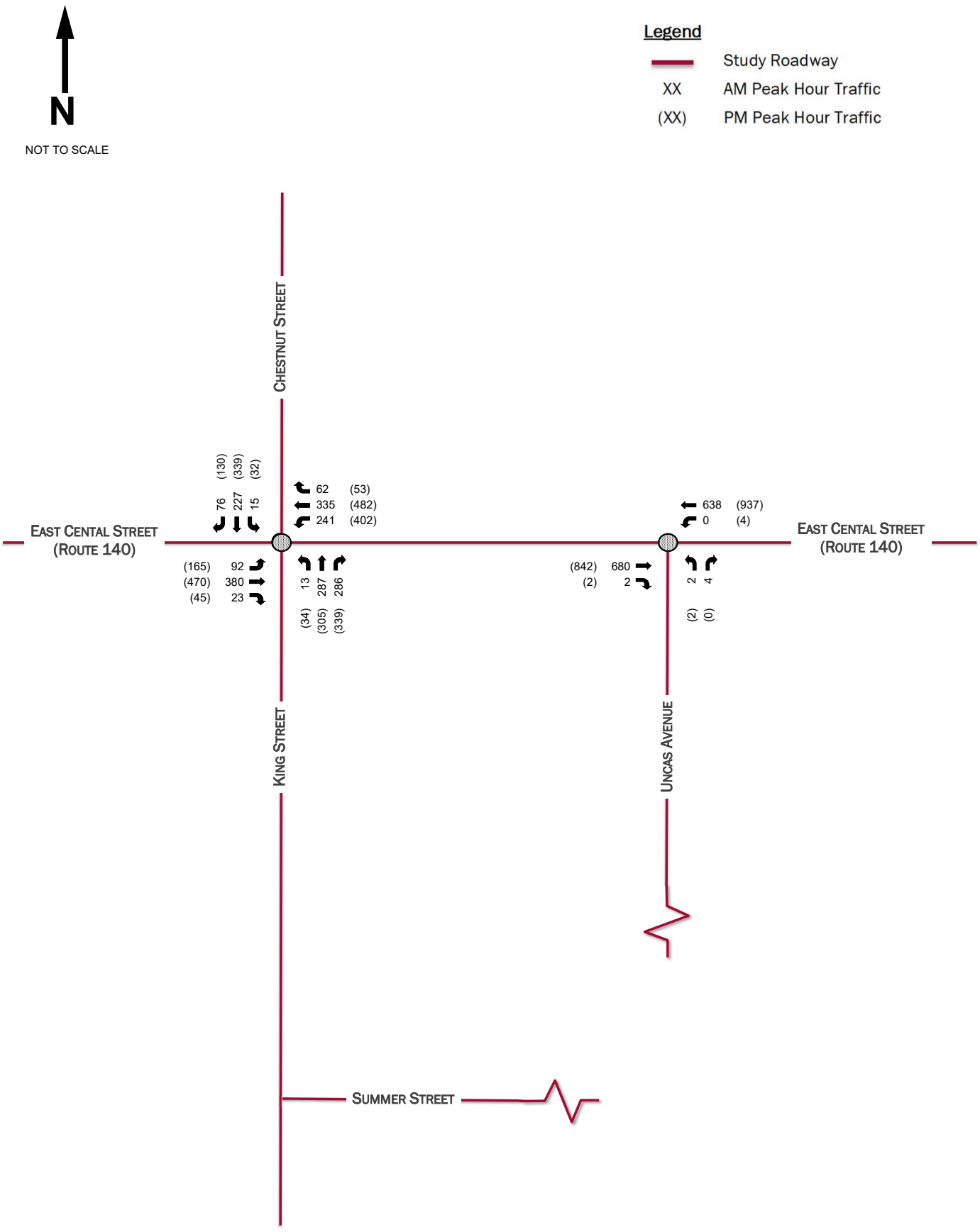


Figure 5

2030 No-Build Conditions Volumes

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

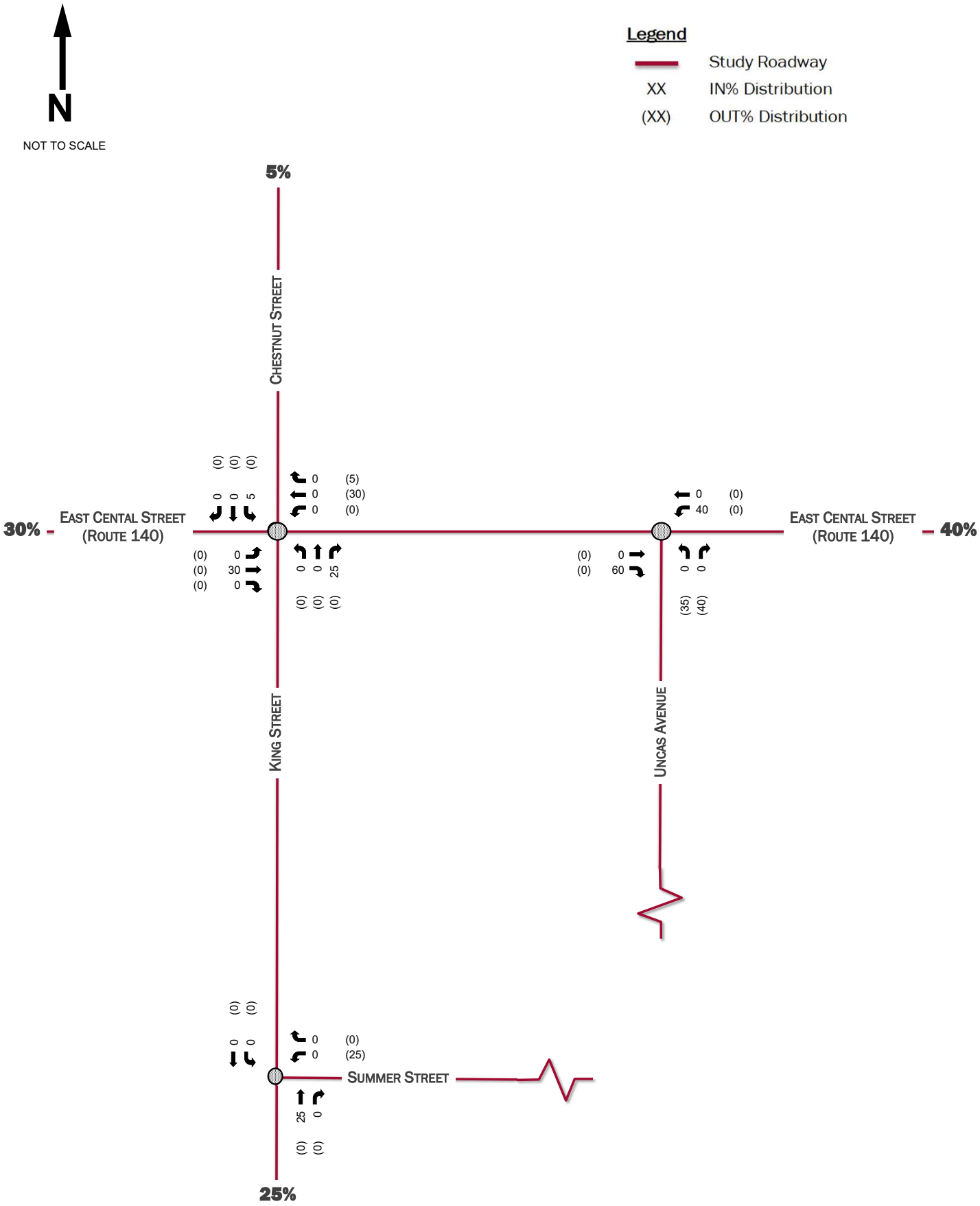


Figure 6

Peak Hour Trip Distribution

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

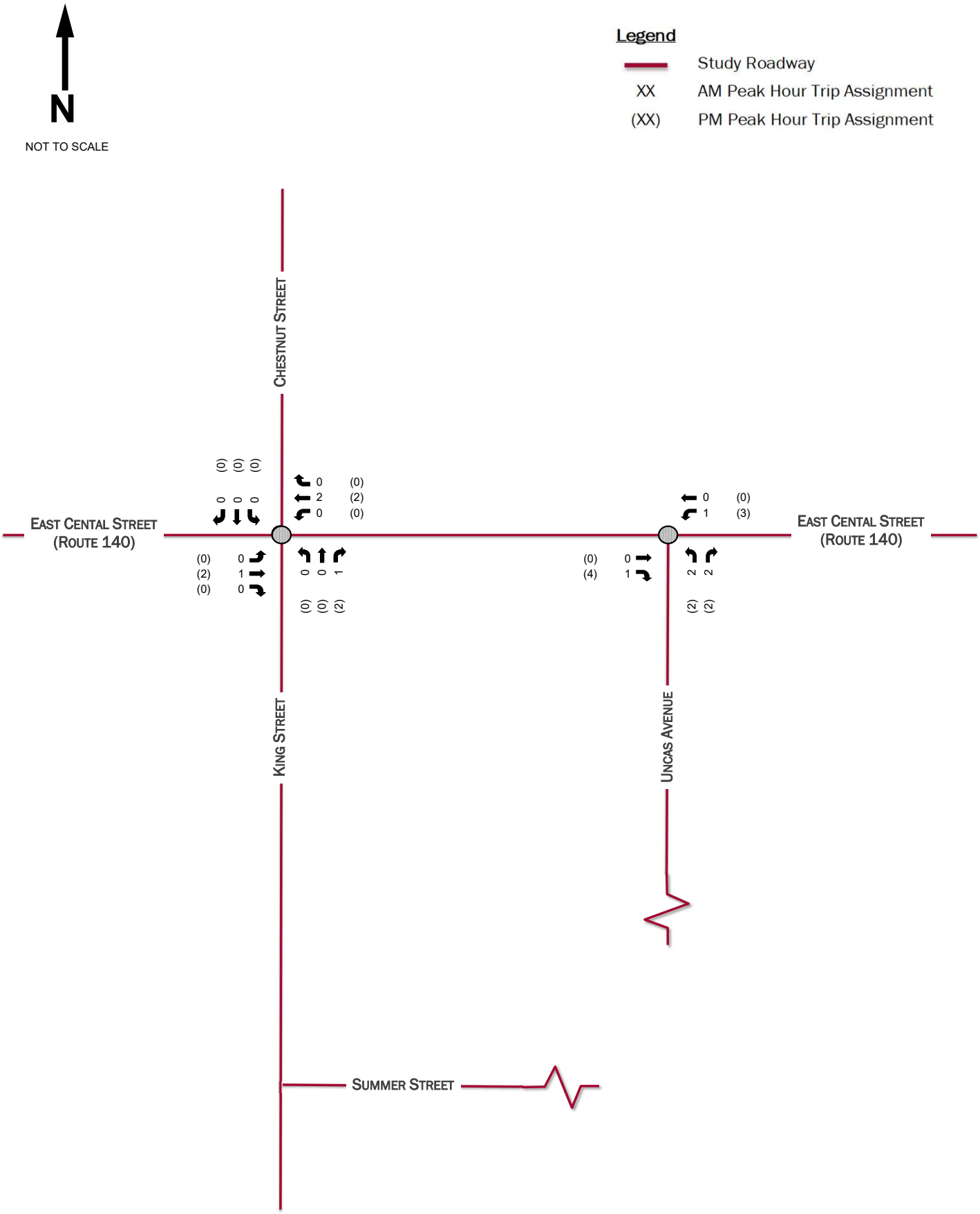


Figure 7

Peak Hour Trip Assignments - Build A

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

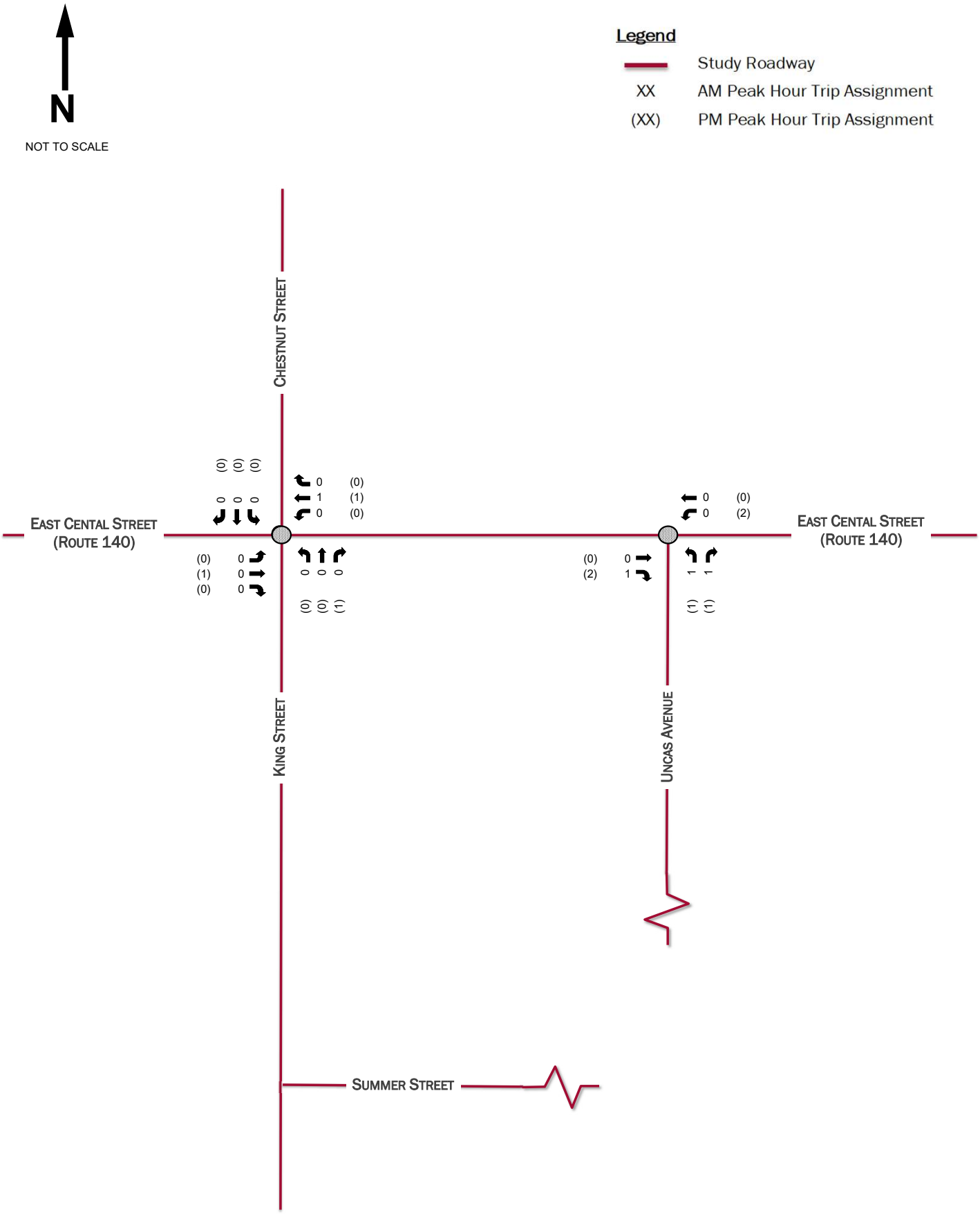


Figure 8

Peak Hour Trip Assignments - Build B

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

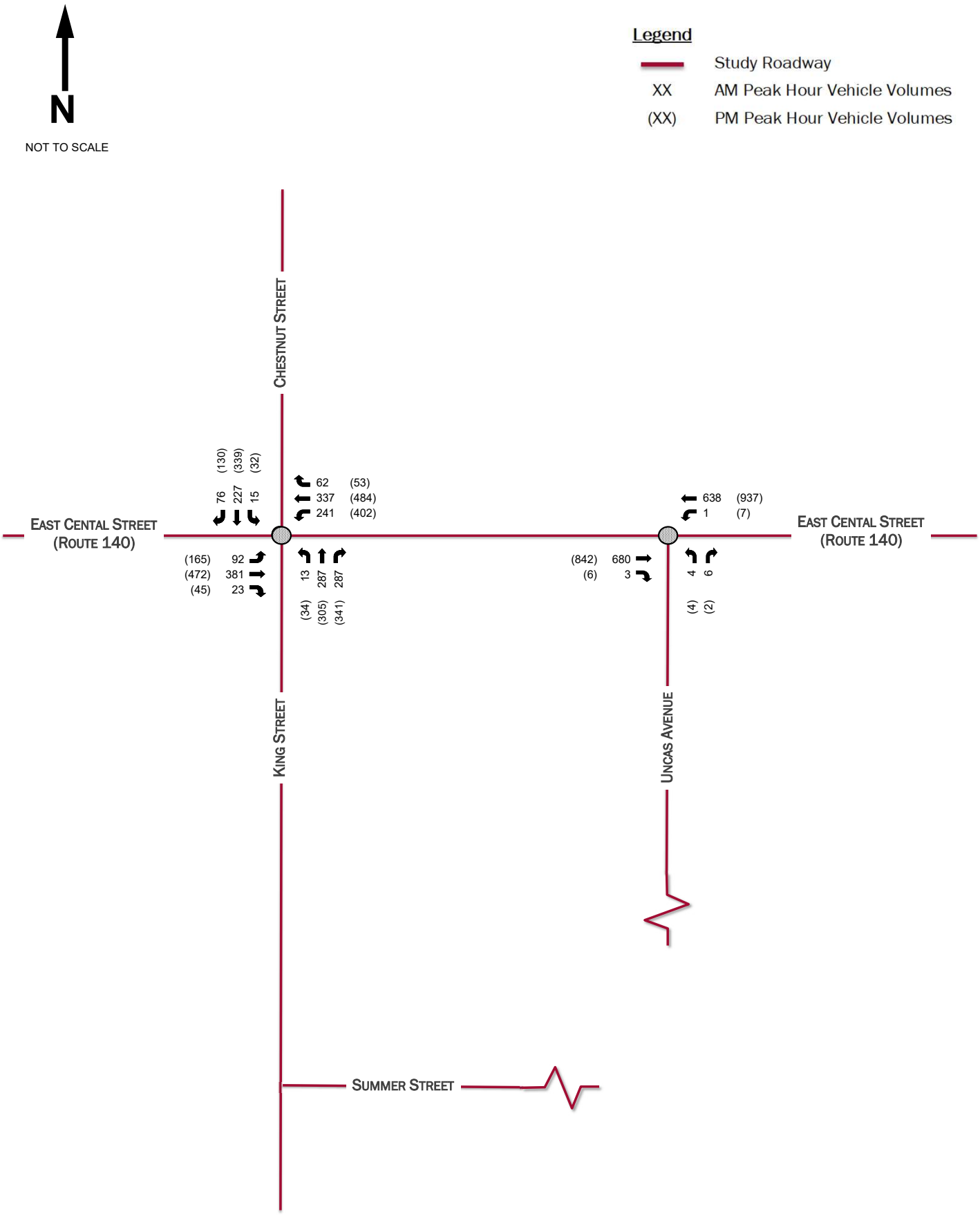


Figure 9

2030 Build A Volumes

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

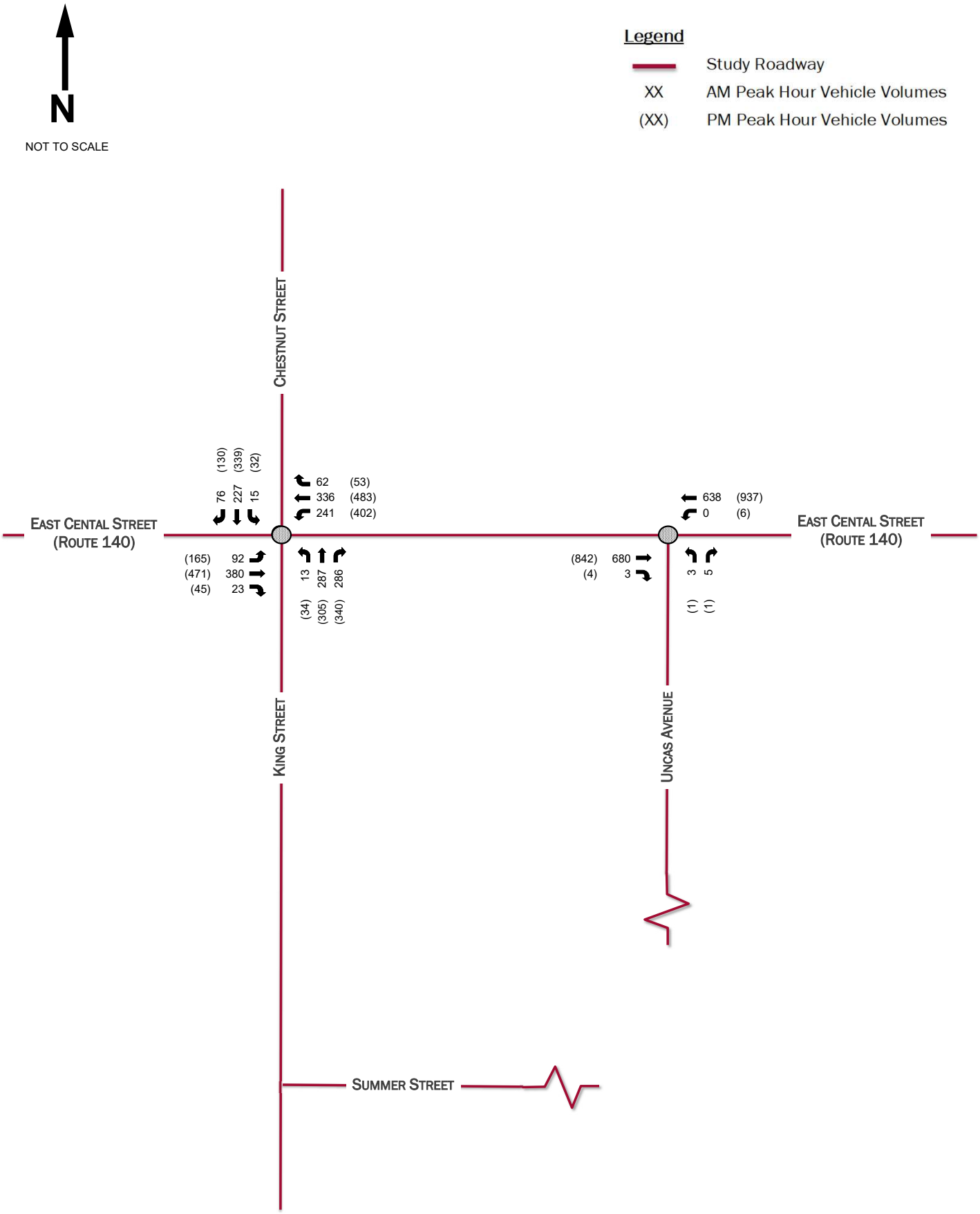


Figure 10

2030 Build B Volumes

Uncas Avenue Extension Residential Development
Traffic Assessment

Kimley»Horn

Kimley»Horn

APPENDIX

APPENDIX A

Site Plan

NOTES:
NEPCA LC-6 CONCRETE LEACHING CHAMBER (2 per system)

1. CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR H-20 LOADING.
3. 1" TO 2" DOUBLE WASHED CRUSHED STONE.

