

F:\land Projects\3\13153--FRANKLIN--300--EAST--CENTRAL--STREET--TOPSFIELD--ASSOCIATES\dwg\13153--PLAN.dwg 1/26/2017 9:04:12 AM EST

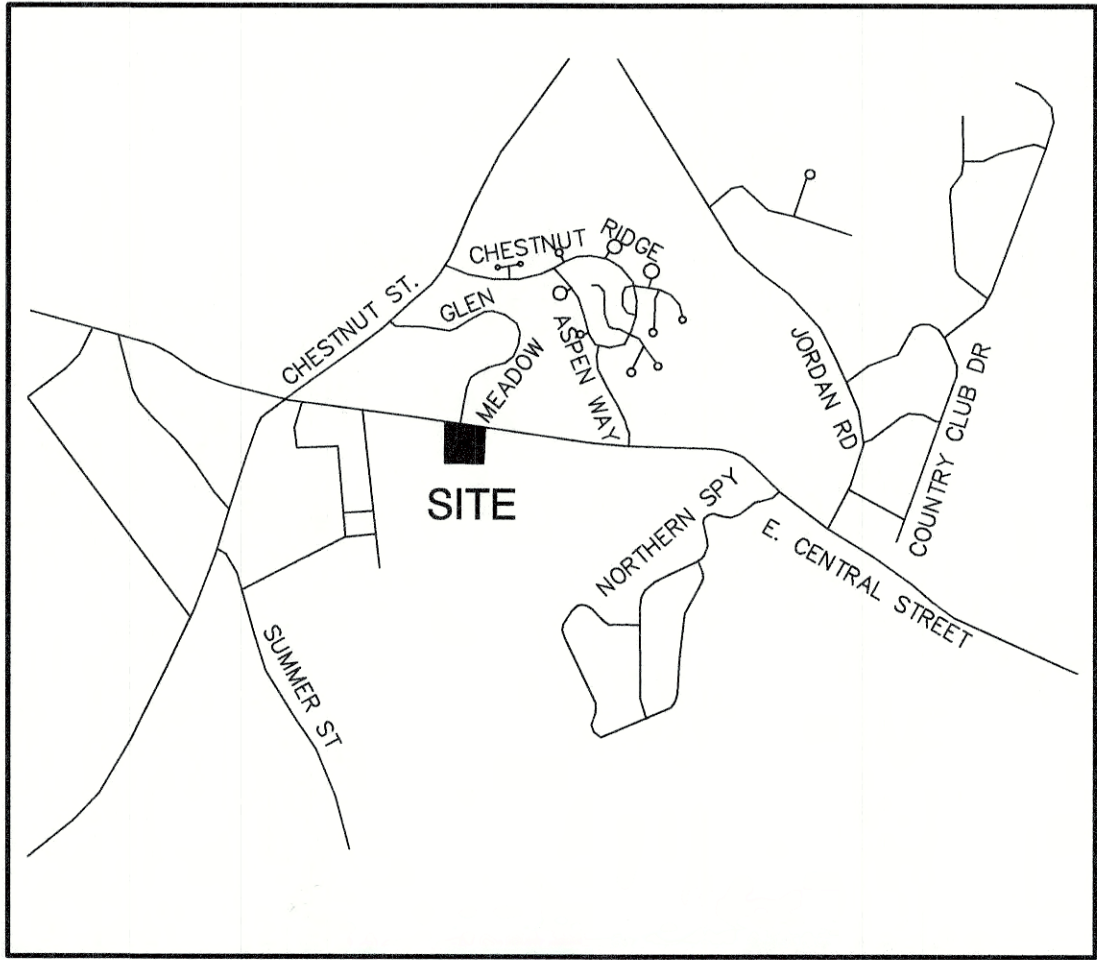
GENERAL LEGEND

EXISTING	PROPOSED	DESCRIPTION
		PROPERTY LINES
		SETBACK LINES
		CENTERLINE
		FRESHWATER WETLANDS LINE
		TIDAL WETLANDS LINE
		STREAM CHANNEL LINE
		TREE LINE
		STONEWALL
		BARBED WIRE
		FENCE
		STOCKADE FENCE
		SOIL BOUNDARY
		AQUIFER PROTECTION LINE
		FLOOD PLAIN LINE
		ZONELINE
		EASEMENT
		MAJOR CONTOUR
		MINOR CONTOUR
		EDGE OF PAVEMENT
		VERTICAL GRANITE CURB
		SLOPE GRANITE CURB
		CAPE COD BERM
		POURED CONCRETE CURB
		SILT FENCE
		DRAINAGE LINE
		SEWER LINE
		SEWER FORCE MAIN
		GAS LINE
		WATER LINE
		WATER SERVICE
		OVERHEAD ELECTRIC
		UNDERGROUND ELECTRIC
		GUARDRAIL
		UNDERDRAIN
		FIRE PROTECTION LINE
		THRUST BLOCK
		IRON PIPE/IRON ROD
		DRILL HOLE
		IRON ROD/DRILL HOLE
		STONE/GRANITE BOUND
		SPOT GRADE
		PAVEMENT SPOT GRADE
		CURB SPOT GRADE
		BENCHMARK (TBM)
		DOUBLE POST SIGN
		SINGLE POST SIGN
		WELL
		TEST PIT
		FAILED TEST PIT
		MONITORING WELL
		PERC TEST
		PHOTO LOCATION
		TREES AND BUSHES
		UTILITY POLE
		LIGHT POLES
		DRAIN MANHOLE
		SEWER MANHOLE
		HYDRANT
		WATER GATE
		WATER SHUT OFF
		REDUCER
		SINGLE GRATE CATCH BASIN
		DOUBLE GRATE CATCH BASIN
		TRANSFORMER
		CULVERT W/WINGWALLS
		CULVERT W/FLARED END SECTION
		CULVERT W/STRAIGHT HEADWALL
		STONE CHECK DAM
		DRAINAGE FLOW DIRECTION
		PATIO AREA
		WETLAND IMPACT
		VEGETATED FILTER STRIP
		RIPRAP
		OPEN WATER
		FRESHWATER WETLANDS
		TIDAL WETLANDS
		STABILIZED CONSTRUCTION ENTRANCE
		CONCRETE
		GRAVEL
		SNOW STORAGE
		RETAINING WALL

PROPOSED DEVELOPMENT
CENTRAL SQUARE
TAX MAP 285 AND LOT NUMBER 009
340 EAST CENTRAL STREET, FRANKLIN, MA

SHEET INDEX

CS	COVER SHEET
C1	EXISTING CONDITIONS PLAN
C2	SITE PLAN
C3	GRADING AND DRAINAGE PLAN
C4	UTILITY PLAN
L-01	LANDSCAPE PLAN
L2	LIGHTING PLAN
D1-D8	DETAIL SHEETS
E1	EROSION AND SEDIMENT CONTROL DETAILS
A1-A2	COMMERCIAL BUILDING ELEVATIONS
T1 01	APARTMENT BUILDING RENDERINGS



LOCUS MAP
SCALE 1" = 2000'

PERMITS

TYPE OF PERMIT	STATUS	TYPE OF PERMIT	STATUS
MASSDOT DRIVEWAY PERMIT: DISTRICT SIX 185 KNEELAND STREET BOSTON, MA 02111 (857) 368-6100 RESPONSIBLE CONSULTANT- JONES & BEACH ENGINEERS, INC.	SUBMITTED: PERMIT NO. DATED: EXPIRATION:	FRANKLIN SITE PLAN APPROVAL: TOWN OF FRANKLIN PLANNING BOARD 355 EAST CENTRAL STREET FRANKLIN, MA (508) 520-4907 RESPONSIBLE CONSULTANT: JONES & BEACH ENGINEERS, INC.	SUBMITTED: APPROVED:
USEPA NPDES PHASE II CONSTRUCTION GENERAL PERMIT, NOTICE OF INTENT (NOI), AND NOTICE OF TERMINATION (NOT) TO BE FILED IN ACCORDANCE WITH FEDERAL AND LOCAL REGULATIONS PRIOR TO AND FOLLOWING CONSTRUCTION: EPA STORMWATER NOTICE PROCESSING CENTER MAIL CODE 4203M, US EPA 1200 PENNSYLVANIA AVENUE, NW WASHINGTON, DC 20460 RESPONSIBLE CONSULTANT: JONES & BEACH ENGINEERS, INC.			

APPLICANT / DEVELOPER
340 EAST CENTRAL STREET LLC
7 SWAIN DRIVE
HAMPTON FALLS, NH 03844

CIVIL ENGINEER
JONES & BEACH ENGINEERS, INC.
85 PORTSMOUTH AVENUE
PO BOX 219
STRATHAM, NH 03885
(603) 772-4746
CONTACT: WAYNE MORRILL
EMAIL: WMORRILL@JONESANDBEACH.COM

LANDSCAPE ARCHITECT
TERRAIN PLANNING AND DESIGN LLC,
311 KAST HILL ROAD
HOPKINTON, NH 03229
(603)491-2322
CONTACT: ERIC BUCK

TRAFFIC ENGINEER
VANASSE & ASSOCIATES, INC.
10 N.E. BUSINESS CTR. DRIVE, SUITE 314
ANDOVER, MA 01810-1066
(978) 474-8800 X30
CONTACT : JEFFREY DIRK

SURVEYOR
GUERRIERE & HALNON, INC
55 WEST CENTRAL DRIVE
FRANKLIN, MA 02038
(508) 528-3221

ELECTRIC
NATIONAL GRID
BAY STATE NORTH
1101 TURNPIKE STREET
NORTH ANDOVER, MA 01845
(978) 725-2215
CONTACT: STEVE HALL

TOWN ENGINEER
MIKE MAGLIO, P.E.
DPW ADMINISTRATION BUILDING
257 FISHER STREET
FRANKLIN, MA 02038
(508) 520-4910

WATER & SEWER DEPARTMENT
PUBLIC WORKS GARAGE
25 PUBLIC WORKS WAY
FRANKLIN, MA 02038
(508) 520-4910
CONTACT: LAURIE RUSZALA, P.E.

POLICE DEPARTMENT
911 PANTHER WAY
FRANKLIN, MA 02038
(508) 528-1212
CONTACT: CHIEF STEPHAN H. SEMERIJAN

FIRE DEPARTMENT
FRANKLIN FIRE DEPARTMENT
40 WEST CENTRAL STREET
FRANKLIN, MA 02038
(508) 528-2323
CONTACT: CHIEF GARY B. MCCARRAHER

PROJECT PARCEL
TOWN OF FRANKLIN, MA
TAX MAP 285, LOT 009

APPLICANT
340 EAST CENTRAL STREET LLC
7 SWAIN DRIVE
HAMPTON FALLS, NH 03844

TOTAL LOT AREA
283,394± SQ. FT.
6.50± ACRES

APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:

Design: WGM	Draft: RMK	Date: 05/06/20
Checked: WGM	Scale: AS NOTED	Project No.: 13153
Drawing Name: 13153-PLAN.dwg		
THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.		



0	05/06/20	ISSUED FOR REVIEW	EMP
REV.	DATE	REVISION	BY

J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885

Designed and Produced in NH
Civil Engineering Services

603-772-4746
FAX: 603-772-0227
E-Mail: JBE@JONESANDBEACH.COM

Plan Name:	COVER SHEET
Project:	PROPOSED CENTRAL SQUARE 340 E CENTRAL STREET, FRANKLIN, MA
Owner of Record:	340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

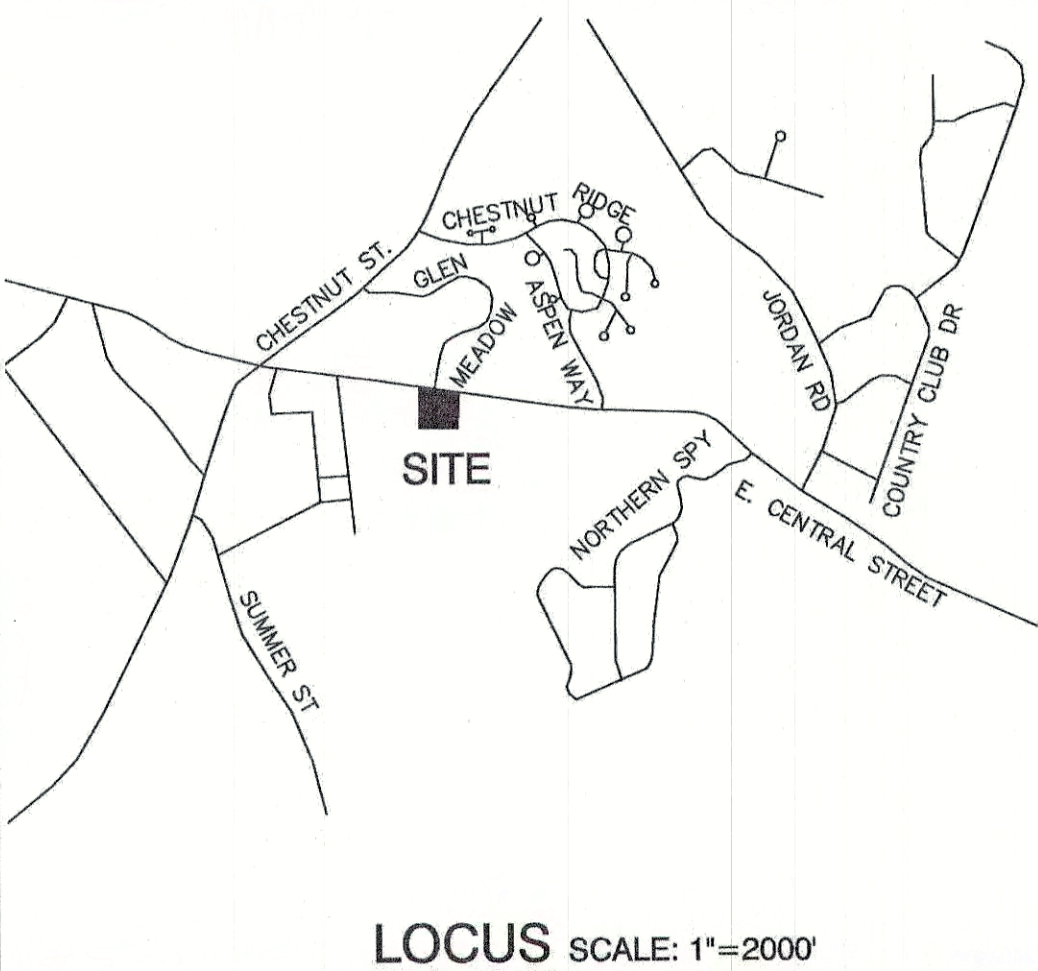
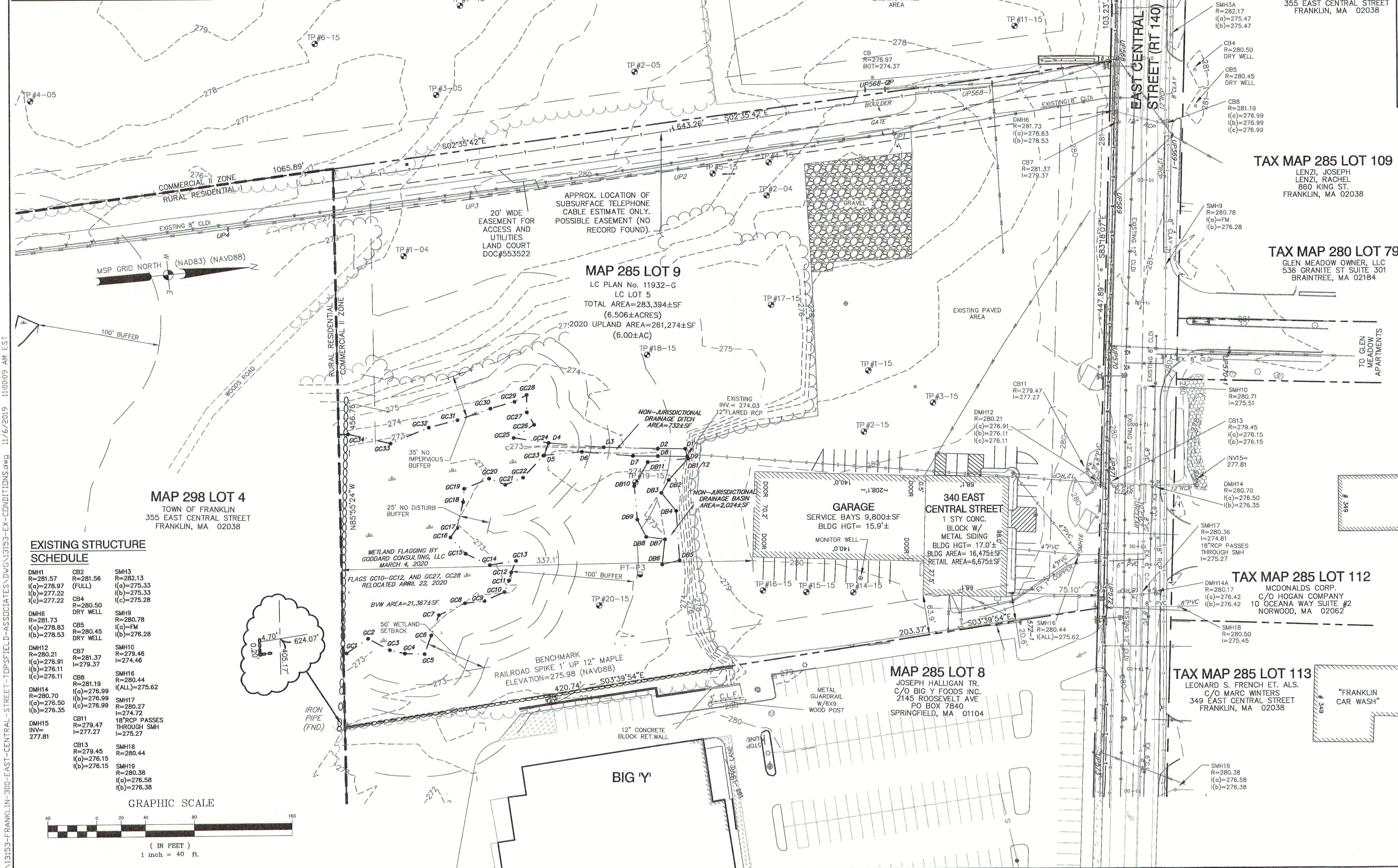
DRAWING No.
CS

SHEET 1 OF 16
JBE PROJECT NO. 13153-2

CENTRAL STREET FRANKLIN
JBE # 13153

APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:



COMMERCIAL II		
FRANKLIN ZONING BYLAW SECTION 185		
ATTACHMENT 9; LAST AMENDED		
03-13-2019 BY AMENDMENT 19-821		
REQUIRED	PROVIDED	LOT 9
MINIMUM LOT AREA	40,000 SF	283,394 SF
MINIMUM LOT FRONTAGE	175'	448'±
MINIMUM LOT DEPTH	200'	631'±
MINIMUM LOT WIDTH	157.5'	448'±
MINIMUM YARDS		
FRONT	40'	75.1'
SIDE	30'	20.8'
REAR	30'	337.1'
MAXIMUM BUILDING HEIGHT:		
STORIES	3*	1
HEIGHT	40'	17'
% OF LOT UPLAND COVERED BY:		
STRUCTURES	70	6.3%
STRUCTURES+PAVING	80	43.3%

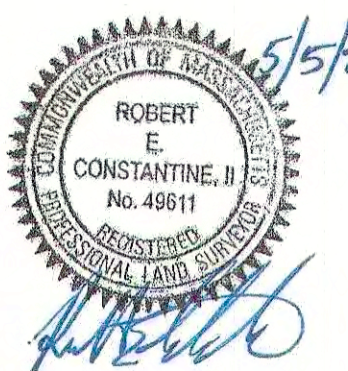
*=BUILDINGS UP TO 50' IN HEIGHT, REGARDLESS OF THE NUMBER OF STORIES
MAY BE PERMITTED BY A SPECIAL PERMIT FROM THE PLANNING BOARD

- EXISTING CONDITIONS NOTES:**
1. VERTICAL DATUM: NAVD88. HORIZONTAL DATUM: NAD83
 2. BASE ELEVATION WAS ESTABLISHED THROUGH MULTIPLE GPS POST PROCESS OBSERVATIONS AND WAS REDUCED TO THE NAVD88 DATUM.
 3. SUBJECT PROPERTY IS NOT LOCATED WITHIN A FEDERALLY DESIGNATED 100 YEAR FLOOD HAZARD ZONE. REFERENCE FEMA MAP 25021C0309E, EFFECTIVE DATE 7/17/2012
 4. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY GODDARD ASSOCIATES, SPRING 2020.
 5. TEST PITS PERFORMED BY GUERRIERE & HALNON, INC.
 6. THE EXISTING SITE IS LOCATED WITHIN THE WATER RESOURCE DISTRICT.

CONSTRUCTION ON THIS LAND IS SUBJECT TO ANY EASEMENTS, RIGHTS-OF-WAY, RESTRICTIONS, RESERVATIONS, OR OTHER LIMITATIONS WHICH MAY BE REVEALED BY AN EXAMINATION OF THE TITLE.

UTILITIES ARE PLOTTED AS A COMPILATION OF RECORD DOCUMENTS, MARKINGS, AND OTHER OBSERVED EVIDENCE TO DEVELOP A VIEW OF THE UNDERGROUND UTILITIES AND SHOULD BE CONSIDERED APPROXIMATE. LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY DETERMINED COMPLETELY AND RELIABLY DEPICTED. NON-UTILITIES, NOT EVIDENCED BY RECORD DOCUMENTS, ARE NOT OBSERVED PHYSICAL EVIDENCE, MAY EXIST. CONTRACTOR, IN ACCORDANCE WITH MASS.G.L. CHAPTER 262, SECTION 20A (AS AMENDED) MUST CONTACT ALL UTILITY COMPANIES BEFORE EXCAVATING AND DRILLING AND CALL DISCOUNT AT 1(888)DIG-SAFE(7233).

- PLAN REFERENCES:**
1. SEE PLAN ENTITLED "LAND COURT CASE NO. 11932 G, SUBDIVISION OF LOT B2 ON LAND COURT PLAN NO. 11932 D W/ CERT NO. 69849 PLAN OF LAND IN FRANKLIN, MASS. PREPARED FOR ARTHUR BENT", DATED MARCH 4, 1996 BY GUERRIERE & HALNON, INC.
 2. SEE PLAN ENTITLED "ALTA/ACSM PLAN OF LAND IN THE TOWN OF FRANKLIN, NORFOLK COUNTY, MASSACHUSETTS DATED DECEMBER 15, 1998."



PROJECT PARCEL
TOWN OF FRANKLIN, MA
TAX MAP 285, LOT 009

TOTAL LOT AREA
283,394 SQ. FT.
6.5 ACRES

Design: WGM Draft: GPC Date: 03/20/2020
Checked: WGM Scale: AS-NOTED Project No.: 13153
Drawing Name: 13153-EX-CONDITIONS.dwg

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ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE OR G&H.



REV.	DATE	REVISION	BY



Guerriere & Halnon, Inc.
Engineering & Land Surveying

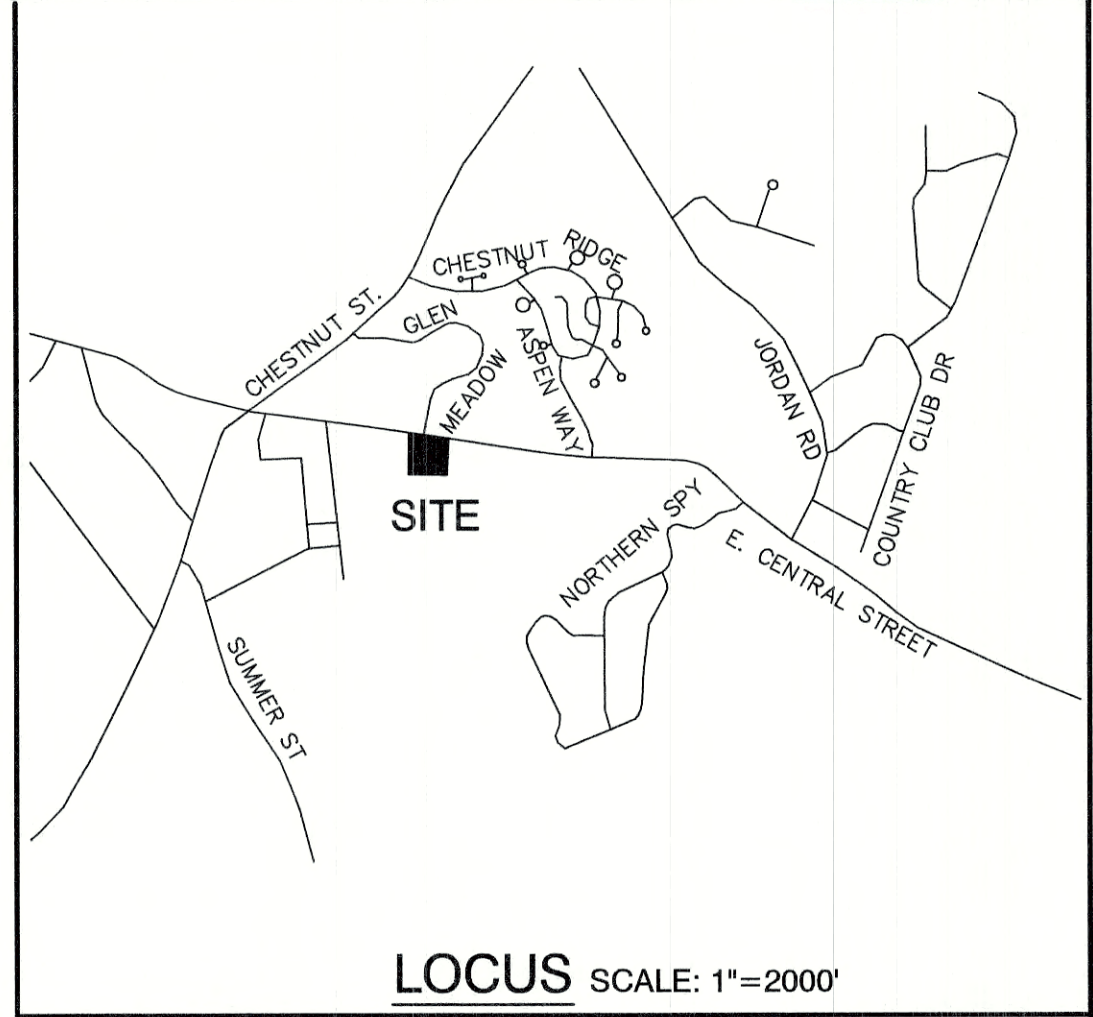
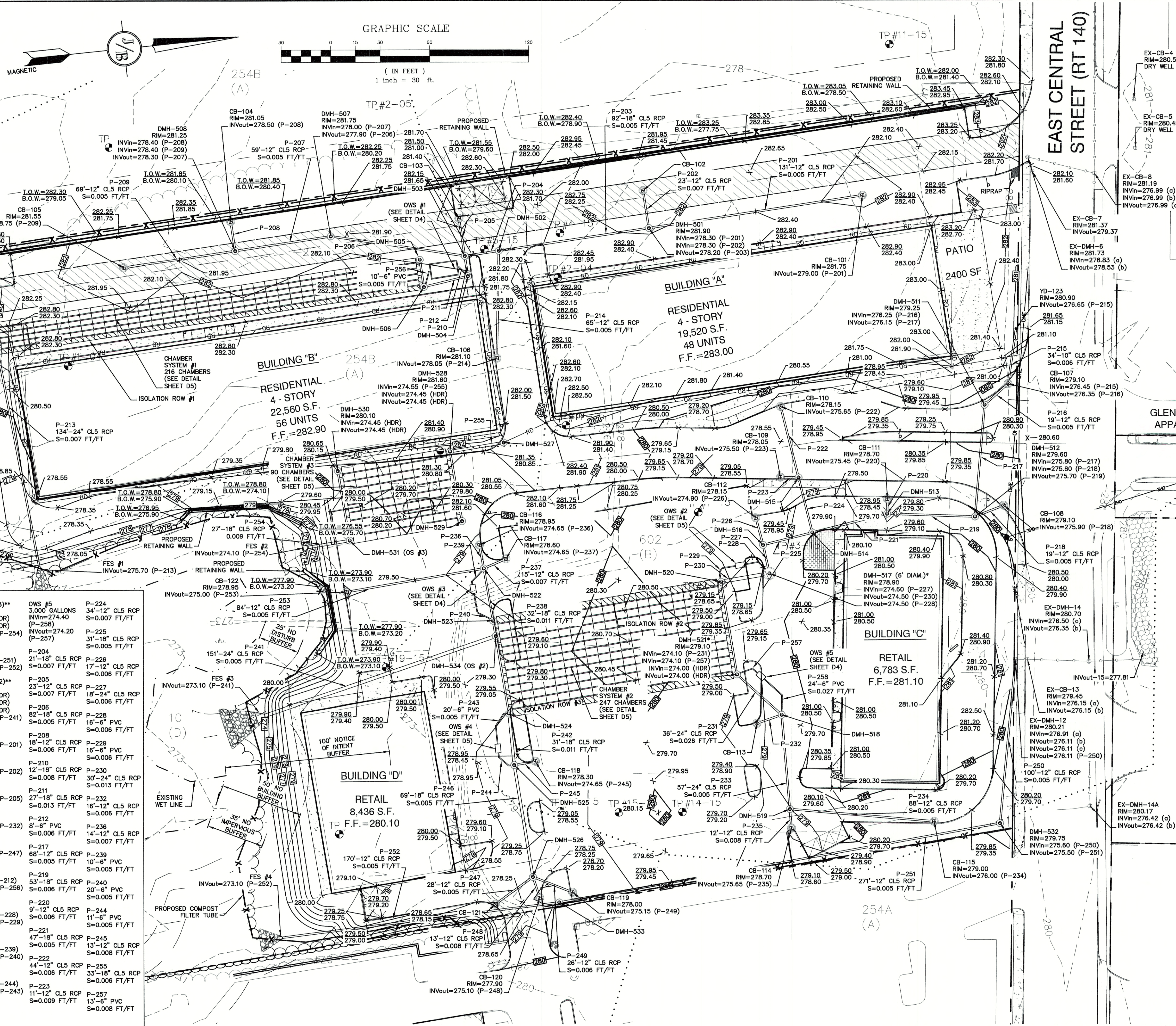
Ph. (508) 528-3221 55 WEST CENTRAL STREET
Fx. (508) 528-7921 FRANKLIN, MASS. 02038
www.gandhengineering.com

Plan Name:	EXISTING CONDITIONS PLAN
Project:	PROPOSED CENTRAL SQUARE 340 E CENTRAL STREET, FRANKLIN, MA
Owner of Record:	340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

DRAWING No.
C1
SHEET 2 OF 16
JBE PROJECT NO. 13153

APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:



- GRADING AND DRAINAGE NOTES:**
- UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER JONES & BEACH ENGINEERS, INC., NOR ANY OF THEIR EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888-DIG-SAFE (888-344-7233).
 - ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
 - SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. SEE CONSTRUCTION SEQUENCE ON SHEET E1.
 - PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECT'S LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS. A MINIMUM OF 48 HOURS NOTICE IS REQUIRED.
 - ALL ROOF DRAINS FROM BUILDING SHALL END 5' OUTSIDE THE BUILDING LIMITS AS SHOWN ON PLAN AND SHALL BE PROVIDED WITH A TEMPORARY PLUG AND WITNESS AT THE END. ALL EXTERIOR ROOF DOWNSPOUTS ARE TO BE INSTALLED WITH OVERFLOW DEVICES.
 - ALL DRAINAGE STRUCTURES AND OUTFALLS ARE TO BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
 - PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
 - ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHERWISE SPECIFIED.
 - ALL DRAINAGE AND SANITARY STRUCTURE INTERIOR DIAMETERS (4" MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS. CATCH BASINS SHALL HAVE 4" DEEP SUMP WITH GREASE HOODS, UNLESS OTHERWISE NOTED.
 - ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE SHEET C3 FOR DRAINAGE STRUCTURE SCHEDULE AND SHEETS D1-D3 FOR DRAINAGE DETAILS.
 - ALL DRAINAGE STRUCTURES AND STORM SEWER PIPES SHALL MEET HEAVY DUTY TRAFFIC H20 LOADING AND SHALL BE INSTALLED ACCORDINGLY.
 - IMMEDIATELY APPLY AND COMPACT STONE BASE FOR BUILDING PAD TO +1/2" PRIOR TO EXCAVATING INTERIOR AND PERIMETER FOOTINGS.
 - IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE SILT FENCING IS NOT REQUIRED.
 - ALL DRAINAGE PIPE OTHER THAN ROOF DRAINS SHALL BE CLASS 3 REINFORCED CONCRETE WITH A MINIMUM COVER OF 42". CLASS 5 REINFORCED CONCRETE PIPE SHALL BE USED WHEN PIPE COVER IS LESS THAN 42".
 - STONE INLET PROTECTION SHALL BE PLACED AT ALL CATCH BASINS. SEE DETAIL WITHIN THE DETAIL SHEETS.
 - LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
 - NO LAND CLEARING OR GRADING SHALL BEGIN UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
 - ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
 - SHOULD CONSTRUCTION STOP FOR LONGER THAN 3 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
 - MAINTAIN EROSION CONTROL MEASURES AFTER EACH RAIN EVENT OF 0.5" OR GREATER IN A 24 HOUR PERIOD AND AT LEAST ONCE A WEEK.
 - THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
 - CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION.
 - IF INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
 - THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION.
 - SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
 - ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH PROJECT SPECIFICATIONS.
 - ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEMED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
 - SEE ALSO EROSION AND SEDIMENT CONTROL SPECIFICATIONS ON SHEET E1.
 - BUILDING "A" AND BUILDING "B" ROOF DRAINS TO BE CONNECTED TO CHAMBER SYSTEM #3.

DRAINAGE STRUCTURE TABLE			
DMH-502 RIM=281.80 INVin=277.70 (P-203) INVin=277.70 (P-214) INVin=277.80 (P-204)	DMH-519 RIM=279.00 INVin=275.55 (P-234) INVin=275.55 (P-235) INVin=275.45 (P-233)	DMH-531 (OS #3)** RIM=279.00 INVin=274.45 (HDR) INVin=274.45 (HDR) INVin=274.35 (P-254)	OWS #5 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH-503 RIM=281.65 INVin=277.45 (P-204) INVin=277.45 (P-205) INVin=277.45 (P-206) INVin=277.35 (P-210)	DMH-520* RIM=279.10 INVin=274.10 (P-230) INVin=274.10 (P-229) INVin=274.00 (HDR) INVin=274.00 (HDR)	DMH-533 RIM=278.90 INVin=274.10 (P-251) INVin=274.10 (P-252)	OWS #6 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH-504* RIM=282.10 INVin=277.25 (P-210) INVin=277.15 (P-211) INVin=277.15 (P-212)	DMH-522* RIM=278.80 INVin=274.55 (P-236) INVin=274.55 (P-237) INVin=274.55 (P-238) INVin=274.45 (P-239)	DMH-534 (OS #2)** RIM=279.15 INVin=274.00 (HDR) INVin=274.00 (HDR) INVin=274.00 (HDR)	OWS #7 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH 505 RIM=281.85 INVin=277.45 (HDR) INVin=276.70 (HDR)	DMH-523* RIM=279.05 INVin=274.10 (P-238) INVin=274.10 (P-240) INVin=274.00 (HDR)	DMH-535 RIM=278.95 INVin=274.10 (P-251) INVin=274.10 (P-252)	OWS #8 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH-506* RIM=282.25 INVin=276.80 (P-211) INVin=276.80 (P-256) INVin=276.70 (HDR) INVin=276.70 (HDR)	DMH-524* RIM=279.00 INVin=274.10 (P-242) INVin=274.10 (P-243) INVin=274.00 (HDR)	DMH-536 RIM=278.95 INVin=274.10 (P-251) INVin=274.10 (P-252)	OWS #9 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH-513 RIM=278.90 INVin=275.40 (P-219) INVin=275.40 (P-220) INVin=275.30 (P-221)	DMH 525** RIM=278.50 INVin=274.55 (P-245) INVin=274.55 (P-246) INVin=274.45 (P-244)	DMH-537 RIM=278.95 INVin=274.10 (P-251) INVin=274.10 (P-252)	OWS #10 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH 514 RIM=279.65 INVin=275.05 (P-221) INVin=275.05 (P-224) INVin=274.95 (P-225)	DMH-526 RIM=278.35 INVin=275.00 (P-247) INVin=275.00 (P-248) INVin=275.00 (P-249) INVin=274.90 (P-246)	DMH-538 RIM=278.95 INVin=274.10 (P-251) INVin=274.10 (P-252)	OWS #11 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH 515 RIM=278.15 INVin=275.40 (P-222) INVin=275.40 (P-223) INVin=275.30 (P-224)	DMH-527 RIM=281.15 INVin=274.85 (RD) INVin=274.75 (P-255)	DMH-539 RIM=279.50 INVin=274.45 (HDR) INVin=274.45 (HDR)	OWS #12 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH-516 RIM=278.45 INVin=274.80 (P-225) INVin=274.80 (P-226) INVin=274.70 (P-227)	DMH-528 RIM=281.15 INVin=274.85 (RD) INVin=274.75 (P-255)	DMH-540 RIM=279.50 INVin=274.45 (HDR) INVin=274.45 (HDR)	OWS #13 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)
DMH-518* RIM=279.45 INVin=275.15 (P-232) INVin=275.15 (P-233) INVin=275.05 (P-231) INVin=275.05 (P-258)	DMH-529 RIM=279.50 INVin=274.45 (HDR) INVin=274.45 (HDR)	DMH-541 RIM=279.50 INVin=274.45 (HDR) INVin=274.45 (HDR)	OWS #14 3,000 GALLONS INVin=274.40 (P-258) INVin=274.20 (P-257)

Design: WGM Draft: RSK Date: 05/06/20
Checked: WGM Scale: AS-NOTED Project No.: 13153
Drawing Name: 13153-PLAN.dwg

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Designed and Produced in NH

J/B Jones & Beach Engineers, Inc.

85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885

Civil Engineering Services

603-772-4746
FAX: 603-772-0227
E-Mail: JBE@JONESANDBEACH.COM

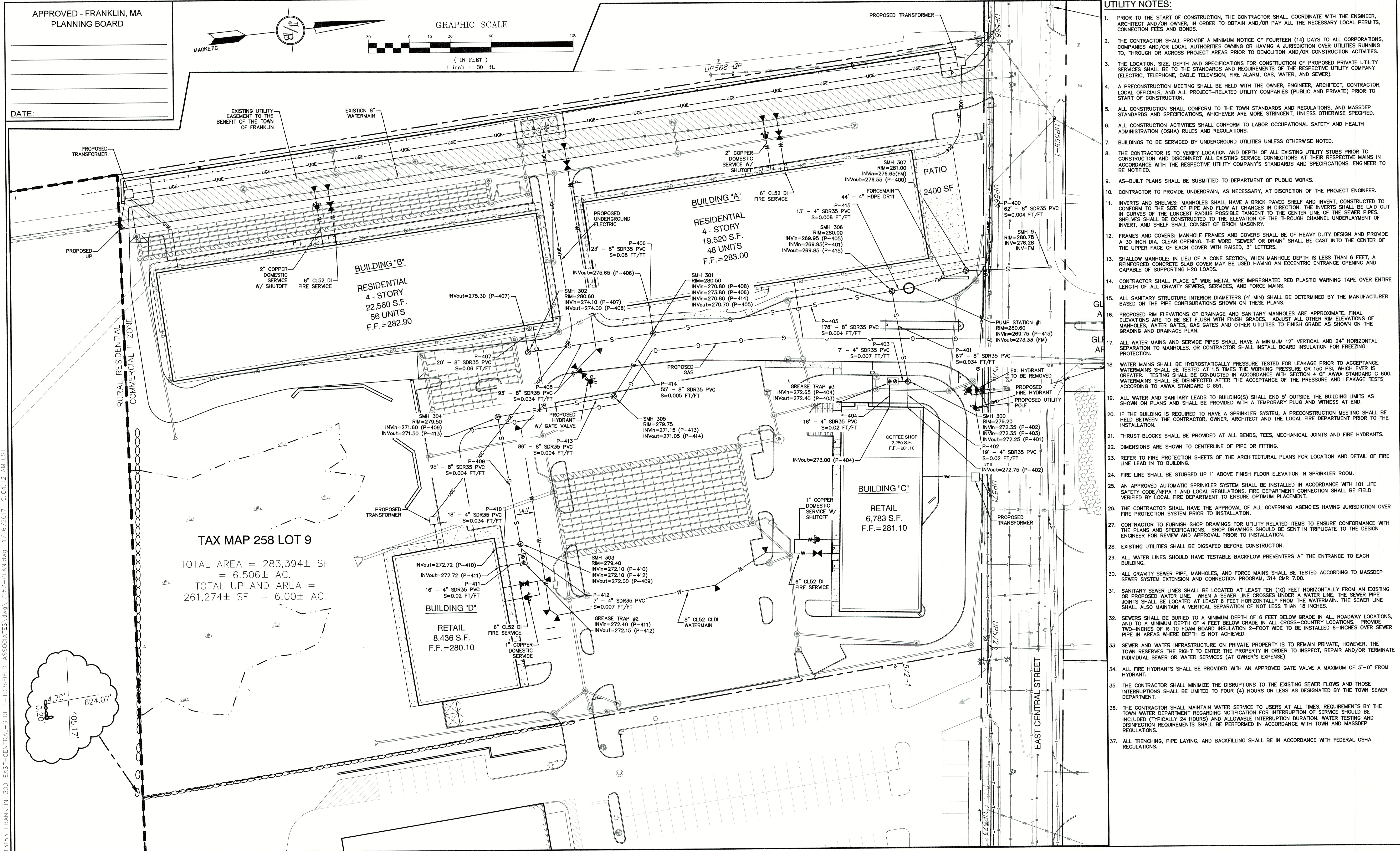
Plan Name: **GRADING AND DRAINAGE PLAN**

Project: **PROPOSED CENTRAL SQUARE
340 E CENTRAL STREET, FRANKLIN, MA**

Owner of Record: **340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576**

DRAWING No. **C3**

SHEET 4 OF 16
JBE PROJECT NO. 13153



Design: WGM Draft: RMK Date: 05/06/20
Checked: WGM Scale: AS-NOTED Project No.: 13153
Drawing Name: 13153-PLAN.dwg
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REV.	DATE	REVISION	EMP	BY
0	05/06/20	ISSUED FOR REVIEW		

J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
603-772-0227
E-Mail: JBE@JONESANDBEACH.COM

Plan Name:	UTILITY PLAN
Project:	PROPOSED CENTRAL SQUARE 340 E CENTRAL STREET, FRANKLIN, MA
Owner of Record:	340 EAST CENTRAL EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

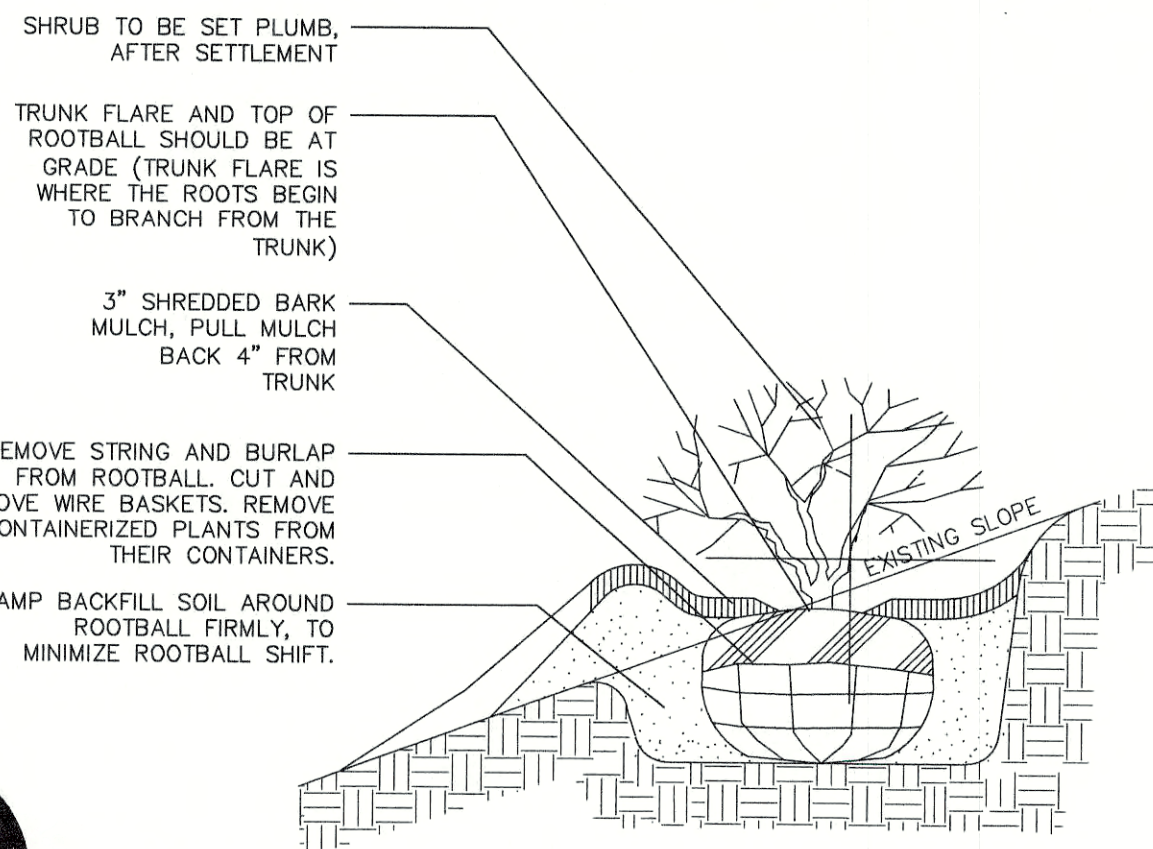
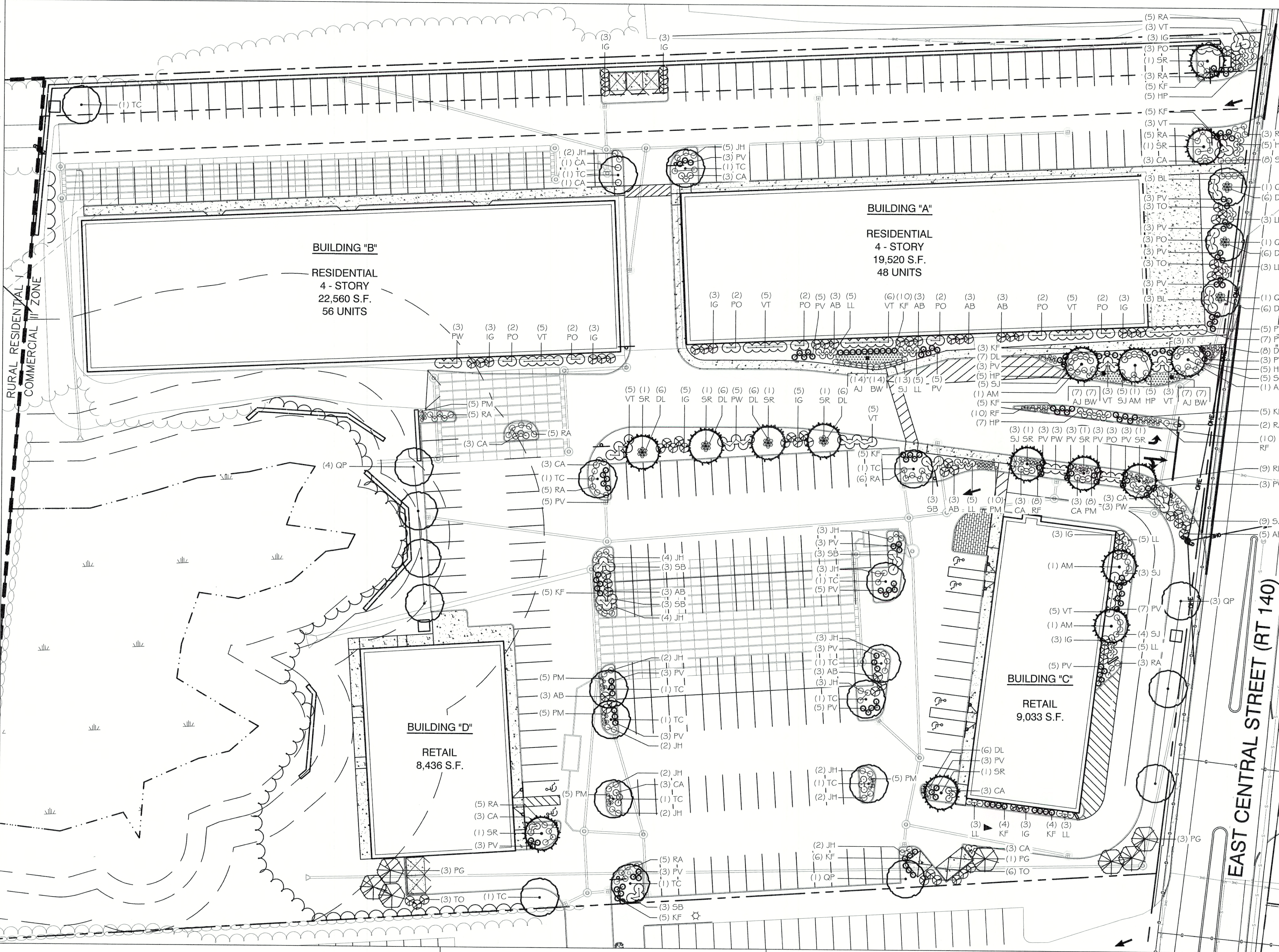
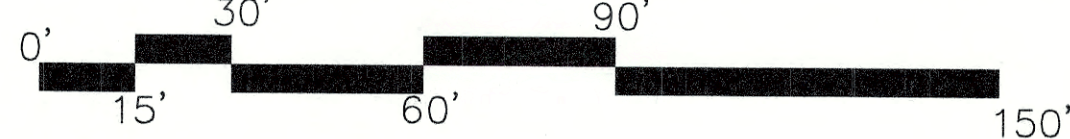
DRAWING No.
C4
SHEET 5 OF 16
JBE PROJECT NO. 13153

- GENERAL NOTES:
1. BASE PLAN DEVELOPED FROM INFORMATION PROVIDED BY JONES & BEACH ENGINEERS, INC., DRAWING TITLE, "SITE PLAN, PROPOSED CENTRAL SQUARE, 340 E CENTRAL STREET, FRANKLIN, MA" DATED 01-23-20.
 2. VERIFY LOCATIONS, ELEVATIONS, AND DIMENSIONS IN THE FIELD, PRIOR TO CONSTRUCTION. VERIFY FIELD CONDITIONS RELATING TO WORK TO BE INSTALLED. NOTIFY LANDSCAPE ARCHITECT OF ANY UNUSUAL OR DIFFICULT CONDITIONS IN A TIMELY FASHION PRIOR TO CONSTRUCTION CONCERNING THE CONDITION IN QUESTION.
 3. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE TOWN OF FRANKLIN AND STATE OF MASSACHUSETTS. NOTIFY APPROPRIATE AGENCIES AT LEAST 48 HOURS PRIOR TO PERFORMING THE WORK UNDER THEIR JURISDICTION.
 4. CONTRACTOR IS RESPONSIBLE FOR SECURING AND PAYING FOR ALL CONSTRUCTION PERMITS AND LICENSES REQUIRED TO COMPLETE SITE WORK. CONTRACTOR IS RESPONSIBLE FOR ALL APPROPRIATE INSPECTIONS OF HIS/HER WORK.
 5. ALL WORK SHALL BE OF WORKMANLIKE QUALITY AND IN CONFORMANCE WITH ALL APPLICABLE CODES. CONTRACTOR SHALL READ ALL ZONING AND ENVIRONMENTAL PERMITS WHICH PERTAIN TO THE PROJECT AND SHALL COMPLY WITH ALL THE CONDITIONS THEREIN.
 6. NOTIFY LANDSCAPE ARCHITECT AT LEAST 72 HOURS PRIOR TO ANY ROUTINE REQUIRED FIELD OBSERVATION. OBTAIN LANDSCAPE ARCHITECT'S APPROVAL OF THE LAYOUT OF ALL IMPROVEMENTS PRIOR TO CONSTRUCTION.
 7. CONTRACTOR IS RESPONSIBLE FOR REPAIR OF DAMAGE OR DISTURBANCE TO OTHER AREAS WHICH MAY OCCUR AS THE RESULT OF HIS/HER WORK WHETHER WITHIN OR OUTSIDE OF THE CONTRACT LIMIT LINES.
 8. CONSTRUCTION SHALL FOLLOW THE SEQUENCES AND CONDITIONS ESTABLISHED IN THE SPECIFICATIONS AND PERMITS.
 9. IT IS INTENDED THAT THE WORK BE EXECUTED IN ACCORDANCE WITH THE BEST CUSTOMARY BUILDING PRACTICES. IF WORK IS REQUIRED IN A MANNER TO MAKE IT IMPOSSIBLE TO PRODUCE FIRST-CLASS WORK OR IF ERRORS, CONFLICTS OR DISCREPANCIES APPEAR AMONG THE CONTRACT DOCUMENTS, INFORM THE LANDSCAPE ARCHITECT IMMEDIATELY AND REQUEST INTERPRETATION BEFORE PROCEEDING WITH THE WORK.
 10. IF CONTRACTOR FAILS TO MAKE SUCH A STATEMENT AND REQUEST, NO EXCISE WILL THEREAFTER BE ENTERTAINED, NOR ADDITIONAL EXPENSE BE ACCEPTED, FOR FAILURE TO CARRY OUT WORK IN A SATISFACTORY MANNER. SHOULD CONFLICT OCCUR IN OR BETWEEN DRAWINGS AND SPECIFICATIONS, CONTRACTOR IS DEEMED TO HAVE ESTIMATED ON THE MORE EXPENSIVE WAY OF DOING WORK UNLESS HE/SHE SHALL HAVE OBTAINED A WRITTEN DECISION, BEFORE SUBMITTING HIS BID, AS TO WHICH METHOD OR MATERIALS WILL BE REQUIRED.
 11. CONTRACTOR IS RESPONSIBLE FOR ALL MATERIALS AND EQUIPMENT STORED AT SITE.
 12. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY WORK.
 13. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT FOR DIRECTION AND RESOLUTION PRIOR TO ANY FURTHER WORK.
 14. VISIBLE EXISTING CONDITIONS WHERE FIELD LOCATED, AND UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE. SITE SUBCONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS, DIMENSIONS, AND GRADES, PRIOR TO START OF ANY FOUNDATION OR UTILITY WORK.
 15. WRITTEN DIMENSIONS HAVE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN CASE OF CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWING AND/OR SPECIFICATION, THE LANDSCAPE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY FOR CLARIFICATIONS.
 16. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY TERRAIN PLANNING & DESIGN LLC, DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR, ENGINEER OR LANDSCAPE ARCHITECT HEREON DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.
 17. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF WITH THE SITE AND ALL EXISTING CONDITIONS SURROUNDING IT AND THEREON. THE CONTRACTOR SHALL ADVISE THE APPROPRIATE AUTHORITY OF HIS INTENTIONS AT LEAST 48 HOURS IN ADVANCE.
 18. THESE PLANS WERE PREPARED UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL LANDSCAPE ARCHITECT. TERRAIN PLANNING & DESIGN LLC ASSUMES NO LIABILITY AS A RESULT OF ANY CHANGES OR NON-CONFORMANCE WITH THESE PLANS EXCEPT UPON THE WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT OF RECORD.
 19. TERRAIN PLANNING & DESIGN LLC ASSUMES NO LIABILITY FOR WORK PERFORMED WITHOUT AN ACCEPTABLE PROGRAM OF TESTING AND INSPECTION AS APPROVED BY THE LANDSCAPE ARCHITECT OF RECORD.
 20. BASE PREPARATION UNDER ALL HARD SURFACES TO BE COMPACTED TO 98% STANDARD PROCTOR DENSITY.
 21. SITE CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE PRIOR TO ANY EXCAVATION, 1-888-DIG-SAFE.

PLANTING NOTES:

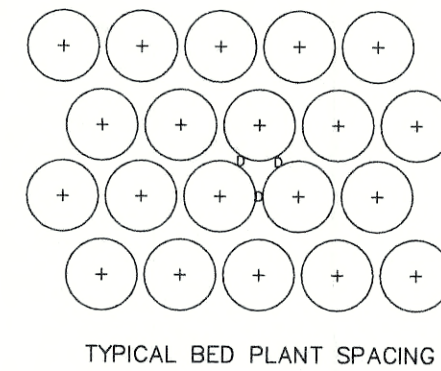
1. CONTRACTOR SHALL OBTAIN APPROVAL FROM LANDSCAPE ARCHITECT PRIOR TO PURCHASING AND/OR INSTALLING SUBSTITUTE PLANT MATERIAL PRIOR TO PURCHASE OF ANY SUBSTITUTE MATERIALS.
2. CONSTRUCTION ACCESS WILL BE AS DIRECTED BY LANDSCAPE ARCHITECT. CONTRACTOR IS RESPONSIBLE FOR RESTORATION OF ACCESS ROUTE AND ALL AREAS DISTURBED BY PLANTING OPERATIONS UPON COMPLETION OF CONSTRUCTION OPERATIONS. AT NO ADDITIONAL COST TO THE OWNER.
3. LAYOUT OF ALL PLANTING BEDS AND LOCATION OF PLANTS TO BE APPROVED BY LANDSCAPE ARCHITECT ON SITE PRIOR TO CONSTRUCTION AND INSTALLATION.
4. CONTRACTOR TO REMOVE ALL DEBRIS GENERATED BY PLANT INSTALLATION. DEBRIS TO BE DISPOSED OF IN A LEGAL MANNER.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED TO BE IN GOOD, HEALTHY AND FLOURISHING CONDITION FOR ONE YEAR FROM THE DATE OF FINAL INSTALLATION APPROVAL BY LANDSCAPE ARCHITECT. CONTRACTOR SHALL REPLACE, WITHOUT COST TO OWNER, AND AS SOON AS WEATHER CONDITIONS PERMIT, ALL DEAD AND NON-FLOURISHING PLANTS AS DETERMINED BY THE LANDSCAPE ARCHITECT. REPLACEMENT PLANTS SHALL BE GUARANTEED IDENTICALLY TO ORIGINAL PLANTS, TIME PERIOD COMMENCING FROM DATE OF REPLACEMENT PLANTING APPROVAL BY LANDSCAPE ARCHITECT.
6. ALL BEDS TO BE MULCHED WITH 4" DEPTH SHREDDED BARK MULCH UNLESS NOTED OTHERWISE.
7. CONTRACTOR TO PROVIDE NECESSARY TEMPORARY IRRIGATION IF NEEDED BASED ON TIME OF YEAR THE PROJECT IS IMPLEMENTED.

Plant Schedule					
Botanical Name/ Common Name	Size	Label	Quantity	Mature Height	
Trees					
<i>Amelanchier x grandiflora</i> 'Autumn Brilliance' / Autumn Brilliance Serviceberry	2-2.5" CAL.	AM	5	20-30'	
<i>Picea glauca</i> / White Spruce	5-6" B&B	PG	7	40-60'	
<i>Tilia cordata</i> 'Greenspire' / Greenspire Littleleaf Linden	2-2.5" CAL.	TC	14	40-60'	
<i>Thuja occidentalis</i> 'Smaragd' / Emerald Green Arborvitae	4-5" B&B	TO	15	15-20'	
<i>Quercus palustris</i> / Pin Oak	2-2.5" CAL.	QP	11	60'+	
<i>Syringa reticulata</i> / Japanese Lilac Tree	2-2.5" CAL.	SR	11	20-30'	
Shrubs					
<i>Azalea</i> 'Blaauw's Pink' / Blaauw's Pink Azalea	#3 Gal.	AB	29	4-5'	
<i>Clethra alnifolia</i> 'Compacta' / Compact Summersweet	#3 Gal.	CA	35	3-4'	
<i>Hydrangea paniculata</i> 'Bobo' / Bobo Panicle Hydrangea	#3 Gal.	HP	32	2-3'	
<i>Hydrangea paniculata</i> 'Little Lime' / Little Lime Panicle Hydrangea	#3 Gal.	LL	37	3-4'	
<i>Hydrangea paniculata</i> 'Pinky Winky' / Pinky Winky Panicle Hydrangea	#5 Gal.	PW	21	6-8'	
<i>Ilex glabra</i> 'Compacta' / Compact Inkberry	#5 Gal.	IG	40	5-6'	
<i>Physocarpus opulifolius</i> 'Amber Jubilee' / Amber Jubilee Ninebark	#5 Gal.	PO	23	5-6'	
<i>Spiraea bumalda</i> 'Anthony Waterer' / Anthony Waterer Spirea	#3 Gal.	SB	15	3-4'	
<i>Spiraea japonica</i> 'Candy Corn' / Candy Corn Spirea	#3 Gal.	SI	55	18-24"	
<i>Syring</i> 'Bloomerang Dark Purple' / Dark Purple Bloomerang Lilac	#5 Gal.	BL	6	5-6'	
<i>Viburnum trilobum</i> 'Compacta' / Compact American Cranberry Viburnum	#5 Gal.	VT	48	5-6'	
Grasses					
<i>Calamagrostis acutifolia</i> 'Karl Foerster' / Karl Foerster Feather Reed Grass	#2 Gal.	KF	65	5'	
<i>Panicum virgatum</i> 'Shenandoah' / Shenandoah Switch Grass	#2 Gal.	PV	99	3-4'	
Perennials					
<i>Hemerocallis</i> 'Happy Returns' / Happy Returns Daylily	#1 Gal.	DL	63	18-24"	
<i>Hemerocallis</i> 'Pardon Me' / Pardon Me Daylily	#1 Gal.	PM	43	18-24"	
<i>Nepeta</i> 'Blue Wonder' / Blue Wonder Catmint	#1 Gal.	BW	28	12"	
<i>Rudbeckia fulgida</i> 'Goldsturm' / Goldsturm Black-Eyed Susan	#1 Gal.	RF	27	2'	
<i>Sedum spectabile</i> 'Autumn Joy' / Autumn Joy Stonecrop	#1 Gal.	AJ	28	18-24"	
Groundcovers					
<i>Juniperus horizontalis</i> 'Bar Harbor' / Bar Harbor Juniper	#1 Gal.	JH	41	6-12"	
<i>Rhus aromatica</i> 'Grow Low' / Grow Low Fragrant Sumac	#1 Gal.	RA	52	18-24"	

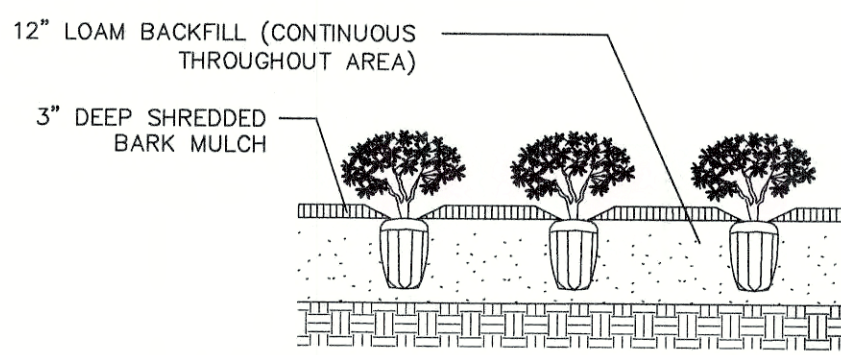


- NOTE:
1. DO NOT HEAVILY PRUNE SHRUB AT PLANTING, PRUNE ONLY CROSSOVER LIMBS AND DAMAGED OR DEAD BRANCHES.
 2. BACKFILL WITH LOAM, AMEND AS REQUIRED BY LANDSCAPE ARCHITECT.
 3. SHRUBS & GROUNDCOVER PLANTED ADJACENT TO CITY SIDEWALKS NEED TO BE PLACED SO THE PLANTS, AT THEIR MATURE HEIGHT & WIDTH, WILL NOT ENCRUMB INTO THE CITY'S SIDEWALK.

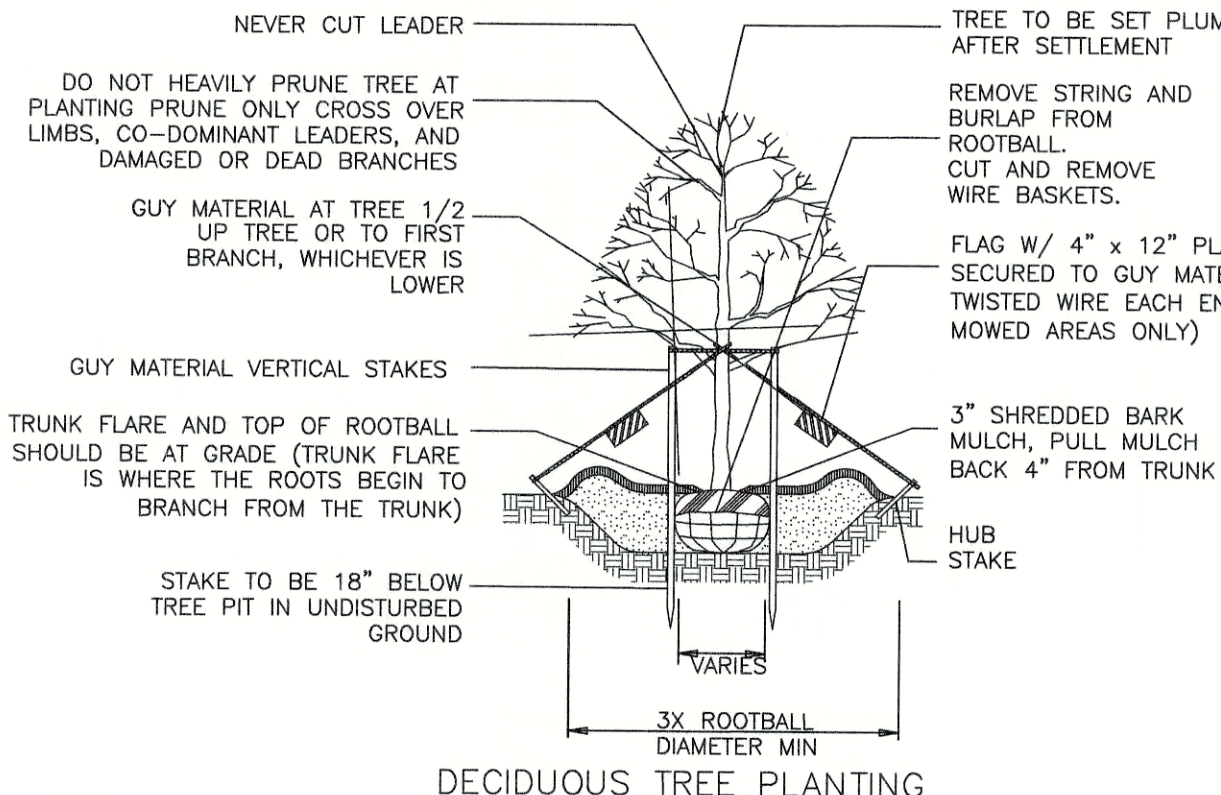
TYPICAL SHRUB PLANTING



NOTE:
D = DIMENSION OF PLANT SPACING (SHRUB OR GROUNDCOVER AS INDICATED ON PLANS)



TYPICAL PERENNIAL PLANTING



- NOTES:
1. GUYING AND STAKING TO BE DETERMINED IN THE FIELD BY THE LANDSCAPE ARCHITECT. LOCAL FIELD CONDITIONS, AS WELL AS PLANT CHARACTERISTICS, WILL DETERMINE THE NECESSITY OF GUYING AND STAKING.
 2. TYPICALLY ONLY TRESS WITH A 3" OR GREATER CALIPER NEED TO BE STAKED. TRESS WITH LESS THAN A 3" CALIPER NEED TO BE STAKED ONLY AS REQUIRED BY A LANDSCAPE ARCHITECT.
 3. ONLY WRAP TREE TRUNKS AS REQUIRED BY LANDSCAPE ARCHITECT.
 4. TREE SHALL BE SET PLUMB AFTER SETTLEMENT.
 5. LOAM FOR BACKFILLING SHALL BE AMENDED AS REQUIRED BY LANDSCAPE ARCHITECT.
 6. CITY TRESS PLANTED ON PRIVATE PROPERTY, ADJACENT TO A PUBLIC RIGHT-OF-WAY NEED TO BE PLANTED A MINIMUM OF 5 FEET FROM THE EDGE OF CITY SIDEWALK.



311 kast hill road
hopkinton nh 03229
603. 746. 3512
terrainplanning.com

PROPOSED
CENTRAL SQUARE

Site Location:
340 E. Central Street
Franklin, MA 02038
Tax Map: 285
Lot #: 9

Prepared For:
Jones & Beach Engineering,
Inc.
85 Portsmouth Avenue
Stratham, NH 03885

LANDSCAPE
PLAN

DATE: 04 - 01 - 2020

SCALE: 1" = 30'

PROJECT #: 2016

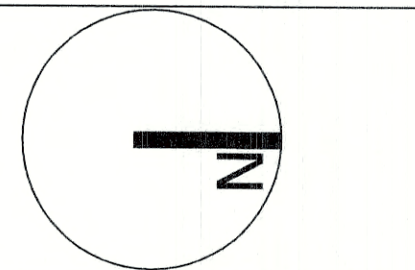
Drawn By: RNM

Checked By: ERB

REVISIONS: DATE:
Issued for Client Review

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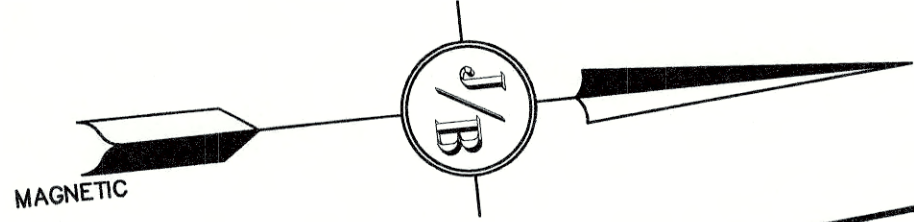
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APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:

COMMERCIAL
RURAL RESIDENTIAL I



RURAL RESIDENTIAL I
COMMERCIAL II ZONE

BUILDING "B"
RESIDENTIAL
4 - STORY
22,560 S.F.
56 UNITS
F.F. = 282.90

BUILDING "A"
RESIDENTIAL
4 - STORY
19,520 S.F.
48 UNITS
F.F. = 283.00

PATIO
2400 SF

COFFEE SHOP
2,250 S.F.
F.F. = 281.10

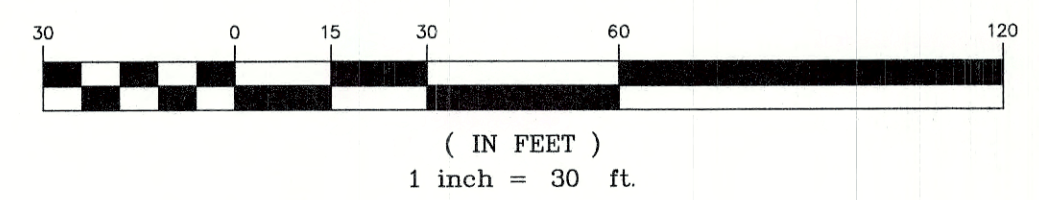
BUILDING "C"
RETAIL
6,783 S.F.
F.F. = 281.10

BUILDING "D"
RETAIL
8,436 S.F.
F.F. = 280.10

LIGHTING AND ELECTRICAL NOTES:

- SITE ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATION OF EASEMENTS, UNDERGROUND UTILITIES AND DRAINAGE BEFORE DRILLING POLE BASES.
- CONTRACTOR SHALL INSTALL PROPOSED LIGHT POLES ACCORDING TO TOWN REGULATIONS.
- ALL OUTDOOR LIGHTING SYSTEMS SHALL BE EQUIPPED WITH TIMERS TO REDUCE ILLUMINATION LEVELS TO NON-OPERATIONAL VALUES PER TOWN REGULATIONS.
- LIGHTING CONDUIT SHALL BE SCHEDULE 40 PVC, AND SHALL BE INSTALLED IN CONFORMANCE WITH THE NATIONAL ELECTRICAL CODE. CONTRACTOR SHALL PROVIDE EXCAVATION AND BACKFILL.
- ILLUMINATION READINGS SHOWN ARE BASED ON A TOTAL LLF OF 0.75 AT GRADE. ILLUMINATION READINGS SHOWN ARE IN UNITS OF FOOT-CANDLES.
- LIGHTING CALCULATIONS SHOWN ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM AND SAFETY.
- ALL LIGHTING FIXTURES SHALL BE FULL CUT-OFF DARK-SKY COMPLIANT, UNLESS OTHERWISE NOTED.
- SEE DETAIL SHEETS FOR LIGHTING DETAILS.
- THE PROPOSED LIGHTING CALCULATIONS AND DESIGN WAS PERFORMED BY CHARRON, INC., P.O. BOX 4550, MANCHESTER, NH 03106. ATTENTION KEN SWEENEY. ALL LIGHTS SHOULD BE PURCHASED FROM THIS COMPANY, OR AN EQUAL LIGHTING DESIGN SHOULD BE SUBMITTED FOR REVIEW IF EQUAL SUBSTITUTIONS ARE PROPOSED BY THE CONTRACTOR OR OWNER.