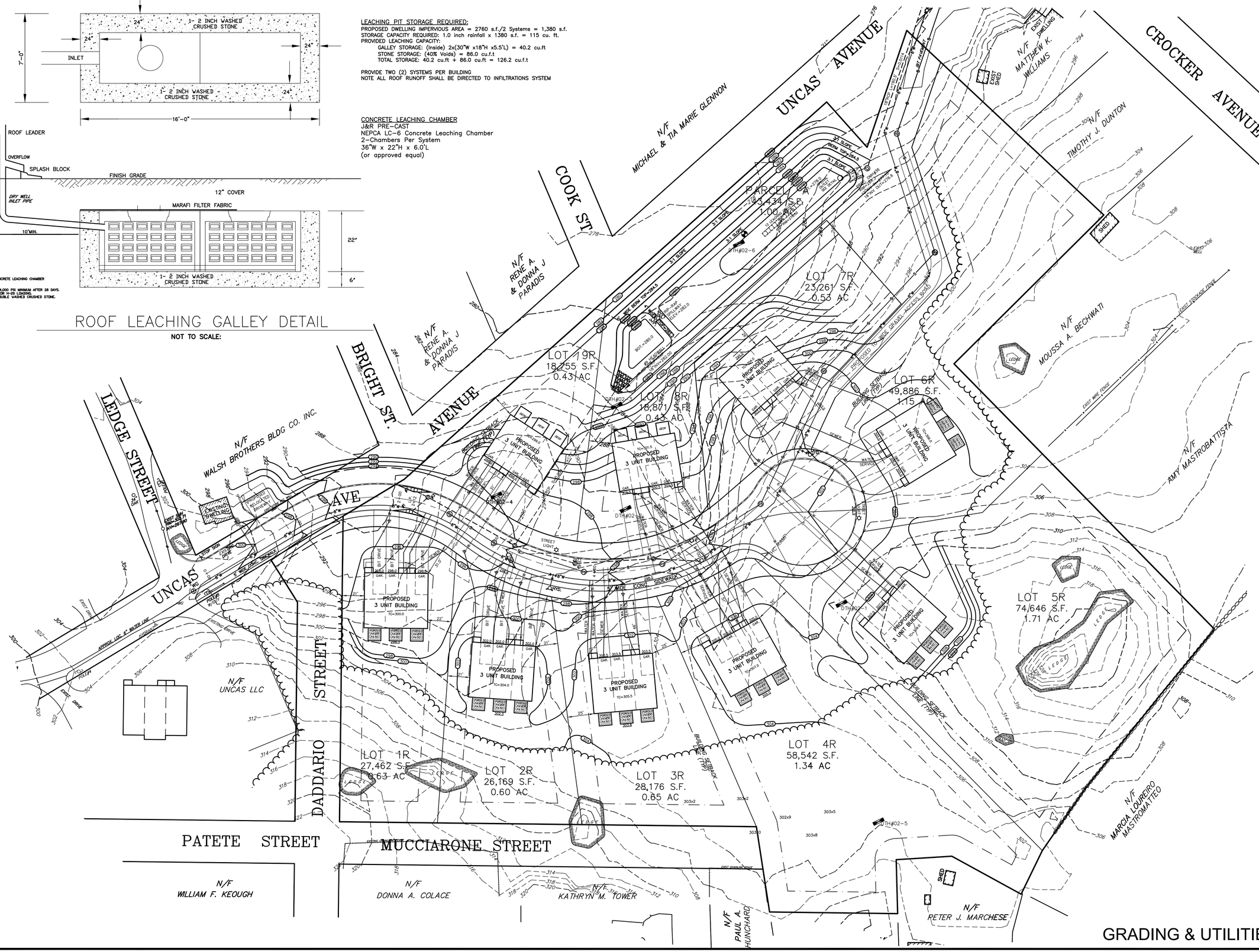
ROOF LEACHING GALLEY DETAIL

NOT TO SCALE:

LEACHING PIT STORAGE REQUIRED:
PROPOSED DWELLING IMPERVIOUS AREA = 2760 s.f./2 Systems = 1,380 s.f.
STORAGE CAPACITY REQUIRED: 1.0 inch rainfall x 1380 s.f. = 115 cu. ft.
PROVIDED LEACHING CAPACITY:
GALLEY STORAGE: (Inside) 2x(30"W x18"H x5.5'L) = 40.2 cu.ft
STONE STORAGE: (40% Voids) = 86.0 cu.f.t
TOTAL STORAGE: 40.2 cu.ft + 86.0 cu.ft = 126.2 cu.f.t

PROVIDE TWO (2) SYSTEMS PER BUILDING
NOTE ALL ROOF RUNOFF SHALL BE DIRECTED TO INFILTRATIONS SYSTEM

CONCRETE LEACHING CHAMBER
J&R PRE-CAST
NEPCA LC-6 Concrete Leaching Chamber
2-Chambers Per System
36"W x 22"H x 6.0'L
(or approved equal)



GRADING & UTILITIES

No.	DESCRIPTION	DATE
	REVISIONS	

PROPOSED HOUSE LOCATION PLAN
DEFINITIVE SUBDIVISION
"UNCAS AVENUE EXTENSION"
FRANKLIN, MASSACHUSETTS

APPLICANT & OWNER:
WALSH BROTHERS BUILDING CO. INC.
11 SADDLE WAY
WALPOLE, MASS. 02081

GLM Engineering Consultants, Inc.
19 EXCHANGE STREET
HOLLISTON, MA 01746
P: 508-429-1100
F: 508-429-7160
www.GLMengineering.com

JOB No.	11,528
DATE:	5/18/2023
SCALE:	1"=40'
SHEET:	2 of 2
PLAN #:	

APPENDIX B

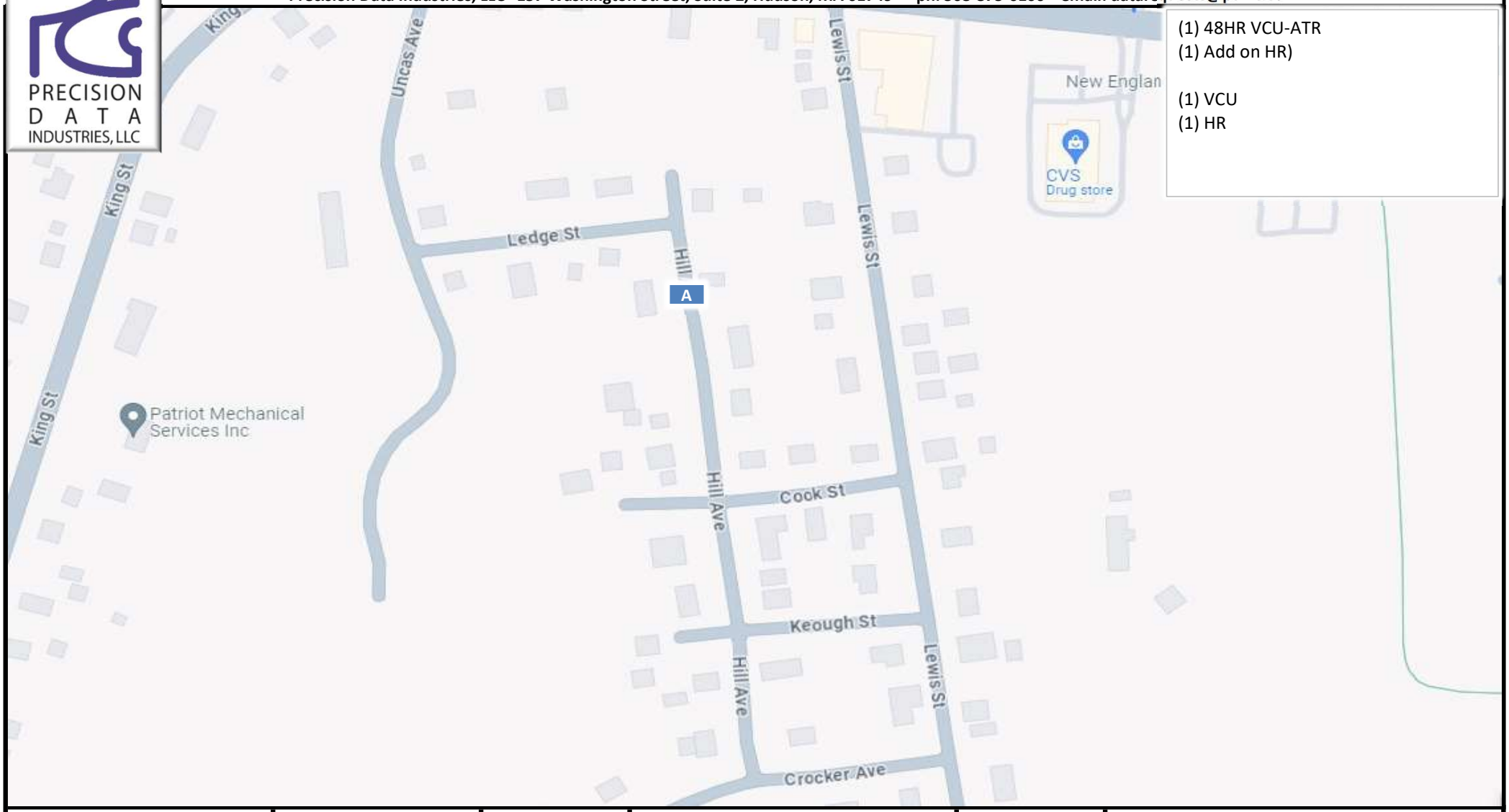
Traffic Data

Location Map: 239756 Franklin, MA

Precision Data Industries, LLC 157 Washington Street, Suite 2, Hudson, MA 01749 ph: 508-875-0100 email: datarequests@pdillc.com

(1) 48HR VCU-ATR
(1) Add on HR)

(1) VCU
(1) HR



Client:	Engineer:	Site Code:	Date:	PDI Job #	City, State:
Kimley-Horn	P. Graham	112922001	Wed 12/13/23	239756	Franklin, MA

Hill Avenue
south of Ledge Street
City, State: Franklin, MA
Client: Kimley-Horn/ P. Graham
Site Code: 112922001

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 239756 ATR-A (Speed)

Count Date
Wednesday, December 13, 2023

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2	19.0	19.0
8:00 AM	2	0	0	0	0	0	0	0	0	0	0	0	0	2	14.0	14.0
9:00 AM	2	0	1	0	0	0	0	0	0	0	0	0	0	3	18.0	14.3
10:00 AM	2	2	1	2	0	0	0	0	0	0	0	0	0	7	27.0	18.6
11:00 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	21.0	21.0
12:00 PM	1	1	1	1	0	0	0	0	0	0	0	0	0	4	22.8	18.8
1:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18.0	18.0
2:00 PM	0	1	1	1	0	0	0	0	0	0	0	0	0	3	24.2	21.3
3:00 PM	1	0	2	1	0	0	0	0	0	0	0	0	0	4	23.9	19.8
4:00 PM	0	2	2	1	0	0	0	0	0	0	0	0	0	5	25.6	21.6
5:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	2	25.4	24.0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
7:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	2	25.1	23.0
8:00 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	25.0	25.0
9:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18.0	18.0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Total	8	10	11	9	0	0	0	0	0	0	0	0	0	38	26.0	19.5
Percent	21.05%	26.32%	28.95%	23.68%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak	8:00 AM	7:00 AM	9:00 AM	10:00 AM										10:00 AM		
Volume	2	2	1	2	0	0	0	0	0	0	0	0	0	7		
PM Peak	12:00 PM	4:00 PM	3:00 PM	12:00 PM										4:00 PM		
Volume	1	2	2	1	0	0	0	0	0	0	0	0	0	5		

15th Percentile:	14.0 MPH	Average Speed:	19.5 MPH	Posted Speed Limit:	20 MPH
50th Percentile:	20.0 MPH	10 MPH Pace:	12 to 21 MPH	Number of Vehicles > 20 MPH:	14
85th Percentile:	26.0 MPH	Number in Pace:	25	Percent of Vehicles > 20 MPH:	36.8%
95th Percentile:	27.0 MPH	Percent in Pace:	65.8%		

Hill Avenue
south of Ledge Street
City, State: Franklin, MA
Client: Kimley-Horn/ P. Graham
Site Code: 112922001

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 239756 ATR-A (Speed)

Count Date
Wednesday, December 13, 2023

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	17.0	17.0
6:00 AM	0	2	0	1	0	0	0	0	0	0	0	0	0	3	25.0	20.7
7:00 AM	0	3	2	1	0	1	0	0	0	0	0	0	0	7	26.2	23.0
8:00 AM	0	1	2	0	0	0	0	0	0	0	0	0	0	3	21.7	20.7
9:00 AM	2	4	2	2	0	0	0	0	0	0	0	0	0	10	25.2	18.9
10:00 AM	0	3	2	0	0	0	0	0	0	0	0	0	0	5	20.4	18.2
11:00 AM	1	3	2	0	0	0	0	0	0	0	0	0	0	6	21.0	18.3
12:00 PM	0	3	1	1	1	0	0	0	0	0	0	0	0	6	28.5	22.3
1:00 PM	0	1	2	1	0	0	0	0	0	0	0	0	0	4	26.3	23.0
2:00 PM	0	6	4	2	1	0	0	0	0	0	0	0	0	13	25.6	21.4
3:00 PM	2	1	9	1	0	1	0	0	0	0	0	0	0	14	24.1	21.3
4:00 PM	1	2	1	0	0	0	0	0	0	0	0	0	0	4	19.7	17.3
5:00 PM	0	3	2	0	0	0	0	0	0	0	0	0	0	5	20.0	17.8
6:00 PM	0	1	2	1	0	0	0	0	0	0	0	0	0	4	24.6	22.3
7:00 PM	0	1	1	0	0	0	0	0	0	0	0	0	0	2	19.9	19.5
8:00 PM	0	1	0	2	0	0	0	0	0	0	0	0	0	3	26.4	22.3
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Total	6	36	32	12	2	2	0	0	0	0	0	0	0	90	25.0	20.5
Percent	6.67%	40.00%	35.56%	13.33%	2.22%	2.22%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak	9:00 AM	9:00 AM	7:00 AM	9:00 AM		7:00 AM								9:00 AM		
Volume	2	4	2	2	0	1	0	0	0	0	0	0	0	10		
PM Peak	3:00 PM	2:00 PM	3:00 PM	2:00 PM	12:00 PM	3:00 PM								3:00 PM		
Volume	2	6	9	2	1	1	0	0	0	0	0	0	0	14		

15th Percentile:	16.0 MPH	Average Speed:	20.5 MPH	Posted Speed Limit:	20 MPH
50th Percentile:	20.0 MPH	10 MPH Pace:	16 to 25 MPH	Number of Vehicles > 20 MPH:	38
85th Percentile:	25.0 MPH	Number in Pace:	69	Percent of Vehicles > 20 MPH:	42.2%
95th Percentile:	28.6 MPH	Percent in Pace:	76.7%		

Hill Avenue
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City, State: Franklin, MA
Client: Kimley-Horn/ P. Graham
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PRECISION D A T A INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 239756 ATR-A (Speed)

Count Date
Wednesday, December 13, 2023

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	17.0	17.0
6:00 AM	0	2	0	1	0	0	0	0	0	0	0	0	0	3	25.0	20.7
7:00 AM	0	5	2	1	0	1	0	0	0	0	0	0	0	9	24.8	22.1
8:00 AM	2	1	2	0	0	0	0	0	0	0	0	0	0	5	21.4	18.0
9:00 AM	4	4	3	2	0	0	0	0	0	0	0	0	0	13	22.4	17.8
10:00 AM	2	5	3	2	0	0	0	0	0	0	0	0	0	12	23.1	18.4
11:00 AM	1	3	3	0	0	0	0	0	0	0	0	0	0	7	21.3	18.7
12:00 PM	1	4	2	2	1	0	0	0	0	0	0	0	0	10	27.0	20.9
1:00 PM	0	2	2	1	0	0	0	0	0	0	0	0	0	5	25.4	22.0
2:00 PM	0	7	5	3	1	0	0	0	0	0	0	0	0	16	25.8	21.4
3:00 PM	3	1	11	2	0	1	0	0	0	0	0	0	0	18	24.5	20.9
4:00 PM	1	4	3	1	0	0	0	0	0	0	0	0	0	9	23.4	19.7
5:00 PM	0	3	3	1	0	0	0	0	0	0	0	0	0	7	22.4	19.6
6:00 PM	0	1	2	1	0	0	0	0	0	0	0	0	0	4	24.6	22.3
7:00 PM	0	1	2	1	0	0	0	0	0	0	0	0	0	4	23.3	21.3
8:00 PM	0	1	0	3	0	0	0	0	0	0	0	0	0	4	26.1	23.0
9:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18.0	18.0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Total	14	46	43	21	2	2	0	0	0	0	0	0	0	128	25.0	20.2
Percent	10.94%	35.94%	33.59%	16.41%	1.56%	1.56%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak	9:00 AM	7:00 AM	9:00 AM	9:00 AM		7:00 AM								9:00 AM		
Volume	4	5	3	2	0	1	0	0	0	0	0	0	0	13		
PM Peak	3:00 PM	2:00 PM	3:00 PM	2:00 PM	12:00 PM	3:00 PM								3:00 PM		
Volume	3	7	11	3	1	1	0	0	0	0	0	0	0	18		

15th Percentile:	16.0 MPH	Average Speed:	20.2 MPH	Posted Speed Limit:	20 MPH
50th Percentile:	20.0 MPH	10 MPH Pace:	16 to 25 MPH	Number of Vehicles > 20 MPH:	52
85th Percentile:	25.0 MPH	Number in Pace:	91	Percent of Vehicles > 20 MPH:	40.6%
95th Percentile:	28.0 MPH	Percent in Pace:	71.1%		

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PDI File #: 239756 ATR-A (Speed)

Count Date
Thursday, December 14, 2023

Speed (60-minute)

NB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18.0	18.0
6:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	29.0	29.0
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18.0	18.0
8:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	2	21.3	19.5
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
10:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	16.0	16.0
11:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	15.0	15.0
12:00 PM	0	2	0	1	0	0	0	0	0	0	0	0	0	3	24.6	20.3
1:00 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	2	24.6	23.5
2:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18.0	18.0
3:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	1	24.0	24.0
4:00 PM	0	1	1	0	1	0	0	0	0	0	0	0	0	3	28.0	23.7
5:00 PM	1	2	0	1	0	0	0	0	0	0	0	0	0	4	22.0	17.3
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
7:00 PM	0	1	2	0	0	0	0	0	0	0	0	0	0	3	20.0	19.7
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
9:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18.0	18.0
10:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Total	1	13	6	4	1	0	0	0	0	0	0	0	0	25	25.4	20.1
Percent	4.00%	52.00%	24.00%	16.00%	4.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak		5:00 AM	8:00 AM	6:00 AM										8:00 AM		
Volume	0	1	1	1	0	0	0	0	0	0	0	0	0	2		
PM Peak	5:00 PM	12:00 PM	7:00 PM	12:00 PM	4:00 PM									5:00 PM		
Volume	1	2	2	1	1	0	0	0	0	0	0	0	0	4		

15th Percentile:	15.6 MPH	Average Speed:	20.1 MPH	Posted Speed Limit:	20 MPH
50th Percentile:	19.0 MPH	10 MPH Pace:	15 to 24 MPH	Number of Vehicles > 20 MPH:	9
85th Percentile:	25.4 MPH	Number in Pace:	19	Percent of Vehicles > 20 MPH:	36.0%
95th Percentile:	28.6 MPH	Percent in Pace:	76.0%		

Hill Avenue
south of Ledge Street
City, State: Franklin, MA
Client: Kimley-Horn/ P. Graham
Site Code: 112922001

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 239756 ATR-A (Speed)