GRAPHIC SCALE



StatArea 1
RESIDENTIAL PARKING LOTS
Illuminance (Fc)
Average = 1.54
Maximum = 4.1
Minimum = 0.3
Avg/Min Ratio = 5.13
Max/Min Ratio = 13.67

StatArea 2
RETAIL PARKING LOTS
Illuminance (Fc)
Average = 2.33
Maximum = 5.1
Minimum = 0.6
Avg/Min Ratio = 3.88
Max/Min Ratio = 8.50

StatArea 3
TRAVEL LANE OF RESIDENTIAL PARKING AREA
Illuminance (Fc)
Average = 1.43
Maximum = 2.5
Minimum = 0.8
Avg/Min Ratio = 1.79
Max/Min Ratio = 3.13

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
	2	S3	SINGLE	GLEON-AF-02-LED-E1-SL3/ SSS4A20SFN1 (20' AFG)
	1	S4	SINGLE	GLEON-AF-02-LED-E1-SL4/ SSS4A20SFN1 (20' AFG)
	3	S4W	SINGLE	GLEON-AF-02-LED-E1-T4W/ SSS4A20SFN1 (20' AFG)
	1	S5-1	SINGLE	GLEON-AF-02-LED-E1-SW0/ SSS4A20SFN1 (20' AFG)
	4	S5-2	BACK-BACK	2-GLEON-AF-02-LED-E1-SW0/ SSS4A20SFN2 (20' AFG)
	6	W2	SINGLE	XTOR1B/ WAL MTD 12' AFG
	7	W3	SINGLE	GWC-AF-02-LED-E1-SL3/ WALL MTD 20' AFG
	7	W4	SINGLE	GWC-AF-02-LED-E1-SL4/ WALL MTD 20' AFG

Design: WGM Draft: RMK Date: 05/06/20
Checked: WGM Scale: AS-NOTED Project No.: 13153
Drawing Name: 13153-PLAN.dwg
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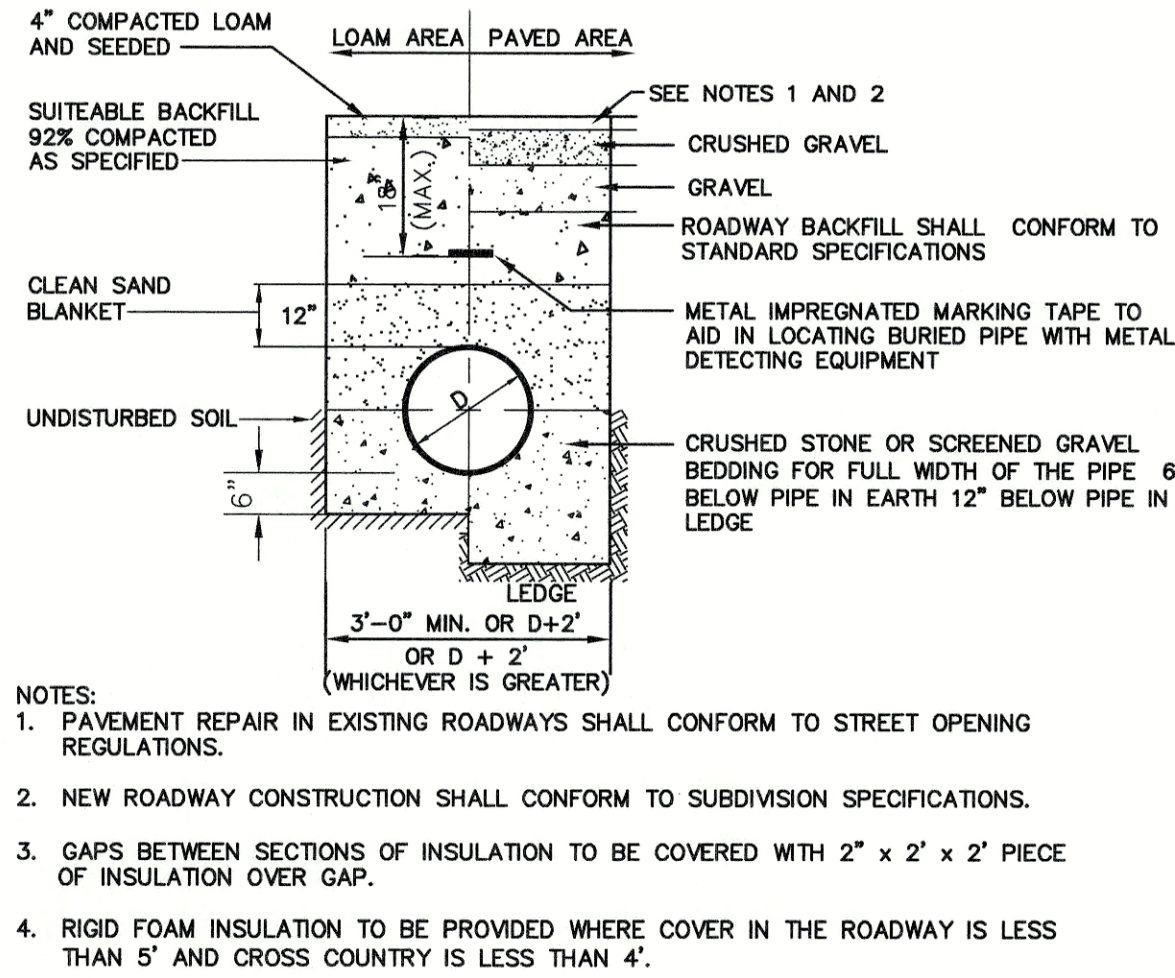
REV.	DATE	REVISION	BY
0	05/06/20	ISSUED FOR REVIEW	EMP

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746 FAX: 603-772-0227 E-Mail: JBE@JONESANDBEACH.COM

Plan Name: **LIGHTING PLAN**
Project: **PROPOSED CENTRAL SQUARE
340 E CENTRAL STREET, FRANKLIN, MA**
Owner of Record: 340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

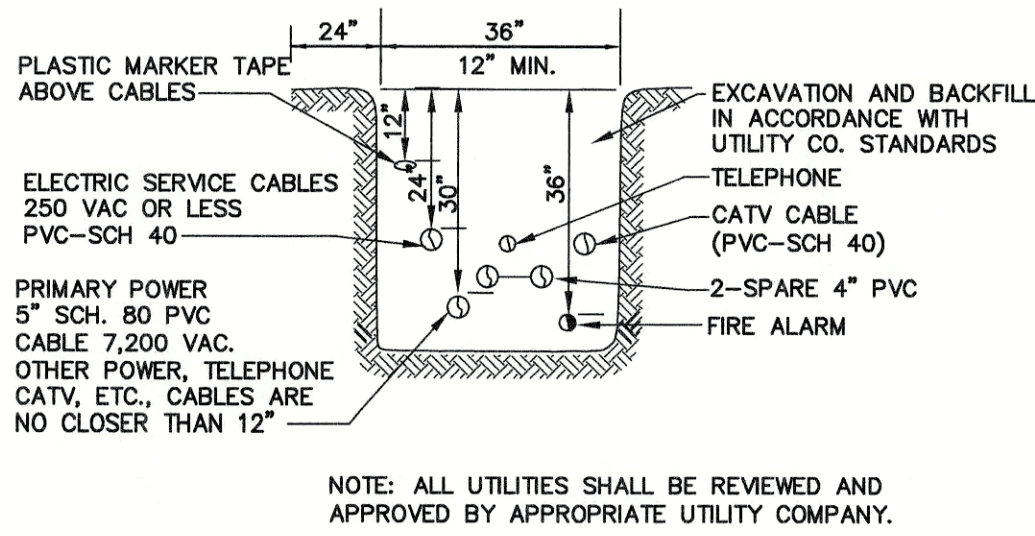
DRAWING No. **L2**
SHEET 7 OF 16
JBE PROJECT NO. 13153

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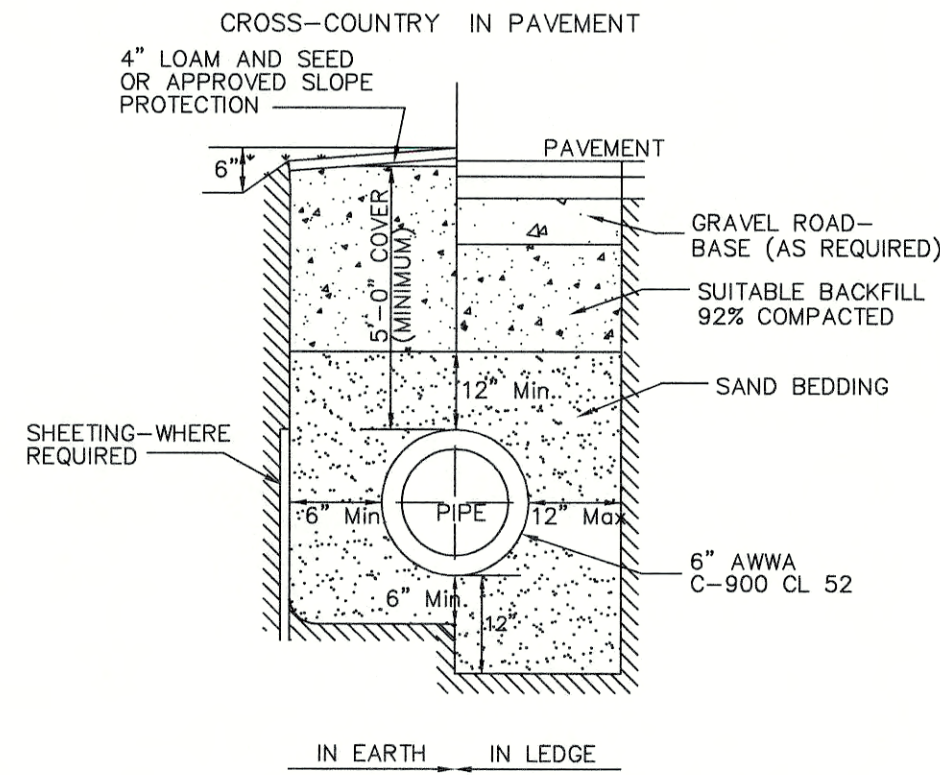
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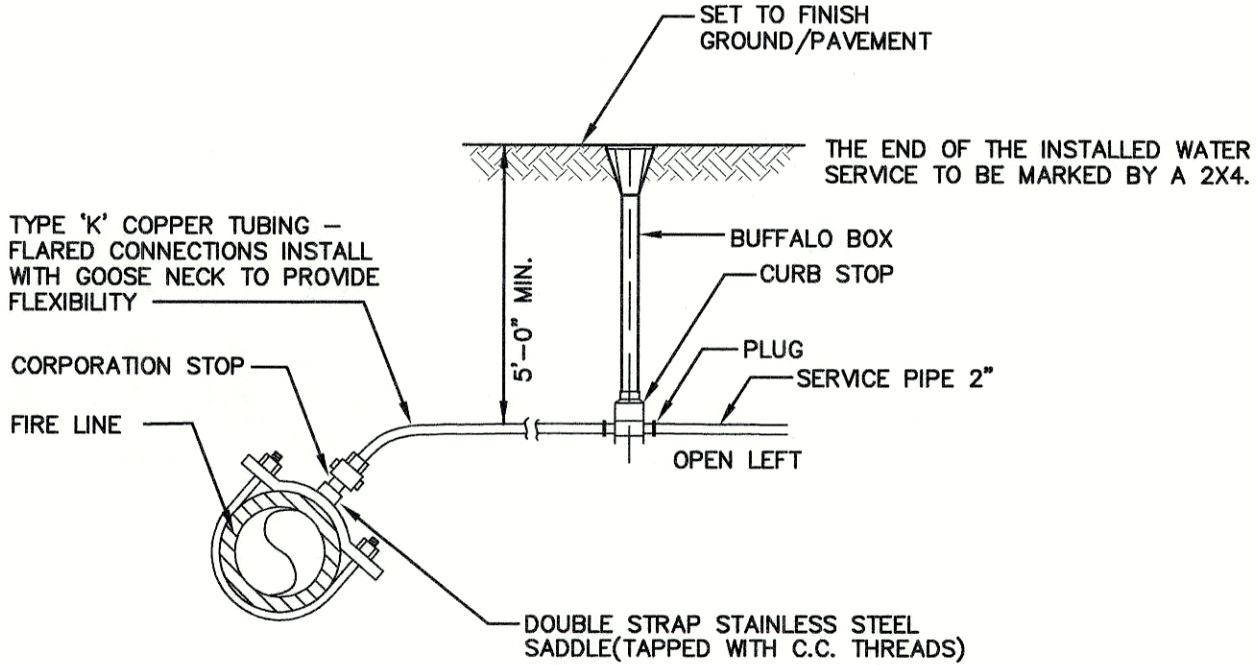
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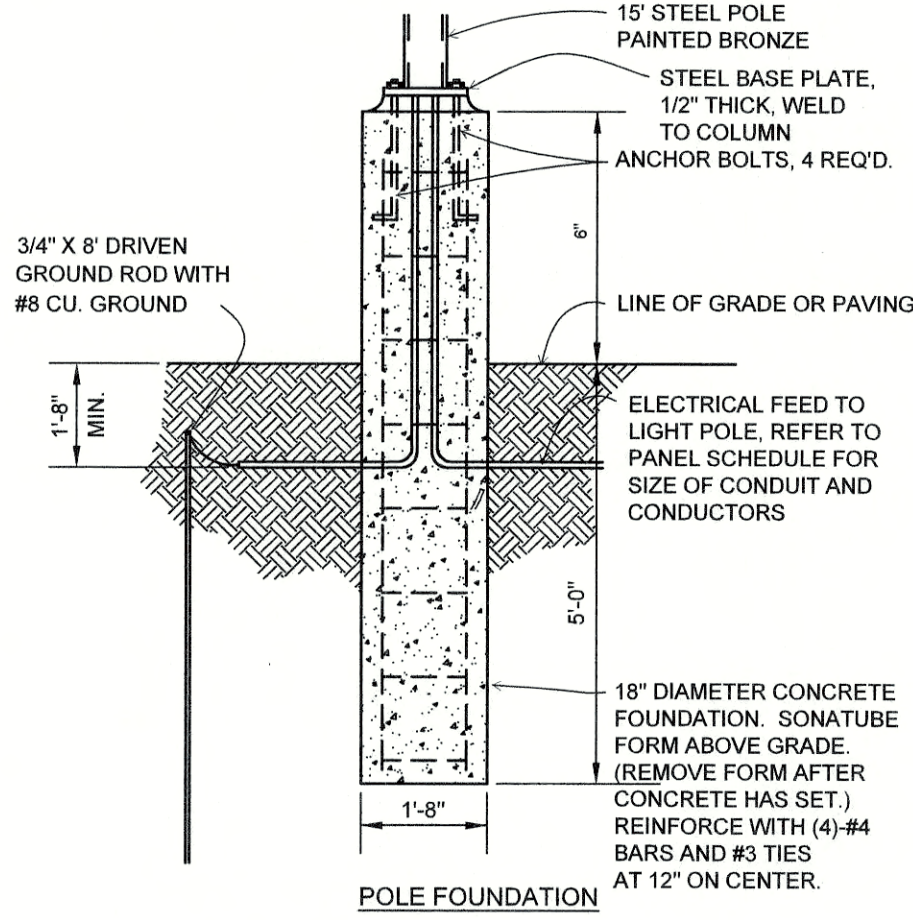
WATER LINE TRENCH DETAIL (RETAIL FIRE LINE)

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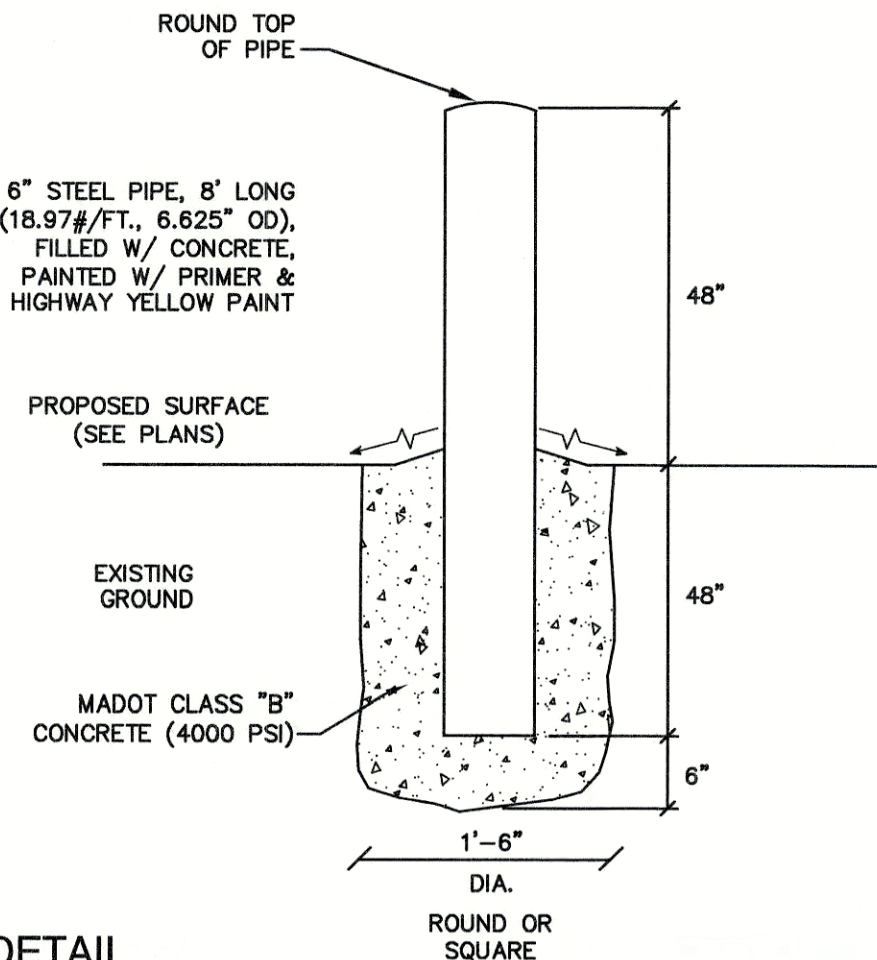
WATER SERVICE CONNECTION (DOMESTIC)

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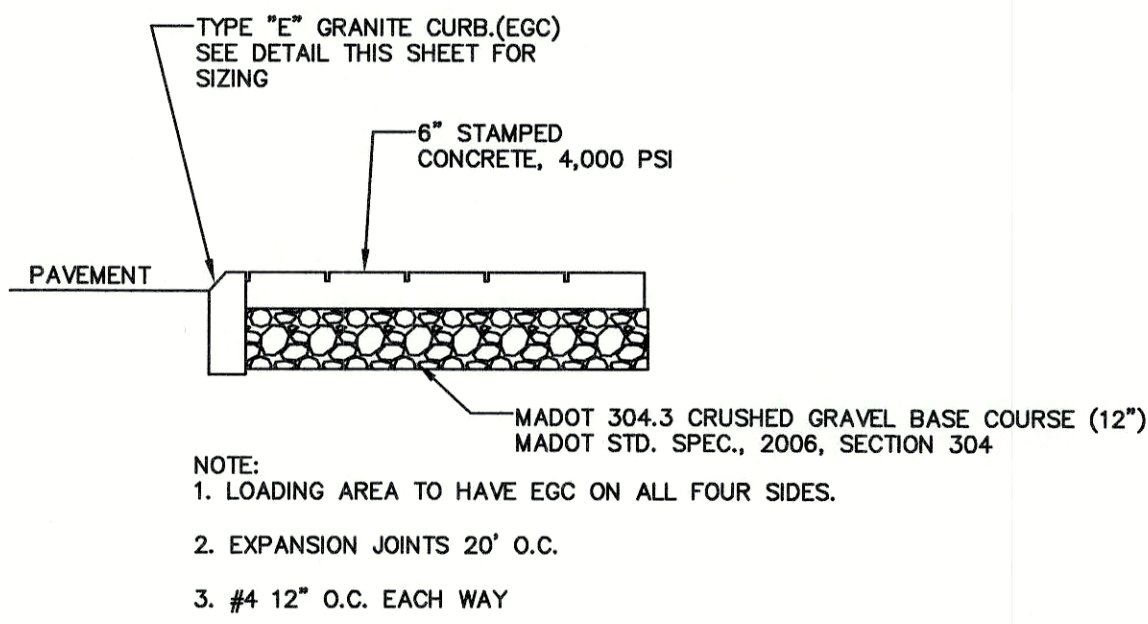
PARKING LOT LIGHTPOLE BASE

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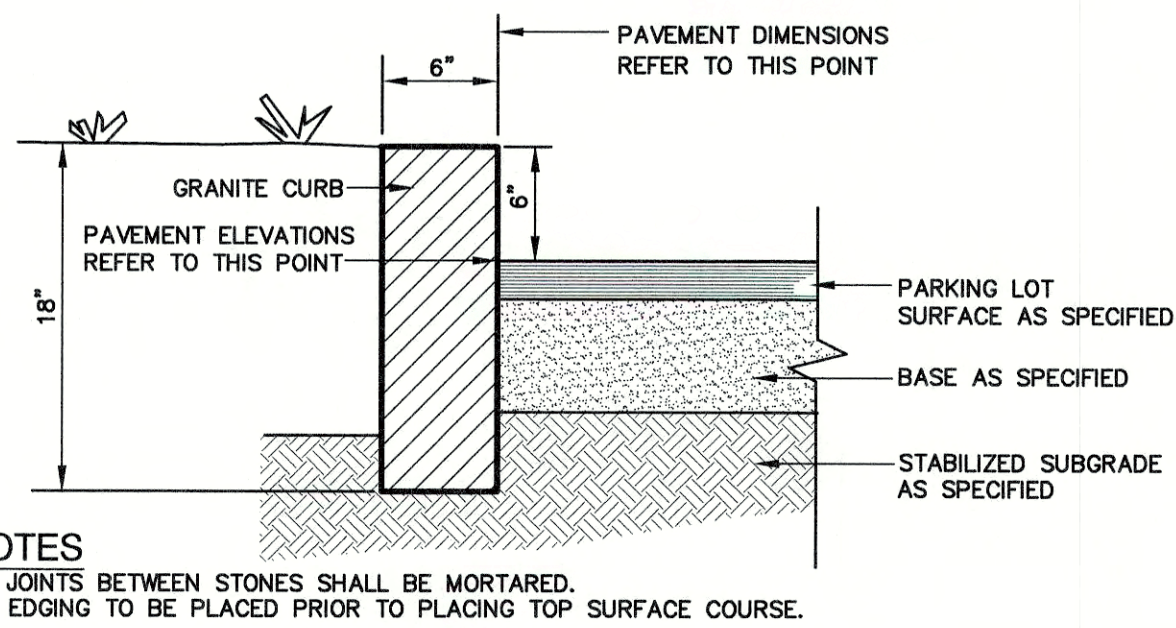
BOLLARD DETAIL

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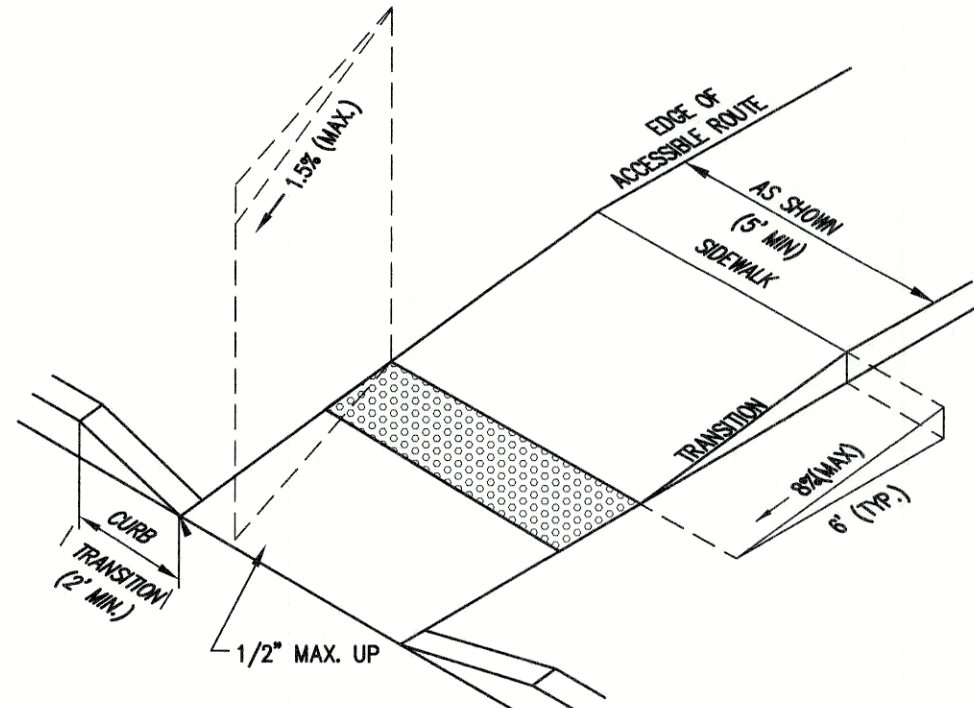
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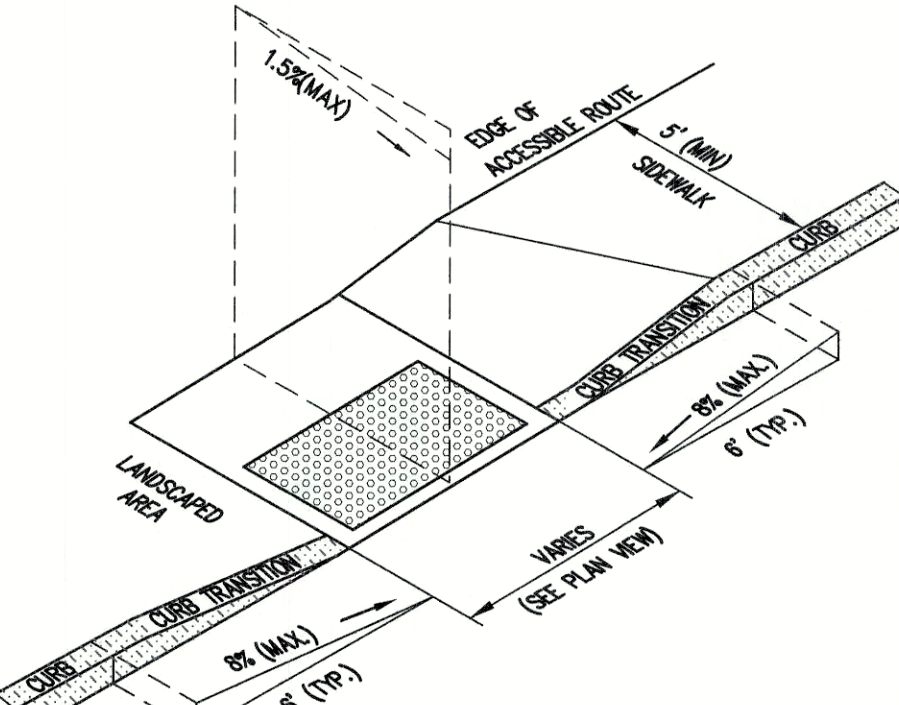
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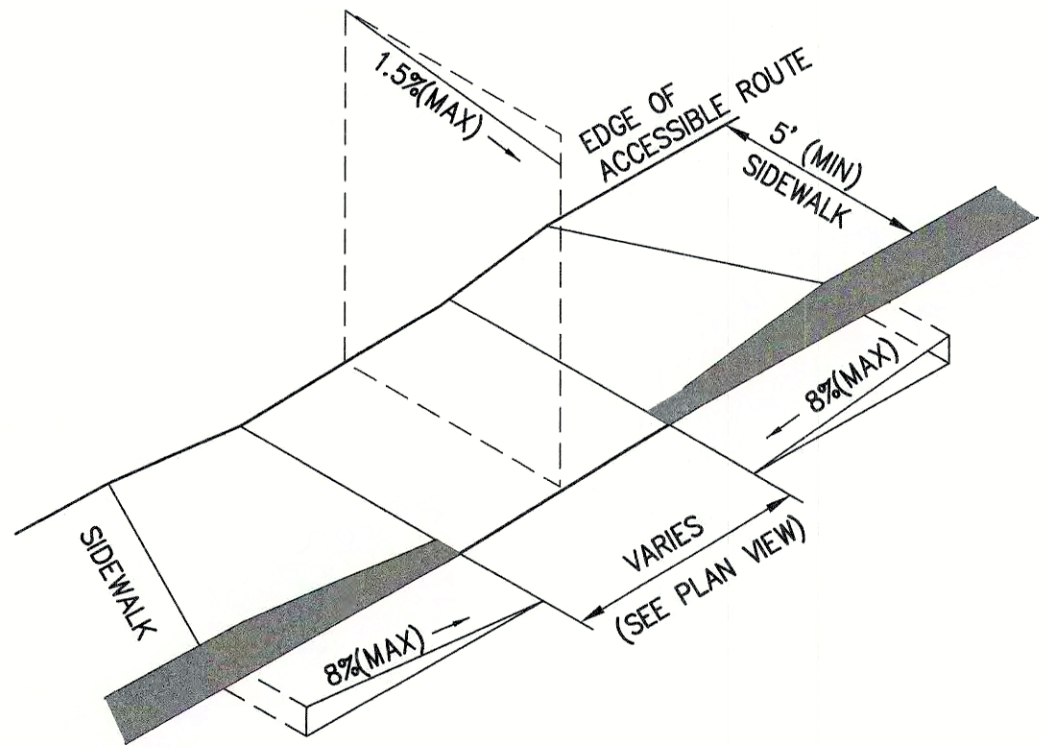
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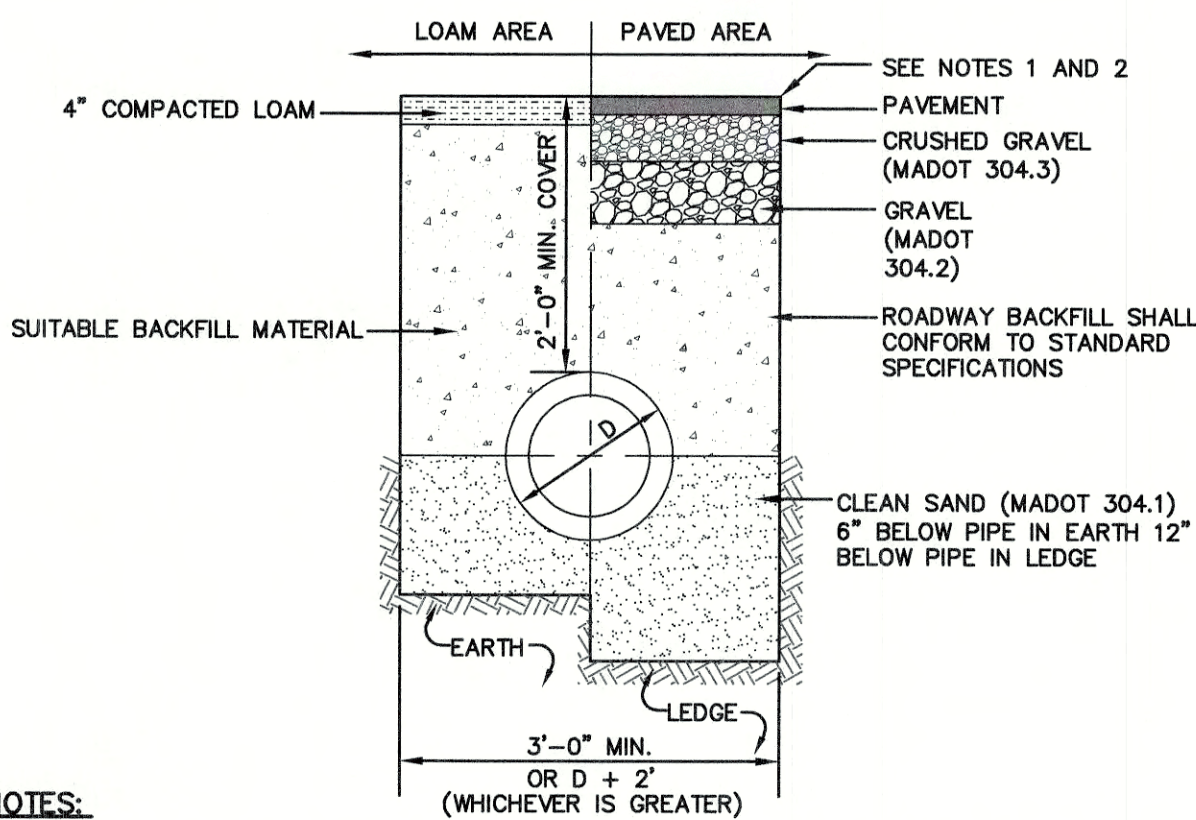
ACCESSIBLE CURB RAMP (TYPE 'I')

NOT TO SCALE



ACCESSIBLE CURB RAMP (TYPE 'A')

NOT TO SCALE



DRAINAGE TRENCH

NOT TO SCALE

APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:

Design: WGM	Draft: RMK	Date: 05/06/20
Checked: WGM	Scale: AS NOTED	Project No.: 13153
Drawing Name: 13153-PLAN.dwg		
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REV.	DATE	REVISION	BY
0	05/06/20	ISSUED FOR REVIEW	EMP

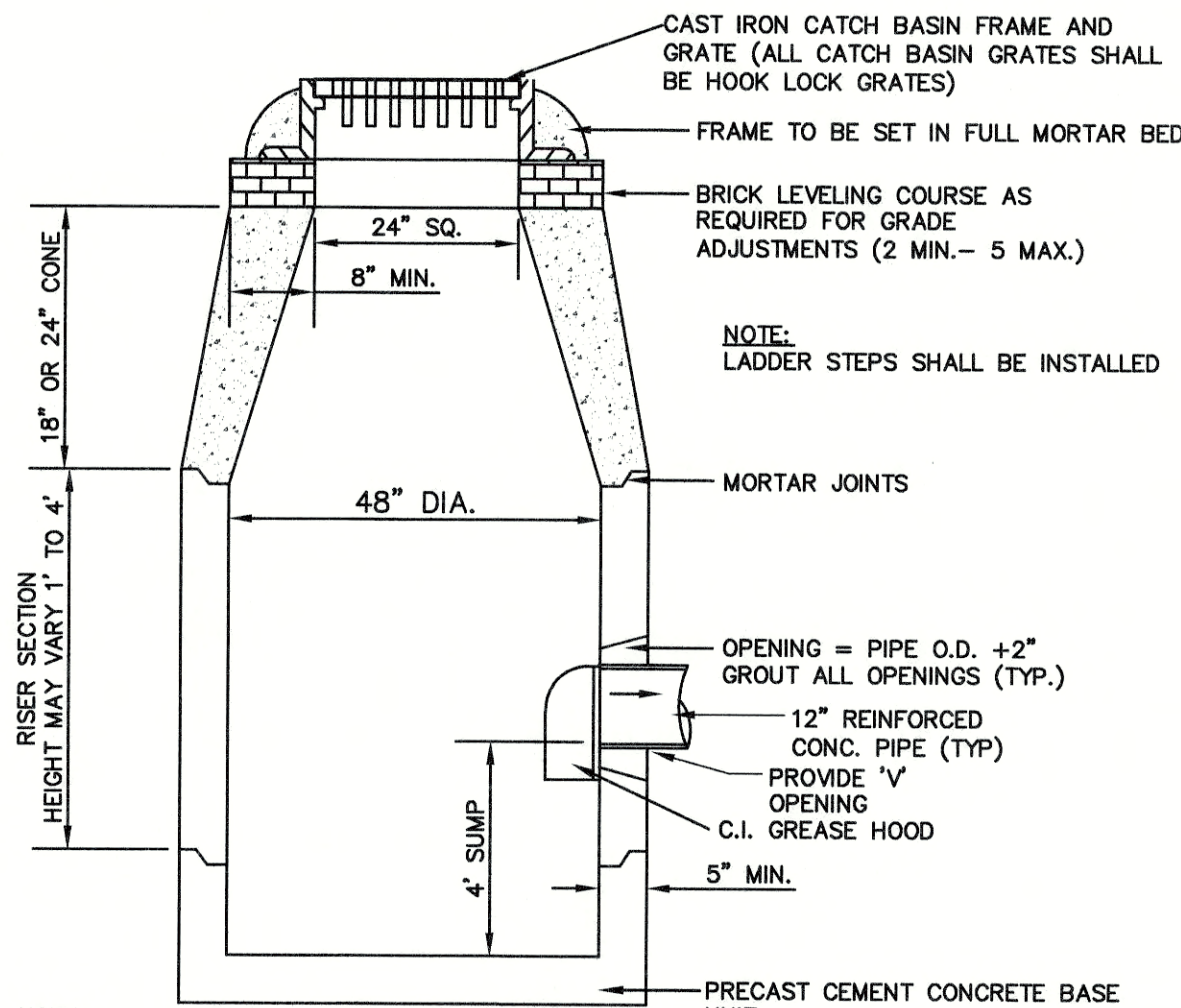
J/B
Jones & Beach Engineers, Inc.
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885

Designed and Produced in NH
Civil Engineering Services
603-772-4746
FAX: 603-772-0227
E-Mail: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	PROPOSED CENTRAL SQUARE 340 E CENTRAL STREET, FRANKLIN, MA
Owner of Record:	340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

DRAWING No.	D1
SHEET 8 OF 16	JBE PROJECT NO. 13153

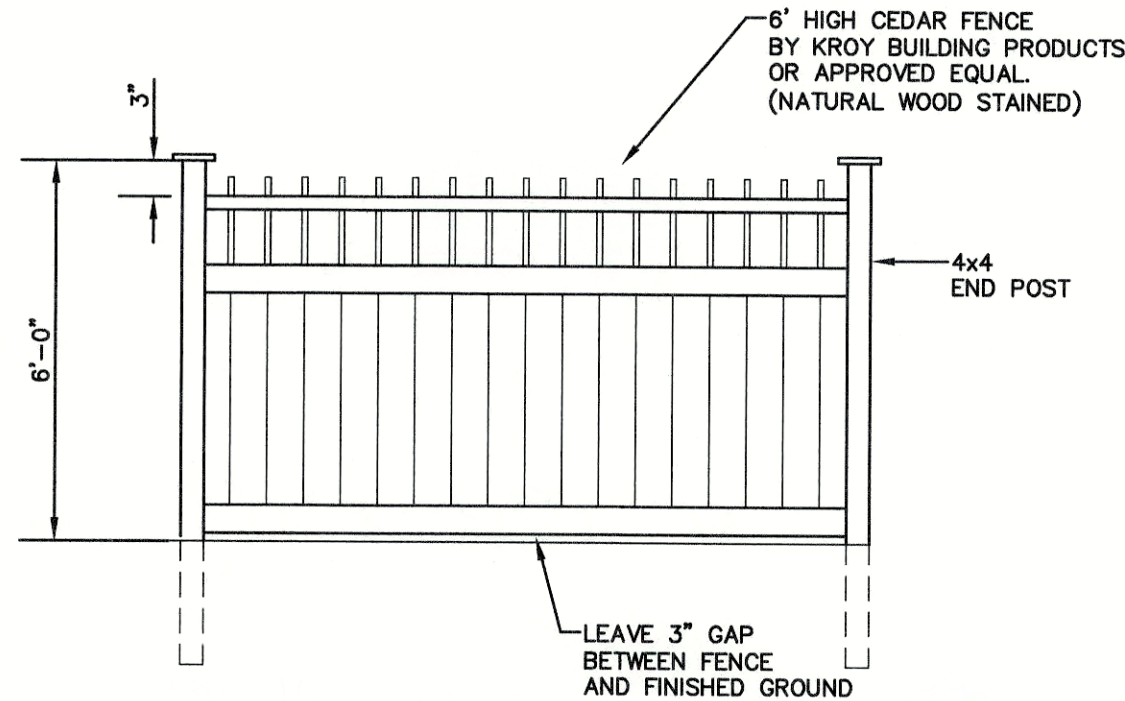
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NOTES:
1. HOODS ARE NOT TO BE INSTALLED IN CATCH BASINS WITHIN THE STATE HIGHWAY LAYOUT.
2. MIN. 0.12 SQ. IN. STEEL PER VERTICAL FOOT, PLACED ACCORDING TO AASHTO DESIGNATION M-199.

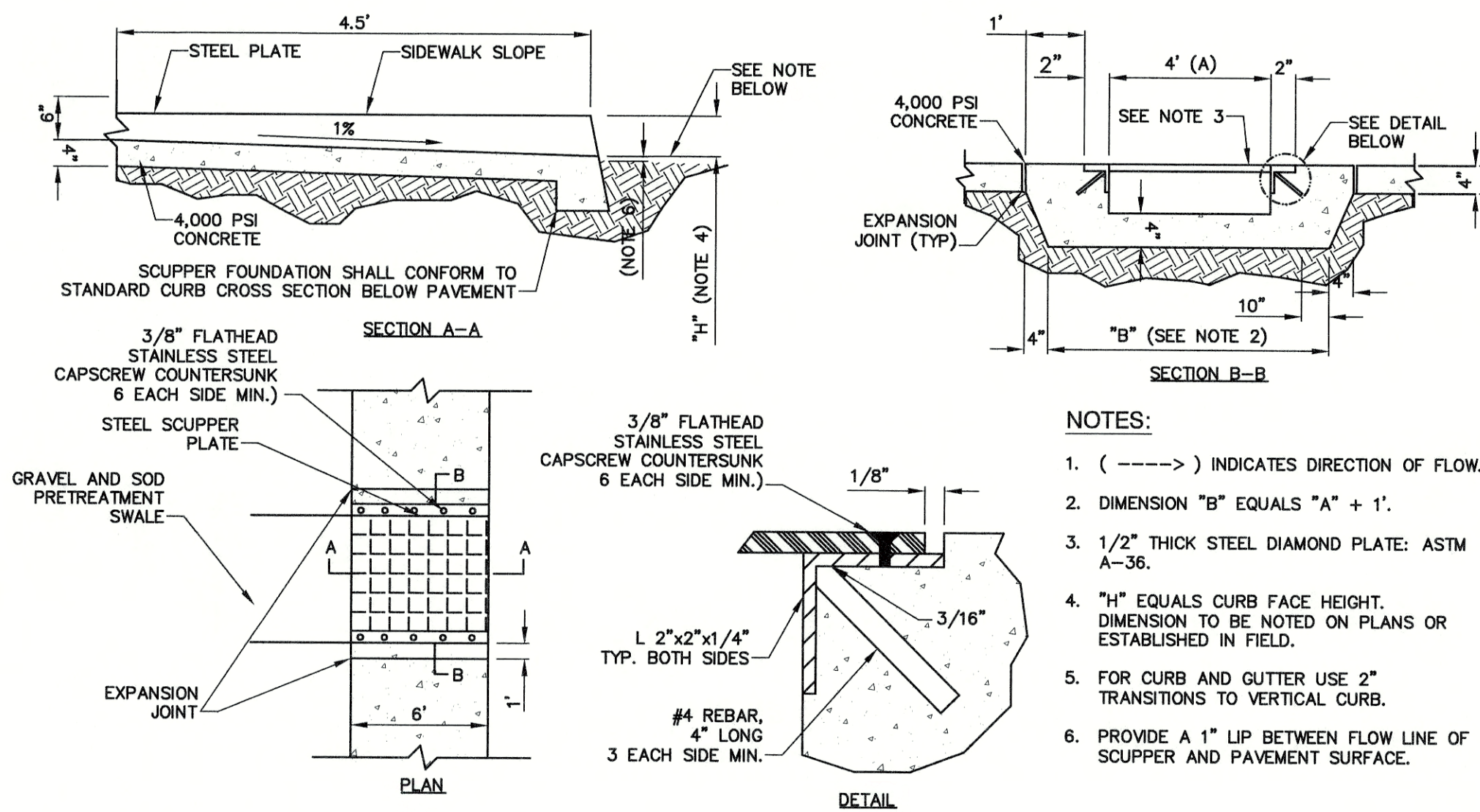
CATCH BASIN (MA)

NOT TO SCALE



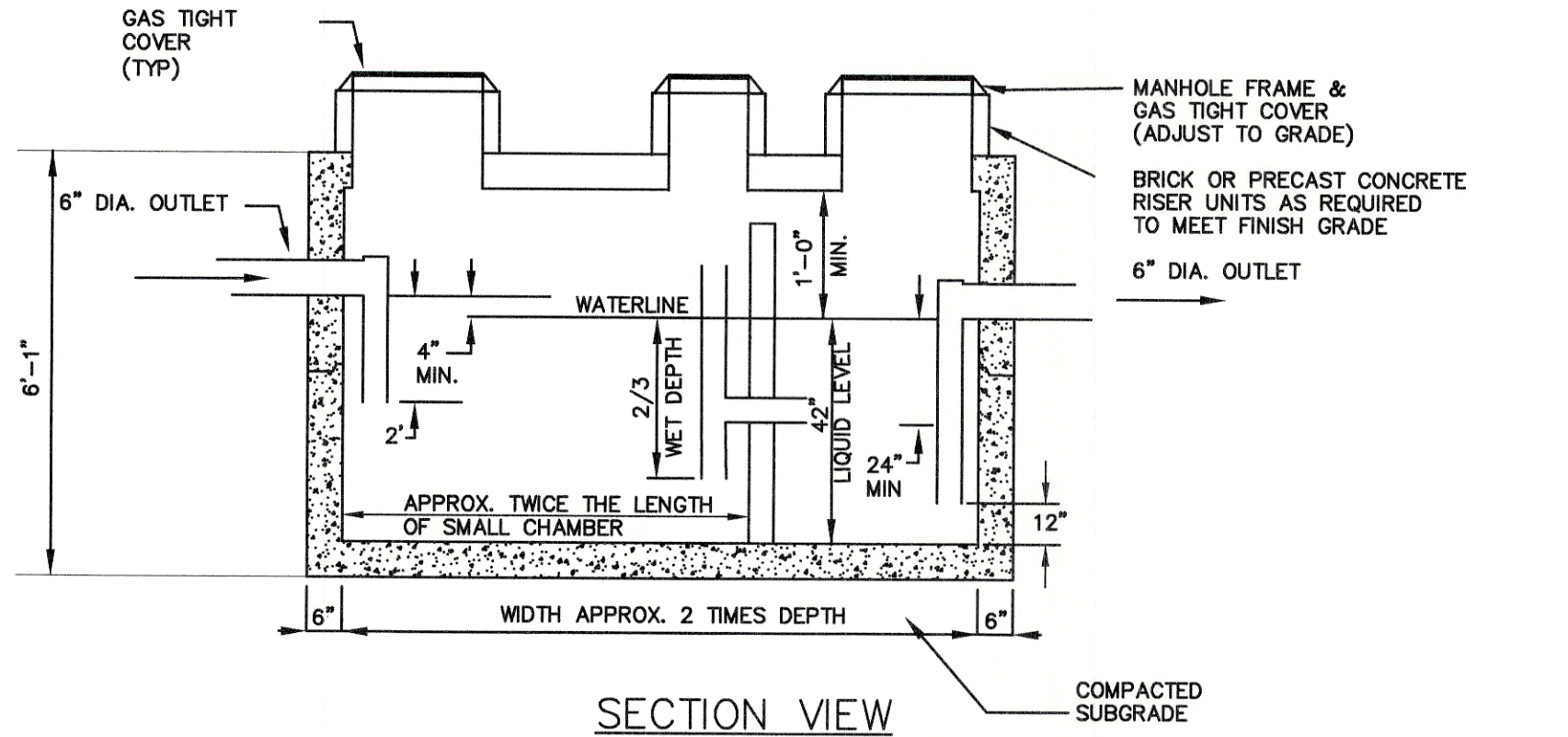
RETAINING WALL FENCE (OPEN BALUSTER TOP)

NOT TO SCALE



SIDEWALK SCUPPER PLATE DETAIL

NOT TO SCALE



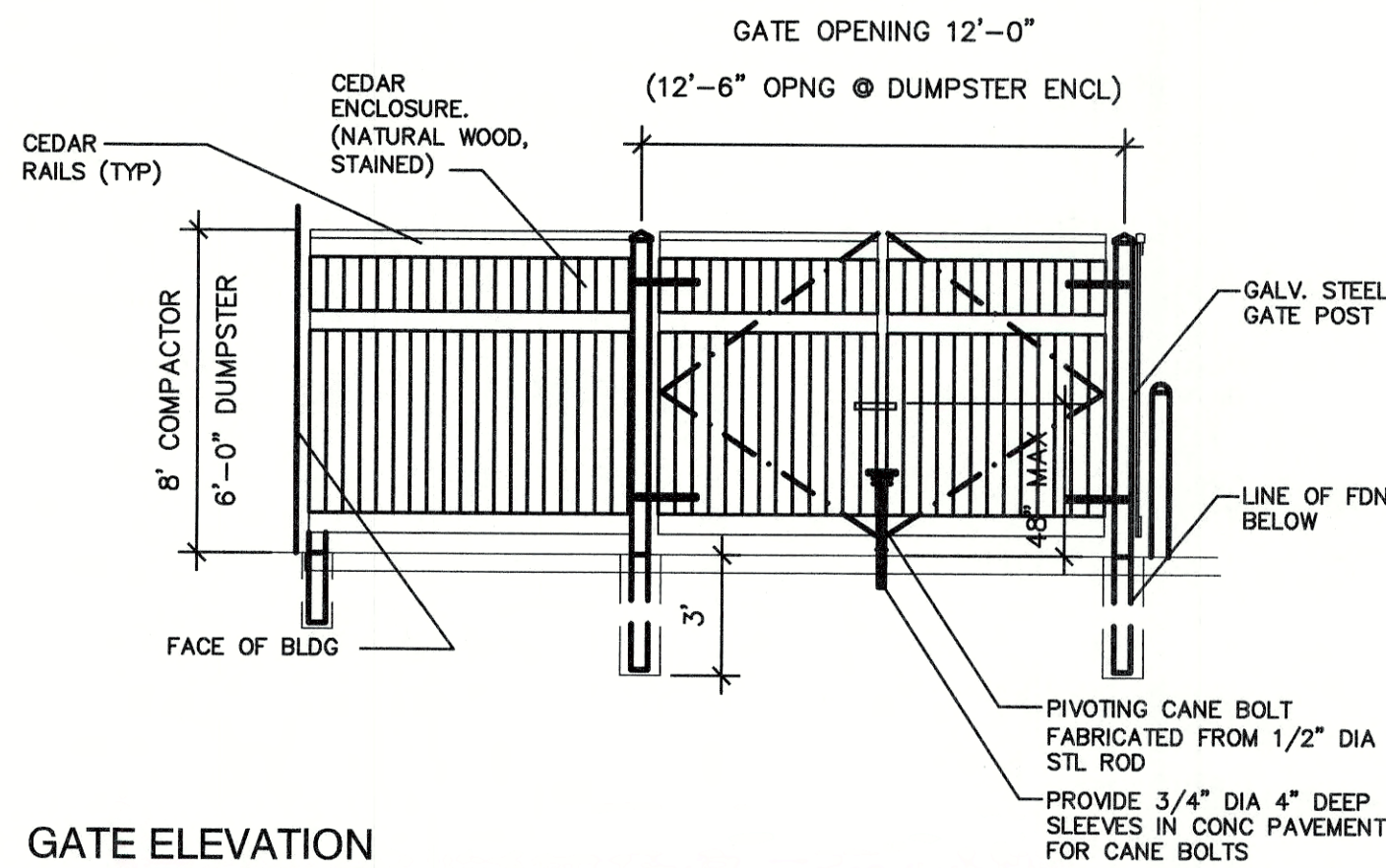
DESIGN DATA & GENERAL NOTES:

- (1) CONCRETE STRENGTH 3,000 PSI MIN. STRENGTH @ 28 DAYS
- (2) STEEL REINFORCEMENT ASTM A-615 GRADE 60
- (3) COVER TO STEEL - 1" MIN.
- (4) TANKS ARE DESIGNED TO MEET ASTM C858 AND ACI 318 WITH AASHTO HS-20 LOADING
- (5) EARTH COVER - 0 TO 4 FEET
- (6) CONSTRUCTION JOINT - SEALED WITH 1" DIA. BUTYL RUBBER OR EQUIVALENT
- (7) CONSTRUCTION TO CONFORM WITH ASTM C1613

NOTE: PRECAST CONCRETE GREASE TRAP MUST CONFORM TO ALL STATE & LOCAL PLUMBING CODES

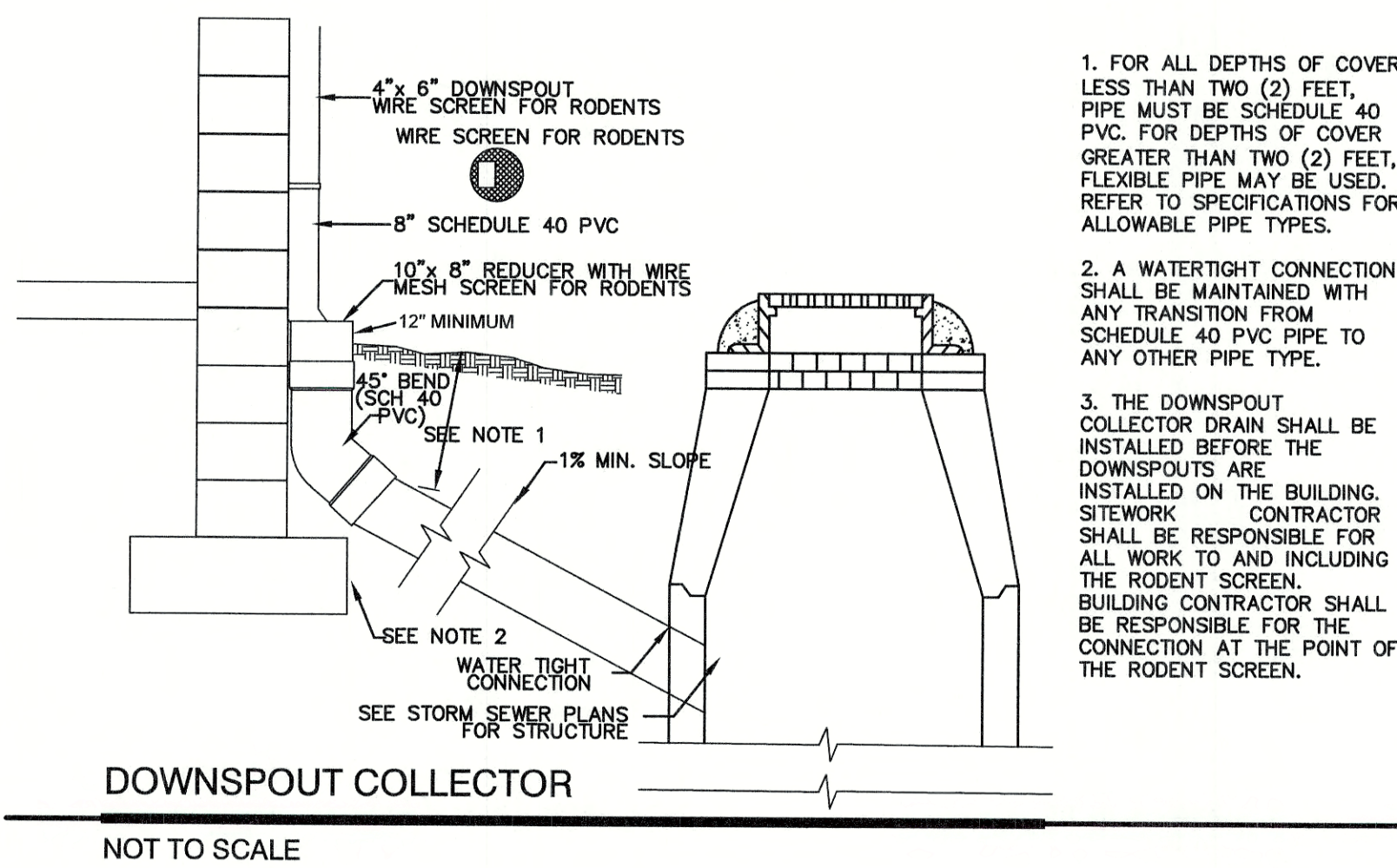
1,500 GALLON GREASE TRAP (H-20)

NOT TO SCALE



GATE ELEVATION

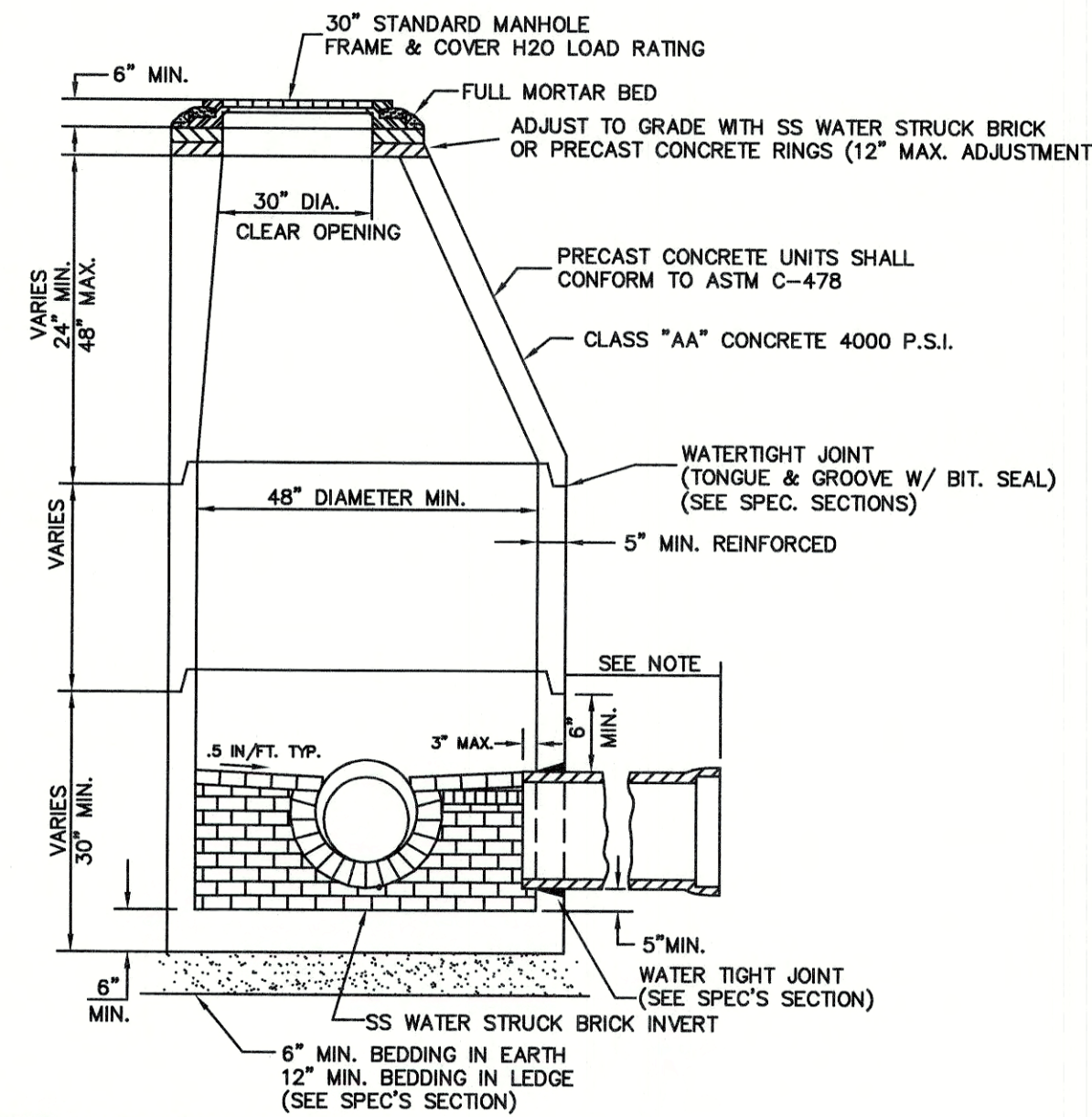
NOT TO SCALE



1. FOR ALL DEPTHS OF COVER LESS THAN TWO (2) FEET, PIPE MUST BE SCHEDULE 40 PVC. FOR DEPTHS OF COVER GREATER THAN TWO (2) FEET, FLEXIBLE PIPE MAY BE USED. REFER TO SPECIFICATIONS FOR ALLOWABLE PIPE TYPES.
2. A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.
3. THE DOWNSPOUT COLLECTOR DRAIN SHALL BE INSTALLED BEFORE THE DOWNSPOUTS ARE INSTALLED ON THE BUILDING. SITEMARK CONTRACTOR SHALL BE RESPONSIBLE FOR ALL WORK TO AND INCLUDING THE RODENT SCREEN. BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONNECTION AT THE POINT OF THE RODENT SCREEN.

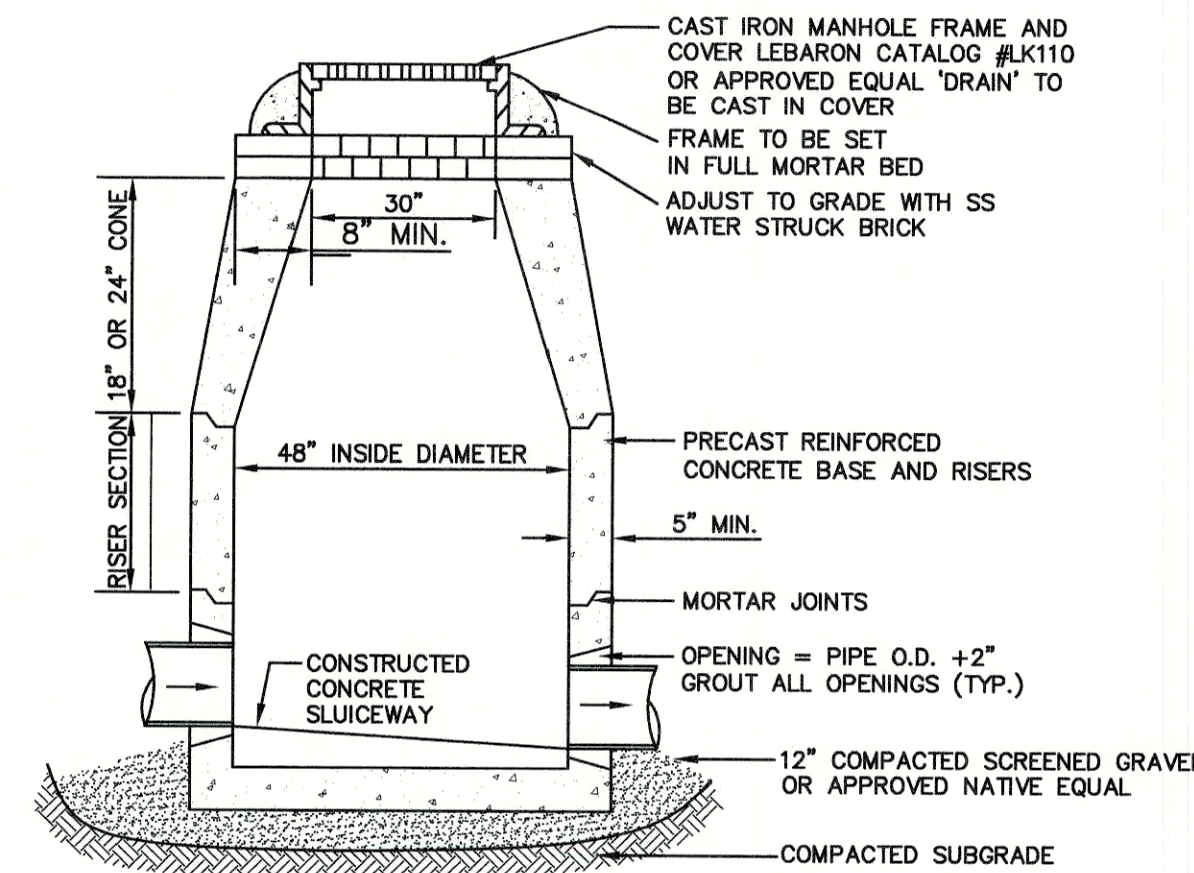
DOWNSPOUT COLLECTOR

NOT TO SCALE



SEWER MANHOLE DETAIL

NOT TO SCALE



DRAIN MANHOLE (MA)

NOT TO SCALE

APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:

Design: WGM Draft: RMK Date: 05/06/20
Checked: WGM Scale: AS NOTED Project No.: 13153
Drawing Name: 13153-PLAN.dwg

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0	05/06/20	ISSUED FOR REVIEW	EMP

Designed and Produced in NH

J/B Jones & Beach Engineers, Inc.

85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885

Civil Engineering Services

603-772-4746
FAX: 603-772-0227
E-Mail: JBE@JONESANDBEACH.COM

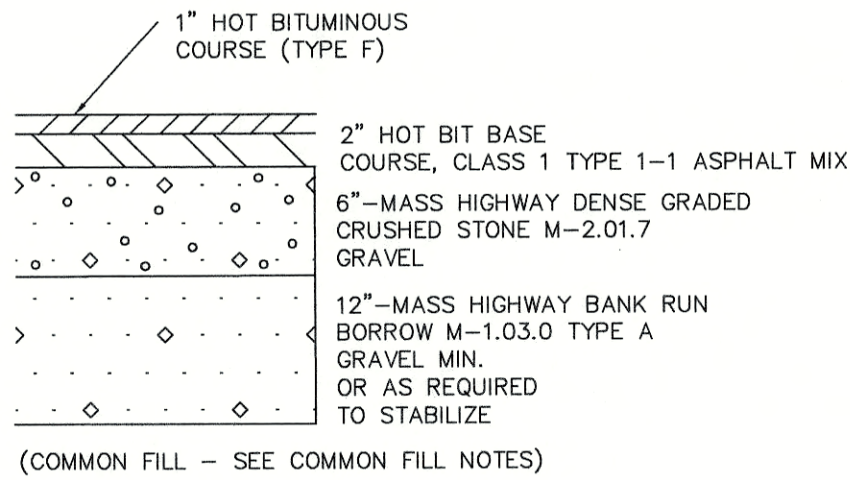
Plan Name: **DETAIL SHEET**
Project: **PROPOSED CENTRAL SQUARE
340 E CENTRAL STREET, FRANKLIN, MA**
Owner of Record: 340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

DRAWING No.

D2

SHEET 9 OF 16
JBE PROJECT NO. 13153

E:\Land Projects\3\13153-FRANKLIN-300-EAST-CENTRAL-STREET-TOPSFIELD-ASSOCIATES\dwg\13153-PLAN.dwg 1/26/2017 9:04:12 AM EST

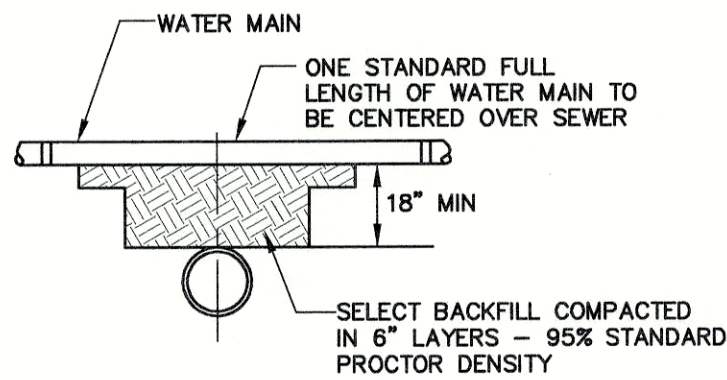


COMMON FILL	
SIEVE SIZE	PERCENT PASSING BY WEIGHT
6-INCH	100
3/4-INCH	60-100
No. 4	20-85
No. 200	0-25

- NOTES:
- FOR USE AS COMMON/SUBGRADE FILL IN PARKING AREAS AND ROADWAY EMBANKMENTS.
 - FOR USE AS FOUNDATION WALL BACKFILL IF USED IN CONJUNCTION WITH A BOND BREAK AND SIZED/SCREENED TO 3-INCH MINUS.
 - PLACE IN LIFTS NOT EXCEEDING 12 INCHES.
 - MAXIMUM STONE SIZE SHOULD NOT EXCEED 1/2 THE ACTUAL LIFT THICKNESS.
 - COMPACT TO AT LEAST 92% RELATIVE COMPACTION PER ASTM D1557 WHEN PLACED AS SUBGRADE FILL IN PARKING AREAS OR ROADWAY EMBANKMENTS.
 - COMPACT TO AT LEAST 95% RELATIVE COMPACTION PER ASTM D1557 WHEN PLACED AS FOUNDATION WALL BACKFILL IN CONJUNCTION WITH A BOND BREAK.
 - COMPACT EFFORTS SHOULD BE VERIFIED BY FIELD DENSITY TESTING.

TYPICAL PAVEMENT SECTION

NOT TO SCALE

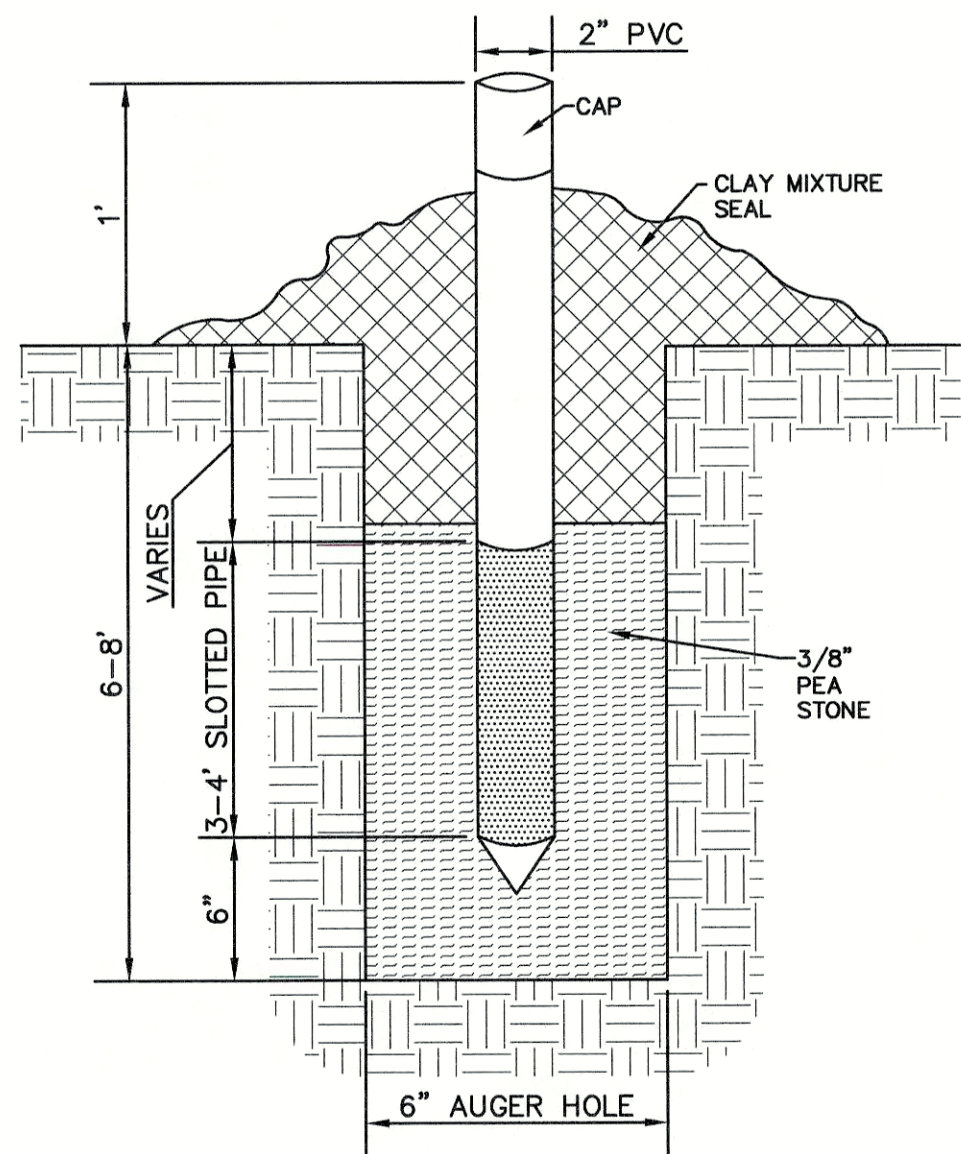


SEPARATION NOTES:

- WATER MAINS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED SEWERS. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE.
- WATER MAINS CROSSING SEWERS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF 18 INCHES BETWEEN PIPES. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.

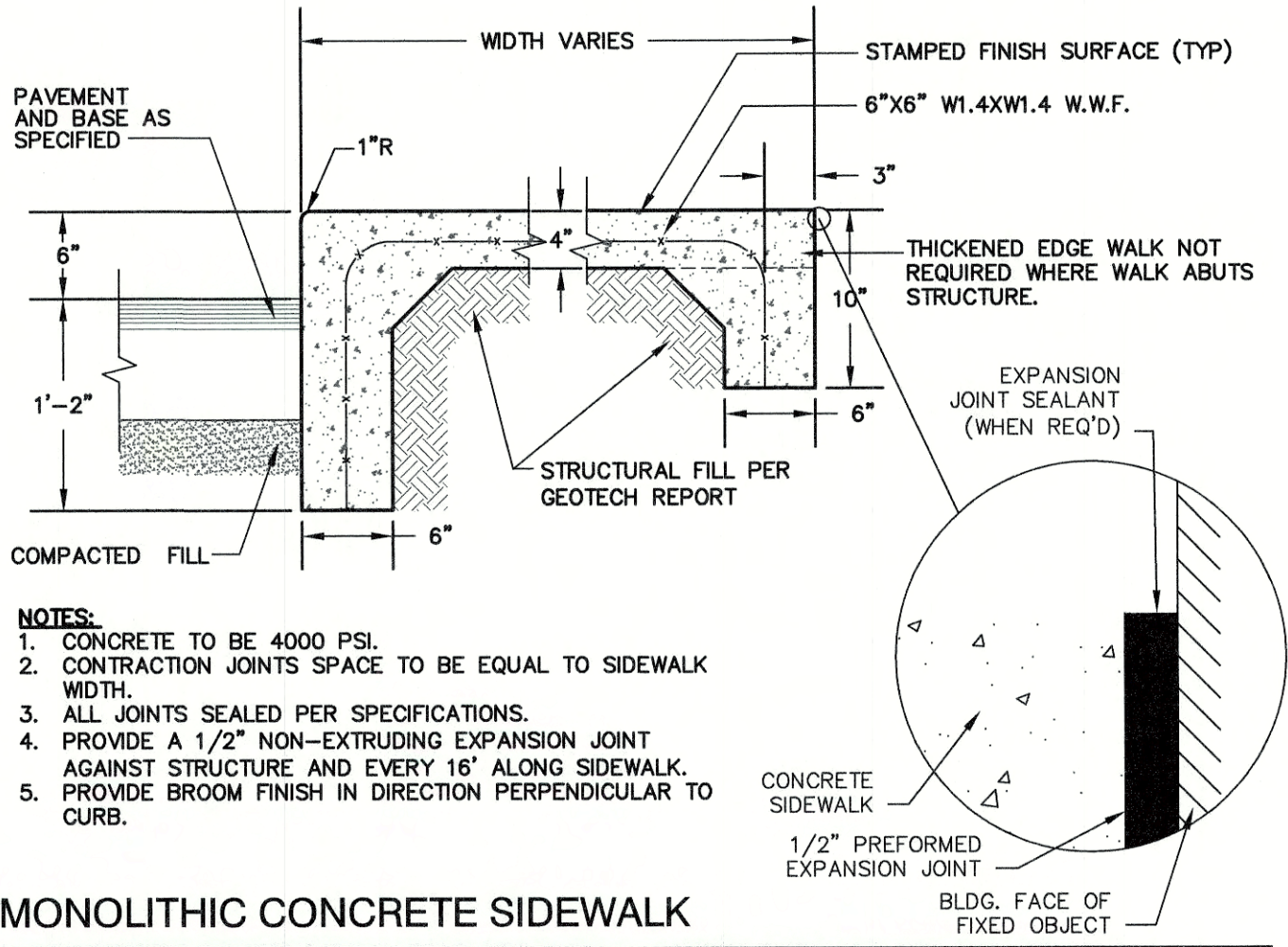
TYPICAL WATER / SEWER SEPARATION

NOT TO SCALE



SHALLOW MONITORING WELL DETAIL

NOT TO SCALE

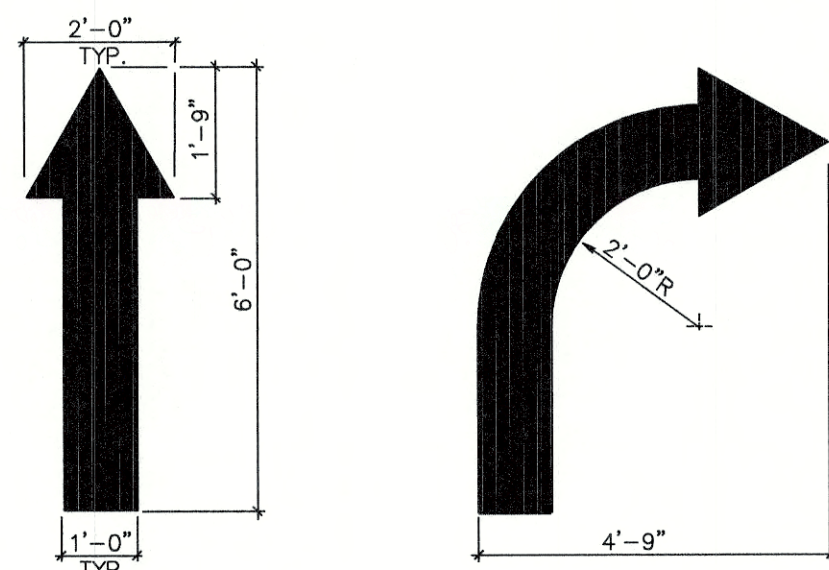


NOTES:

- CONCRETE TO BE 4000 PSI.
- CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
- ALL JOINTS SEALED PER SPECIFICATIONS.
- PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
- PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

MONOLITHIC CONCRETE SIDEWALK

NOT TO SCALE

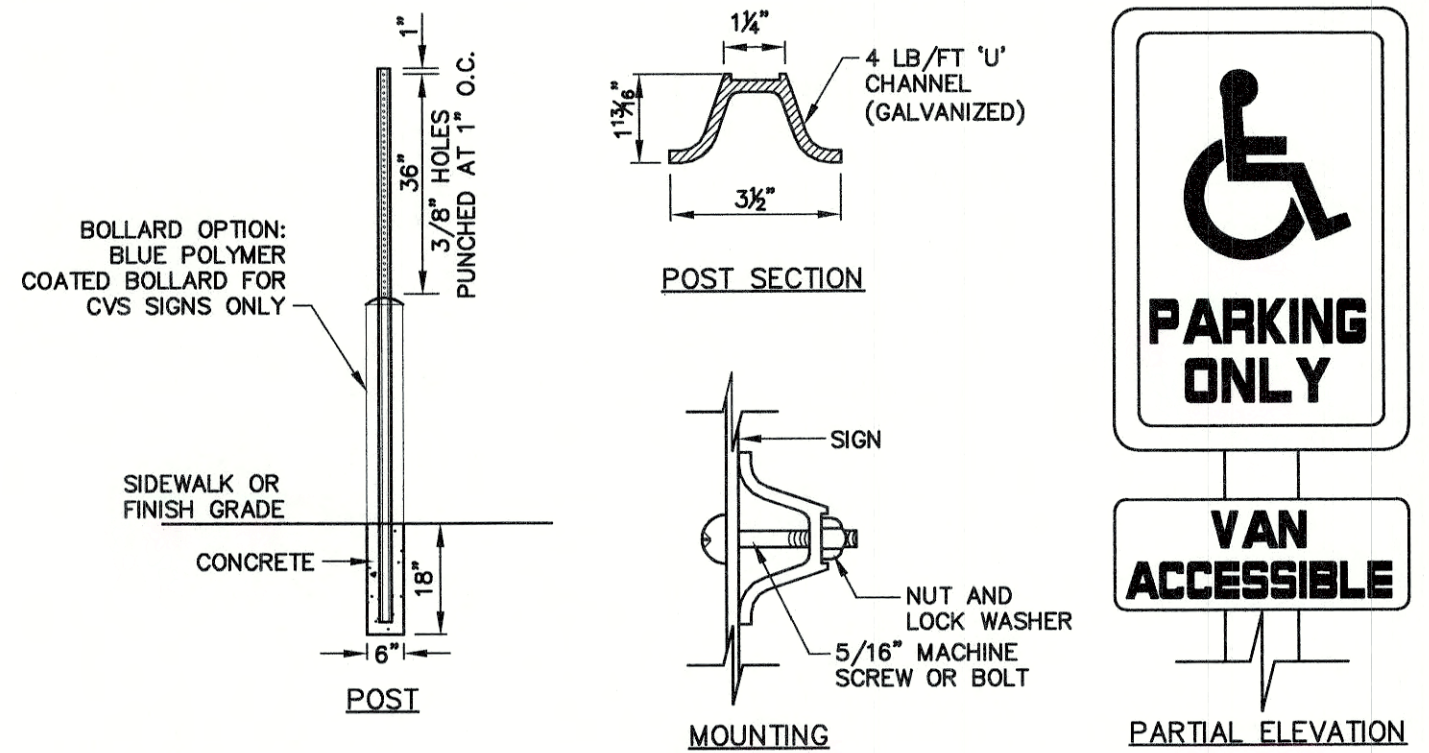


ALL FLOW ARROWS TO BE SOLID YELLOW REFLECTIVE TRAFFIC PAINT AS PER DIMENSIONS ABOVE.

REVERSE ARROWS FOR OPPOSITE DIRECTION OF FLOW.