Count Date
Thursday, December 14, 2023

Speed (60-minute)

SB																
Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	19.0	19.0
6:00 AM	1	1	1	1	0	0	0	0	0	0	0	0	0	4	24.7	19.8
7:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	19.0	19.0
8:00 AM	0	1	1	0	0	0	0	0	0	0	0	0	0	2	21.6	20.5
9:00 AM	0	1	1	2	0	0	0	0	0	0	0	0	0	4	25.6	22.8
10:00 AM	0	1	7	0	0	0	0	0	0	0	0	0	0	8	22.0	20.9
11:00 AM	0	2	1	0	0	0	0	0	0	0	0	0	0	3	19.8	18.3
12:00 PM	0	1	1	2	0	0	0	0	0	0	0	0	0	4	26.1	23.8
1:00 PM	0	2	0	2	0	0	0	0	0	0	0	0	0	4	27.1	22.0
2:00 PM	2	1	1	0	1	0	0	0	0	0	0	0	0	5	25.8	19.0
3:00 PM	0	0	2	3	0	0	0	0	0	0	0	0	0	5	27.2	25.4
4:00 PM	1	4	2	2	0	0	0	0	0	0	0	0	0	9	24.6	19.4
5:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	0	2	24.7	21.5
6:00 PM	1	2	0	0	0	0	0	0	0	0	0	0	0	3	17.8	16.0
7:00 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	2	23.4	22.0
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
9:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
10:00 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	2	36.1	34.0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Total	5	19	19	13	2	1	0	0	0	0	0	0	0	59	26.0	21.3
Percent	8.47%	32.20%	32.20%	22.03%	3.39%	1.69%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak	6:00 AM	11:00 AM	10:00 AM	9:00 AM										10:00 AM		
Volume	1	2	7	2	0	0	0	0	0	0	0	0	0	8		
PM Peak	2:00 PM	4:00 PM	3:00 PM	3:00 PM	2:00 PM	10:00 PM								4:00 PM		
Volume	2	4	2	3	1	1	0	0	0	0	0	0	0	9		

15th Percentile:	16.0 MPH	Average Speed:	21.3 MPH	Posted Speed Limit:	20 MPH
50th Percentile:	21.0 MPH	10 MPH Pace:	16 to 25 MPH	Number of Vehicles > 20 MPH:	31
85th Percentile:	26.0 MPH	Number in Pace:	40	Percent of Vehicles > 20 MPH:	52.5%
95th Percentile:	29.2 MPH	Percent in Pace:	67.8%		

Hill Avenue
south of Ledge Street
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Site Code: 112922001

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
Office: 508-875-0100 Fax: 508-875-0118

PDI File #: 239756 ATR-A (Speed)

Count Date
Thursday, December 14, 2023

Speed (60-minute)

Combined NB and SB

Start Time:	1 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 to 44	45 to 49	50 to 54	55 to 59	60 to 64	65 to 69	70+	Total	85th %ile	Ave Speed
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
1:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
2:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
3:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
4:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
5:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2	18.9	18.5
6:00 AM	1	1	1	2	0	0	0	0	0	0	0	0	0	5	27.2	21.6
7:00 AM	0	2	0	0	0	0	0	0	0	0	0	0	0	2	18.9	18.5
8:00 AM	0	2	2	0	0	0	0	0	0	0	0	0	0	4	22.0	20.0
9:00 AM	0	1	1	2	0	0	0	0	0	0	0	0	0	4	25.6	22.8
10:00 AM	0	2	7	0	0	0	0	0	0	0	0	0	0	9	21.8	20.3
11:00 AM	0	3	1	0	0	0	0	0	0	0	0	0	0	4	19.2	17.5
12:00 PM	0	3	1	3	0	0	0	0	0	0	0	0	0	7	27.0	22.3
1:00 PM	0	2	1	3	0	0	0	0	0	0	0	0	0	6	26.5	22.5
2:00 PM	2	2	1	0	1	0	0	0	0	0	0	0	0	6	24.0	18.8
3:00 PM	0	0	3	3	0	0	0	0	0	0	0	0	0	6	26.8	25.2
4:00 PM	1	5	3	2	1	0	0	0	0	0	0	0	0	12	26.4	20.5
5:00 PM	1	3	0	2	0	0	0	0	0	0	0	0	0	6	26.0	18.7
6:00 PM	1	2	0	0	0	0	0	0	0	0	0	0	0	3	17.8	16.0
7:00 PM	0	1	4	0	0	0	0	0	0	0	0	0	0	5	21.6	20.6
8:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
9:00 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18.0	18.0
10:00 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	2	36.1	34.0
11:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0
Total	6	32	25	17	3	1	0	0	0	0	0	0	0	84	26.0	20.9
Percent	7.14%	38.10%	29.76%	20.24%	3.57%	1.19%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
AM Peak	6:00 AM	11:00 AM	10:00 AM	6:00 AM										10:00 AM		
Volume	1	3	7	2	0	0	0	0	0	0	0	0	0	9		
PM Peak	2:00 PM	4:00 PM	7:00 PM	12:00 PM	2:00 PM	10:00 PM								4:00 PM		
Volume	2	5	4	3	1	1	0	0	0	0	0	0	0	12		

15th Percentile:	16.0 MPH	Average Speed:	20.9 MPH	Posted Speed Limit:	20 MPH
50th Percentile:	20.0 MPH	10 MPH Pace:	15 to 24 MPH	Number of Vehicles > 20 MPH:	40
85th Percentile:	26.0 MPH	Number in Pace:	57	Percent of Vehicles > 20 MPH:	47.6%
95th Percentile:	29.0 MPH	Percent in Pace:	67.9%		

Hill Avenue
south of Ledge Street
City, State: Franklin, MA
Client: Kimley-Horn/ P. Graham
Site Code: 112922001

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 239756 ATR-A

Count Date: Wednesday, December 13, 2023
Direction: NB

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0
6:30 AM	0	0	0	0	0	0	0
6:45 AM	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	1	0	1
8:30 AM	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	1	2
9:00 AM	0	0	1	0	1	0	2
9:15 AM	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0
10:00 AM	0	0	1	0	0	0	1
10:15 AM	0	0	1	0	0	0	1
10:30 AM	0	0	0	0	0	0	0
10:45 AM	0	0	4	0	0	0	4
11:00 AM	0	0	0	0	0	0	0
11:15 AM	0	0	1	0	0	0	1
11:30 AM	0	0	1	0	0	0	1
11:45 AM	0	0	0	0	0	0	0
AM Total	**0**	**0**	**10**	**0**	**2**	**1**	**13**
Percentage	**0.00%**	**0.00%**	**76.92%**	**0.00%**	**15.38%**	**7.69%**	
AM Peak	**12:00 AM**	**12:00 AM**	**10:00 AM**	**12:00 AM**	**8:15 AM**	**8:00 AM**	**10:00 AM**
Volume	**0**	**0**	**6**	**0**	**2**	**1**	**6**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	1
12:30 PM	0	0	2	0	0	0	2
12:45 PM	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	1	0	1
1:15 PM	0	0	0	0	1	0	1
1:30 PM	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0
2:00 PM	0	0	1	0	0	0	1
2:15 PM	0	0	2	0	0	0	2
2:30 PM	0	0	1	0	0	0	1
2:45 PM	0	0	1	0	0	0	1
3:00 PM	0	0	1	0	0	0	1
3:15 PM	0	0	0	0	0	0	0
3:30 PM	0	0	1	0	0	0	1
3:45 PM	0	1	0	0	0	0	1
4:00 PM	0	0	2	0	0	0	2
4:15 PM	0	0	1	0	0	0	1
4:30 PM	0	0	2	0	0	0	2
4:45 PM	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	0	0	1
5:45 PM	0	0	1	0	0	0	1
6:00 PM	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0
7:30 PM	0	0	2	0	0	0	2
7:45 PM	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0
8:15 PM	0	0	1	0	0	0	1
8:30 PM	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0
9:15 PM	0	0	1	0	0	0	1
9:30 PM	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0
PM Total	**0**	**1**	**21**	**0**	**2**	**0**	**24**
Percentage	**0.00%**	**4.17%**	**87.50%**	**0.00%**	**8.33%**	**0.00%**	
PM Peak	**12:00 PM**	**3:00 PM**	**2:00 PM**	**12:00 PM**	**12:30 PM**	**12:00 PM**	**3:45 PM**
Volume	**0**	**1**	**5**	**0**	**2**	**0**	**6**
Day Total	**0**	**1**	**31**	**0**	**4**	**1**	**37**
Percentage	**0.00%**	**2.70%**	**83.78%**	**0.00%**	**10.81%**	**2.70%**	

Hill Avenue
south of Ledge Street
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PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 239756 ATR-A

Count Date: Thursday, December 14, 2023
Direction: NB

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0
5:00 AM	0	0	1	0	0	0	1
5:15 AM	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	0
6:30 AM	0	0	1	0	0	0	1
6:45 AM	0	0	0	0	0	0	0
7:00 AM	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0
7:45 AM	0	0	1	0	0	0	1
8:00 AM	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	1
8:45 AM	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0
9:45 AM	0	0	1	0	0	0	1
10:00 AM	0	0	0	0	0	0	0
10:15 AM	0	0	0	0	0	0	0
10:30 AM	0	0	0	0	0	0	0
10:45 AM	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0
11:30 AM	0	0	1	0	0	0	1
11:45 AM	0	0	0	0	0	0	0
AM Total	**0**	**0**	**6**	**0**	**0**	**0**	**6**
Percentage	**0.00%**	**0.00%**	**100.00%**	**0.00%**	**0.00%**	**0.00%**	
AM Peak	**12:00 AM**	**12:00 AM**	**7:45 AM**	**12:00 AM**	**12:00 AM**	**12:00 AM**	**7:45 AM**
Volume	**0**	**0**	**2**	**0**	**0**	**0**	**2**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	1	0	0	0	1
12:15 PM	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	0	1
1:00 PM	0	0	0	0	0	0	0
1:15 PM	0	0	1	0	0	0	1
1:30 PM	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0
2:00 PM	0	0	1	0	0	0	1
2:15 PM	0	0	0	0	0	0	0
2:30 PM	0	0	0	0	0	0	0
2:45 PM	0	0	0	0	0	0	0
3:00 PM	0	0	0	0	0	0	0
3:15 PM	0	0	0	0	0	0	0
3:30 PM	0	0	2	0	0	0	2
3:45 PM	0	0	1	0	0	0	1
4:00 PM	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	1
4:45 PM	0	0	1	0	0	0	1
5:00 PM	0	0	2	0	0	0	2
5:15 PM	0	0	0	0	0	0	0
5:30 PM	0	0	1	0	0	0	1
5:45 PM	0	0	1	0	0	0	1
6:00 PM	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0
7:30 PM	0	0	1	0	0	0	1
7:45 PM	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0
9:30 PM	0	0	1	0	0	0	1
9:45 PM	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0
PM Total	**0**	**0**	**15**	**0**	**0**	**0**	**15**
Percentage	**0.00%**	**0.00%**	**100.00%**	**0.00%**	**0.00%**	**0.00%**	
PM Peak	**12:00 PM**	**12:00 PM**	**4:15 PM**	**12:00 PM**	**12:00 PM**	**12:00 PM**	**4:15 PM**
Volume	**0**	**0**	**4**	**0**	**0**	**0**	**4**
Day Total	**0**	**0**	**21**	**0**	**0**	**0**	**21**
Percentage	**0.00%**	**0.00%**	**100.00%**	**0.00%**	**0.00%**	**0.00%**	

Hill Avenue
south of Ledge Street
City, State: Franklin, MA
Client: Kimley-Horn/ P. Graham
Site Code: 112922001

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 239756 ATR-A

Count Date: Wednesday, December 13, 2023
Direction: SB

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0
6:00 AM	0	0	0	0	0	0	0
6:15 AM	0	0	1	0	0	0	1
6:30 AM	0	0	0	0	0	0	0
6:45 AM	0	0	2	0	0	0	2
7:00 AM	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0
7:30 AM	0	0	2	0	0	0	2
7:45 AM	0	0	2	0	0	0	2
8:00 AM	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0
8:30 AM	0	0	2	0	0	0	2
8:45 AM	0	0	1	0	1	0	2
9:00 AM	0	0	2	0	0	0	2
9:15 AM	0	0	3	0	1	0	4
9:30 AM	0	0	1	0	1	0	2
9:45 AM	0	0	1	0	0	0	1
10:00 AM	0	0	2	0	0	0	2
10:15 AM	0	0	2	0	0	0	2
10:30 AM	0	0	0	0	0	0	0
10:45 AM	0	0	2	0	0	0	2
11:00 AM	0	0	0	0	0	0	0
11:15 AM	0	0	3	0	0	0	3
11:30 AM	0	0	1	0	1	0	2
11:45 AM	0	0	2	0	0	0	2
AM Total	**0**	**0**	**29**	**0**	**4**	**0**	**33**
Percentage	**0.00%**	**0.00%**	**87.88%**	**0.00%**	**12.12%**	**0.00%**	
AM Peak	**12:00 AM**	**12:00 AM**	**8:30 AM**	**12:00 AM**	**8:45 AM**	**12:00 AM**	**8:30 AM**
Volume	**0**	**0**	**8**	**0**	**3**	**0**	**10**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	1
12:30 PM	0	0	2	0	0	0	2
12:45 PM	0	0	1	0	0	0	1
1:00 PM	0	0	2	0	1	0	3
1:15 PM	0	0	1	0	0	0	1
1:30 PM	0	0	1	0	0	0	1
1:45 PM	0	0	0	0	0	0	0
2:00 PM	0	0	1	0	0	0	1
2:15 PM	0	0	4	0	0	0	4
2:30 PM	0	0	5	0	0	0	5
2:45 PM	0	0	2	0	0	0	2
3:00 PM	0	0	2	0	1	0	3
3:15 PM	0	0	4	0	1	0	5
3:30 PM	0	0	3	0	0	0	3
3:45 PM	0	1	1	0	0	0	2
4:00 PM	0	0	2	0	0	0	2
4:15 PM	0	0	1	0	0	0	1
4:30 PM	0	0	0	0	0	0	0
4:45 PM	0	0	1	0	0	0	1
5:00 PM	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	1
5:30 PM	0	0	0	0	0	0	0
5:45 PM	0	0	2	0	0	0	2
6:00 PM	0	0	1	0	0	0	1
6:15 PM	0	0	1	0	0	0	1
6:30 PM	0	0	0	0	0	0	0
6:45 PM	0	0	1	0	0	0	1
7:00 PM	0	0	0	0	0	0	0
7:15 PM	0	0	0	0	0	0	0
7:30 PM	0	0	2	0	0	0	2
7:45 PM	0	0	0	0	0	0	0
8:00 PM	0	0	1	0	0	0	1
8:15 PM	0	0	1	0	0	0	1
8:30 PM	0	0	1	0	0	0	1
8:45 PM	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0
10:30 PM	0	0	0	0	0	0	0
10:45 PM	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0
PM Total	**0**	**1**	**45**	**0**	**3**	**0**	**49**
Percentage	**0.00%**	**2.04%**	**91.84%**	**0.00%**	**6.12%**	**0.00%**	
PM Peak	**12:00 PM**	**3:00 PM**	**2:15 PM**	**12:00 PM**	**2:30 PM**	**12:00 PM**	**2:30 PM**
Volume	**0**	**1**	**13**	**0**	**2**	**0**	**15**
Day Total	**0**	**1**	**74**	**0**	**7**	**0**	**82**
Percentage	**0.00%**	**1.22%**	**90.24%**	**0.00%**	**8.54%**	**0.00%**	