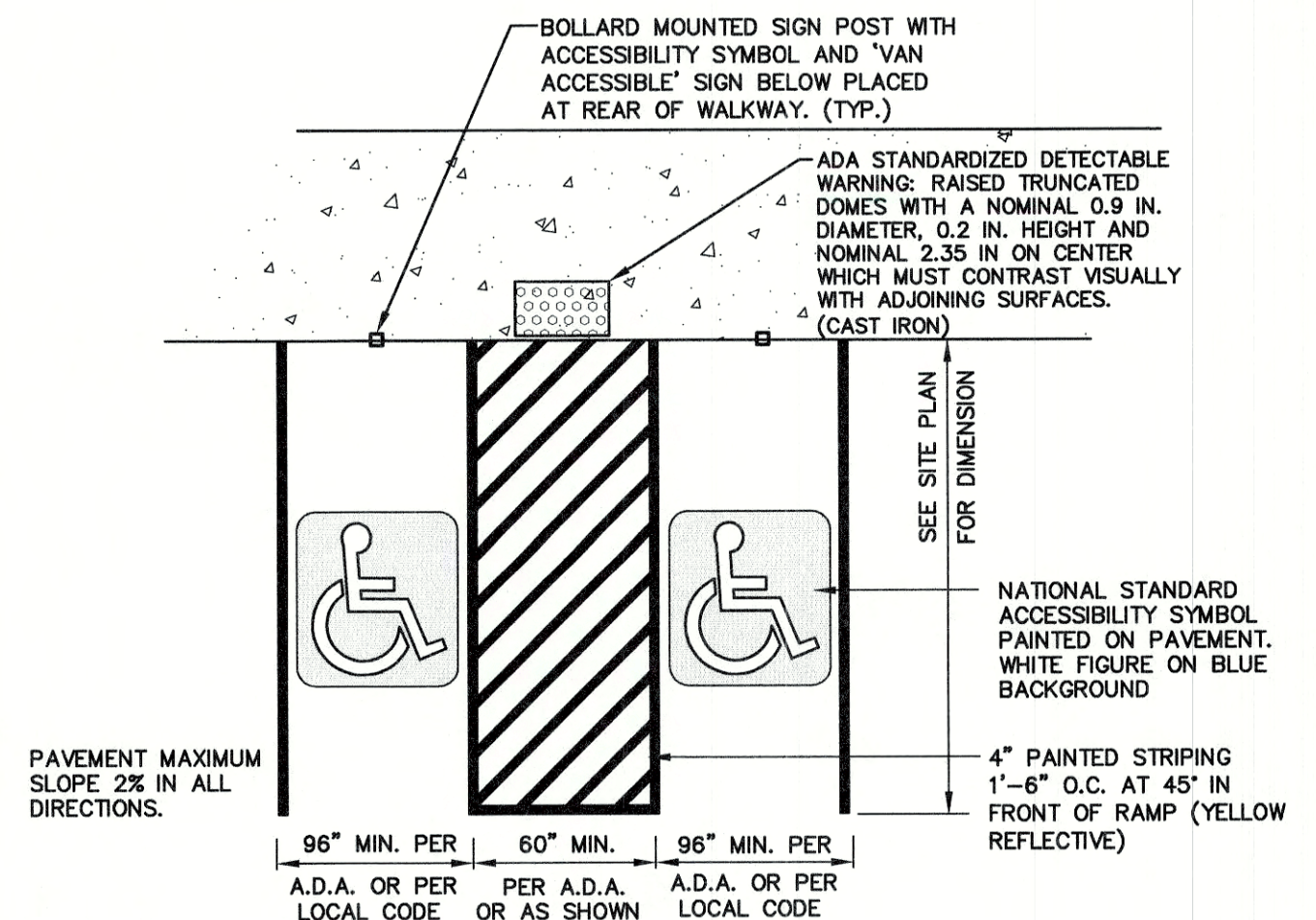
PAINTED TRAFFIC ARROWS

NOT TO SCALE



HANDICAP SIGN DETAILS

NOT TO SCALE



HANDICAP PARKING LAYOUT

NOT TO SCALE

APPROVED - FRANKLIN, MA
PLANNING BOARD

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Design: WGM Draft: RMK Date: 05/06/20
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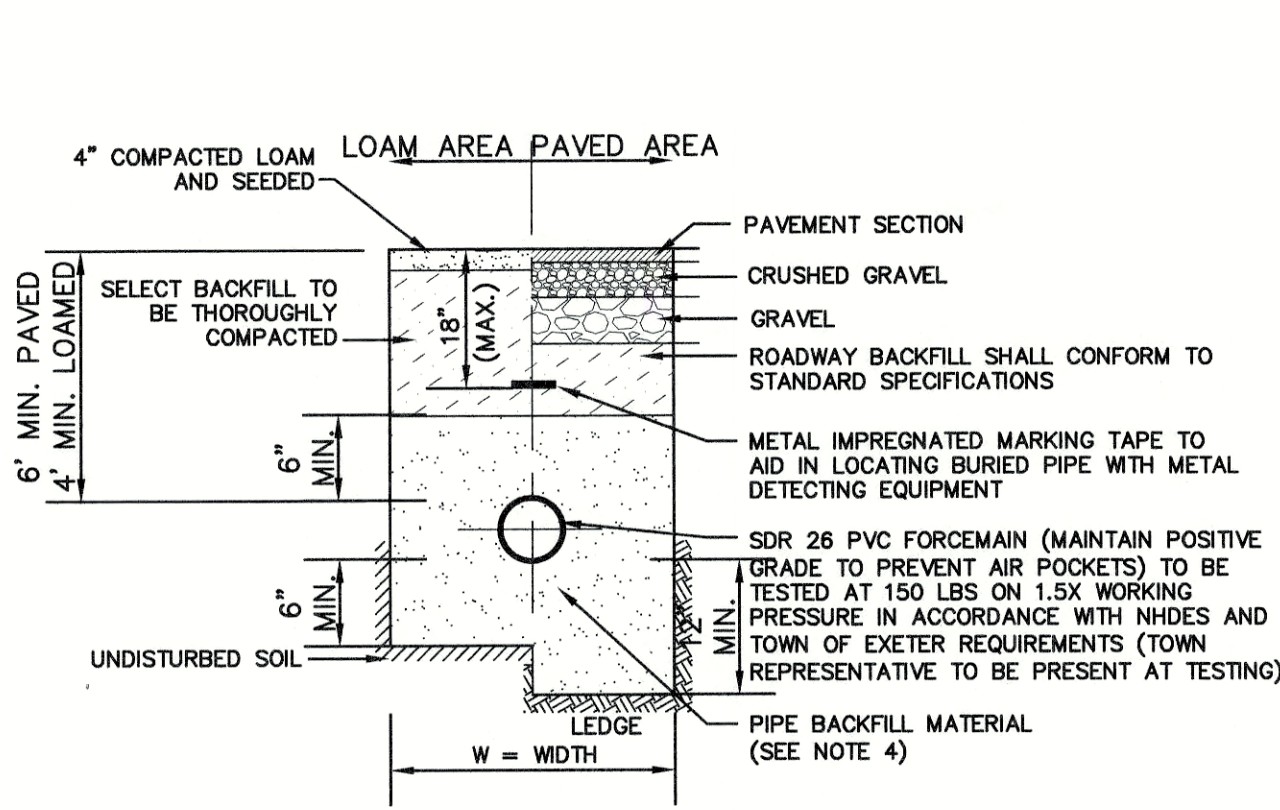


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85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-Mail: JBE@JONESANDBEACH.COM

Plan Name:	DETAIL SHEET
Project:	PROPOSED CENTRAL SQUARE 340 E CENTRAL STREET, FRANKLIN, MA
Owner of Record:	340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

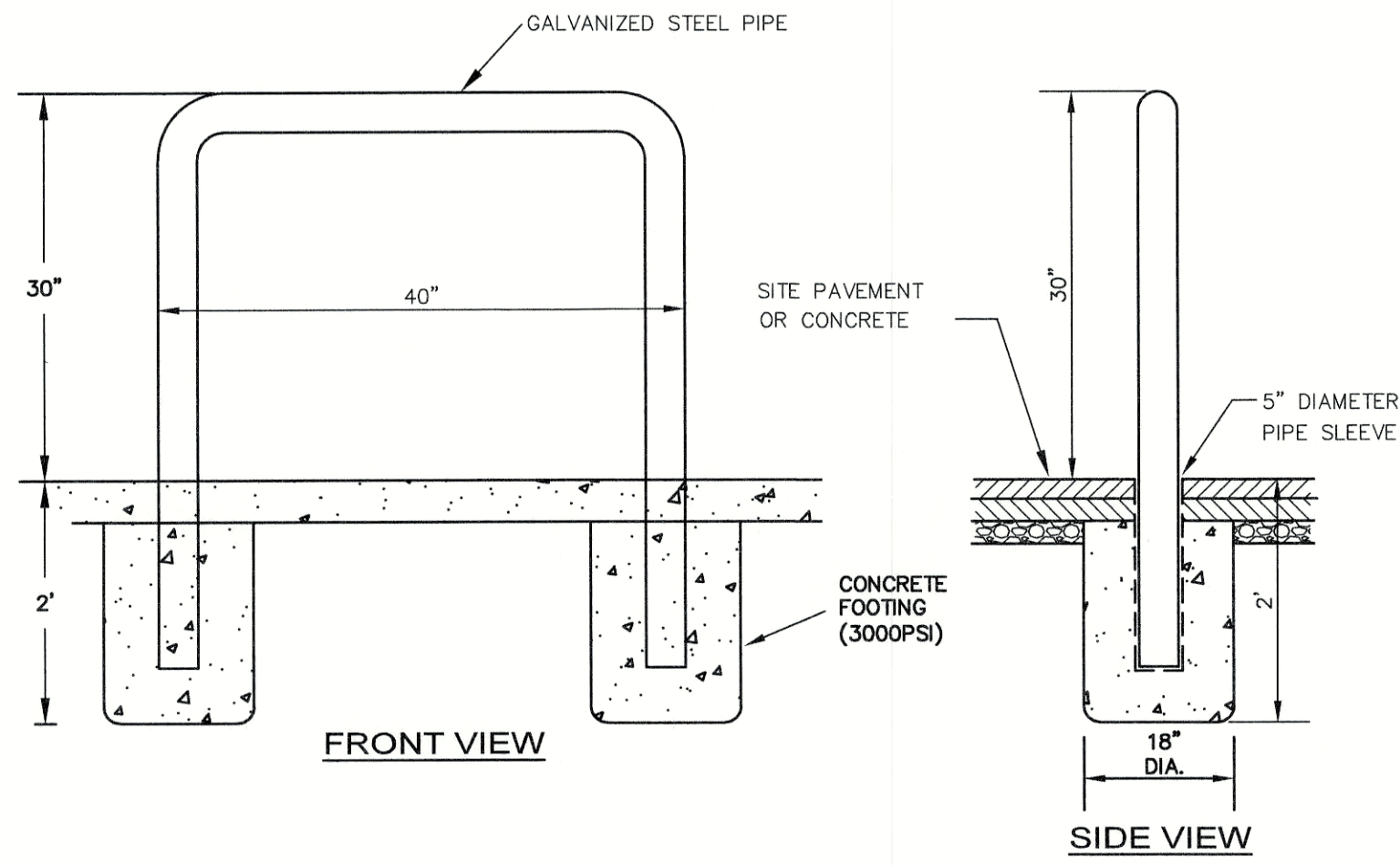
DRAWING No.
D3
SHEET 10 OF 16
JBE PROJECT NO. 13153



- NOTES:
1. PAVEMENT REPAIR IN EXISTING ROADWAYS SHALL CONFORM TO STREET OPENING REGULATIONS.
 2. NEW ROADWAY CONSTRUCTION SHALL CONFORM TO SUBDIVISION SPECIFICATIONS.
 3. W=MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12" INCHES ABOVE THE PIPE. W SHALL BE NO MORE THAN 36"
 4. SAND BEDDING AND BLANKET SHALL BE CLEAN SAND FREE FROM ORGANIC MATTER, SO GRADED THAT 90-100% PASSES A 1/2 INCH SIEVE AND NO MORE THAN 15% WILL PASS A #200 SIEVE.

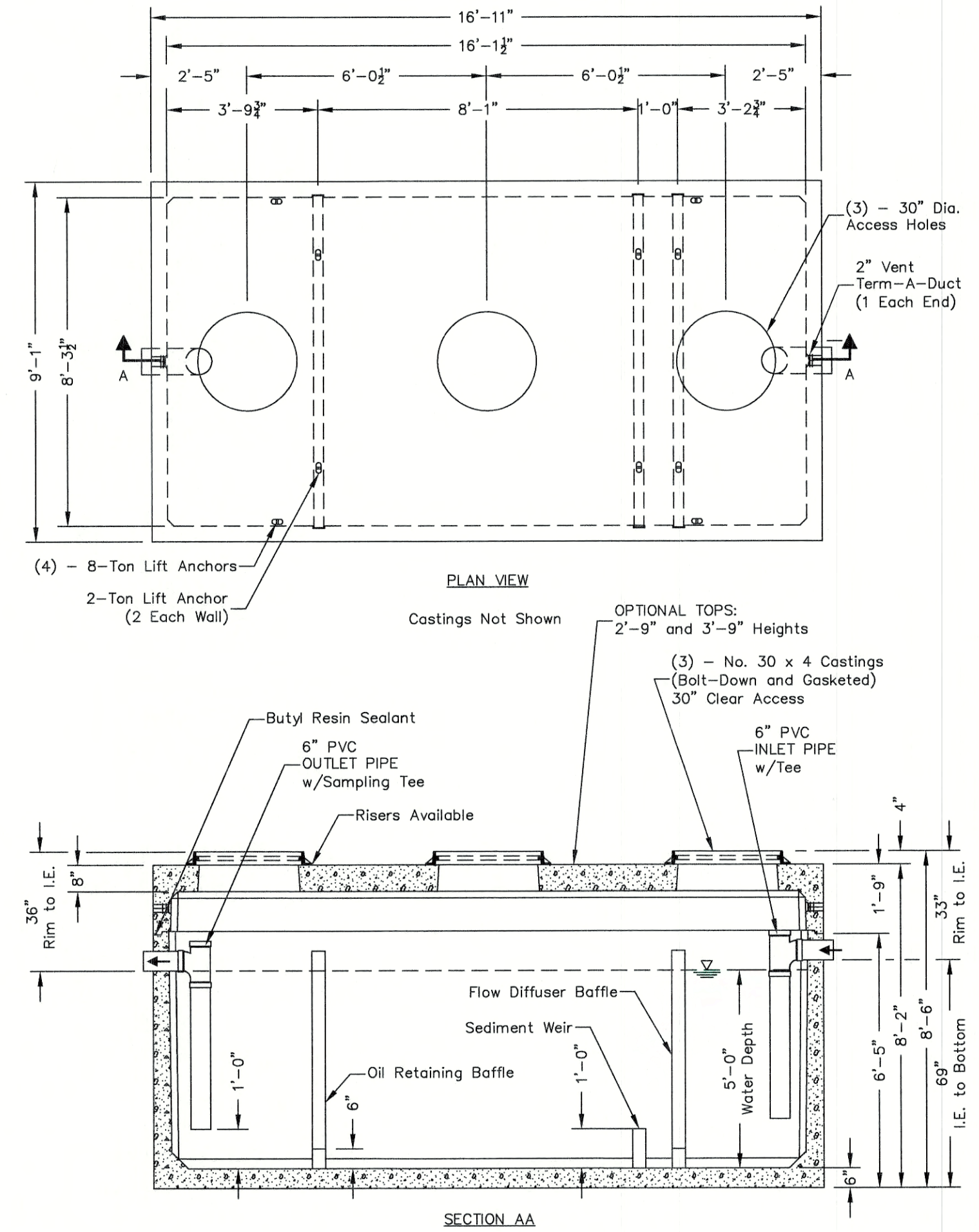
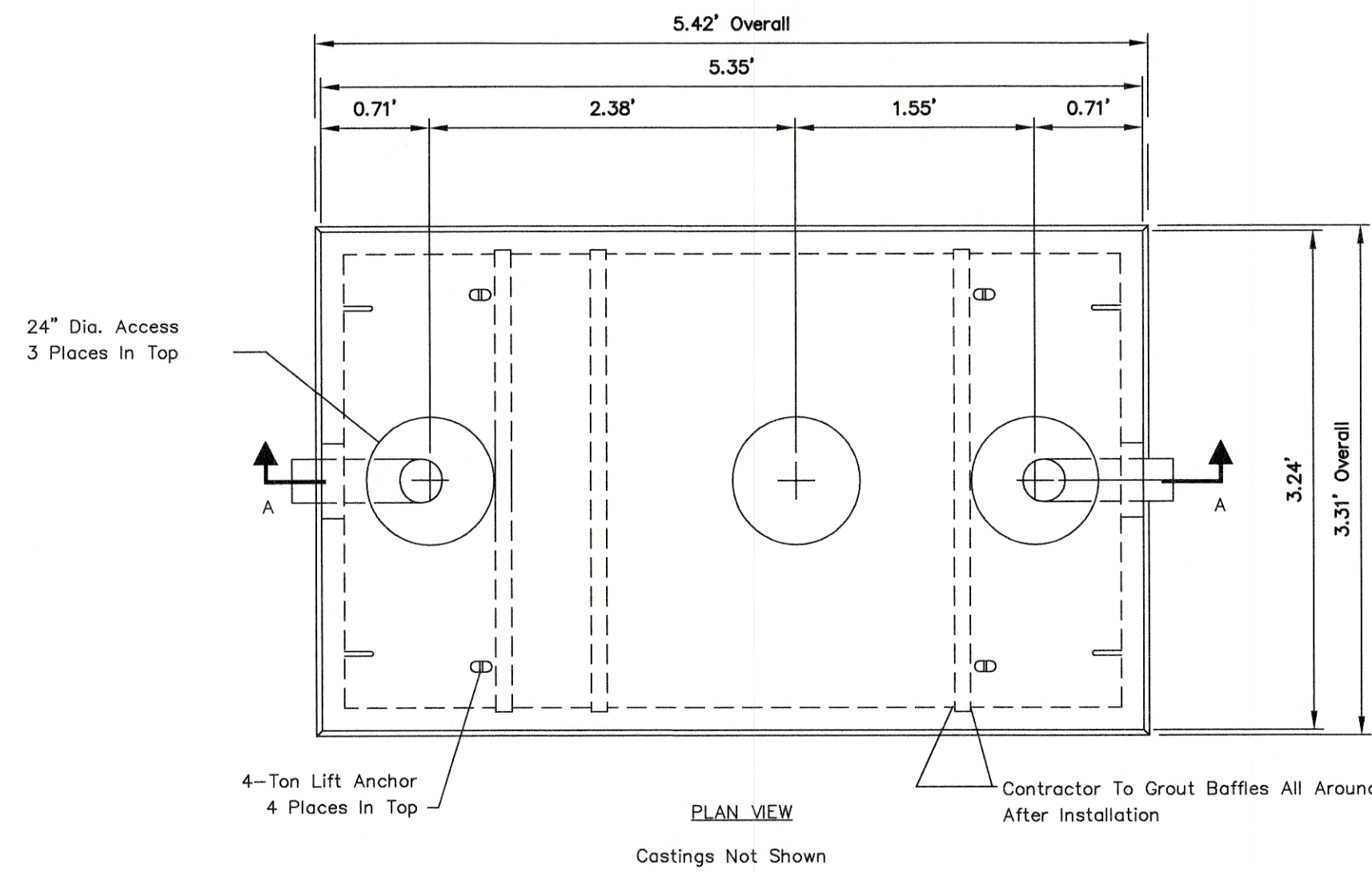
FORCE MAIN SEWER TRENCH

NOT TO SCALE



U-SHAPED BOLLARD

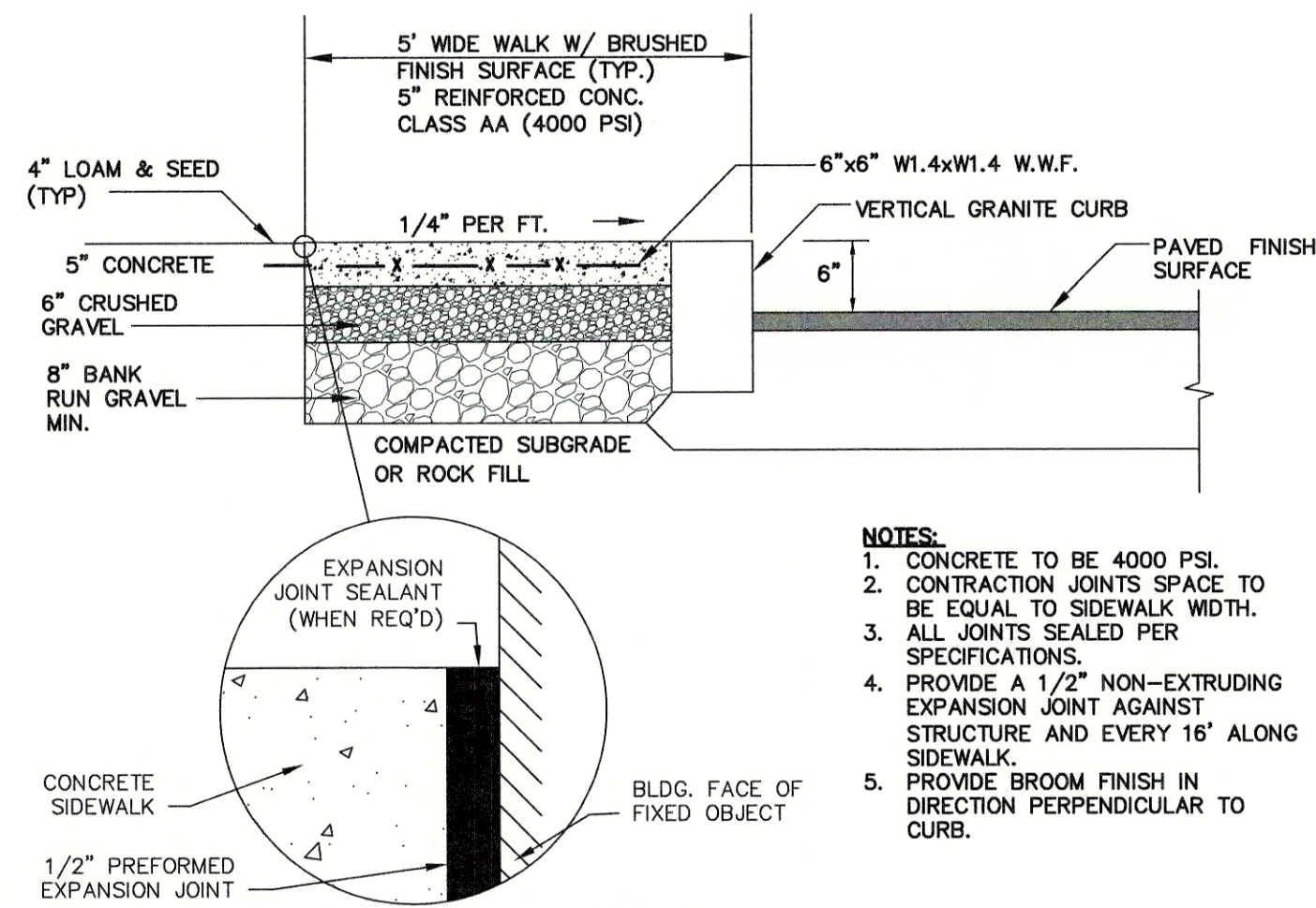
NOT TO SCALE



- Notes:
- Designed in accordance with ASTM C 890 for AASHTO HS20-44 vehicle loading
 - Flow Rate 333 GPM based on 15 min. retention time.
 - Manufacturer's recommendations:
- 1.) Ventilate each end to open atmosphere.
 - 2.) Prior to "Start Up" of System, fill with clean water to bottom of outlet pipe (approx. one foot deep). For best results, fill to flow line.
 - 3.) Follow Regular Inspection, Cleaning, & Maintenance Schedule (See Clean Out & Maintenance).

5,000 GAL OIL / WATER SEPARATOR

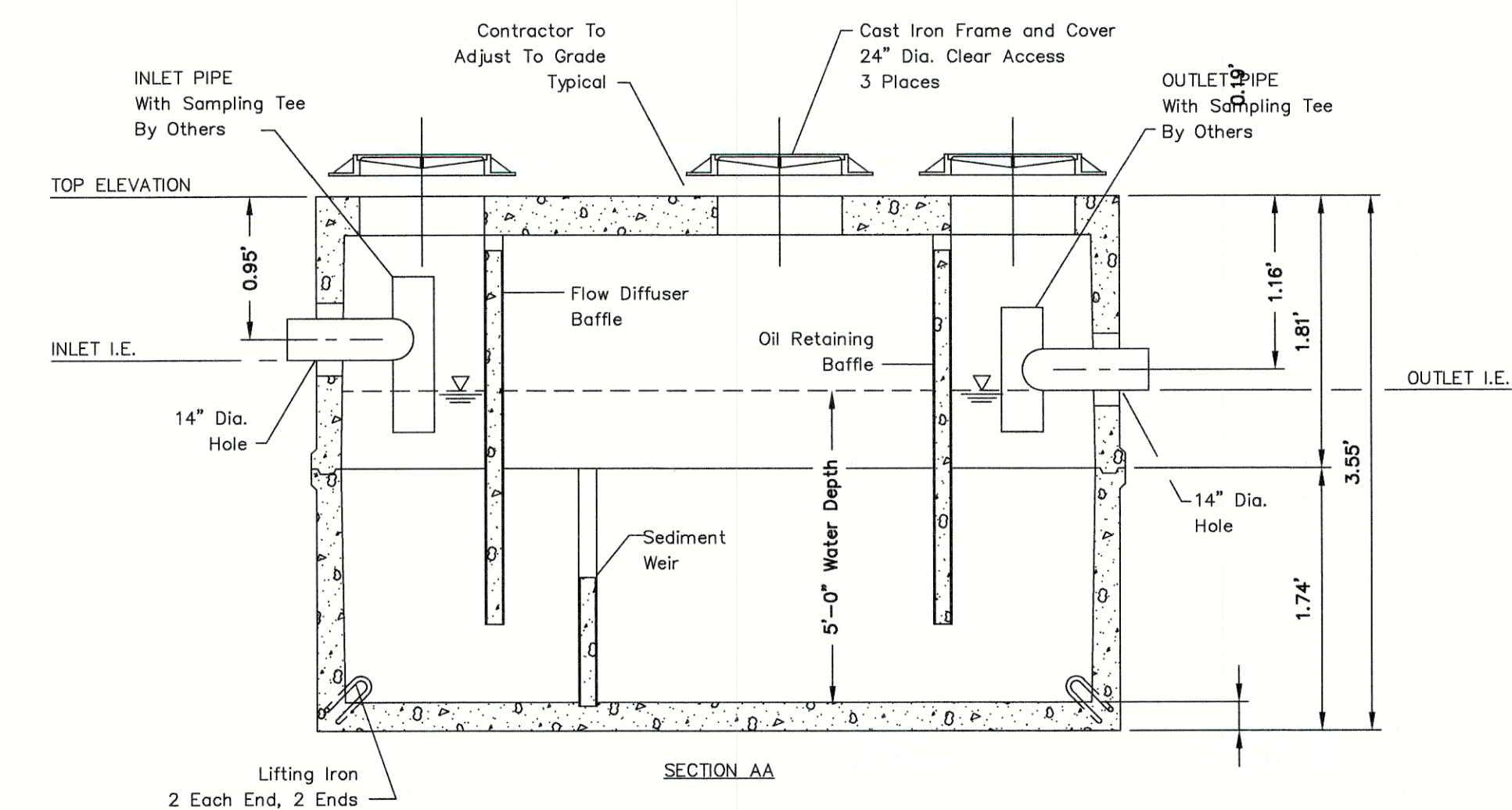
NOT TO SCALE



- NOTES:
1. CONCRETE TO BE 4000 PSI.
 2. CONTRACTION JOINTS SPACE TO BE EQUAL TO SIDEWALK WIDTH.
 3. ALL JOINTS SEALED PER SPECIFICATIONS.
 4. PROVIDE A 1/2" NON-EXTRUDING EXPANSION JOINT AGAINST STRUCTURE AND EVERY 16' ALONG SIDEWALK.
 5. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.

CONCRETE SIDEWALK W/ VERTICAL GRANITE CURB (ROADWAY)

NOT TO SCALE



- STRUCTURAL NOTES:
1. Concrete: 28 Day Compressive Strength f'_c = 7000 psi
 2. Rebar: ASTM A-615 Grade 60
 3. Mesh: ASTM A-185 Grade 65
 4. Design: ACI-318-05 Building Code
 5. Loads: HS-20 Truck Wheel w/ 30% Impact Per AASHTO

- GENERAL NOTES:
1. All Baffles and Weirs To Be Precast Concrete
 2. Contractor to:
 - Supply and Install All Piping & Sampling Tees
 - Grout In All Pipes
 - Fill With Clean Water Prior To "Start-Up" Of System
 - Verify All Blockout Sizes and Locations

3,000 GAL OIL / WATER SEPARATOR

NOT TO SCALE

APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:

TRAFFIC CONTROL SCHEDULE						
SIGN NUMBER	SIGN	SIZE OF SIGN WIDTH HEIGHT	DESCRIPTION	MOUNT TYPE	MOUNT HEIGHT	REMARKS
R1-1	STOP	30" 30"	WHITE ON RED	CHANNEL	7'-0"	REFLECTORIZED SIGN
R5-1	RED / SILVER	30" 30"	RED / SILVER	CHANNEL	7'-0"	REFLECTORIZED SIGN
R7-8	BLUE & GREEN ON WHITE	12" 24"	BLUE & GREEN ON WHITE	CHANNEL	7'-0"	REFLECTORIZED SIGN
R7-8A	YAN	12" 6"	BLUE & GREEN ON WHITE	CHANNEL	5'-0"	REFLECTORIZED SIGN
RES-1	BLACK / WHITE	12" 18"	BLACK / WHITE	FENCE	5'-0"	REFLECTORIZED SIGN
R6-2	BLACK / WHITE	24" 30"	BLACK / WHITE	CHANNEL	7'-0"	REFLECTORIZED SIGN
R5-2A	BLACK / WHITE	24" 24"	BLACK / WHITE	CHANNEL	7'-0"	REFLECTORIZED SIGN

SIGN LEGEND		
R1-1	STOP	R3-5R ONLY
R3-2	NO LEFT TURN	R4-7
R3-1	NO RIGHT TURN	R5-1 DO NOT ENTER
R3-7L	LEFT LANE MUST TURN LEFT	R6-1 ONE WAY
R4-4	BEGIN RIGHT TURN LANE YIELD TO BIKES	
R3-8b	ONLY	ONLY

Design: WGM	Draft: RMK	Date: 05/06/20
Checked: WGM	Scale: AS NOTED	Project No.: 13153
Drawing Name: 13153-PLAN.dwg		
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				BY

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Plan Name:	DETAIL SHEET
Project:	PROPOSED CENTRAL SQUARE 340 E CENTRAL STREET, FRANKLIN, MA
Owner of Record:	340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

DRAWING No.	D4
SHEET 11 OF 16	JBE PROJECT NO. 13153

APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:

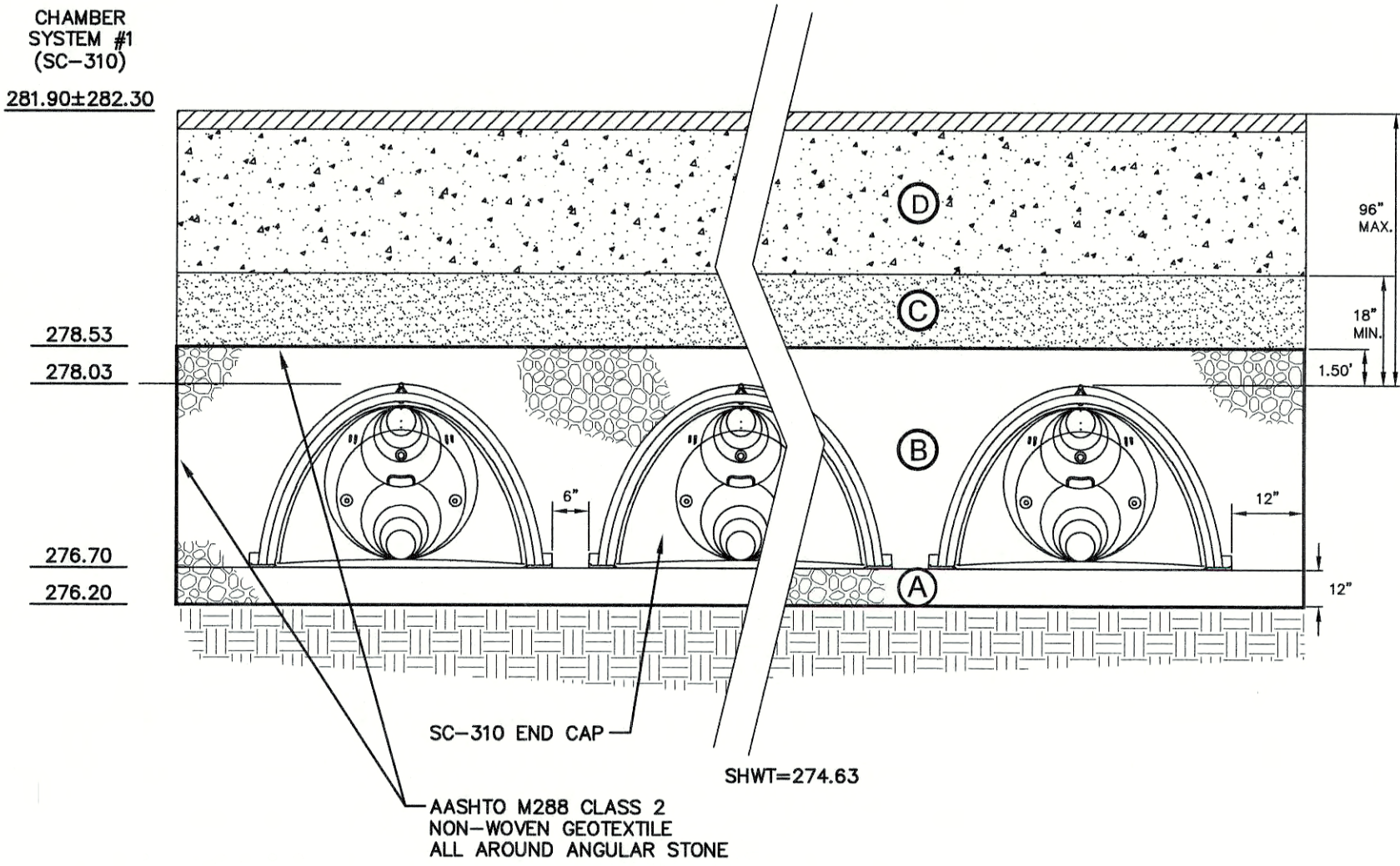
ACCEPTABLE FILL MATERIALS
STORMTECH SC-310 AND SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION	AASHTO M145 DESIGNATION	COMPACTION/DENSITY REQUIREMENT
(D)	PAVEMENT SUBGRADE, DEPTH(S) PER SPECIFICATIONS	PAVEMENT SUBGRADE, MATERIALS PER SPECIFICATIONS	N/A	N/A	PREPARE PER SPECIFICATIONS AND PLANS. PAVED INSTALLATIONS HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
(C)	FILL MATERIAL FROM 1.50' ABOVE CHAMBERS TO BOTTOM OF PAVEMENT SUBGRADE	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	A-1 A-2 A-3	COMPACT IN 6" LIFTS TO A MINIMUM 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 LBS. DYNAMIC FORCE NOT TO EXCEED 20,000 LBS.
(B)	EMBEDMENT STONE SURROUNDING AND TO A 1.50' ELEVATION ABOVE CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN ¾" - 2" INCH	3, 357, 4, 467, 5, 56, 57	N/A	NO COMPACTION REQUIRED
(A)	12" FOUNDATION STONE BELOW CHAMBERS	WASHED ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN ¾" - 2" INCH	3, 357, 4, 467, 5, 56, 57	N/A	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY

PLEASE NOTE: THE LISTED AASHTO DESIGNATIONS ARE FOR
GRADATIONS ONLY. THE STONE MUST ALSO BE WASHED
CRUSHED ANGULAR. FOR EXAMPLE, THE STONE MUST BE
SPECIFIED AS WASHED, CRUSHED, ANGULAR NO. 4 STONE.

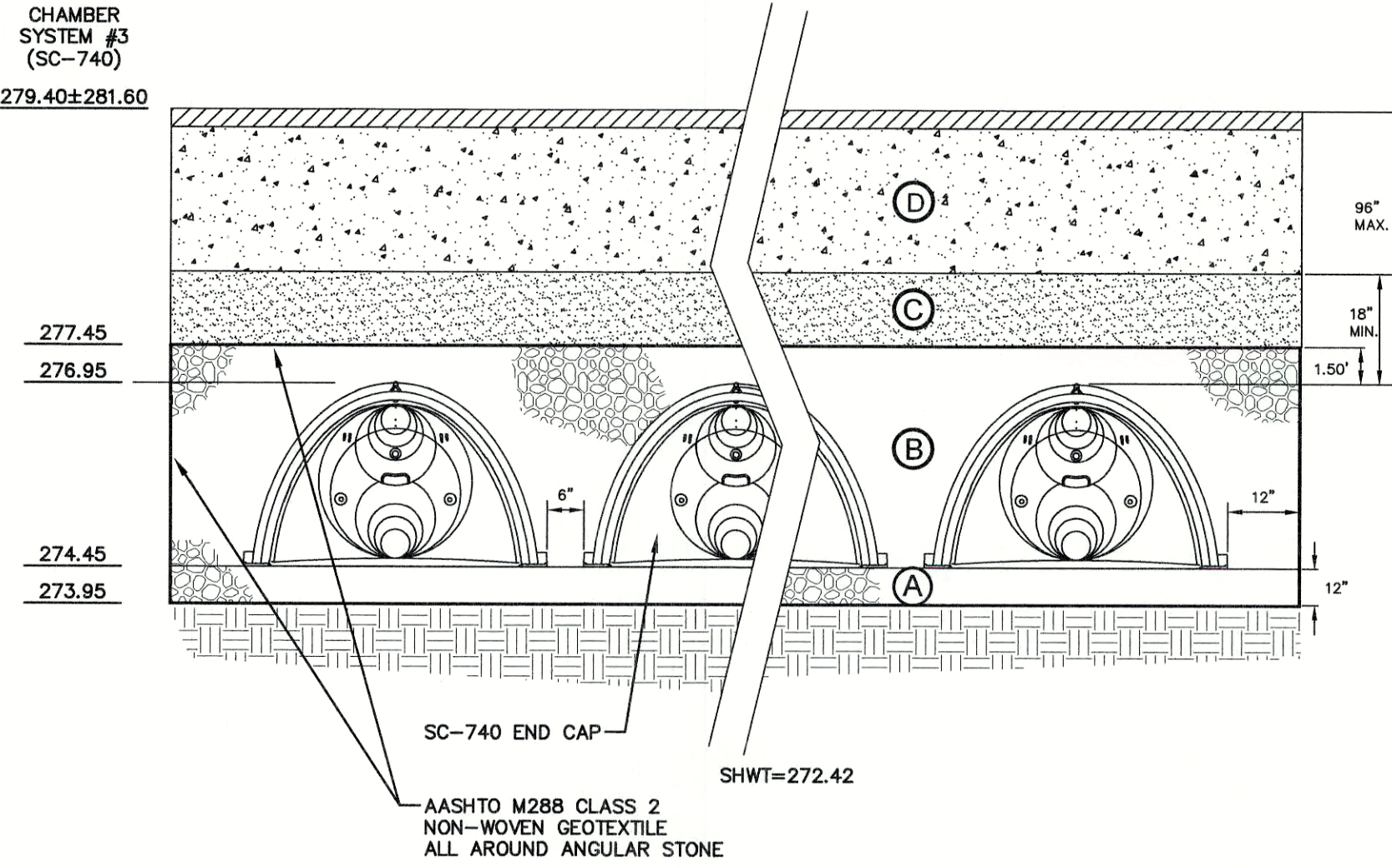
NOTES:

- SC-310 AND SC-740 CHAMBERS SHALL CONFORM TO THE
REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR
POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER
COLLECTION CHAMBERS".
- SC-310 AND SC-740 CHAMBERS SHALL BE DESIGNED IN
ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR
STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL
STORMWATER COLLECTION CHAMBERS".
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL
LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION
REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL
MATERIALS.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE
BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE
SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH
CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE
CONDITIONS.
PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE
EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION
WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED
IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT
SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL
REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN
ENGINEER'S DISCRETION.



TYPICAL SC-310 CROSS-SECTION (CHAMBER SYSTEM #1)

NOT TO SCALE

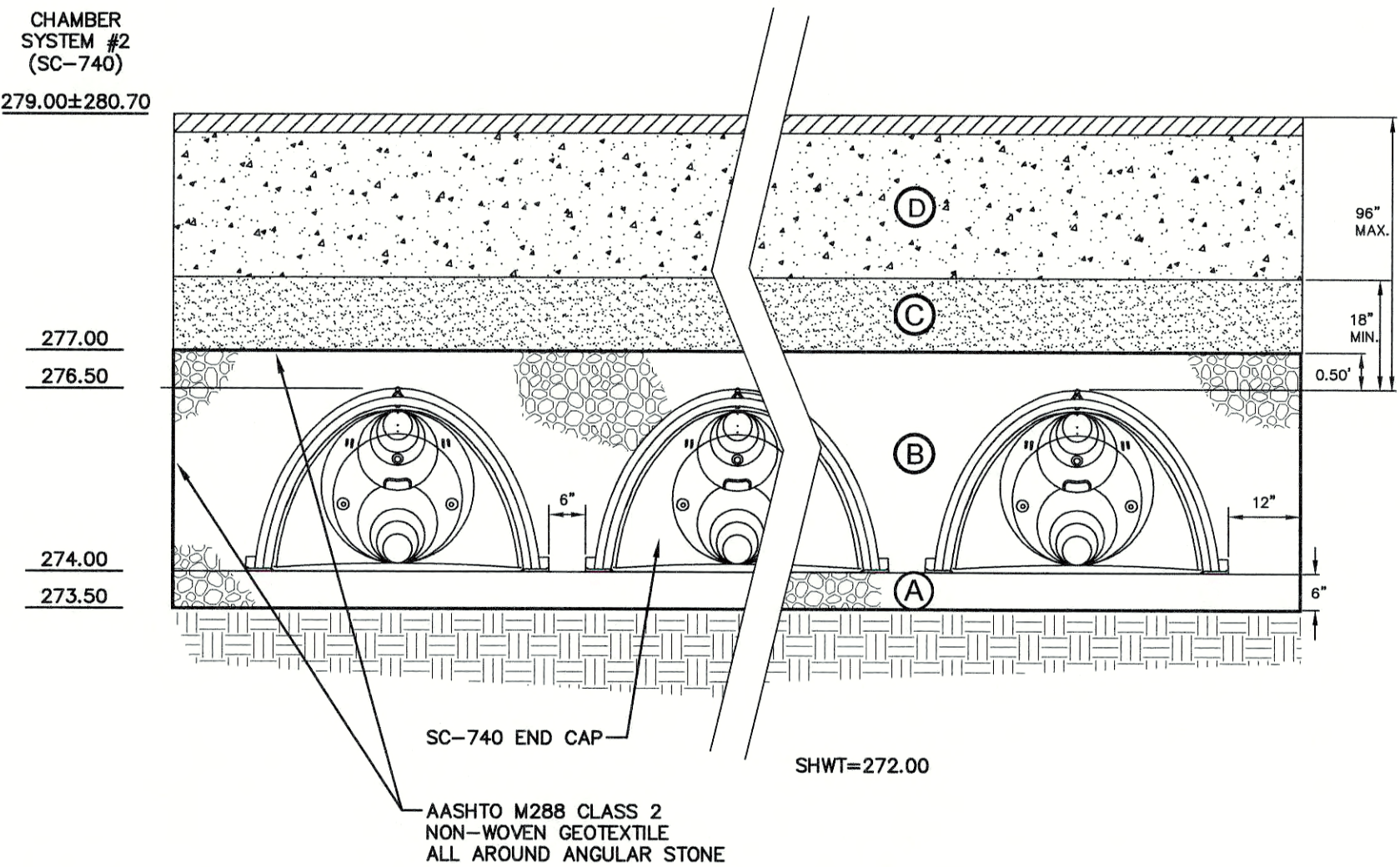


TYPICAL SC-740 CROSS-SECTION (CHAMBER SYSTEM #3)

NOT TO SCALE

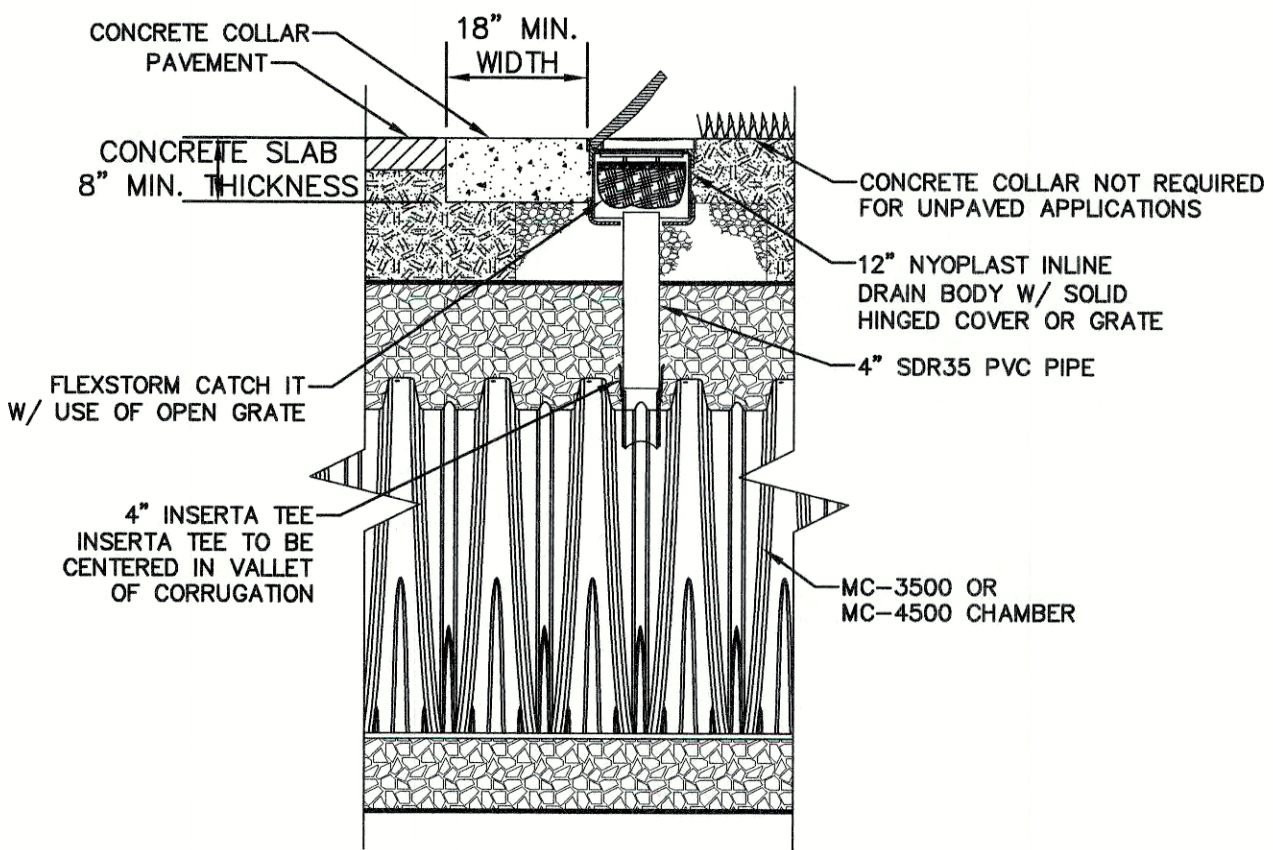
STORMTECH GENERAL NOTES

- STORMTECH LLC ("STORMTECH") REQUIRES
INSTALLING CONTRACTORS TO USE AND
UNDERSTAND STORMTECH'S LATEST
INSTALLATION INSTRUCTIONS PRIOR TO
BEGINNING SYSTEM INSTALLATION.
- STORMTECH OFFERS INSTALLATION
CONSULTATIONS TO INSTALLING
CONTRACTORS. CONTACT OUR TECHNICAL
SERVICE DEPARTMENT OR LOCAL
STORMTECH REPRESENTATIVE AT LEAST 30
DAYS PRIOR TO SYSTEM INSTALLATION TO
ARRANGE A PRE-INSTALLATION
CONSULTATION. OUR REPRESENTATIVES
CAN THEN ANSWER QUESTIONS OR ADDRESS
COMMENTS ON THE STORMTECH CHAMBER
SYSTEM AND INFORM THE INSTALLING
CONTRACTOR OF THE MINIMUM INSTALLATION
REQUIREMENTS BEFORE BEGINNING THE
SYSTEM'S CONSTRUCTION. CALL
860-529-8188 TO SPEAK TO A TECHNICAL
SERVICE REPRESENTATIVE OR VISIT
WWW.STORMTECH.COM TO RECEIVE A COPY
OF OUR INSTALLATION INSTRUCTIONS.
- STORMTECH'S REQUIREMENTS FOR SYSTEMS
WITH PAVEMENT DESIGN (ASPHALT,
CONCRETE PAVERS, ETC.): MINIMUM COVER
IS 24 INCHES NOT INCLUDING PAVEMENT;
MAXIMUM COVER IS 6.5 FEET INCLUDING
PAVEMENT. FOR INSTALLATIONS THAT DO
NOT INCLUDE PAVEMENT, WHERE RUTTING
FROM VEHICLES MAY OCCUR, MINIMUM
REQUIRED COVER IS 24 INCHES, MAXIMUM
COVER IS 6.5 FEET.
- THE CONTRACTOR MUST REPORT ANY
DISCREPANCIES WITH CHAMBER FOUNDATION
MATERIALS BEARING CAPACITIES TO THE
DESIGN ENGINEER.
- AASHTO M288 CLASS 2 NON-WOVEN
GEOTEXTILE (FILTER FABRIC) MUST BE USED
AS INDICATED IN THE PROJECT PLANS.
- STONE PLACEMENT BETWEEN CHAMBERS
ROWS AND AROUND PERIMETER MUST
FOLLOW INSTRUCTIONS AS INDICATED IN THE
MOST CURRENT VERSION OF STORMTECH'S
INSTALLATION INSTRUCTIONS.
- BACKFILLING OVER THE CHAMBERS MUST
FOLLOW REQUIREMENTS AS INDICATED IN
THE MOST CURRENT VERSION OF
STORMTECH'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR MUST REFER TO
STORMTECH'S INSTALLATION INSTRUCTIONS
FOR A TABLE OF ACCEPTABLE VEHICLE
LOADS AT VARIOUS DEPTHS OF COVER.
THIS INFORMATION IS ALSO AVAILABLE AT
STORMTECH'S WEBSITE:
WWW.STORMTECH.COM. THE CONTRACTOR IS
RESPONSIBLE FOR PREVENTING VEHICLES
THAT EXCEED STORMTECH'S REQUIREMENTS
FROM TRAVELING ACROSS OR PARKING
OVER THE STORMWATER SYSTEM.
TEMPORARY FENCING, WARNING TAPE AND
APPROPRIATELY LOCATED SIGNS ARE
COMMONLY USED TO PREVENT
UNAUTHORIZED VEHICLES FROM ENTERING
SENSITIVE CONSTRUCTION AREAS.
- THE CONTRACTOR MUST APPLY EROSION
AND SEDIMENT CONTROL MEASURES TO
PROTECT THE STORMWATER SYSTEM DURING
ALL PHASES OF SITE CONSTRUCTION PER
LOCAL CODES AND DESIGN ENGINEER'S
SPECIFICATIONS.
- STORMTECH PRODUCT WARRANTY IS LIMITED.
CONTACT STORMTECH FOR WARRANTY
INFORMATION.



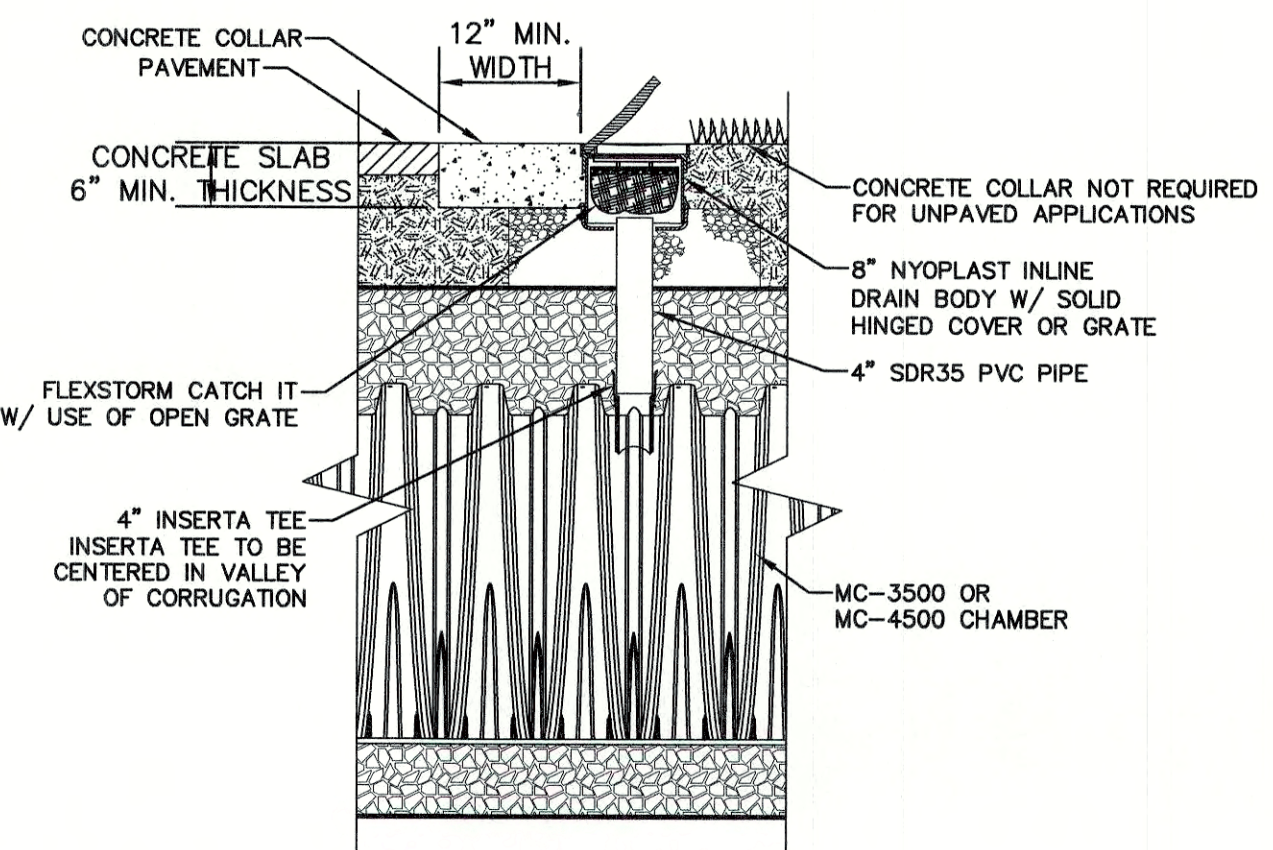
TYPICAL SC-740 CROSS-SECTION (CHAMBER SYSTEM #2)

NOT TO SCALE



TYPICAL SC-740 4" INSPECTION PORT

NOT TO SCALE



TYPICAL SC-310 4" INSPECTION PORT

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DRAWING No.

D5

SHEET 12 OF 16
JBE PROJECT NO. 13153

DATE:

DMH 504 DETAIL

NOT TO SCALE

DMH 506 DETAIL

NOT TO SCALE

OUTLET STRUCTURE #1 (DMH-510)

DMH 517 DETAIL
NOT TO SCALE

DMH 518 DETAIL

NOT TO SCALE

DMH 520 DETAIL

NOT TO SCALE

DMH 521 DETAIL

NOT TO SCALE

DMH 522 DETAIL

NOT TO SCALE

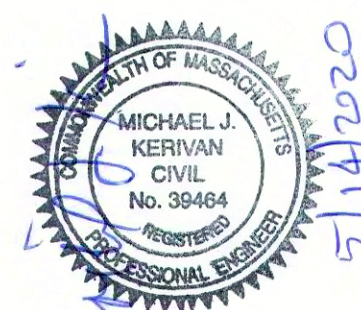
DMH-523 DETAIL

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DMH 524 DETAIL

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Drawing Name: 13153-PLAN.dwg		
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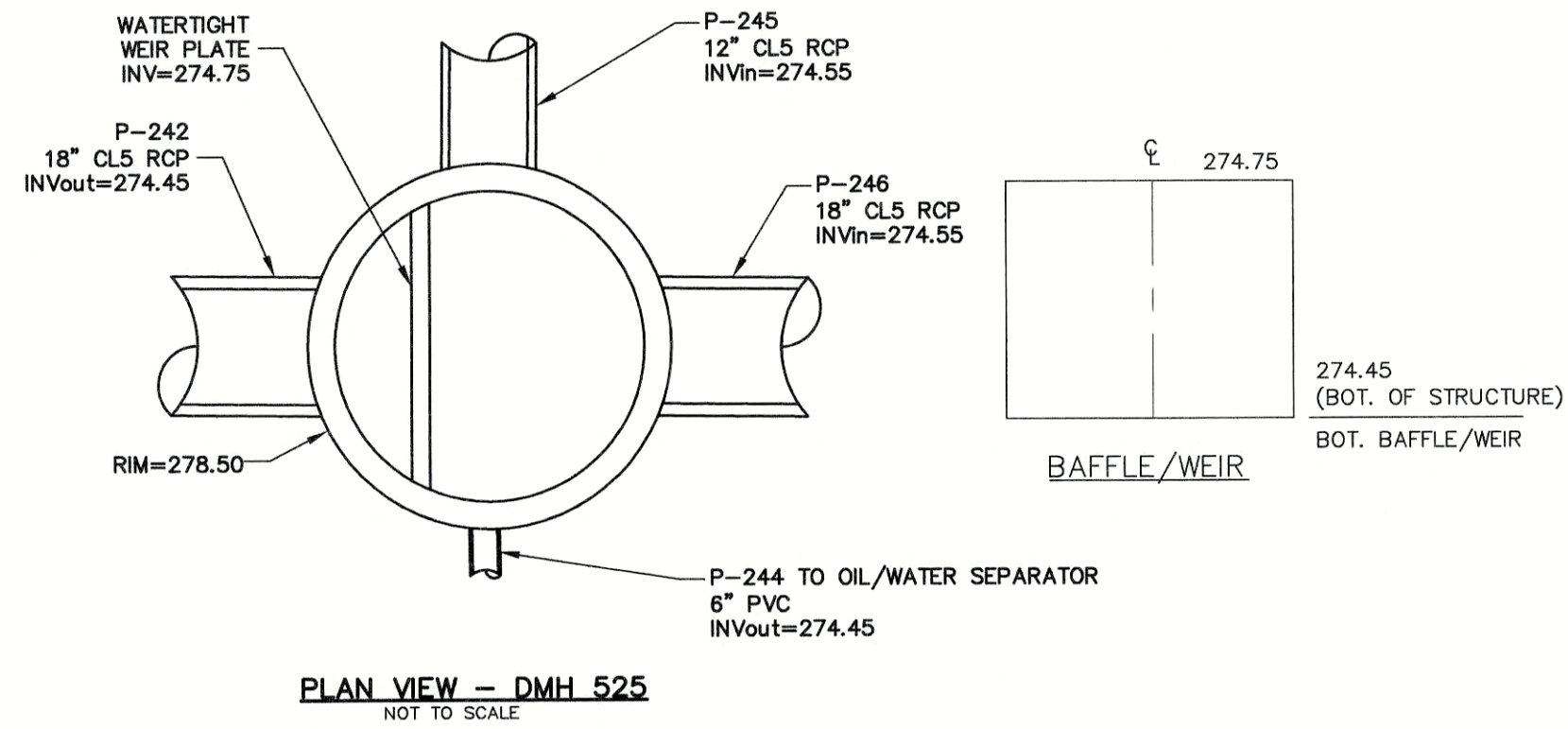
<p>85 Portsmouth Ave. PO Box 219 Stratham, NH 03885</p>	<p><i>Civil Engineering Services</i></p>	<p>603-772-4746 FAX: 603-772-0227 E-Mail: JBE@JONESANDBEACH.COM</p>
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Plan Name:	DETAIL SHEET
Project:	PROPOSED CENTRAL SQUARE 340 E CENTRAL STREET, FRANKLIN, MA
Owner of Record:	340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

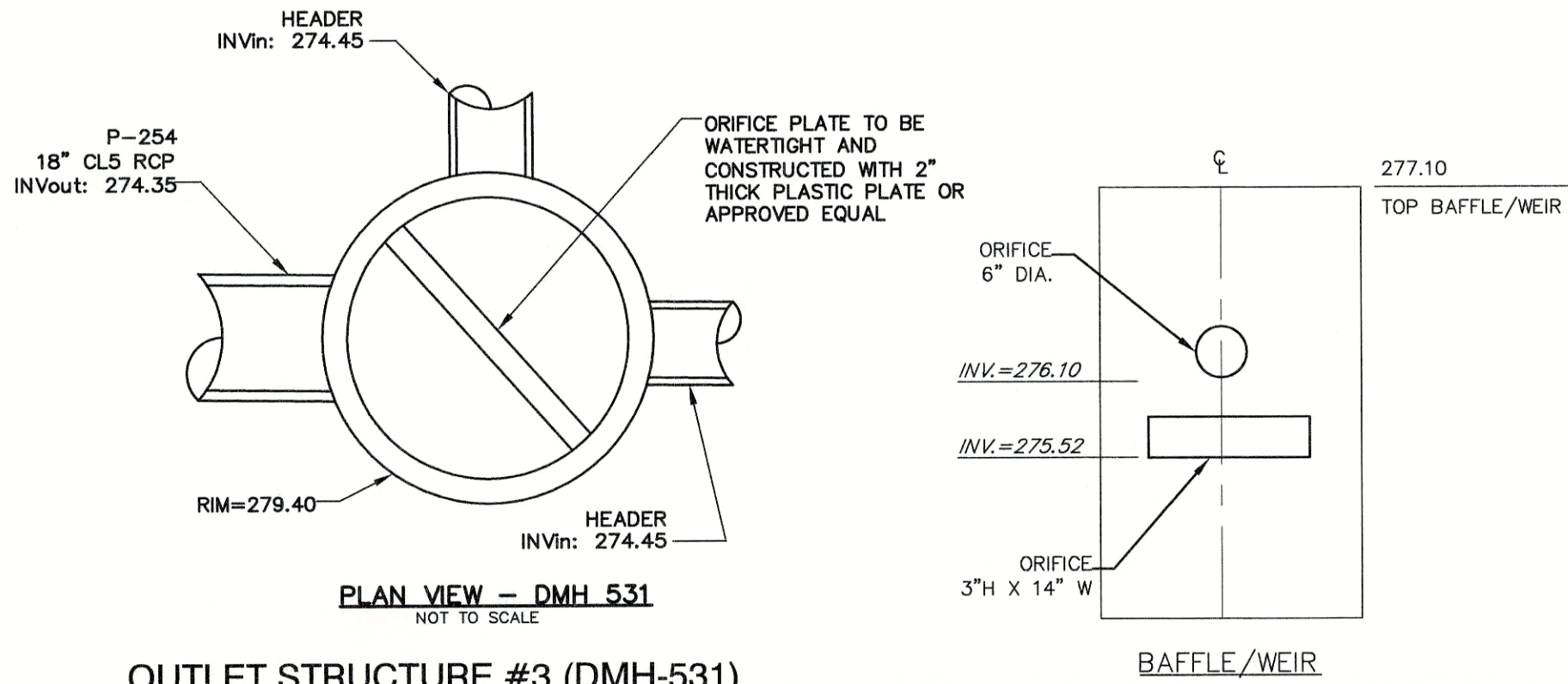
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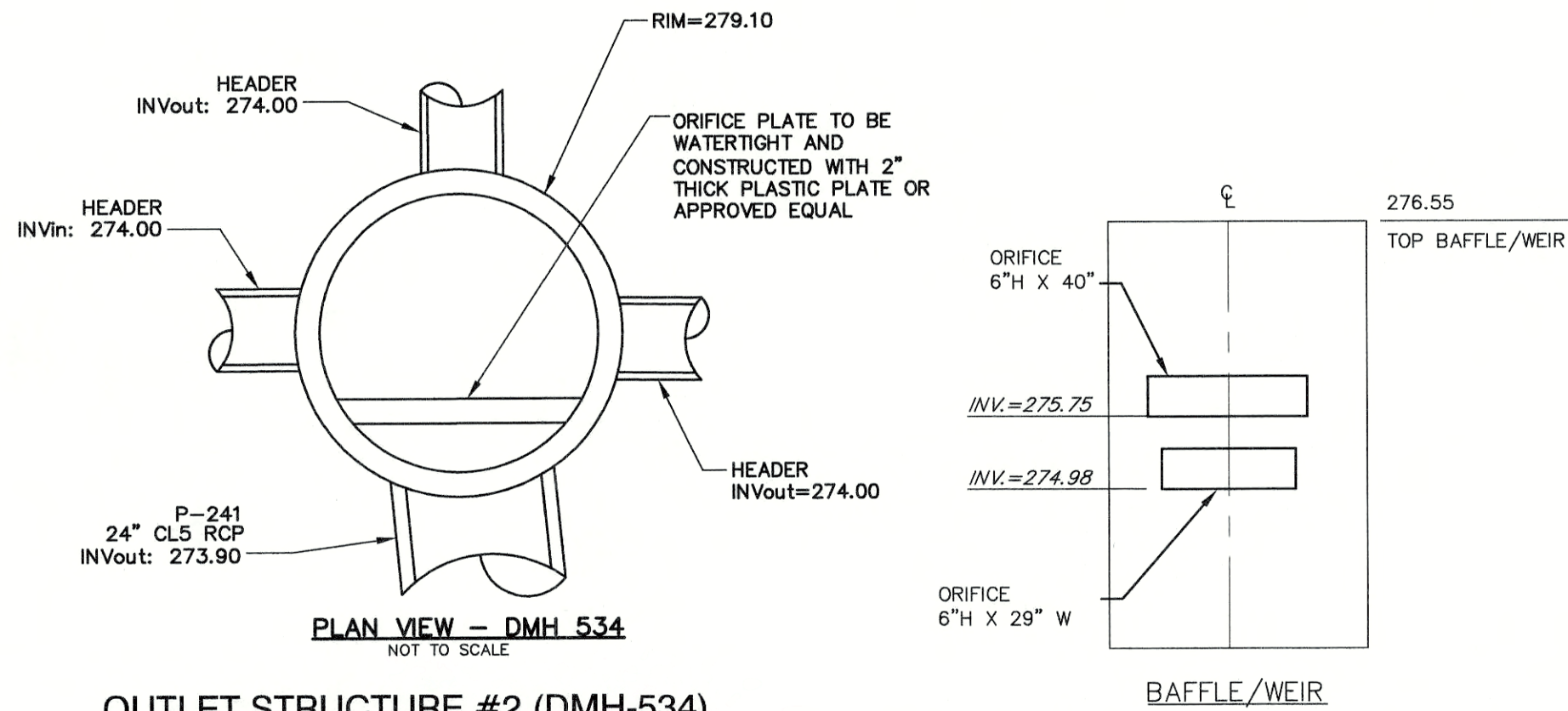
SHEET 13 OF
PIPE PROJECT NO. 1



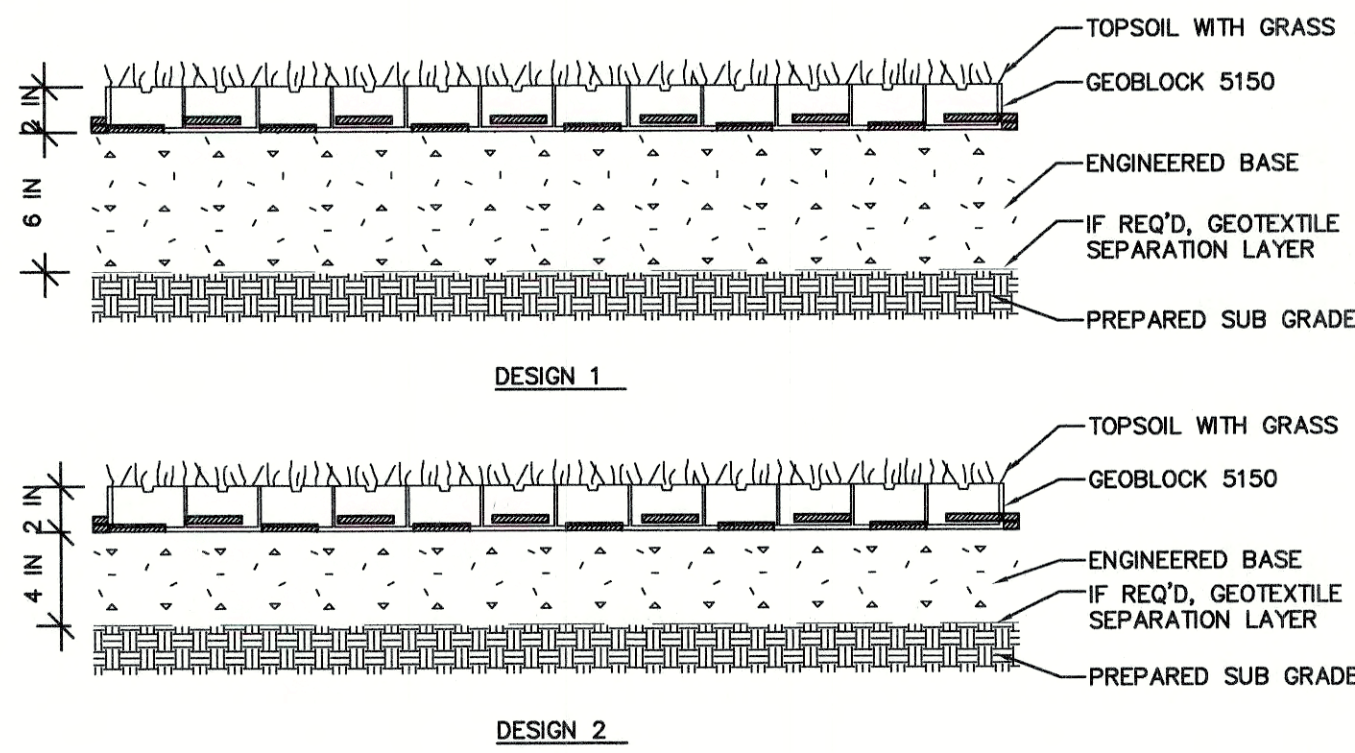
DMH 525 DETAIL
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OUTLET STRUCTURE #3 (DMH-531)
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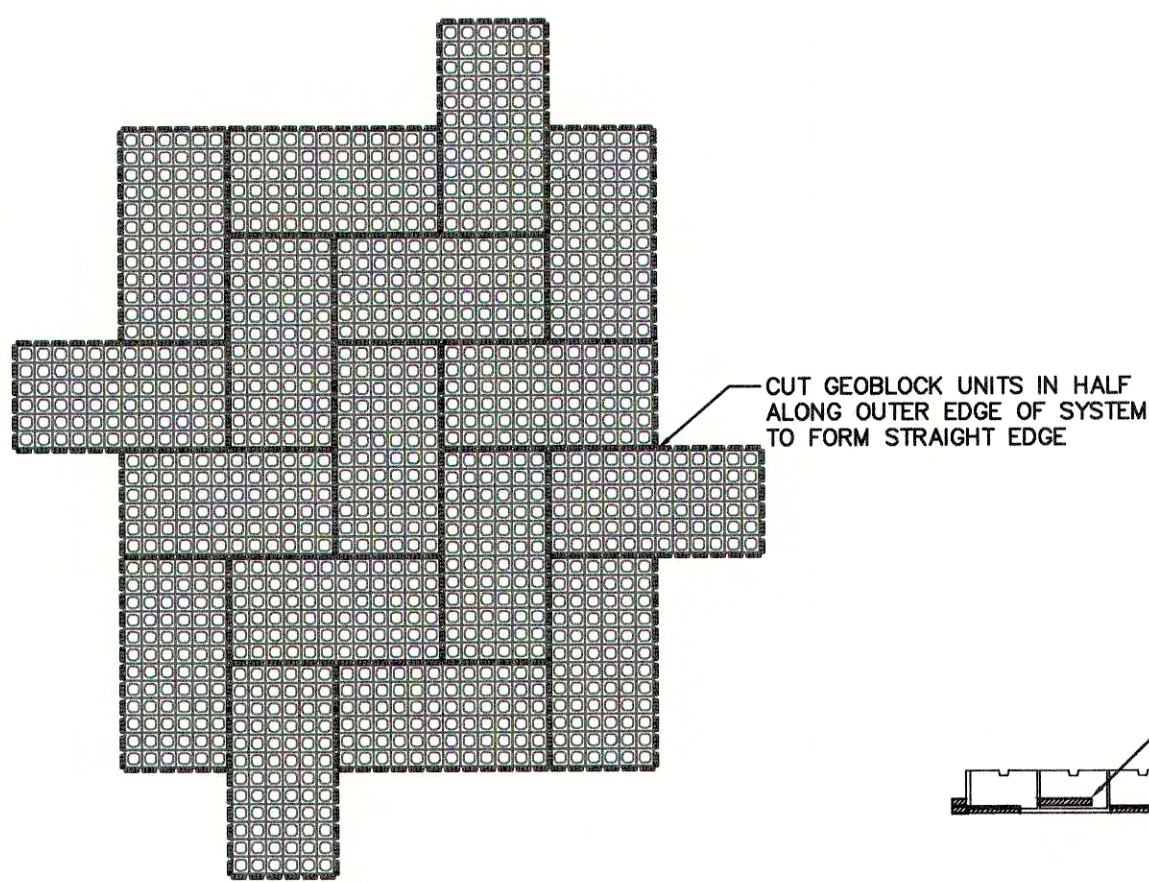
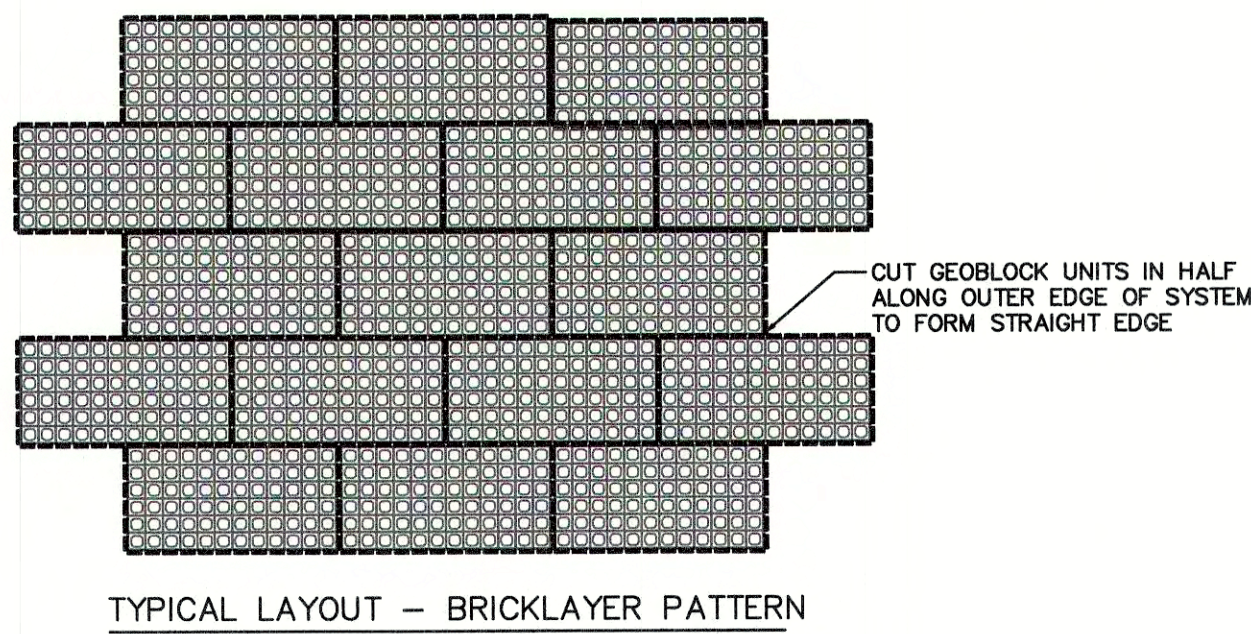


OUTLET STRUCTURE #2 (DMH-534)
NOT TO SCALE



DESIGN GUIDELINES		
LOAD DESCRIPTION	CBR 2 - 4%	CBR > 4%
Heavy Fire Truck Access & H/HS-20 loading. Typical 110 psi (758 kPa) tire pressure. Single axle loadings of 32 kips (145 kN), tandem axle loadings of 48 kips (220 kN). Gross vehicle weight of 80,000 lbs (36.3 MT). Infrequent passes.	Design 1 - 6" Base	Design 2 - 4" Base
Light Fire Truck Access & H/HS-15 loading. Typical 85 psi (586 kPa) tire pressure. Single axle loadings of 24 kips (110 kN). Gross vehicle loads of 60,000 lbs (27.2 MT). Infrequent passes.	Design 2 - 4" Base	Design 3 - 2" Base
Utility & Delivery Truck Access & H/HS-10 loading. Typical 60 psi (414 kPa) tire pressure. Single axle loadings of 16 kips (75 kN). Gross vehicle loads of 40,000 lbs (18.1 MT). Infrequent passes.	Design 3 - 2" Base	Design 3 - 2" Base
Cars & Pick-up Truck Access. Typical 45 psi (310 kPa) tire pressure. Single axle loadings of 4 kips (18 kN). Gross vehicle loads of 8,000 lbs (3.6 MT). Infrequent passes.	Design 4 - No Base	Design 4 - No Base
Trail Use. Loading for pedestrian, wheelchair, equestrian, bicycle, motorcycle and ATV traffic.	Design 4 - No Base	Design 4 - No Base

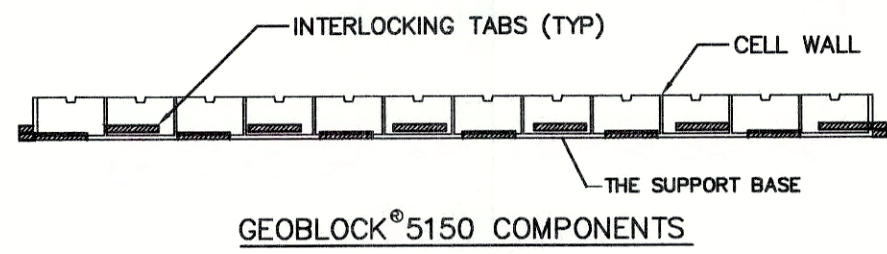
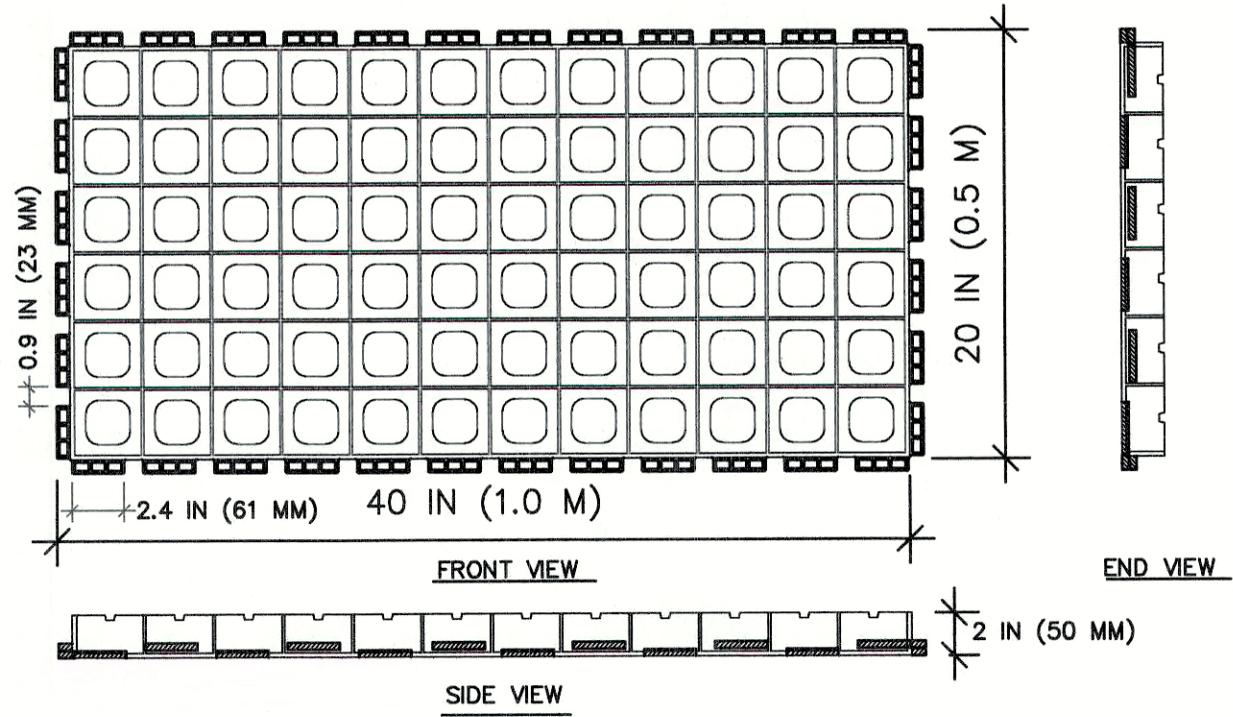
- Notes:
- This information is based on the use of Geoblock 5150 manufactured by Presto Products Co. All rights reserved. Any use of this information for any rigid porous paver product other than that manufactured by Presto is strictly prohibited and makes this information invalid.
 - Engineered base is a homogenous mixture consisting of open graded crushed aggregate having an AASHTO # 5 or similar designation blended with pulverized topsoil and a void component generally containing air and/or water. This homogenous mixture will promote vegetative growth and provide required structural support. The aggregate portion shall have a particle range from 9.5 mm to 25 mm (0.375 to 1.0 in) with a D50 of 13 mm (0.5 in). The percentage void-space of the aggregate portion when compacted shall be at least 30%. The pulverized topsoil portion shall equal 33% +/- of the total volume and be added and blended to produce a homogenous mixture prior to placement.
 - If required, provide a non-woven geotextile separation layer and install in accordance with Manufacturer recommendations including overlaps based on sub grade CBR.
 - Connect Geoblock 5150 panels with the interlocking offset tab so that adjacent sections have horizontally level profiles.
 - Refer to the Geoblock 5150 Design and Construction Overview for a complete description of the design and construction methods.