Hill Avenue
south of Ledge Street
City, State: Franklin, MA
Client: Kimley-Horn/ P. Graham
Site Code: 112922001

PRECISION DATA INDUSTRIES, LLC
157 Washington Street, Suite 2
Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File #: 239756 ATR-A

Count Date: Thursday, December 14, 2023
Direction: SB

AM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 AM	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0
1:00 AM	0	0	0	0	0	0	0
1:15 AM	0	0	0	0	0	0	0
1:30 AM	0	0	0	0	0	0	0
1:45 AM	0	0	0	0	0	0	0
2:00 AM	0	0	0	0	0	0	0
2:15 AM	0	0	0	0	0	0	0
2:30 AM	0	0	0	0	0	0	0
2:45 AM	0	0	0	0	0	0	0
3:00 AM	0	0	0	0	0	0	0
3:15 AM	0	0	0	0	0	0	0
3:30 AM	0	0	0	0	0	0	0
3:45 AM	0	0	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0
4:15 AM	0	0	0	0	0	0	0
4:30 AM	0	0	0	0	0	0	0
4:45 AM	0	0	0	0	0	0	0
5:00 AM	0	0	0	0	0	0	0
5:15 AM	0	0	0	0	0	0	0
5:30 AM	0	0	0	0	0	0	0
5:45 AM	0	0	0	0	0	0	0
6:00 AM	0	0	1	0	0	0	1
6:15 AM	0	0	1	0	0	0	1
6:30 AM	0	0	0	0	0	0	0
6:45 AM	0	0	2	0	0	0	2
7:00 AM	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	1
7:45 AM	0	0	1	0	0	0	1
8:00 AM	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0
9:00 AM	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0
9:30 AM	0	0	1	0	0	0	1
9:45 AM	0	0	2	0	0	0	2
10:00 AM	0	0	1	0	0	0	1
10:15 AM	0	0	0	0	0	0	0
10:30 AM	0	0	3	0	1	0	4
10:45 AM	0	0	1	0	0	0	1
11:00 AM	0	0	1	0	0	0	1
11:15 AM	0	0	0	0	0	0	0
11:30 AM	0	0	1	0	0	0	1
11:45 AM	0	0	1	0	1	0	2
AM Total	**0**	**0**	**17**	**0**	**2**	**0**	**19**
Percentage	**0.00%**	**0.00%**	**89.47%**	**0.00%**	**10.53%**	**0.00%**	
AM Peak	**12:00 AM**	**12:00 AM**	**9:45 AM**	**12:00 AM**	**9:45 AM**	**12:00 AM**	**9:45 AM**
Volume	**0**	**0**	**6**	**0**	**1**	**0**	**7**

PM	Bicycles	Motorcycle	Cars & Light Goods	Buses	Single Unit Heavy	Multi Unit Heavy	Total
12:00 PM	0	0	3	0	0	0	3
12:15 PM	0	0	0	0	0	0	0
12:30 PM	0	0	1	0	0	0	1
12:45 PM	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0
1:15 PM	0	0	1	0	0	0	1
1:30 PM	0	0	2	0	0	0	2
1:45 PM	0	0	2	0	0	0	2
2:00 PM	0	0	2	0	0	0	2
2:15 PM	0	0	1	0	0	0	1
2:30 PM	0	0	1	0	0	0	1
2:45 PM	0	0	1	0	0	0	1
3:00 PM	0	0	2	0	0	0	2
3:15 PM	0	0	1	0	0	0	1
3:30 PM	0	0	2	0	0	0	2
3:45 PM	0	0	1	0	0	0	1
4:00 PM	0	0	1	0	0	0	1
4:15 PM	0	0	3	0	1	0	4
4:30 PM	0	0	1	0	0	0	1
4:45 PM	0	0	4	0	0	0	4
5:00 PM	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	0	0	0
6:30 PM	0	0	1	0	0	0	1
6:45 PM	0	0	1	0	0	0	1
7:00 PM	0	0	1	0	0	0	1
7:15 PM	0	0	0	0	0	0	0
7:30 PM	0	0	1	0	0	0	1
7:45 PM	0	0	0	0	0	0	0
8:00 PM	0	0	0	0	0	0	0
8:15 PM	0	0	0	0	0	0	0
8:30 PM	0	0	0	0	0	0	0
8:45 PM	0	0	0	0	0	0	0
9:00 PM	0	0	0	0	0	0	0
9:15 PM	0	0	0	0	0	0	0
9:30 PM	0	0	0	0	0	0	0
9:45 PM	0	0	0	0	0	0	0
10:00 PM	0	0	0	0	0	0	0
10:15 PM	0	0	0	0	0	0	0
10:30 PM	0	0	1	0	0	0	1
10:45 PM	0	0	0	0	0	0	0
11:00 PM	0	0	0	0	0	0	0
11:15 PM	0	0	0	0	0	0	0
11:30 PM	0	0	0	0	0	0	0
11:45 PM	0	0	0	0	0	0	0
PM Total	**0**	**0**	**34**	**0**	**1**	**0**	**35**
Percentage	**0.00%**	**0.00%**	**97.14%**	**0.00%**	**2.86%**	**0.00%**	
PM Peak	**12:00 PM**	**12:00 PM**	**4:00 PM**	**12:00 PM**	**3:30 PM**	**12:00 PM**	**4:00 PM**
Volume	**0**	**0**	**9**	**0**	**1**	**0**	**10**
Day Total	**0**	**0**	**51**	**0**	**3**	**0**	**54**
Percentage	**0.00%**	**0.00%**	**94.44%**	**0.00%**	**5.56%**	**0.00%**	

Hill Avenue
south of Ledge Street
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Site Code: 112922001

PRECISION DATA INDUSTRIES, LLC
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Hudson, MA 01749
508-875-0100 datarequests@pdillc.com

PDI File # 239756 ATR-A

Direction: NB

Weekly Report

Day	Wednesday		Thursday												Week	
Date	12/13/23		12/14/23												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
12:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2:00	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:15	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:30	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:30	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	2
3:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:00	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:30	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
4:45	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
5:00	0	0	1	2	0	0	0	0	0	0	0	0	0	0	1	1
5:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
5:45	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
6:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
6:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
7:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
8:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
8:45	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
9:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
9:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
9:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
9:45	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
10:00	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
10:15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
11:30	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
11:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**13**	**24**	**6**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**10**	**20**
Day Total	**37**		**21**		**0**		**0**		**0**		**0**		**0**		**29**	
Peak HR	**10:00 AM**	**3:45 PM**	**7:45 AM**	**4:15 PM**											**10:45 AM**	**3:30 PM**
Volume	**6**	**6**	**2**	**4**											**4**	**4**

Hill Avenue
south of Ledge Street
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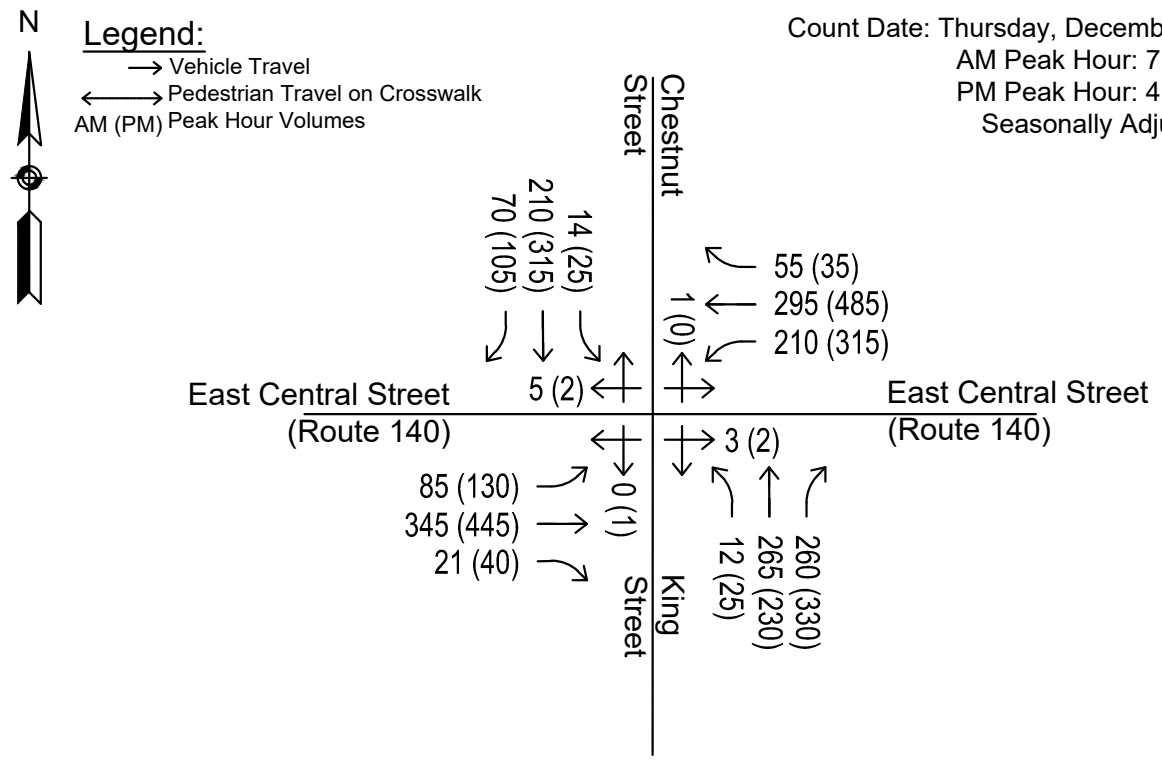
PDI File # 239756 ATR-A

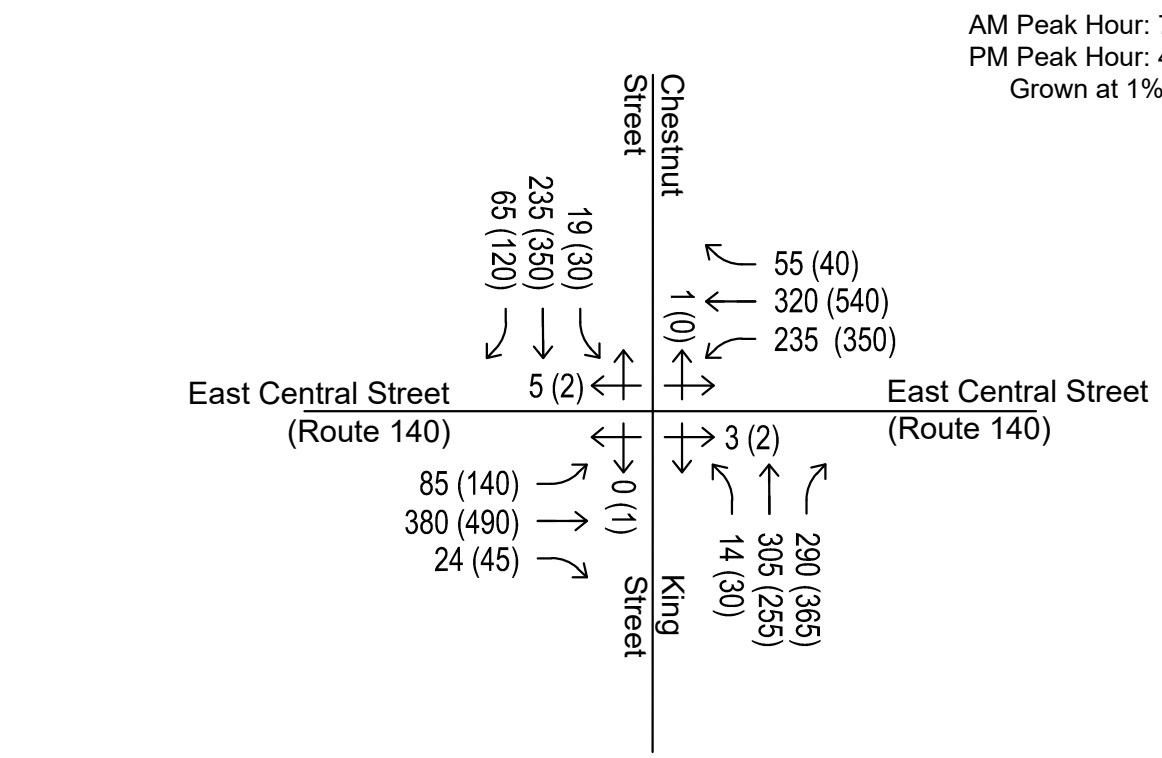
Direction: SB

Weekly Report

Day	Wednesday		Thursday												Week	
Date	12/13/23		12/14/23												Ave	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
12:00	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2
12:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
12:30	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
12:45	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1:00	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2
1:15	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1:30	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	2
1:45	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1
2:00	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	2
2:15	0	4	0	1	0	0	0	0	0	0	0	0	0	0	0	3
2:30	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0	3
2:45	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
3:00	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	3
3:15	0	5	0	1	0	0	0	0	0	0	0	0	0	0	0	3
3:30	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	3
3:45	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
4:00	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2
4:15	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	3
4:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
4:45	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	3
5:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1
6:00	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
6:15	1	1	1	0	0	0	0	0	0	0	0	0	0	0	1	1
6:30	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
6:45	2	1	2	1	0	0	0	0	0	0	0	0	0	0	2	1
7:00	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
7:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30	2	2	1	1	0	0	0	0	0	0	0	0	0	0	2	2
7:45	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
8:00	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:15	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:30	2	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
8:45	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
9:00	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
9:15	4	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
9:30	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
9:45	1	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
10:00	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
10:15	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
10:30	0	0	4	1	0	0	0	0	0	0	0	0	0	0	2	1
10:45	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
11:00	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
11:15	3	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0
11:30	2	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0
11:45	2	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0
Total	**33**	**49**	**19**	**35**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26**	**42**
Day Total	**82**		**54**		**0**		**0**		**0**		**0**		**0**		**68**	
Peak HR	**8:30 AM**	**2:30 PM**	**9:45 AM**	**4:00 PM**											**9:15 AM**	**2:30 PM**
Volume	**10**	**15**	**7**	**10**											**7**	**10**



Existing (2022) AM and PM Volumes



Future (2032) AM and PM Volumes

Not To Scale

BETA
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Chestnut Street Left Turn Lane Evaluation

Franklin, MA

Figure 2

Existing (2022) and Future (2032) Peak Hour Turning Movement Volumes

APPENDIX C

Growth Rate

Project Name:	Uncas Avenue	**Data Source:**	US Census
Project Number:	112922001	**Local District:**	3

The table below summarizes traffic count data from US Census traffic count maps. The locations chosen are in the general vicinity of the project site. Five years worth of data was evaluated and the growth averaged over the five year period.