TYPICAL LAYOUT - HERRINGBONE PATTERN

GEOBLOCK 5150
NOT TO SCALE

GEOBLOCK 5150 MATERIAL SPECIFICATION	
MATERIAL	UP TO 100% RECYCLED POLYETHYLENE
COLOR	RANGES DARK SHADES GRAY TO BLACK
CHEMICAL RESISTANCE	SUPERIOR
CARBON BLACK FOR UV STABILIZATION, %	1.5 TO 2.0%
UNIT MIN CRUSH STRENGTH - EMPTY @ 70F (21C)	420 PSI (2,900 KPa)
UNIT MIN CRUSH STRENGTH - SAND FILLED @ 70F (21C)	7,058 PSI (48,734 KPa)
FLEXURAL MODULUS @ 73F (21C)	35,000 PSI (240,000 KPa)
NOMINAL DIMENSIONS - WIDTH X LENGTH	20 X 40 IN (0.5 X 1.0 M)
NOMINAL UNIT DEPTH	2 IN (50 MM)
NOMINAL AREA	5.3 SQFT (0.5 SQMTR)
CELLS PER UNIT	72
CELL SIZE	3.1 X 3.2 IN (79 X 81 MM)
TOP OPEN AREA PER UNIT	87%
BOTTOM OPEN AREA PER UNIT	41%
INTERLOCKING OFFSET SHEAR TRANSFER PINS	12 TABS PER 40 IN (PER 1 M)
NOMINAL WEIGHT PER UNIT	8.7 LBS (4.0 KG)
RUNOFF COEFFICIENT @ 2.5 IN/HR (64 MM) RAIN	0.15
UNITS PER PALLET	50



GEOBLOCK 5150 COMPONENTS

APPROVED - FRANKLIN, MA
PLANNING BOARD

DATE:

Design: WGM Draft: RMK Date: 05/06/20
Checked: WGM Scale: AS NOTED Project No.: 13153
Drawing Name: 13153-PLAN.dwg

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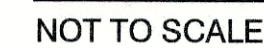
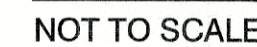


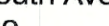
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		REVISION	BY

Designed and Produced in NH
J/B Jones & Beach Engineers, Inc.
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
Civil Engineering Services
603-772-4746 FAX: 603-772-0227 E-Mail: JBE@JONESANDBEACH.COM

Plan Name: **DETAIL SHEET**
Project: **PROPOSED CENTRAL SQUARE
340 E CENTRAL STREET, FRANKLIN, MA**
Owner of Record: 340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

DRAWING No.
D7
SHEET 14 OF 16
JBE PROJECT NO. 13153




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J/B Jones & Beach Engineers, Inc.

 85 Portsmouth Ave. *Civil Engineering Services* 603-772-4746
 PO Box 219 FAX: 603-772-0227
 Stratham, NH 03885 E-Mail: JBE@JONESANDBEACH.COM

DRAWING No.

D8

SHEET 15 OF 16

IRE PROJECT NO. 12152

APPROVED - FRANKLIN, MA
PLANNING BOARD

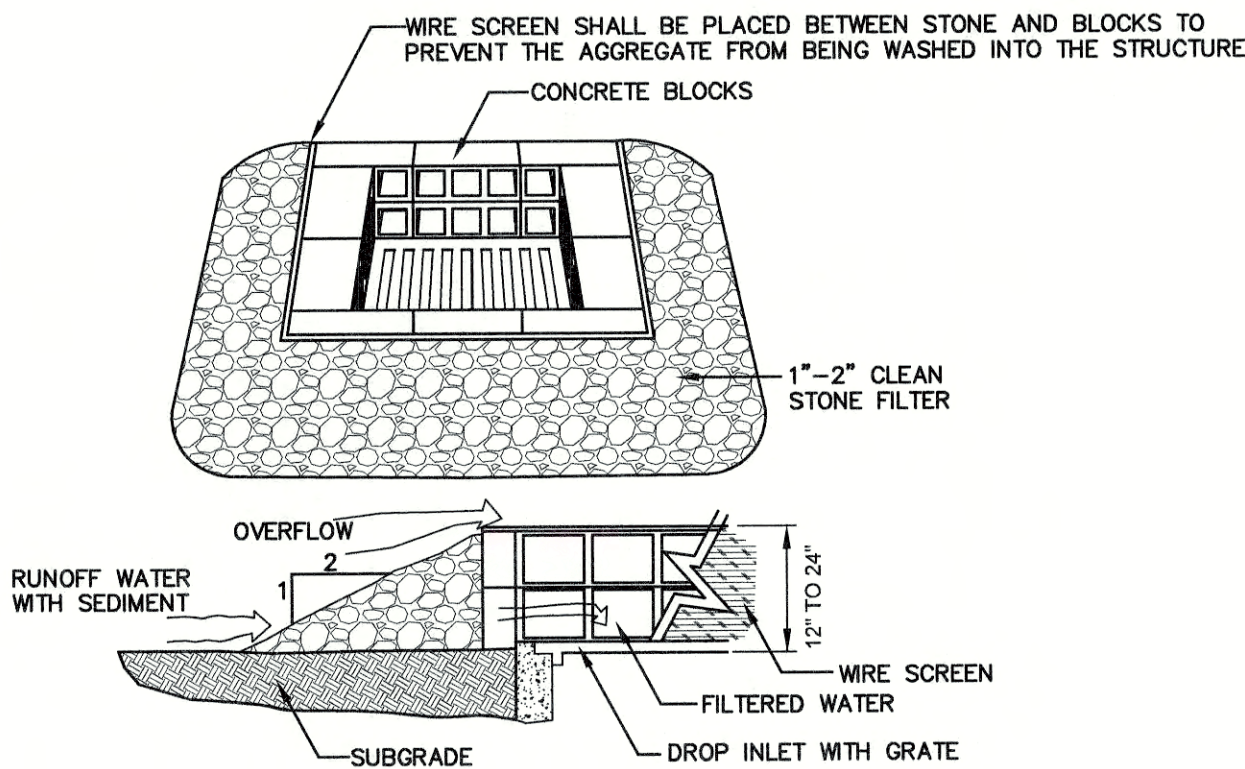
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SEEDING SPECIFICATIONS

1. **GRADING AND SHAPING**
- A. SLOPES SHALL NOT BE STEEPER THAN 2:1 WITHOUT APPROPRIATE EROSION CONTROL MEASURES AS SPECIFIED ON THE PLANS (3:1 SLOPES OR FLATTER ARE PREFERRED).
- B. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
2. **SEEDBED PREPARATION**
- A. SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
- B. STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND FERTILIZER AND LIME MIXED INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.
3. **ESTABLISHING A STAND**
- A. LIME AND FERTILIZER SHOULD BE APPLIED PRIOR TO OR AT THE TIME OF SEEDING AND INCORPORATED INTO THE SOIL. TYPES AND AMOUNTS OF LIME AND FERTILIZER SHOULD BE BASED ON AN EVALUATION OF SOIL TESTS. WHEN A SOIL TEST IS NOT AVAILABLE, THE FOLLOWING MINIMUM AMOUNTS SHOULD BE APPLIED:
- AGRICULTURAL LIMESTONE, 2 TONS PER ACRE OR 100 LBS. PER 1,000 SQ.FT.
NITROGEN(N), 50 LBS. PER ACRE OR 1.1 LBS. PER 1,000 SQ.FT.
PHOSPHATE(P2O5), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
POTASH(K2O), 100 LBS. PER ACRE OR 2.2 LBS. PER 1,000 SQ.FT.
(NOTE: THIS IS THE EQUIVALENT OF 500 LBS. PER ACRE OF 10-20-20 FERTILIZER OR 1,000 LBS. PER ACRE OF 5-10-10.)
- B. SEED SHOULD BE SPREAD UNIFORMLY BY THE METHOD MOST APPROPRIATE FOR THE SITE. METHODS INCLUDE BROADCASTING, DRILLING AND HYDROSEEDING. WHERE BROADCASTING IS USED, COVER SEED WITH .25 INCH OF SOIL OR LESS, BY CULTIPACKING OR RAKING.
- C. REFER TO THE "SEEDING GUIDE" AND "SEEDING RATES" TABLES ON THIS SHEET FOR APPROPRIATE SEED MIXTURES AND RATES OF SEEDING. ALL LEGUMES (CROWN VETCH, BIRD'S FOOT, TREFOIL, AND FLATPEA) MUST BE INOCULATED WITH THEIR SPECIFIC INOCULANT PRIOR TO THEIR INTRODUCTION TO THE SITE.
- D. WHEN SEEDED AREAS ARE MULCHED, PLANTINGS MAY BE MADE FROM EARLY SPRING TO EARLY OCTOBER. WHEN SEEDED AREAS ARE NOT MULCHED, PLANTINGS SHOULD BE MADE FROM EARLY SPRING TO MAY 20th OR FROM AUGUST 10th TO SEPTEMBER 1st.
4. **MULCH**
- A. HAY, STRAW, OR OTHER MULCH, WHEN NEEDED, SHOULD BE APPLIED IMMEDIATELY AFTER SEEDING.
- B. MULCH WILL BE HELD IN PLACE USING APPROPRIATE TECHNIQUES FROM THE BEST MANAGEMENT PRACTICE FOR MULCHING. HAY OR STRAW MULCH SHALL BE PLACED AT A RATE OF 90 LBS PER 1000 S.F.
5. **MAINTENANCE TO ESTABLISH A STAND**
- A. PLANTED AREAS SHOULD BE PROTECTED FROM DAMAGE BY FIRE, GRAZING, TRAFFIC, AND DENSE WEED GROWTH.
- B. FERTILIZATION NEEDS SHOULD BE DETERMINED BY ONSITE INSPECTIONS. SUPPLEMENTAL FERTILIZER IS USUALLY THE KEY TO FULLY COMPLETE THE ESTABLISHMENT OF THE STAND BECAUSE MOST PERENNIALS TAKE 2 TO 3 YEARS TO BECOME FULLY ESTABLISHED.
- C. IN WATERWAYS, CHANNELS, OR SWALES WHERE UNIFORM FLOW CONDITIONS ARE ANTICIPATED, ANNUAL MOWING MAY BE NECESSARY TO CONTROL GROWTH OF WOODY VEGETATION.

TEMPORARY EROSION CONTROL NOTES

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME. AT NO TIME SHALL AN AREA IN EXCESS OF THAT REQUIRED FOR CONSTRUCTION BE EXPOSED.
2. EROSION, SEDIMENT AND DETENTION MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND AT LOCATIONS AS REQUIRED OR DIRECTED BY THE ENGINEER.
3. ALL DISTURBED AREAS (INCLUDING POND AREAS BELOW THE PROPOSED WATERLINE) SHALL BE RETURNED TO PROPOSED GRADES AND ELEVATIONS. DISTURBED AREAS SHALL BE LOAMED WITH A MINIMUM OF 6" OF SCREENED ORGANIC LOAM AND SEEDED WITH SEED MIXTURE 'C' AT A RATE NOT LESS THAN 1.10 POUNDS OF SEED PER 1,000 S.F. OF AREA (48 LBS. / ACRE).
4. COMPOST FILTER TUBE AND OTHER BARRIERS SHALL BE INSPECTED EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF A RAINFALL OF 0.5" OR GREATER. ALL DAMAGED AREAS SHALL BE REPAIRED, AND SEDIMENT DEPOSITS SHALL PERIODICALLY BE REMOVED AND DISPOSED.
5. AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED, THE TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND THE AREA DISTURBED BY THE REMOVAL SMOOTHED AND REVEGETATED.
6. AREAS MUST BE SEEDED AND MULCHED OR OTHERWISE PERMANENTLY STABILIZED WITHIN 3 DAYS OF FINAL GRADING, OR TEMPORARILY STABILIZED WITHIN 14 DAYS OF THE INITIAL DISTURBANCE OF SOIL.
7. ALL PROPOSED VEGETATED AREAS THAT DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED BY SEEDING AND INSTALLING NORTH AMERICAN GREEN S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER) ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE. SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
8. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85 PERCENT VEGETATIVE GROWTH BY OCTOBER 15, OR WHICH ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
9. AFTER NOVEMBER 15th, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3" OF CRUSHED GRAVEL PER MASSDOT ITEM 304.3.
10. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
- a. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
- b. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
- c. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED; OR EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
11. IN ORDER TO ENSURE THE STABILITY OF THE SITE AND EFFECTIVE IMPLEMENTATION OF THE SEDIMENT AND EROSION CONTROL MEASURES SPECIFIED IN THE PLANS FOR THE DURATION OF CONSTRUCTION, THE CONTRACTOR SHALL BE IN STRICT COMPLIANCE WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS IN ADDITION TO THOSE CALLED FOR IN THE SWPPP:
- a. A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL OR A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF MASSACHUSETTS ("MONITOR") SHALL BE EMPLOYED TO INSPECT THE SITE FROM THE START OF EARTH MOVING ACTIVITIES UNTIL THE SITE IS STABLE.
- b. DURING THIS PERIOD, THE MONITOR SHALL INSPECT THE SUBJECT SITE AT LEAST ONCE A WEEK, AND IF POSSIBLE, DURING ANY ½ INCH OR GREATER RAIN EVENT (I.E. ½ INCH OF PRECIPITATION OR MORE WITHIN A 24 HOUR PERIOD). IF UNABLE TO BE PRESENT DURING SUCH A STORM, THE MONITOR SHALL INSPECT THE SITE WITHIN 24 HOURS OF THIS EVENT.
- c. THE MONITOR SHALL PROVIDE TECHNICAL ASSISTANCE AND RECOMMENDATIONS TO THE CONTRACTOR ON THE APPROPRIATE BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROLS REQUIRED TO MEET THE REQUIREMENTS OF ALL APPLICABLE DES PERMIT CONDITIONS.

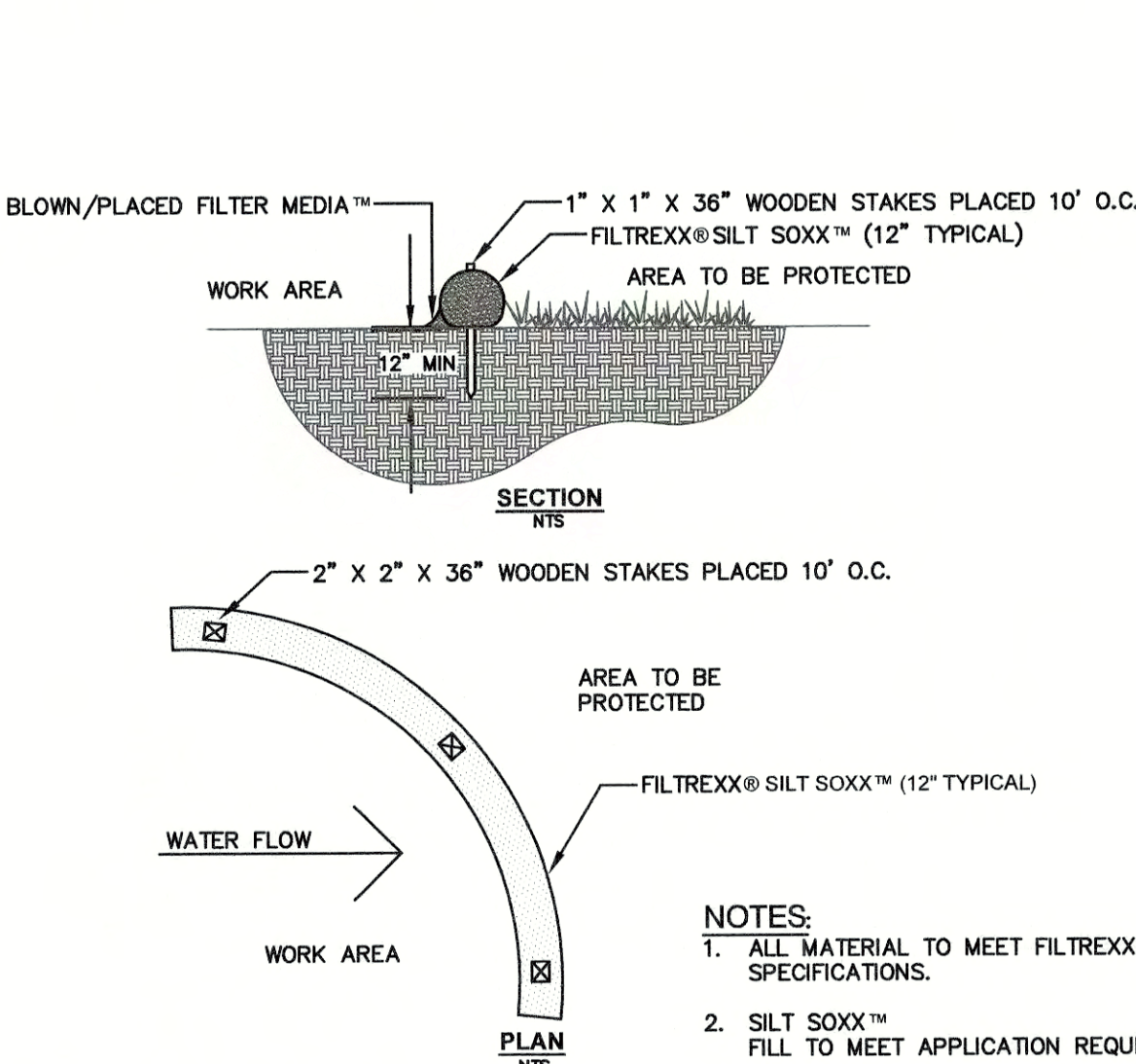


MAINTENANCE NOTE:

1. ALL STRUCTURES SHOULD BE INSPECTED AFTER EVERY RAINFALL AND REPAIRS MADE AS NECESSARY. SEDIMENT SHOULD BE REMOVED FROM TRAPPING DEVICES AFTER THE SEDIMENT HAS REACHED A MAXIMUM OF ONE HALF THE DEPTH OF THE TRAP. THE SEDIMENT SHOULD BE DISPOSED IN A SUITABLE UPLAND AREA AND PROTECTED FROM EROSION BY EITHER STRUCTURE OR VEGETATIVE MEANS. THE TEMPORARY TRAPS SHOULD BE REMOVED AND THE AREA REPAIRED AS SOON AS THE CONTRIBUTING DRAINAGE AREA TO THE INLET HAS BEEN COMPLETELY STABILIZED.

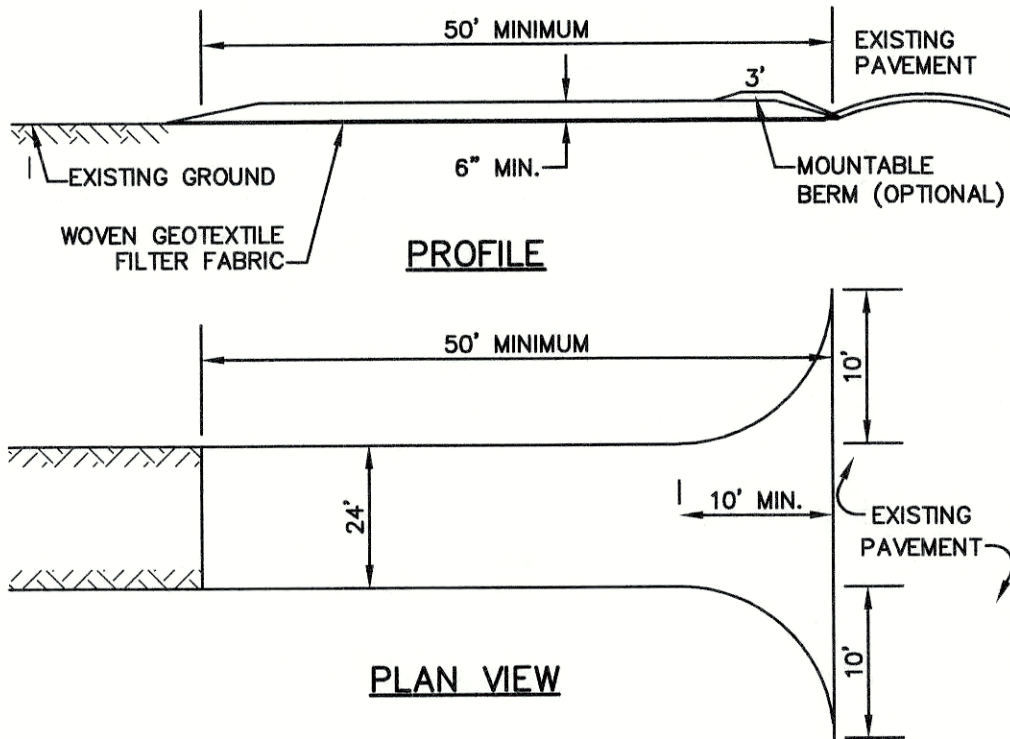
TEMPORARY CATCH BASIN INLET PROTECTION
(Block and Gravel Drop Inlet Sediment Filter)

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NOTES:

1. STONE FOR STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS, OR 10 FEET, WHICHEVER IS GREATER.
5. GEOTEXTILE FILTER FABRIC SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER FABRIC IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENTIAL LOT.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A STONE BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO THE PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT, ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO THE PUBLIC RIGHT-OF-WAY MUST BE REMOVED PROMPTLY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

USE	SEEDING MIXTURE 1/	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED	POORLY DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD	FAIR
	B	POOR	GOOD	FAIR	FAIR
	C	POOR	GOOD	EXCELLENT	GOOD
	D	FAIR	EXCELLENT	EXCELLENT	POOR
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD	FAIR
	B	GOOD	GOOD	FAIR	POOR
	C	GOOD	EXCELLENT	EXCELLENT	FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT	2/
	F	FAIR	EXCELLENT	EXCELLENT	2/
GRAVEL PIT: SEE NH-PM-24 IN APPENDIX FOR RECOMMENDATION REGARDING RECLAMATION OF SAND AND GRAVEL PITS.					
1/ REFER TO SEEDING MIXTURES AND RATES IN TABLE BELOW.					
2/ POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREA AND ATHLETIC FIELDS.					

NOTE: TEMPORARY SEED MIX FOR STABILIZATION OF TURF SHALL BE WINTER RYE OR OATS AT A RATE OF 2.5 LBS. PER 1000 S.F. AND SHALL BE PLACED PRIOR TO OCTOBER 15th, IF PERMANENT SEEDING NOT YET COMPLETE.

SEEDING GUIDE

MIXTURE	POUNDS PER ACRE	POUNDS PER 1,000 Sq. Ft.
A. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
RED TOP	2	0.05
TOTAL	42	0.95
B. TALL FESCUE	15	0.35
CREEPING RED FESCUE	10	0.25
CROWN VETCH	15	0.35
OR		
FLAT PEA	30	0.75
TOTAL	40 OR 55	0.95 OR 1.35
C. TALL FESCUE	20	0.45
CREEPING RED FESCUE	20	0.45
BIRDS FOOT TREFOIL	8	0.20
TOTAL	48	1.10
D. TALL FESCUE	20	0.45
FLAT PEA	30	0.75
TOTAL	50	1.20
E. CREEPING RED FESCUE 1/	50	1.15
KENTUCKY BLUEGRASS 1/	50	1.15
TOTAL	100	2.30
F. TALL FESCUE 1	150	3.60
1/ FOR HEAVY USE ATHLETIC FIELDS CONSULT THE UNIVERSITY OF NEW HAMPSHIRE COOPERATIVE EXTENSION TURF SPECIALIST FOR CURRENT VARIETIES AND SEEDING RATES.		

SEEDING RATES

Design: WGM	Draft: RMK	Date: 05/06/20
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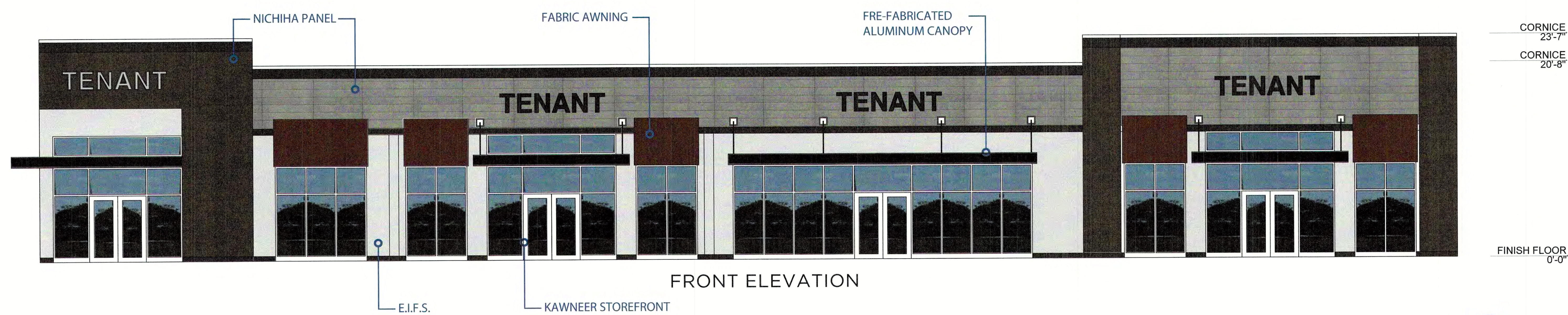
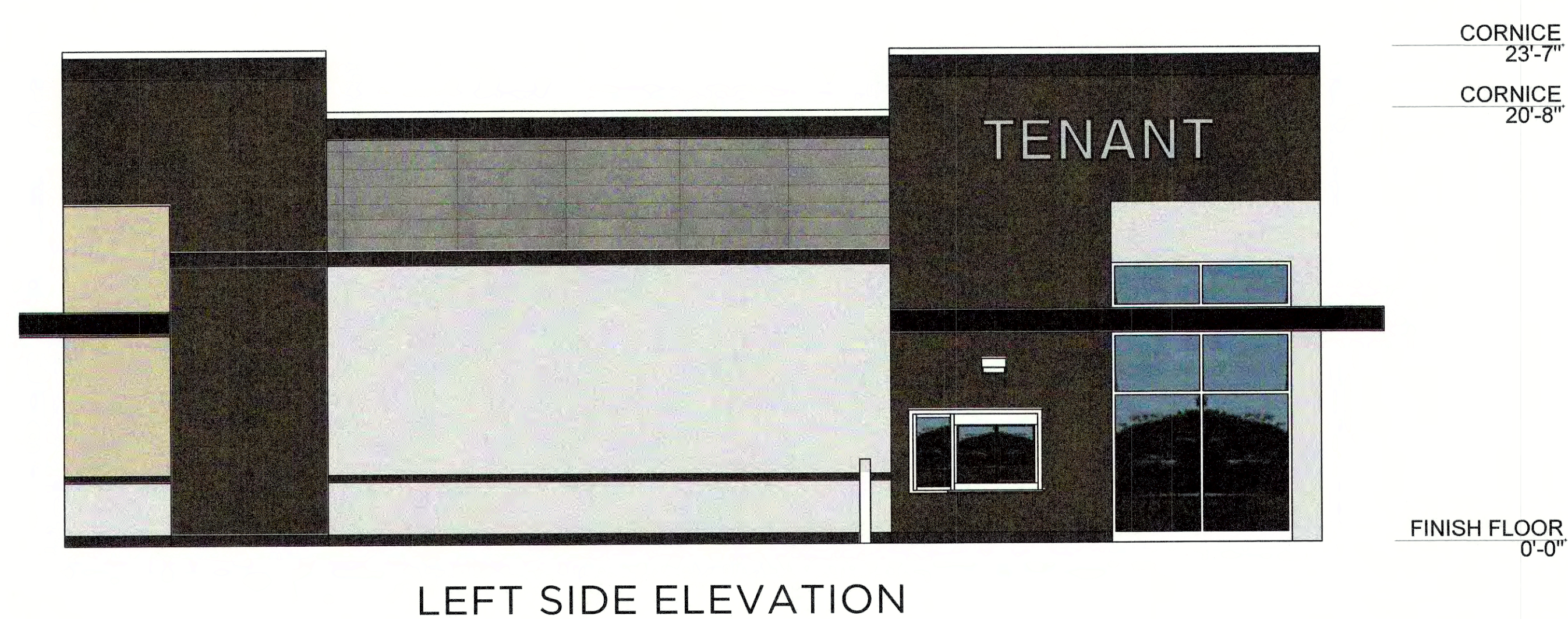
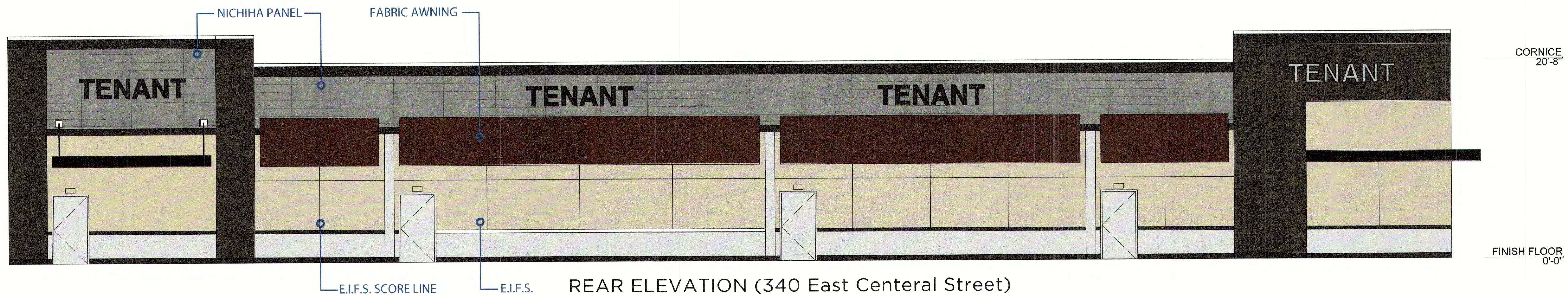


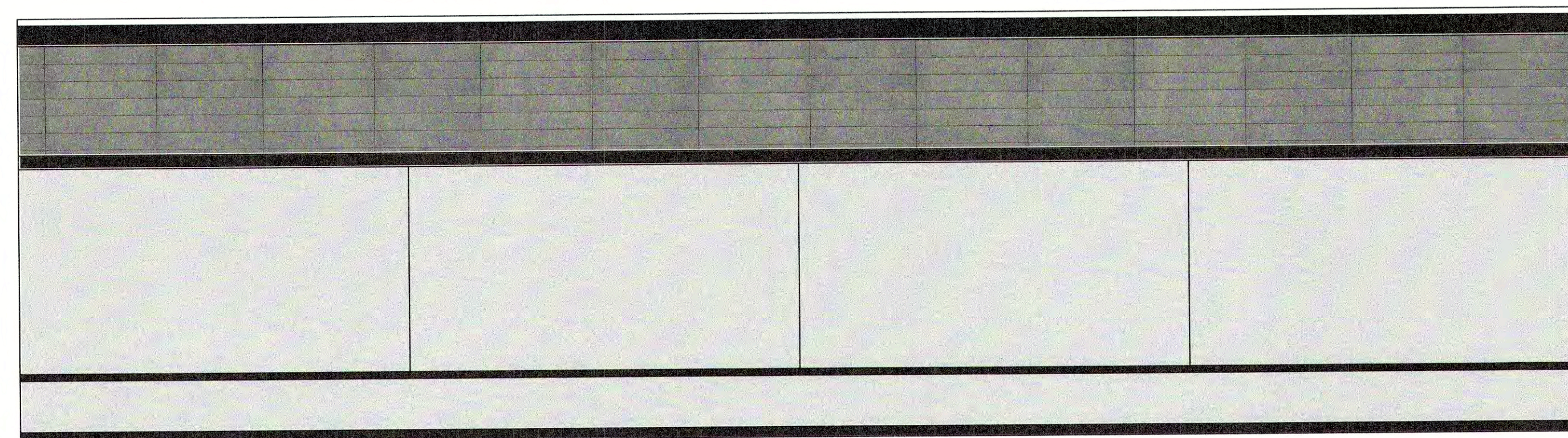
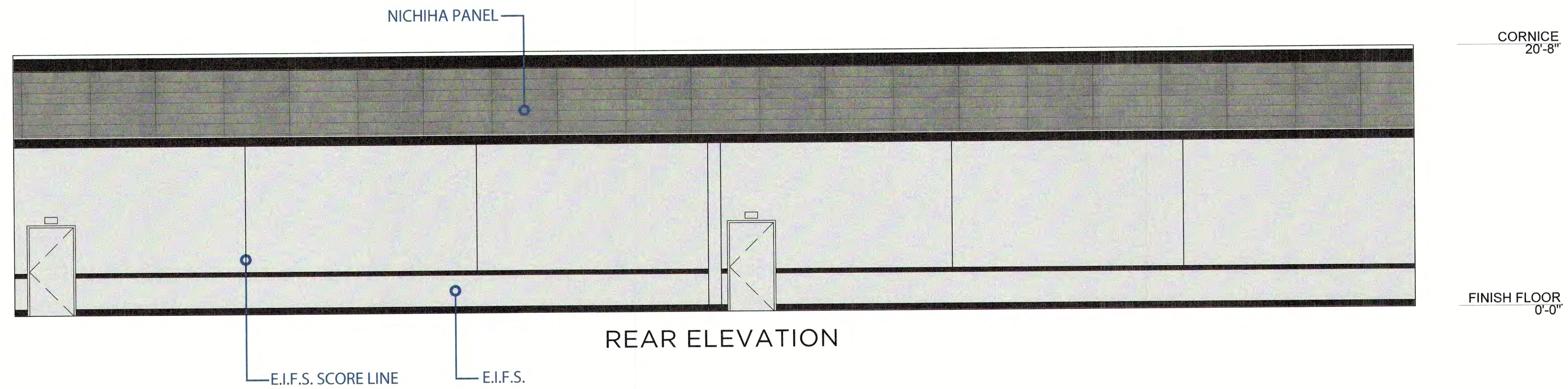
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Designed and Produced in NH	
J/B Jones & Beach Engineers, Inc.	
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885	Civil Engineering Services 603-772-4746 FAX: 603-772-0227 E-Mail: JBE@JONESANDBEACH.COM