A growth rate of 1% is proposed for the site.

Municipality	2010	2020	Average Annual Growth
Franklin	31,635	33,261	0.5%
Bellingham	16,332	16,945	0.4%
Wrentham	10,955	12,178	1.1%
Average Annual Growth Rate			**0.7%**

Current Year	
Project Year	**2023**
Synchro Growth Factor	**2030**
Growth Years	**1.05**

APPENDIX D

Trip Generation

Project Name: Uncas Avenue
Project Scenario: Build A

Peak Period 1: AM
Peak Period 2: PM

Trip Generation										
Land Use	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
					IN	OUT	TOTAL			
Single Family Attaached	27	DU	215	156	2	6	8	7	5	12
			Total Trips:	**156**	**2**	**6**	**8**	**7**	**5**	**12**

Trip generation based on ITE's Trip Generation Manual, 11th Edition.
Pass-by trips based on ITE's Trip Generation Handbook, 3rd Edition.

Project Name: Uncas Avenue
Project Scenario: Build B

Peak Period 1: AM
Peak Period 2: PM

Trip Generation										
Land Use	Amount	Units	ITE Code	Daily One-Way Trips	AM Peak Hour One-Way Trips			PM Peak Hour One-Way Trips		
					IN	OUT	TOTAL			
Single Family Attaached	18	DU	215	88	1	3	4	4	3	7
			Total Trips:	**88**	**1**	**3**	**4**	**4**	**3**	**7**

Trip generation based on ITE's Trip Generation Manual, 11th Edition.
Pass-by trips based on ITE's Trip Generation Handbook, 3rd Edition.

APPENDIX E

Volume Development

Build A - Volume Development

	Intersection (North/South and East/West)	Direction	Movement SYNCHRO	AutoCAD Index	Existing 2023		Existing PHF 2023		Existing HV 2023		Taj Estates II		Taj Estates		No Build 2030		Trip Distribution		Trip Assignments		Total Trips		Build Out 2030	
							AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	%IN	%OUT	AM	PM	AM	PM	AM	PM
1	King Street/Chestnut Street	SB	SBL	SBL	14	28	0.85	0.90	14			1		1	15	32	5		0	0	0	0	15	32
	and	(King Street/Chestnut Street)	SBT	SBT	212	316	0.85	0.90	6	1					227	339			0	0	0	0	227	339
	East Central Street (Route 140)		SBR	SBR	71	121	0.85	0.90	9	1					76	130			0	0	0	0	76	130
		WB	WBL	WBL	212	367	0.95	0.93	7	1	7	4	7	5	241	402			0	0	0	0	241	402
	(7:45 AM - 8:45 AM)	East Central Street (Route 140	WBT	WBT	298	441	0.95	0.93	4	2	8	4	8	5	335	482		30	2	2	2	2	337	484
	(4:30 PM - 5:30 PM)		WBR	WBR	56	47	0.95	0.93	6		1	1	1	1	62	53		5	0	0	0	0	62	53
		NB	NBL	NBL	12	31	0.88	0.84							13	34			0	0	0	0	13	34
		(King Street/Chestnut Street)	NBT	NBT	268	285	0.88	0.84	6	1					287	305			0	0	0	0	287	305
			NBR	NBR	263	304	0.88	0.84	3	3	2	6	2	7	286	339	25		1	2	1	2	287	341
		EB	EBL	EBL	86	154	0.86	0.91	3	1					92	165			0	0	0	0	92	165
		(East Central Street (Route 140	EBT	EBT	348	424	0.86	0.91	5	2	3	7	3	8	380	470	30		1	2	1	2	381	472
			EBR	EBR	21	42	0.86	0.91	10	3					23	45			0	0	0	0	23	45
2	Uncas Avenue	SB	SBL	SBL											0	0			0	0	0	0	0	0
	and	(Uncas Avenue)	SBT	SBT											0	0			0	0	0	0	0	0
	East Central Street (Route 140)		SBR	SBR											0	0			0	0	0	0	0	0
		WB	WBL	WBL		4									0	4	40		1	3	1	3	1	7
	(7:45 AM - 8:45 AM)	East Central Street (Route 140	WBT	WBT	566	855	0.95	0.93	5	1	16	9	16	11	638	937			0	0	0	0	638	937
	(4:30 PM - 5:30 PM)		WBR	WBR											0	0			0	0	0	0	0	0
		NB	NBL	NBL	2	2									2	2		35	2	2	2	2	4	4
		(Uncas Avenue)	NBT	NBT											0	0			0	0	0	0	0	0
			NBR	NBR	4										4	0		40	2	2	2	2	6	2
		EB	EBL	EBL											0	0			0	0	0	0	0	0
		(East Central Street (Route 140	EBT	EBT	625	756	0.86	0.88	4	2	5	14	5	17	680	842			0	0	0	0	680	842
			EBR	EBR	2	2									2	2	60		1	4	1	4	3	6

Build B - Volume Development

	Intersection (North/South and East/West)	Direction	Movement SYNCHRO	AutoCAD Index	Existing 2023		Existing PHF 2023		Existing HV 2023		Taj Estates II		Taj Estates		No Build 2030		Trip Distribution		Trip Assignments		Pass-By Distribution		Pass-By Trips		Total Trips		Build Out 2030	
							AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	%IN	%OUT	AM	PM	%IN	%OUT	AM	PM	AM	PM	AM	PM
1	King Street/Chestnut Street	SB	SBL	SBL	14	28	0.85	0.90	14			1		1	15	32	5		0	0			0	0	0	0	15	32
	and	(King Street/Chestnut Street)	SBT	SBT	212	316	0.85	0.90	6	1					227	339			0	0			0	0	0	0	227	339
	East Central Street (Route 140)		SBR	SBR	71	121	0.85	0.90	9	1					76	130			0	0			0	0	0	0	76	130
		WB	WBL	WBL	212	367	0.95	0.93	7	1	7	4	7	5	241	402			0	0			0	0	0	0	241	402
	(7:45 AM - 8:45 AM)	East Central Street (Route 140	WBT	WBT	298	441	0.95	0.93	4	2	8	4	8	5	335	482		30	1	1			0	0	1	1	336	483
	(4:30 PM - 5:30 PM)		WBR	WBR	56	47	0.95	0.93	6		1	1	1	1	62	53		5	0	0			0	0	0	0	62	53
		NB	NBL	NBL	12	31	0.88	0.84							13	34			0	0			0	0	0	0	13	34
		(King Street/Chestnut Street)	NBT	NBT	268	285	0.88	0.84	6	1					287	305			0	0			0	0	0	0	287	305
			NBR	NBR	263	304	0.88	0.84	3	3	2	6	2	7	286	339	25		0	1			0	0	0	1	286	340
		EB	EBL	EBL	86	154	0.86	0.91	3	1					92	165			0	0			0	0	0	0	92	165
		(East Central Street (Route 140	EBT	EBT	348	424	0.86	0.91	5	2	3	7	3	8	380	470	30		0	1			0	0	0	1	380	471
			EBR	EBR	21	42	0.86	0.91	10	3					23	45			0	0			0	0	0	0	23	45
2	Uncas Avenue	SB	SBL	SBL											0	0			0	0			0	0	0	0	0	0
	and	(Uncas Avenue)	SBT	SBT											0	0			0	0			0	0	0	0	0	0
	East Central Street (Route 140)		SBR	SBR											0	0			0	0			0	0	0	0	0	0
		WB	WBL	WBL		4									0	4	40		0	2			0	0	0	2	0	6
	(7:45 AM - 8:45 AM)	East Central Street (Route 140	WBT	WBT	566	855	0.95	0.93	5	1	16	9	16	11	638	937			0	0			0	0	0	0	638	937
	(4:30 PM - 5:30 PM)		WBR	WBR											0	0			0	0			0	0	0	0	0	0
		NB	NBL	NBL	2										2	0		35	1	1			0	0	1	1	3	1
		(Uncas Avenue)	NBT	NBT											0	0			0	0			0	0	0	0	0	0
			NBR	NBR	4										4	0		40	1	1			0	0	1	1	5	1
		EB	EBL	EBL											0	0			0	0			0	0	0	0	0	0
		(East Central Street (Route 140	EBT	EBT	625	756	0.86	0.88	4	2	5	14	5	17	680	842			0	0			0	0	0	0	680	842
			EBR	EBR	2	2									2	2	60		1	2			0	0	1	2	3	4

APPENDIX F

Capacity Analysis

2023 Existing AM Peak Hour

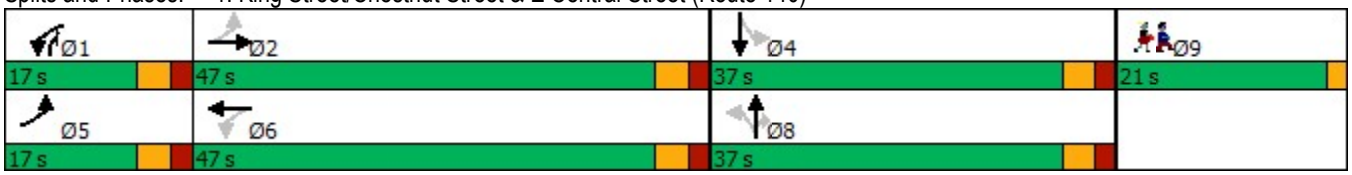
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	348	21	212	298	56	12	268	263	14	212	71
Future Volume (vph)	86	348	21	212	298	56	12	268	263	14	212	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		50	130		50	0		80	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.976				0.850		0.968	
Flt Protected	0.950			0.950				0.998			0.998	
Satd. Flow (prot)	1752	1790	0	1687	1778	0	0	1793	1568	0	1714	0
Flt Permitted	0.486			0.266				0.978			0.977	
Satd. Flow (perm)	897	1790	0	472	1778	0	0	1757	1568	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			8				182		13	
Link Speed (mph)		40			40			35			30	
Link Distance (ft)		612			209			641			701	
Travel Time (s)		10.4			3.6			12.5			15.9	
Peak Hour Factor	0.86	0.86	0.86	0.95	0.95	0.95	0.88	0.88	0.88	0.85	0.85	0.85
Heavy Vehicles (%)	3%	5%	10%	7%	4%	6%	0%	6%	3%	14%	6%	9%
Adj. Flow (vph)	100	405	24	223	314	59	14	305	299	16	249	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	429	0	223	373	0	0	319	299	0	349	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	6.0	12.0		6.0	12.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	17.0		11.0	17.0		13.0	13.0	11.0	13.0	13.0	
Total Split (s)	17.0	47.0		17.0	47.0		37.0	37.0	17.0	37.0	37.0	
Total Split (%)	13.9%	38.5%		13.9%	38.5%		30.3%	30.3%	13.9%	30.3%	30.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Recall Mode	None	None		None	None		None	None	None	None	None	
Act Effct Green (s)	32.6	24.1		38.3	29.7			22.9	38.9		22.9	
Actuated g/C Ratio	0.44	0.33		0.52	0.40			0.31	0.53		0.31	
v/c Ratio	0.20	0.73		0.53	0.52			0.58	0.33		0.66	
Control Delay	10.4	30.6		14.4	21.8			27.4	5.5		28.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.4	30.6		14.4	21.8			27.4	5.5		28.9	
LOS	B	C		B	C			C	A		C	
Approach Delay		26.8			19.1			16.8			28.9	
Approach LOS		C			B			B			C	
Queue Length 50th (ft)	20	171		48	129			123	25		133	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	17%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	48	290		106	254			230	77		239	
Internal Link Dist (ft)		532			129			561			621	
Turn Bay Length (ft)	200			130					80			
Base Capacity (vph)	593	1071		456	1066			800	948		772	
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	0.17	0.40		0.49	0.35			0.40	0.32		0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 73.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 22.0		Intersection LOS: C	
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: King Street/Chestnut Street & E Central Street (Route 140)



Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	625	2	0	566	2	4
Future Vol, veh/h	625	2	0	566	2	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	86	86	95	95	92	92
Heavy Vehicles, %	4	0	0	5	0	0
Mvmt Flow	727	2	0	596	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	729	0	1324	728
Stage 1	-	-	-	-	728	-
Stage 2	-	-	-	-	596	-
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	-	-	884	-	174	427
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	884	-	174	427
Mov Cap-2 Maneuver	-	-	-	-	174	-
Stage 1	-	-	-	-	482	-
Stage 2	-	-	-	-	554	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	17.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	288	-	-	884	-
HCM Lane V/C Ratio	0.023	-	-	-	-
HCM Control Delay (s)	17.8	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2023 Existing PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	154	424	42	367	441	47	31	285	304	28	316	121
Future Volume (vph)	154	424	42	367	441	47	31	285	304	28	316	121
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		50	130		50	0		80	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.985				0.850		0.965	
Flt Protected	0.950			0.950				0.995			0.997	
Satd. Flow (prot)	1787	1837	0	1787	1838	0	0	1874	1568	0	1811	0
Flt Permitted	0.212			0.175				0.900			0.961	
Satd. Flow (perm)	399	1837	0	329	1838	0	0	1695	1568	0	1746	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5				187		14	
Link Speed (mph)		40			40			35			30	
Link Distance (ft)		612			209			641			701	
Travel Time (s)		10.4			3.6			12.5			15.9	
Peak Hour Factor	0.91	0.91	0.91	0.93	0.93	0.93	0.84	0.84	0.84	0.90	0.90	0.90
Heavy Vehicles (%)	1%	2%	3%	1%	2%	0%	0%	1%	3%	0%	1%	1%
Adj. Flow (vph)	169	466	46	395	474	51	37	339	362	31	351	134
Shared Lane Traffic (%)												
Lane Group Flow (vph)	169	512	0	395	525	0	0	376	362	0	516	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	6.0	12.0		6.0	12.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	17.0		11.0	17.0		13.0	13.0	11.0	13.0	13.0	
Total Split (s)	17.0	47.0		17.0	47.0		37.0	37.0	17.0	37.0	37.0	
Total Split (%)	13.9%	38.5%		13.9%	38.5%		30.3%	30.3%	13.9%	30.3%	30.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Recall Mode	None	None		None	None		None	None	None	None	None	
Act Effct Green (s)	40.7	30.5		44.4	32.3			32.2	49.3		32.2	
Actuated g/C Ratio	0.45	0.34		0.49	0.36			0.36	0.55		0.36	
v/c Ratio	0.50	0.82		1.10	0.79			0.62	0.38		0.81	
Control Delay	16.3	38.1		100.0	35.1			30.9	7.6		39.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	16.3	38.1		100.0	35.1			30.9	7.6		39.2	
LOS	B	D		F	D			C	A		D	
Approach Delay		32.7			63.0			19.5			39.2	
Approach LOS		C			E			B			D	
Queue Length 50th (ft)	47	259		~186	261			170	46		251	

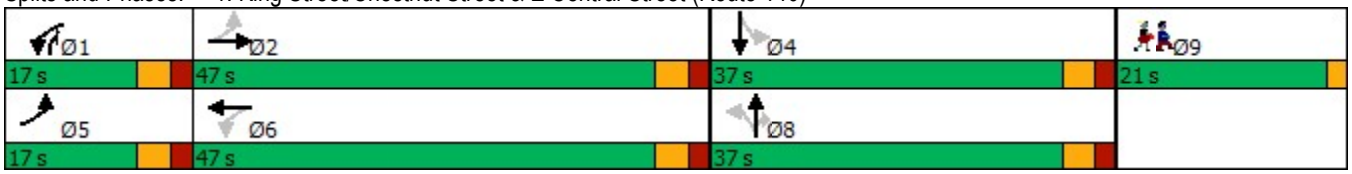
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	17%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	79	378		#390	390			289	113		#513	
Internal Link Dist (ft)		532			129			561			621	
Turn Bay Length (ft)	200			130					80			
Base Capacity (vph)	375	865		358	866			607	944		634	
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	0.45	0.59		1.10	0.61			0.62	0.38		0.81	

Intersection Summary

Area Type: Other
Cycle Length: 122
Actuated Cycle Length: 89.9
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 40.2 Intersection LOS: D
Intersection Capacity Utilization 104.1% ICU Level of Service G
Analysis Period (min) 15
~ 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.

Splits and Phases: 1: King Street/Chestnut Street & E Central Street (Route 140)



Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	756	2	4	855	2	0
Future Vol, veh/h	756	2	4	855	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	93	93	92	92
Heavy Vehicles, %	2	0	0	1	0	2
Mvmt Flow	859	2	4	919	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	861	0	1787	860
Stage 1	-	-	-	-	860	-
Stage 2	-	-	-	-	927	-
Critical Hdwy	-	-	4.1	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	789	-	90	356
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	389	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	789	-	89	356
Mov Cap-2 Maneuver	-	-	-	-	89	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	385	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	46.5
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	89	-	-	789	-
HCM Lane V/C Ratio	0.024	-	-	0.005	-
HCM Control Delay (s)	46.5	-	-	9.6	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2030 No Build AM Peak Hour

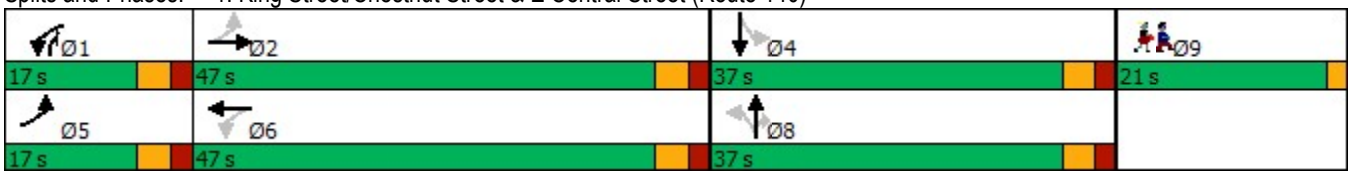
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	380	23	241	335	62	13	287	286	15	227	76
Future Volume (vph)	92	380	23	241	335	62	13	287	286	15	227	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		50	130		50	0		80	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.977				0.850		0.968	
Flt Protected	0.950			0.950				0.998			0.998	
Satd. Flow (prot)	1752	1788	0	1687	1780	0	0	1793	1568	0	1714	0
Flt Permitted	0.430			0.246				0.978			0.977	
Satd. Flow (perm)	793	1788	0	437	1780	0	0	1757	1568	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			8				185		13	
Link Speed (mph)		40			40			35			30	
Link Distance (ft)		612			209			641			701	
Travel Time (s)		10.4			3.6			12.5			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	10%	7%	4%	6%	0%	6%	3%	14%	6%	9%
Adj. Flow (vph)	100	413	25	262	364	67	14	312	311	16	247	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	438	0	262	431	0	0	326	311	0	346	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	6.0	12.0		6.0	12.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	17.0		11.0	17.0		13.0	13.0	11.0	13.0	13.0	
Total Split (s)	17.0	47.0		17.0	47.0		37.0	37.0	17.0	37.0	37.0	
Total Split (%)	13.9%	38.5%		13.9%	38.5%		30.3%	30.3%	13.9%	30.3%	30.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Recall Mode	None	None		None	None		None	None	None	None	None	
Act Effct Green (s)	33.1	24.7		40.3	31.2			23.3	40.2		23.3	
Actuated g/C Ratio	0.44	0.33		0.54	0.41			0.31	0.53		0.31	
v/c Ratio	0.22	0.74		0.61	0.58			0.60	0.34		0.66	
Control Delay	10.7	31.7		16.8	23.2			28.3	5.7		29.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.7	31.7		16.8	23.2			28.3	5.7		29.4	
LOS	B	C		B	C			C	A		C	
Approach Delay		27.8			20.8			17.3			29.4	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	20	179		59	159			129	28		134	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	17%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	50	318		124	302			246	88		259	
Internal Link Dist (ft)		532			129			561			621	
Turn Bay Length (ft)	200			130					80			
Base Capacity (vph)	550	1037		441	1034			775	936		748	
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	0.18	0.42		0.59	0.42			0.42	0.33		0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 75.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.8		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: King Street/Chestnut Street & E Central Street (Route 140)



Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	680	2	0	638	2	4
Future Vol, veh/h	680	2	0	638	2	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	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	5	0	2
Mvmt Flow	739	2	0	693	2	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	741	0	1433	740
Stage 1	-	-	-	-	740	-
Stage 2	-	-	-	-	693	-
Critical Hdwy	-	-	4.1	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	875	-	149	417
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	875	-	149	417
Mov Cap-2 Maneuver	-	-	-	-	149	-
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	500	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	261	-	-	875	-
HCM Lane V/C Ratio	0.025	-	-	-	-
HCM Control Delay (s)	19.1	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2030 No Build PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	470	45	402	482	53	34	305	339	32	339	130
Future Volume (vph)	165	470	45	402	482	53	34	305	339	32	339	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		50	130		50	0		80	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.985				0.850		0.965	
Flt Protected	0.950			0.950				0.995			0.997	
Satd. Flow (prot)	1787	1837	0	1787	1838	0	0	1874	1568	0	1811	0
Flt Permitted	0.172			0.170				0.866			0.901	
Satd. Flow (perm)	324	1837	0	320	1838	0	0	1631	1568	0	1637	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5				193		14	
Link Speed (mph)		40			40			35			30	
Link Distance (ft)		612			209			641			701	
Travel Time (s)		10.4			3.6			12.5			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	2%	3%	1%	2%	0%	0%	1%	3%	0%	1%	1%
Adj. Flow (vph)	179	511	49	437	524	58	37	332	368	35	368	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	560	0	437	582	0	0	369	368	0	544	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	6.0	12.0		6.0	12.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	17.0		11.0	17.0		13.0	13.0	11.0	13.0	13.0	
Total Split (s)	17.0	47.0		17.0	47.0		37.0	37.0	17.0	37.0	37.0	
Total Split (%)	13.9%	38.5%		13.9%	38.5%		30.3%	30.3%	13.9%	30.3%	30.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Recall Mode	None	None		None	None		None	None	None	None	None	
Act Effct Green (s)	46.4	35.4		48.5	36.5			32.2	49.3		32.2	
Actuated g/C Ratio	0.49	0.37		0.51	0.39			0.34	0.52		0.34	
v/c Ratio	0.55	0.81		1.25	0.82			0.67	0.41		0.96	
Control Delay	17.2	36.6		154.5	36.5			35.2	8.5		62.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	17.2	36.6		154.5	36.5			35.2	8.5		62.6	
LOS	B	D		F	D			D	A		E	
Approach Delay		31.9			87.1			21.9			62.6	
Approach LOS		C			F			C			E	
Queue Length 50th (ft)	50	294		~260	311			198	59		329	

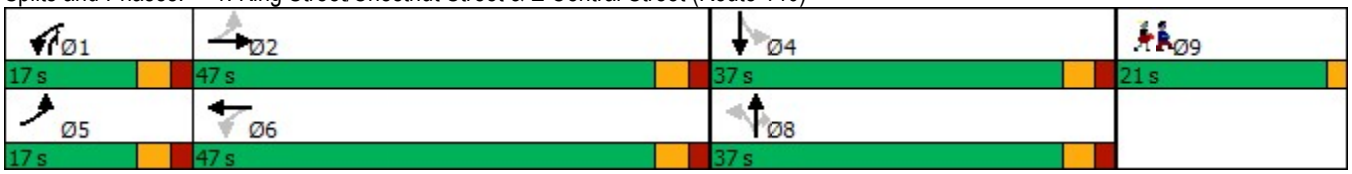
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	17%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	83	426		#459	450			317	132		#580	
Internal Link Dist (ft)		532			129			561			621	
Turn Bay Length (ft)	200			130					80			
Base Capacity (vph)	348	821		351	822			553	908		565	
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	0.51	0.68		1.25	0.71			0.67	0.41		0.96	

Intersection Summary

Area Type: Other
Cycle Length: 122
Actuated Cycle Length: 94.7
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.25
Intersection Signal Delay: 53.5 Intersection LOS: D
Intersection Capacity Utilization 111.9% ICU Level of Service H
Analysis Period (min) 15
~ 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.

Splits and Phases: 1: King Street/Chestnut Street & E Central Street (Route 140)



Intersection	
Int Delay, s/veh	0.1

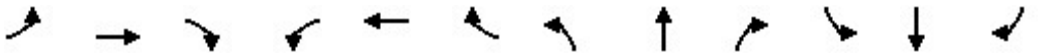
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	842	2	4	937	2	0
Future Vol, veh/h	842	2	4	937	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	915	2	4	1018	2	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	917	0	1942	916
Stage 1	-	-	-	-	916	-
Stage 2	-	-	-	-	1026	-
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	-	-	752	-	72	333
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	349	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	752	-	71	333
Mov Cap-2 Maneuver	-	-	-	-	71	-
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	345	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	57.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	71	-	-	752	-
HCM Lane V/C Ratio	0.031	-	-	0.006	-
HCM Control Delay (s)	57.3	-	-	9.8	0
HCM Lane LOS	F	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2030 Build A AM Peak Hour



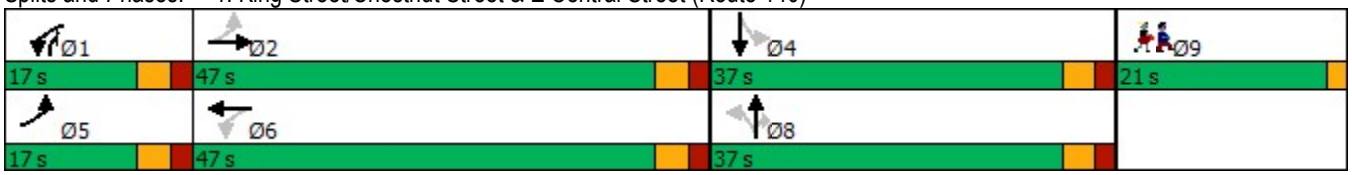
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	381	23	241	337	62	13	287	287	15	227	76
Future Volume (vph)	92	381	23	241	337	62	13	287	287	15	227	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		50	130		50	0		80	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.977				0.850		0.968	
Flt Protected	0.950			0.950				0.998			0.998	
Satd. Flow (prot)	1752	1788	0	1687	1780	0	0	1793	1568	0	1714	0
Flt Permitted	0.430			0.245				0.978			0.977	
Satd. Flow (perm)	793	1788	0	435	1780	0	0	1757	1568	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			8				186		13	
Link Speed (mph)		40			40			35			30	
Link Distance (ft)		612			209			1743			701	
Travel Time (s)		10.4			3.6			34.0			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	10%	7%	4%	6%	0%	6%	3%	14%	6%	9%
Adj. Flow (vph)	100	414	25	262	366	67	14	312	312	16	247	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	439	0	262	433	0	0	326	312	0	346	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	6.0	12.0		6.0	12.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	17.0		11.0	17.0		13.0	13.0	11.0	13.0	13.0	
Total Split (s)	17.0	47.0		17.0	47.0		37.0	37.0	17.0	37.0	37.0	
Total Split (%)	13.9%	38.5%		13.9%	38.5%		30.3%	30.3%	13.9%	30.3%	30.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Recall Mode	None	None		None	None		None	None	None	None	None	
Act Effct Green (s)	33.2	24.8		40.4	31.3			23.2	40.2		23.2	
Actuated g/C Ratio	0.44	0.33		0.54	0.42			0.31	0.53		0.31	
v/c Ratio	0.22	0.74		0.61	0.58			0.60	0.34		0.66	
Control Delay	10.7	31.7		16.8	23.2			28.4	5.7		29.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.7	31.7		16.8	23.2			28.4	5.7		29.4	
LOS	B	C		B	C			C	A		C	
Approach Delay		27.8			20.8			17.3			29.4	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	20	179		59	160			129	28		134	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	17%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	50	319		124	303			246	89		260	
Internal Link Dist (ft)		532			129			1663			621	
Turn Bay Length (ft)	200			130					80			
Base Capacity (vph)	550	1035		440	1033			774	935		746	
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	0.18	0.42		0.60	0.42			0.42	0.33		0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 75.4			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.9		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: King Street/Chestnut Street & E Central Street (Route 140)



Intersection	
Int Delay, s/veh	0.2

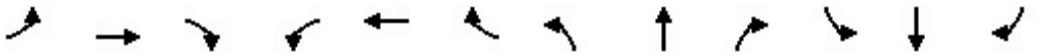
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	680	3	1	638	4	6
Future Vol, veh/h	680	3	1	638	4	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	5	0	0
Mvmt Flow	739	3	1	693	4	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	742	0	1436	741
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	695	-
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	-	-	874	-	149	420
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	499	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	874	-	149	420
Mov Cap-2 Maneuver	-	-	-	-	149	-
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	498	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	243	-	-	874	-
HCM Lane V/C Ratio	0.045	-	-	0.001	-
HCM Control Delay (s)	20.5	-	-	9.1	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2030 Build A PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	472	45	402	484	53	34	305	341	32	339	130
Future Volume (vph)	165	472	45	402	484	53	34	305	341	32	339	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		50	130		50	0		80	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.985				0.850		0.965	
Flt Protected	0.950			0.950				0.995			0.997	
Satd. Flow (prot)	1787	1837	0	1787	1838	0	0	1874	1568	0	1811	0
Flt Permitted	0.172			0.169				0.865			0.899	
Satd. Flow (perm)	324	1837	0	318	1838	0	0	1629	1568	0	1633	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5				195		14	
Link Speed (mph)		40			40			35			30	
Link Distance (ft)		612			209			1743			701	
Travel Time (s)		10.4			3.6			34.0			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	2%	3%	1%	2%	0%	0%	1%	3%	0%	1%	1%
Adj. Flow (vph)	179	513	49	437	526	58	37	332	371	35	368	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	562	0	437	584	0	0	369	371	0	544	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	6.0	12.0		6.0	12.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	17.0		11.0	17.0		13.0	13.0	11.0	13.0	13.0	
Total Split (s)	17.0	47.0		17.0	47.0		37.0	37.0	17.0	37.0	37.0	
Total Split (%)	13.9%	38.5%		13.9%	38.5%		30.3%	30.3%	13.9%	30.3%	30.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Recall Mode	None	None		None	None		None	None	None	None	None	
Act Effct Green (s)	46.6	35.6		48.7	36.7			32.2	49.3		32.2	
Actuated g/C Ratio	0.49	0.38		0.51	0.39			0.34	0.52		0.34	
v/c Ratio	0.55	0.81		1.25	0.82			0.67	0.41		0.97	
Control Delay	17.2	36.6		156.0	36.5			35.4	8.6		63.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	17.2	36.6		156.0	36.5			35.4	8.6		63.8	
LOS	B	D		F	D			D	A		E	
Approach Delay		31.9			87.7			21.9			63.8	
Approach LOS		C			F			C			E	
Queue Length 50th (ft)	50	296		~262	312			200	60		~334	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	17%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

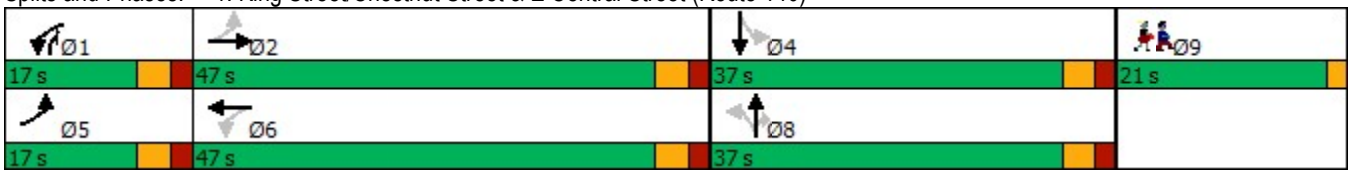
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	83	429		#461	452			318	134		#581	
Internal Link Dist (ft)		532			129			1663			621	
Turn Bay Length (ft)	200			130					80			
Base Capacity (vph)	348	819		350	820			552	907		562	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.51	0.69		1.25	0.71			0.67	0.41		0.97	

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 94.9			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 53.9		Intersection LOS: D	
Intersection Capacity Utilization 112.0%		ICU Level of Service H	
Analysis Period (min) 15			

~ 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.

Splits and Phases: 1: King Street/Chestnut Street & E Central Street (Route 140)



Intersection	
Int Delay, s/veh	0.2

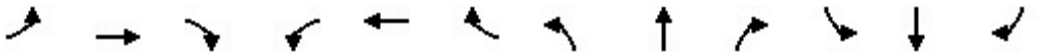
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	842	6	8	937	4	2
Future Vol, veh/h	842	6	8	937	4	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	915	7	9	1018	4	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	922	0	1955	919
Stage 1	-	-	-	-	919	-
Stage 2	-	-	-	-	1036	-
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	-	-	749	-	71	332
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	345	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	749	-	69	332
Mov Cap-2 Maneuver	-	-	-	-	69	-
Stage 1	-	-	-	-	392	-
Stage 2	-	-	-	-	335	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	46.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	94	-	-	749	-
HCM Lane V/C Ratio	0.069	-	-	0.012	-
HCM Control Delay (s)	46.1	-	-	9.9	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

2030 Build B AM Peak Hour



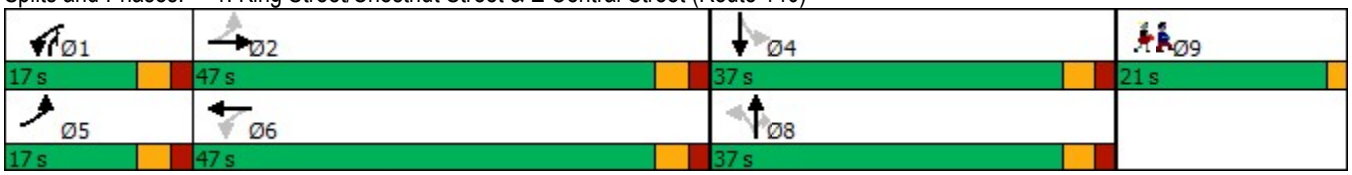
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	380	23	241	336	62	13	287	286	15	227	76
Future Volume (vph)	92	380	23	241	336	62	13	287	286	15	227	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		50	130		50	0		80	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.977				0.850		0.968	
Flt Protected	0.950			0.950				0.998			0.998	
Satd. Flow (prot)	1752	1788	0	1687	1780	0	0	1793	1568	0	1714	0
Flt Permitted	0.429			0.246				0.978			0.977	
Satd. Flow (perm)	791	1788	0	437	1780	0	0	1757	1568	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			8				185		13	
Link Speed (mph)		40			40			35			30	
Link Distance (ft)		612			209			1743			701	
Travel Time (s)		10.4			3.6			34.0			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	10%	7%	4%	6%	0%	6%	3%	14%	6%	9%
Adj. Flow (vph)	100	413	25	262	365	67	14	312	311	16	247	83
Shared Lane Traffic (%)												
Lane Group Flow (vph)	100	438	0	262	432	0	0	326	311	0	346	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	6.0	12.0		6.0	12.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	17.0		11.0	17.0		13.0	13.0	11.0	13.0	13.0	
Total Split (s)	17.0	47.0		17.0	47.0		37.0	37.0	17.0	37.0	37.0	
Total Split (%)	13.9%	38.5%		13.9%	38.5%		30.3%	30.3%	13.9%	30.3%	30.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Recall Mode	None	None		None	None		None	None	None	None	None	
Act Effct Green (s)	33.1	24.7		40.3	31.2			23.3	40.2		23.3	
Actuated g/C Ratio	0.44	0.33		0.54	0.41			0.31	0.53		0.31	
v/c Ratio	0.22	0.74		0.61	0.58			0.60	0.34		0.66	
Control Delay	10.7	31.7		16.8	23.2			28.3	5.7		29.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	10.7	31.7		16.8	23.2			28.3	5.7		29.4	
LOS	B	C		B	C			C	A		C	
Approach Delay		27.8			20.8			17.3			29.4	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	20	179		59	159			129	28		134	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	17%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	50	318		124	302			246	88		259	
Internal Link Dist (ft)		532			129			1663			621	
Turn Bay Length (ft)	200			130					80			
Base Capacity (vph)	549	1037		441	1034			775	936		748	
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	0.18	0.42		0.59	0.42			0.42	0.33		0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 75.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.8		Intersection LOS: C	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: King Street/Chestnut Street & E Central Street (Route 140)



Intersection	
Int Delay, s/veh	0.1

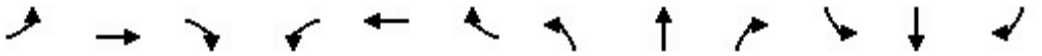
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	680	3	0	638	3	5
Future Vol, veh/h	680	3	0	638	3	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	4	0	0	5	0	2
Mvmt Flow	739	3	0	693	3	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	742	0	1434	741
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	693	-
Critical Hdwy	-	-	4.1	-	6.4	6.22
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.318
Pot Cap-1 Maneuver	-	-	874	-	149	416
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	500	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	874	-	149	416
Mov Cap-2 Maneuver	-	-	-	-	149	-
Stage 1	-	-	-	-	475	-
Stage 2	-	-	-	-	500	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	249	-	-	874	-
HCM Lane V/C Ratio	0.035	-	-	-	-
HCM Control Delay (s)	20	-	-	0	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

2030 Build B PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	471	45	402	483	53	34	305	340	32	339	130
Future Volume (vph)	165	471	45	402	483	53	34	305	340	32	339	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		50	130		50	0		80	0		0
Storage Lanes	1		0	1		0	0		1	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.987			0.985				0.850		0.965	
Flt Protected	0.950			0.950				0.995			0.997	
Satd. Flow (prot)	1787	1837	0	1787	1838	0	0	1874	1568	0	1811	0
Flt Permitted	0.172			0.169				0.866			0.900	
Satd. Flow (perm)	324	1837	0	318	1838	0	0	1631	1568	0	1635	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5				194		14	
Link Speed (mph)		40			40			35			30	
Link Distance (ft)		612			209			1743			701	
Travel Time (s)		10.4			3.6			34.0			15.9	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	2%	3%	1%	2%	0%	0%	1%	3%	0%	1%	1%
Adj. Flow (vph)	179	512	49	437	525	58	37	332	370	35	368	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	179	561	0	437	583	0	0	369	370	0	544	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	pm+ov	Perm	NA	
Protected Phases	5	2		1	6			8	1		4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	1	4	4	
Switch Phase												
Minimum Initial (s)	6.0	12.0		6.0	12.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	17.0		11.0	17.0		13.0	13.0	11.0	13.0	13.0	
Total Split (s)	17.0	47.0		17.0	47.0		37.0	37.0	17.0	37.0	37.0	
Total Split (%)	13.9%	38.5%		13.9%	38.5%		30.3%	30.3%	13.9%	30.3%	30.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Recall Mode	None	None		None	None		None	None	None	None	None	
Act Effct Green (s)	46.5	35.5		48.6	36.6			32.2	49.3		32.2	
Actuated g/C Ratio	0.49	0.37		0.51	0.39			0.34	0.52		0.34	
v/c Ratio	0.55	0.81		1.25	0.82			0.67	0.41		0.96	
Control Delay	17.2	36.6		156.0	36.5			35.3	8.6		63.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay	17.2	36.6		156.0	36.5			35.3	8.6		63.1	
LOS	B	D		F	D			D	A		E	
Approach Delay		31.9			87.7			21.9			63.1	
Approach LOS		C			F			C			E	
Queue Length 50th (ft)	50	295		~262	312			199	59		~331	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	5.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	17%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

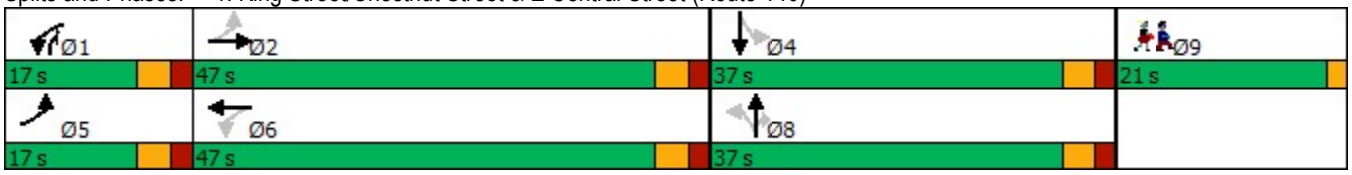
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	83	428		#461	451			317	133		#581	
Internal Link Dist (ft)		532			129			1663			621	
Turn Bay Length (ft)	200			130					80			
Base Capacity (vph)	348	820		350	821			553	907		564	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.51	0.68		1.25	0.71			0.67	0.41		0.96	

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 94.8			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 53.8		Intersection LOS: D	
Intersection Capacity Utilization 111.9%		ICU Level of Service H	
Analysis Period (min) 15			

~ 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.

Splits and Phases: 1: King Street/Chestnut Street & E Central Street (Route 140)



Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	842	4	6	937	1	1
Future Vol, veh/h	842	4	6	937	1	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	92	92	92	92	92	92
Heavy Vehicles, %	2	0	0	1	0	0
Mvmt Flow	915	4	7	1018	1	1

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	919	0	1949	917
Stage 1	-	-	-	-	917	-
Stage 2	-	-	-	-	1032	-
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	-	-	751	-	72	332
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	347	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	751	-	70	332
Mov Cap-2 Maneuver	-	-	-	-	70	-
Stage 1	-	-	-	-	393	-
Stage 2	-	-	-	-	340	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	36.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	116	-	-	751	-
HCM Lane V/C Ratio	0.019	-	-	0.009	-
HCM Control Delay (s)	36.6	-	-	9.8	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

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