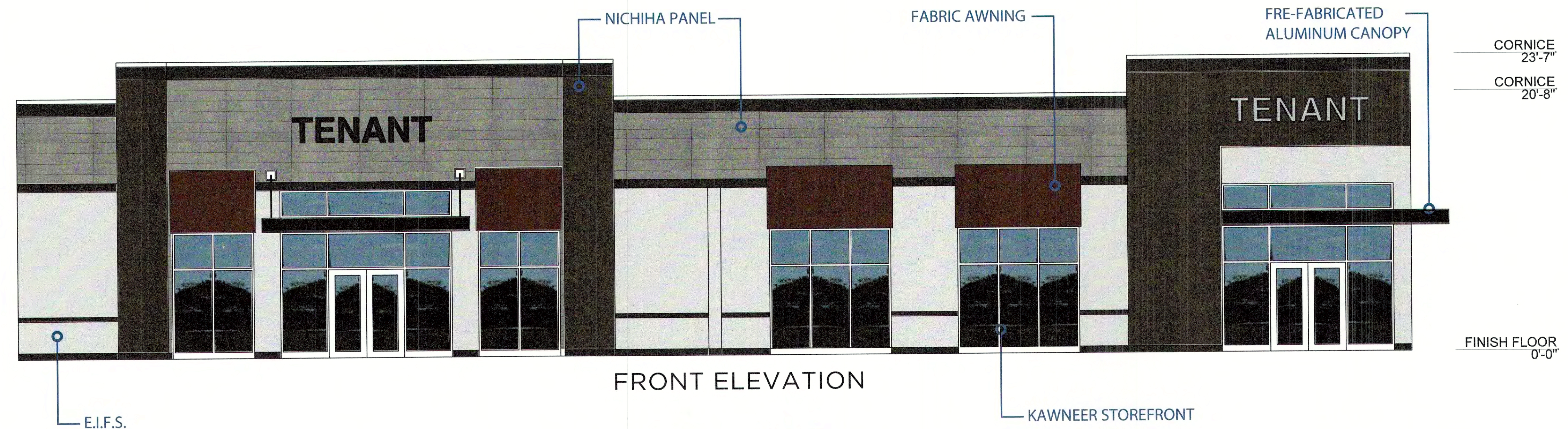
Plan Name:	EROSION AND SEDIMENT CONTROL DETAILS
Project:	PROPOSED CENTRAL SQUARE 340 E CENTRAL STREET, FRANKLIN, MA
Owner of Record:	340 EAST CENTRAL. EPK PROPERTIES, LLC. LAND COURT CERTIFICATE 190576

DRAWING No.	E1
SHEET 16 OF 16 JBE PROJECT NO. 13153	





LEFT SIDE ELEVATION



TAJ ESTATES of FRANKLIN

Building A

03-CONTRACT DOCUMENTS
TAJ ESTATES of FRANKLIN
J2001.3

PROJECT INFORMATION

00002 – PROJECT DIRECTORY

OWNER/ DEVELOPER/ CONTRACTOR:
TAJ ESTATES
Contact: Miraj Amed
1779 Central Street
Stoughton, MA
Phone: —
FAX: —
Cell: 508-962-1928
E-mail: mirajahmed@yahoo.com

ARCHITECT:
ARCHITECTstudio, Incorporated
Principal Architect: Jerome R. Dixon, Architect, AIA NCARB CSI
50 Oliver Street Studio W7
North Easton, MA 02356
Contact: Karen S
Phone: (508) 230-9684
FAX: (508) 219-4493
E-mail: TASKaren@aol.com

STRUCTURAL ENGINEER:
JOHN SPINK Structural Engineer
Contact: John Spink, PE
Phone: 774-766-0544-353-5888
E-mail: jspink1@gmail.com

SITE SURVEY/ CIVIL ENGINEERS:
JONES & BEACH ENGINEERS, INC.
Contact: —
85 Portsmouth Ave. PO Box 219
Stratham NH 03885
Phone: 603-772-4746
FAX: 603-772-0227
E-mail: JBESANDBEACH.COM

SOIL ENGINEER
Contact: —
Phone: —
FAX: —
E-mail: —

LUMBER SUPPLIER:
NATIONAL LUMBER
Contact: Rob Harris
71 Maple Street
Mansfield, MA 02048
Phone: 508-339-8020
Cell: 508-509-9234
E-mail: rharris@national-lumber.com

TRUSS SUPPLIER:
RELIABLE TRUSS AND COMPONENTS INC.
Contact: —
200 Welby Road
New Bedford, MA 02745
Phone: (603) 796-2131 ext 1713
Cell: 603-552-0523
E-mail: —

FIRE PROTECTION:
FIRE INSPECTIONAL SERVICES INC.
Contact: —
Phone: —
FAX: —
E-mail: —

SITE LIGHTING DESIGN
JONES & BEACH ENGINEERS, INC.
Contact: —
85 Portsmouth Ave. PO Box 219
Stratham NH 03885
Phone: 603-772-4746
FAX: 603-772-0227
E-mail: JBESANDBEACH.COM

CODE COMPLIANCE

BASE CODE:	780 MASSACHUSETTS STATE BUILDING CODE 8th Edition Amendments to INTERNATIONAL BUILDING CODE 2009 (IBC 2009) 521 CMR ARCHITECTURAL ACCESS BOARD 248 CMR PLUMBING AND GAS 527 CMR FIRE PREVENTION; Where items are not addressed, defer to IFC and/or IMC INTERNATIONAL ENERGY CONSERVATION CODE 2012 (IEEC2012) 271 CMR DUCTWORK AND SHEETMETAL	REFERENCE
OCCUPANCY CLASSIFICATION	R-2 RESIDENTIAL (APARTMENT BUILDING) C LOW-HAZARD STORAGE ENCLOSED	SECTION 310.1
SPECIAL REQUIREMENTS	GROUP R-2 SEPARATION WALLS FIRE PARTITIONS 1-Hr Min. FIRE RESISTANCE EXCEPTION: 1/2-Hr W/ SPRINKLER SYSTEM	SECTION 420 SECTION 420.2 SECTION 709 SECTION 709.3
CONSTRUCTION CLASSIFICATION	TYPE VA COMBUSTIBLE, PROTECTED	CHAPTER 6
MINIMUM FIRE RESISTANCE OF STRUCTURAL ELEMENTS EXTERIOR WALLS	0	TABLE 601
BUILDING AREA	7,000 ALLOWED 21,000 SF ALLOWED WITH AUTOMATIC SPRINKLER SYSTEM XX,XXX SF PROPOSED GROSS AREA	TABLE 503 TABLE 506.3 SECTION 502.1
BUILDING HEIGHT NUMBER OF STORIES	2 STORIES ABOVE GRADE PLANE WITH BASEMENT, 1 STORY BELOW GRADE PLANE ALLOWED WITH SPRINKLERS	TABLE 503 (2308.2)
SPRINKLERED	YES	SECTION 903.3.1.1

LIST OF DRAWINGS

ARCHITECTURAL

NO.	DESCRIPTION	REV	DATE
T101	Key Plans Project Information, Code Compliance & Gen. Requirements Wall, Floor, and Ceiling Assemblies		
A100			
A101	Typical 2-Bed Apartment Unit Plans		
A102	Typical 2-Bed Townhouse Unit Plans		
A103	Typical 2-Bed Townhouse Unit Plans		
A111	First Floor Plan		
A112	Second Floor Plan		
A113	Third Floor Plan		
A114	Fourth Floor Plan		
A115	Mezzanine Floor Plan		
A116	Roof Floor Plan		
A132	Stair A Plans & Sections		
A133	Stair B Plans & Sections		
A134	Loft Staircase		
A151	Interior Elevations		
A152	Interior Elevations		
A211	Exterior Elevations		
A212	Exterior Elevations		
A300	Building Section		
A301	Exterior Wall sections		
A302	Exterior Wall sections		
A810	Wall Types& Floor/ Ceiling Assembly		
A901	Exterior Openings Sections		
S000	Building 2 General Structural Notes		
S110	Building 2 Foundation Plan Bolt Plan Elevations		

GENERAL REQUIREMENTS

The Contractor and all Subcontractors shall perform their Work according to the following:

01010 SUMMARY OF WORK

Included in the Work are the following:

a. Multi-Family Apartment Building

01035 SUBSTITUTIONS AND CHANGE ORDERS

a. DO NOT substitute materials, equipment or methods unless such substitution is first discussed with the Architect and has been approved specifically in writing by the Owner
b. Notify the Architect immediately by telephone of any hidden, unforeseen conditions and any requirements Confirm all notifications and action required in writing within 24 hours of the event.
c. Milestone date changes must be made in writing by Owner.

01040 COORDINATION

a. The Contractor and each Subcontractor shall be thoroughly familiar with the Work shown on the drawings and on the other Contract Documents.
b. Each Subcontractor shall coordinate their Work with that of others and be aware of all Related Work to be performed by others, via the Contractor

01050 EXISTING CONDITIONS

a. Prior to submitting bid proposals, the Contractor and each Subcontractor shall visit the proposed site and make themselves familiar with all existing conditions, take field measurements and record all information needed to provide a complete scope of Work.
b. Notify the Architect immediately of conditions which may contribute to unnecessary, excessive costs.
c. No additional compensation will be paid by the Owner for disputes which result from a lack of familiarity with the existing conditions.

01060 REGULATORY REQUIREMENTS

Comply with all applicable national, state and local codes.

01100 SPECIAL REQUIREMENTS AND PROCEDURES

a. Maintain a written daily journal.
b. The Owner shall provide a phone on site.
c. Designate a superintendent for the duration of the Project and submit his/her name to the Architect
d. Work shall be completed in a timely manner, consistent with the approved construction schedule.
e. The Contractor shall be responsible for receiving and maintaining in good condition all millwork, fixtures and equipment up to the Date of Substantial Completion.
f. All Owners' material delivered to the Project shall be checked against the Owners' material list by the Contractor at the time of delivery. All discrepancies shall be noted in the Receiving Report and in the Daily Journal, and the Contractor shall immediately notify the Owner of same. All Shortages occurring after the receipt of goods shall be charged back the the Contractor.
g. Note on all Bills of Lading, "CASES NOT INSPECTED FOR CONCEALED DAMAGES AND SHORTAGES"

01300 SUBMITTALS

a. Product samples, manufacturer's data and shop drawings shall be submitted to the Architect for review.

01700 CONTRACT CLOSEOUT

a. Substantial Completion is the date certified by the Architect on which the Work or designated portion thereof is sufficiently complete so the Owner may occupy the same for the intended purpose.
b. Provide the following for closeout:
1-Daily Journal
2-Operation and Maintenance Data
3-Keys
4-Spare Parts, Materials and Stock
5-Certificate of Inspection/Occupancy
6-Certificate of Insurance
7-Evidence of Payment and Release of Liens
8-List of Subcontractors, Vendors and Suppliers
9-Final Statement of Account

01710 CLEANING

a. Each Subcontractor shall clean his/her Work and remove all trash, debris, packing, etc. resulting from that Work.
b. Final cleaning shall be done by a professional cleaner.

SYMBOLS AND ABBREVIATIONS

DT	CSI SPECIFICATION DIVISION NUMBER
JL	ITEM, NOTE OR LINE NUMBER
A	ELEVATION KEY NUMBER
A-3	SHEET NUMBER
A	DETAIL OR SECTION KEY NUMBER
A-3	SHEET NUMBER
A	WINDOW KEY
A	DOOR KEY
1	NOTE KEY
7	KEY TO WALLS AND PARTITION SCHEDULE

DP	DUPLEX OUTLET
WP	WEATHER-PROOF
G	GROUND-FAULT INTERRUPTED
FD	FLOOR DRAIN
220	220 VOLT RECEPTACLE
CL	CEILING-MOUNTED LIGHT
R	RECESSED
P	PENDENT
Q	WALL-MOUNTED LIGHT
S	SMOKE DETECTOR
H	HEAT DETECTOR
T	THERMOSTAT
DM	DIMMER
A	PARTITION SCHEDULE
K	CABLE
TEL	TELEPHONE
CB	CEILING FAN
DB	DOORBELL
REF	RECESSED EXHAUST FAN
REH	RECESSED EXHAUST FAN WITH HEAT
REH	RECESSED EXHAUST FAN WITH LIGHT
REH	RECESSED EXHAUST FAN WITH LIGHT AND HEAT
FF	FINISHED FLOOR
AF	ABOVE FINISHED FLOOR
D	DIMMER
T	THERMOSTAT
G	GROUND-FAULT
WP	WEATHER-PROOF
R	RECESSED
C	CHANDELIER
F	FLORESCENT
P	PENDANT
E	EYEBALL
DS	DOWNSPOUT

Key to Symbols

SC	COMBINATION SMOKE & CARBON MONOXIDE DETECTOR
HD	HEAT DETECTOR
P	PULL STATION
F	MINI AUDIO/VISUAL DEVICE
FE	FIRE EXTINGUISHER
EL	EMERGENCY LIGHT
EXIT	EXIT SIGN
EXIT	EXIT SIGN WITH EMERGENCY LIGHT
FACP	FIRE ALARM CONTROL PANEL
MFACP	MASTER FIRE CONTROL PANEL
EXIT	EMERGENCY EXIT LIGHT
B	BATHROOM EXHAUST FAN

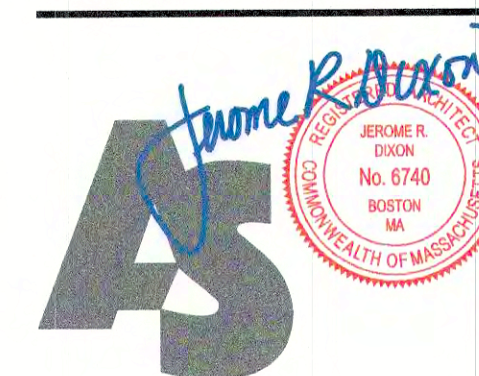
Key to wall types

EXTERIOR INSULATED WALL 2x6 @ 16" O.C.
INTERIOR INSULATED WALL 2x4 @16" O.C.
INTERIOR WET WALL WITH SOUND BATTS 2x8 @16" O.C.
INTERIOR WALL WH SOUND BATTS 2x4 @16" O.C.
INTERIOR WALL 2x4 @ 16" O.C.
E and F Sheet A00

SIGNATURES
BY: DATE:

OWNER	
REVISION HISTORY	
1	09/11/2017 Issued for Permit

TAJ Estates of Franklin
340 E Central Square
Franklin, MA



ARCHITECTS' STUDIO
Jerome R. Dixon, Architect

**ARCHITECTURE
PLANNING
INTERIOR DESIGN**

50 Oliver Street
Studio W7
Easton, MA 02356

PHONE: 508.230.9684
FAX: 508.219.4693
E-Mail: ARCHITEC77@AOL.com
WWW.ARCHITECTSSTUDIO1.COM

**Building A
Project
Information**

DATE: Rev 0 April 26, 2020
DRAWN BY: KS
CHECKED BY: ARD
ARCHITECT'S PROJECT NUMBER: 20013

T1 01

TAJ ESTATES of FRANKLIN Building B

03-CONTRACT DOCUMENTS
TAJ ESTATES of FRANKLIN
J2001.3

PROJECT INFORMATION

00002 – PROJECT DIRECTORY

OWNER/ DEVELOPER/ CONTRACTOR:
TAJ ESTATES
Contact: Miraj Amed
1779 Central Street
Stoughton, MA
Phone: –
FAX: –
Cell: 508-962-1928
E-mail: mirajahmed@yahoo.com

ARCHITECT:
ARCHITECTSStudio, Incorporated
Principal Architect: Jerome R. Dixon, Architect, AIA NCARB CSI
50 Oliver Street Studio W7
North Easton, MA 02356
Phone: (508) 230-9684
FAX: (508) 219-4493
Contact: Karen S
Phone: (508) 230-9684
E-mail: TASKaren@aol.com

STRUCTURAL ENGINEER:
JOHN SPINK Structural Engineer
Contact: John Spink, PE
Phone: 774-766-0544-353-5888
E-mail: jspink1@gmail.com

SITE SURVEY/ CIVIL ENGINEERS:
JONES & BEACH ENGINEERS, INC.
Contact:
85 Portsmouth Ave. PO Box 219
Stratham NH 03885
Phone: 603-772-4746
FAX: 603-772-0227
E-mail: JBESANDBEACH.COM

SOIL ENGINEER

Contact: –
Phone: –
Fax: –
E-mail: –

LUMBER SUPPLIER:
NATIONAL LUMBER
Contact: Rob Harris
71 Maple Street
Mansfield, MA 02048
Phone: 508-339-8020
Cell: 508-509-9234
E-mail: rharris@national-lumber.com

TRUSS SUPPLIER:
RELIABLE TRUSS AND COMPONENTS INC.
Contact:
200 Welby Road
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Phone: (603) 796-2131 ext 1713
Cell: 603-552-0523
E-mail: –

FIRE PROTECTION:
FIRE INSPECTIONAL SERVICES INC.
Contact: –
Phone: –
Fax: –
E-mail: –

SITE LIGHTING DESIGN
JONES & BEACH ENGINEERS, INC.
Contact: –
85 Portsmouth Ave. PO Box 219
Stratham NH 03885
Phone: 603-772-4746
FAX: 603-772-0227
E-mail: JBESANDBEACH.COM

CODE COMPLIANCE

BASE CODE:	780 MASSACHUSETTS STATE BUILDING CODE 8th Edition Amendments to INTERNATIONAL BUILDING CODE 2009 (IBC 2009) 521 CMR ARCHITECTURAL ACCESS BOARD 248 CMR PLUMBING AND GAS 527 CMR FIRE PREVENTION; Where items are not addressed, defer to IFC and/or IMC INTERNATIONAL ENERGY CONSERVATION CODE 2012 (IECC2012) 271 CMR DUCTWORK AND SHEETMETAL	REFERENCE
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OCCUPANCY CLASSIFICATION	R-2 RESIDENTIAL (APARTMENT BUILDING) C LOW-HAZARD STORAGE ENCLOSED	SECTION 310.1
SPECIAL REQUIREMENTS	GROUP R-2 SEPARATION WALLS FIRE PARTITIONS 1-Hr Min. FIRE RESISTANCE EXCEPTION: 1/2-Hr W/ SPRINKLER SYSTEM	SECTION 420 SECTION 420.2 SECTION 709 SECTION 709.3
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S000	Building 2 General Structural Notes		
S110	Building 2 Foundation Plan Bolt Plan Elevations		

GENERAL REQUIREMENTS

The Contractor and all Subcontractors shall perform their Work according to the following:

- 01010 SUMMARY OF WORK**
Included in the Work are the following:
a. Multi-Family Apartment Building
- 01035 SUBSTITUTIONS AND CHANGE ORDERS**
a. DO NOT substitute materials, equipment or methods unless such substitution is first discussed with the Architect and has been approved specifically in writing by the Owner.
b. Notify the Architect immediately by telephone of any hidden, unforeseen conditions and any requirements Confirm all notifications and action required in writing within 24 hours of the event.
c. Milestone date changes must be made in writing by Owner.
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a. Prior to submitting bid proposals, the Contractor and each Subcontractor shall visit the proposed site and make themselves familiar with all existing conditions, take field measurements and record all information needed to provide a complete scope of Work.
b. Notify the Architect immediately of conditions which may contribute to unnecessary, excessive costs.
c. No additional compensation will be paid by the Owner for disputes which result from a lack of familiarity with the existing conditions.
- 01060 REGULATORY REQUIREMENTS**
Comply with all applicable national, state and local codes.
- 01100 SPECIAL REQUIREMENTS AND PROCEDURES**
a. Maintain a written daily journal.
b. The Owner shall provide a phone on site.
c. Designate a superintendent for the duration of the Project and submit his/her name to the Architect.
d. Work shall be completed in a timely manner, consistent with the approved construction schedule.
e. The Contractor shall be responsible for receiving and maintaining in good condition all millwork, fixtures and equipment up to the Date of Substantial Completion.
f. All Owners' material delivered to the Project shall be checked against the Owners' material list by the Contractor at the time of delivery. All discrepancies shall be noted in the Receiving Report and in the Daily Journal, and the Contractor shall immediately notify the Owner of same. All Shortages occurring after the receipt of goods shall be charged back the Contractor.
g. Note on all Bills of Lading, "CASES NOT INSPECTED FOR CONCEALED DAMAGES & SHORTAGES"
- 01300 SUBMITTALS**
a. Product samples, manufacturer's data and shop drawings shall be submitted to the Architect for review.
- 01700 CONTRACT CLOSEOUT**
a. Substantial Completion is the date certified by the Architect on which the Work or designated portion thereof is sufficiently complete so the Owner may occupy the same for the intended purpose.
b. Provide the following for closeout:
1-Daily Journal
2-Operation and Maintenance Data
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b. Final cleaning shall be done by a professional cleaner.

SYMBOLS AND ABBREVIATIONS

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1	NOTE KEY
7	KEY TO WALLS AND PARTITION SCHEDULE

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WP	WEATHER-PROOF
G	GROUND-Fault INTERRUPTED
FD	FLOOR DRAIN
220	220 VOLT RECEPTACLE
CL	CEILING-MOUNTED LIGHT
R	RECESSED
P	PENDENT
Q	WALL-MOUNTED LIGHT
S	SMOKE DETECTOR
H	HEAT DETECTOR
T	THERMOSTAT
SD	DIMMER
A	PARTITION SCHEDULE
K	CABLE
TEL	TELEPHONE
CB	CEILING FAN
DB	DOORBELL
RE	RECESSED EXHAUST FAN
REH	RECESSED EXHAUST FAN WITH HEAT
REHL	RECESSED EXHAUST FAN WITH LIGHT
REHHL	RECESSED EXHAUST FAN WITH LIGHT AND HEAT
FF	FINISHED FLOOR
AFF	ABOVE FINISHED FLOOR
D	DIMMER
T	THERMOSTAT
G	GROUND-Fault
WP	WEATHER-PROOF
R	RECESSED
C	CHANDELIER
F	FLORESCENT
P	PENDANT
E	EYEBALL
DS	DOWNSPOUT

Key to Symbols

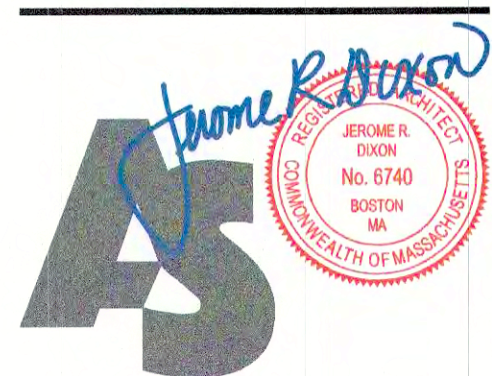
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FE	FIRE EXTINGUISHER
EL	EMERGENCY LIGHT
EXIT	EXIT SIGN
EXIT	EXIT SIGN WITH EMERGENCY LIGHT
FACP	FIRE ALARM CONTROL PANEL
MFACP	MASTER FIRE CONTROL PANEL
EE	EMERGENCY EXIT LIGHT
B	BATHROOM EXHAUST FAN

Key to wall types

EXTERIOR INSULATED WALL	2x6 @ 16" O.C.
INTERIOR INSULATED WALL	2x4 @ 16" O.C.
INTERIOR WET WALL WITH SOUND BATTS	2x8 @ 16" O.C.
INTERIOR WALL W/ SOUND BATTS	2x4 @ 16" O.C.
INTERIOR WALL	2x4 @ 16" O.C.
E and F Sheet A00	

SIGNATURES		DATE
BY		
OWNER		
REVISION HISTORY		
Δ	09/11/2017	Issued for Permit

TAJ ESTATES
340 E Central Square
Franklin, MA



ARCHITECTS' STUDIO
Jerome R. Dixon, Architect

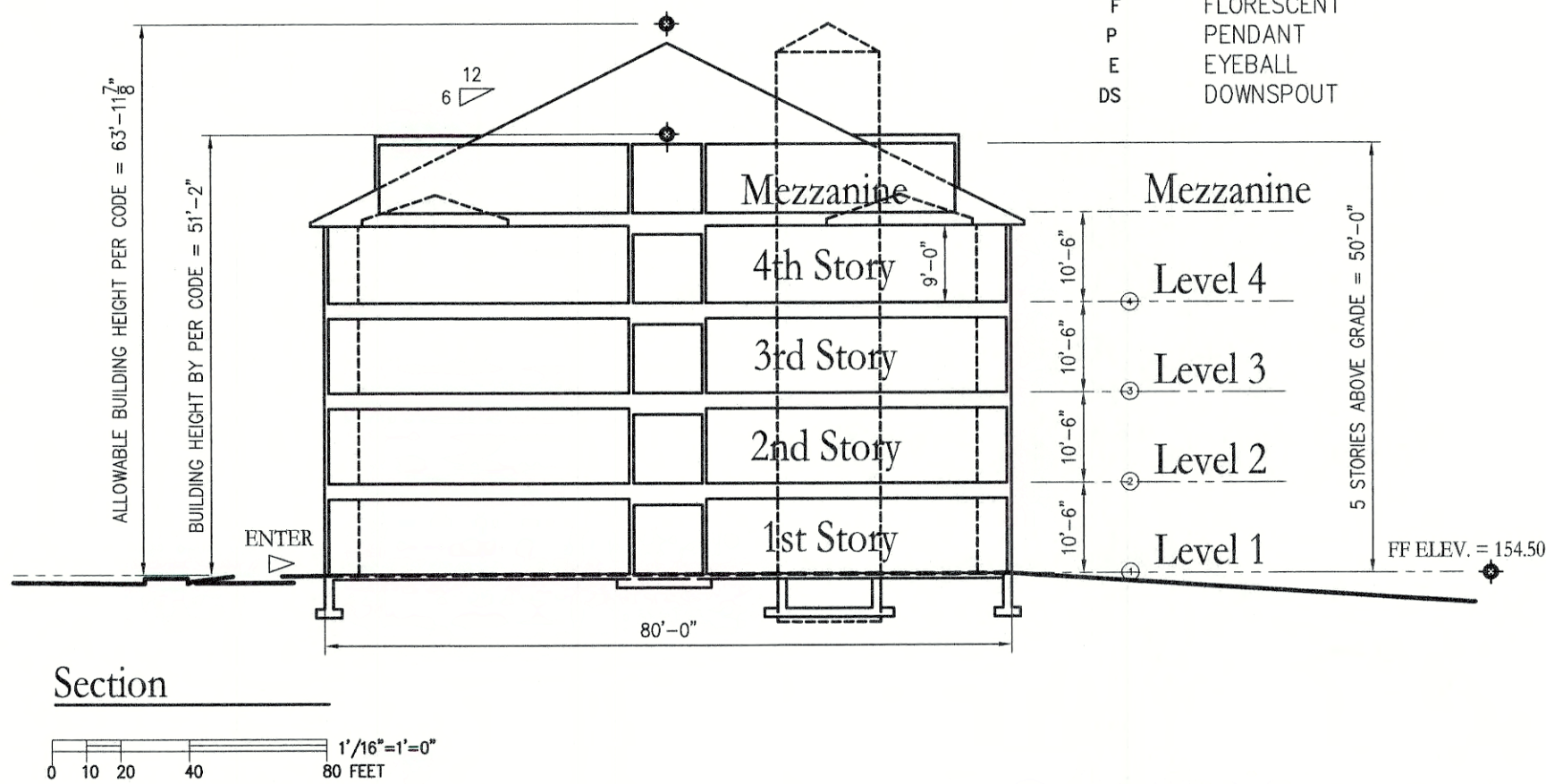
ARCHITECTURE
PLANNING
INTERIOR DESIGN

50 Oliver Street
Studio W7
Easton, MA 02356

PHONE: 508.230.9684
FAX: 508.21.9.4693
E-Mail: ARCHITECT77@AOL.COM
WWW.ARCHITECTSSTUDIO1.COM

Building B
Project
Information

DATE : Rev 0 April 26, 2020
DRAWN BY : KS
CHECKED BY : JRD
ARCHITECT'S PROJECT NUMBER : 2001.3

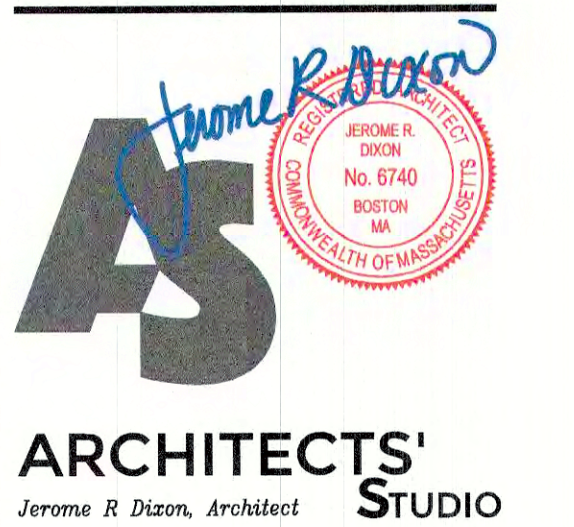


Section





TAJ ESTATES
340 E Central Square
Franklin, MA



ARCHITECTURE
PLANNING
INTERIOR DESIGN

50 Oliver Street
Studio W7
Easton, MA 02356

PHONE: 508.230.9684
FAX: 508.219.4693
E-Mail: ARCHITEC77@AOL.com
WWW.ARCHITECTSSTUDIO1.COM

3D RENDERS

DATE: Rev 0 April 26, 2020
DRAWN BY: KS
CHECKED BY: JRD
ARCHITECT'S PROJECT NUMBER: 20013

June 17, 2020

Mr. Anthony Padula, Chairman
355 East Central Street
Franklin, MA 02038

**Re: 340 East Central Street
Site Plan Peer Review**

Dear Mr. Padula:

BETA Group, Inc. has reviewed documents for the proposed Site Plan Approval application, ***“Proposed Development Central Square” located at 340 East Central Street Franklin, Massachusetts***. This letter is provided to outline findings, comments, and recommendations.

BASIS OF REVIEW

BETA received the following items:

- ***Site Plan & Special Permit Application***, including the following:
 - *Cover Letter*
 - *Form P*
 - *Certificate of Ownership*
 - *Memorandum in support of application within the Commercial II District*
 - *Waiver Request Letter*
 - *Abutter Information*
- Site Plans (21 Sheets) entitled ***Proposed Development Central Square***, dated May 6, 2020 and prepared by Jones & Beach Engineers, Inc. of Stratham, NH.
- ***Drainage Analysis***, dated May 1, 2020 and prepared by Jones & Beach Engineers, Inc. of Stratham, NH.
- ***Transportation Impact Assessment Central Square Mixed-Use Development 340 East Central Street (Route 140) Franklin, Massachusetts, dated May 2020, prepared by Vanasse & Associates, Inc., Andover, MA***

Review by BETA included the above items along with the following, as applicable:

- Site Visit
- ***Zoning Chapter 185 From the Code of the Town of Franklin***, current through October 2019
- ***Zoning Map of the Town of Franklin, Massachusetts***, attested to April 30, 2019
- ***Stormwater Management Chapter 153 From the Code of the Town of Franklin***, Adopted May 2, 2007
- ***Subdivision Regulations Chapter 300 From the Code of the Town of Franklin***, current through January 1, 2016
- ***Wetlands Protection Chapter 181 From the Code of the Town of Franklin***, dated August 20, 1997
- ***Town of Franklin Best Development Practices Guidebook***, dated September 2016

INTRODUCTION

The project site consists of 340 East Central Street, a previously developed parcel formerly used as an auto service facility (the "Site"). The parcel contains an area of 6.506 Acres and is located along the southern side of East Central Street. The Town of Franklin Assessor's Office identifies the parcel as Map 285 Lot 9. The Site is located within the Commercial II Zoning District. Properties to the north, east, and west are also within this district, while parcels to the south are within the Rural Residential I district.

The existing Site includes a 116,475± sq. ft. 1-story building and a 9,800± sq. ft. garage. Associated site features include paved parking areas, utilities (drainage, water, sewer, and electric). The western portion of the Site includes a 20' wide easement used for access and utilities. A paved driveway within this easement begins at East Central Street and continues south beyond the Site.

Topography at the Site generally slopes towards the south. Grades within the paved areas are typically 3% - 5%. The southern portion of the parcel is an area of vegetated wetlands.

The applicant proposes to demolish the existing buildings and redevelop the Site with two retail buildings and two residential buildings. Associated site developments will include paved parking areas and driveways, lighting, utilities, and landscaping. Stormwater management is proposed through deep sump catch basins, oil/water separators, and several subsurface infiltration systems.

The project is located within an approved wellhead protection area (Zone II) and the Water Resource District. Wetland resource areas are located within the project limits and work is proposed within the buffer zone which will require obtaining an Order of Conditions from the Franklin Conservation Commission. The project is not located within a FEMA mapped 100-year flood zone or a NHESP mapped estimated habitat of rare or endangered species. NRCS maps indicate the presence of Merrimac fine sandy loam, rated in hydrologic soil group (HSG) A, Scarboro and Birdsall soils (HSG A/D), and Urban Land (unrated).

FINDINGS, COMMENTS AND RECOMMENDATIONS

GENERAL COMMENTS

- G1. The existing easement for utilities and access will be partially blocked by proposed curbing, reducing the usable access width to 15 feet and will be located in a one-way traffic area. Provide accommodations or additional easement area for egress from the site.
- G2. Clarify if there will be any easements or rights of entry granted for the proposed connection to the parcel to the east.
- G3. Provide typical details for proposed light poles and luminaires.

ZONING

The Site is located within the Commercial II (CII) Zoning District. The proposed use of the Site is identified as residential, retail, and a coffee shop with associated vehicle service establishment. General retail uses and coffee shops (restaurant) are permitted as of right and require a special permit from the Board of Appeals only if the project results in an increase in estimated water consumption of more than 15,000 gallons per day. The proposed vehicle service establishment associated with coffee shop also requires a special permit, which has been requested. Multi-family residential uses are not permitted within the

district; however, the project narrative indicates the Board of Appeals has granted a variance, dated January 9, 2020, for this proposed use.

- Z1. Provide the estimated water consumption for retail and coffee shop uses to confirm a special permit by the Board of Appeals is not required.

SCHEDULE OF LOT, AREA, FRONTAGE, YARD AND HEIGHT REQUIREMENTS (§185 ATTACHMENT 9)

The project site will meet the requirements for lot area, frontage, lot depth, lot width, front and side yards, and impervious coverage. The project does not comply with the requirement for rear yard; however, the narrative indicates the Board of Appeals has granted a variance, dated January 9, 2020, for the proposed 26' rear yard setback. The project does not comply with building height requirements by right (40') and the applicant has submitted a special permit requesting a height of up to 50' as outlined in §185 Attachment 9. Greater than one principal building is permitted on a single lot in accordance with §185-11.

- SCH1. Clarify the proposed building height, noted as 50' on the Site Plan and as 51' – 2" on the Architectural Plans. Buildings greater than 50' in height are not permitted in the CII Zoning District. Also confirm that the exterior wall height at the gable does not exceed the permitted building height by more than 10 feet in accordance with the Building Height definition (§185-3).

PARKING, LOADING AND DRIVEWAY REQUIREMENTS (§185-21)

The existing Site includes three paved access driveways. The project proposes to modify the westerly access drive (to a one-way entrance) and remove the easterly access driveways. A new curb cut will also be provided directly across from Glen Meadow Road and will service as the entrance for the non-residential uses and will be the primary egress from the site. An additional connection will be made to the commercial parcel to the east.

Section §185-21.B.(2) describes the number of parking spaces required for residential and nonresidential buildings in the CII Zoning District. For residential buildings, two spaces are required for each dwelling unit. For retail, one space is required per 200 feet of gross floor area (GFA), plus one space per separate enterprise. For restaurants, one space is required per 2.5 fixed seats or one space per 60 square feet if seats are not fixed. According to provided parking calculations, 104 dwelling units are proposed and require 208 spaces; 15,219 sq. ft. of retail GFA is proposed and requires 76 spaces; and 40 restaurant seats are proposed and require 16 spaces. A total of 301 parking spaces are required for the site where 268 are proposed and the applicant has requested that the Planning Board reduce the required number of parking spaces as outlined in §185-21.D.(4).

Proposed parking spaces are depicted as 19' long and 9' wide, except for accessible parking spaces which are 8' in width in accordance with Massachusetts Architectural Access Board (MAAB) requirements. Associated parking area aisles are a minimum of 24' wide. Twelve spaces are designated as accessible and meet MAAB requirements for number, markings, and signage.

It is anticipated that the Fire Chief will review turning movements for fire equipment throughout the site as well as the proposed materials for the fire lane

- P1. Clarify how many separate enterprises are proposed within the retail buildings. Each enterprise must be provided one additional parking space.
- P2. Clarify if the parking calculations include the outdoor patio area associated with the restaurant.

- P3. Confirm that a waste collection vehicle can adequately access the most northerly restaurant-use dumpster.
- P4. Clarify where residential parking will be provided. Plans indicate 117 spaces located to the north of the residential buildings; however, the Waiver Request Letter indicates that 1.5 spaces per unit (150 total) will be sufficient for site operations.
- P5. Provide background information and/or empirical data to confirm that the proposed parking, including shared-use, and visitor parking is adequate for the site and is justified to be below that required by the Bylaw.
- P6. Confirm that all residential parking spaces will be located within 300 feet of the building entrances (§185-21.C.(6)).
- P7. Clarify if any of the dwelling units will be accessible. Per 521 CMR 10.3, parking spaces for dwelling unit occupants must be capable of complying with 521 CMR 23.2 through 521 CMR 23.8. Demonstrate that additional accessible spaces can be provided for occupants, if necessary.
- P8. Although the number of trees proposed throughout the site exceeds that required by (§185-21.C(5)), consideration should be given to relocating or adding trees in the parking lot serving the residential units.
- P9. Recommend revising the location of or eliminating the first several parking spaces west of the one-way residential entrance. The spaces will require vehicles to back into them and their view will be obstructed by the proposed transformer and landscaping adjacent to East Central Street, creating a potential conflict with entering vehicles.
- P10. Additional comments regarding site circulation, parking layout, signing/stripping, and pedestrian accommodations will be provided under separate cover as part of the traffic review.

SIDEWALKS (§185-28)

The project is located within the Commercial II Zoning District and is required to provide 6' wide sidewalks along the street frontage. An existing 5' wide sidewalk, located within the State right-of-way, is present along the frontage's length. The applicant proposes to retain this sidewalk and provide handicap ramps at proposed and retained driveways.

CURBING (§185-29)

The project proposes the use of vertical granite curbing within the East Central Street right-of-way and along the majority of parking areas. Monolithic concrete curb is proposed along sidewalks in front of new buildings.

- C1. Clarify proposed location of Type "F" granite curb depicted on Mountable Stamped Concrete Detail.

SITE PLAN REVIEW (§185-31)

The proposed development is subject to Site Plan Review and must comply with the requirements of this section.

- S1. Include abutting land uses and zoning information on the Locus Map (§185-31.C.(3)(d)).
- S2. Indicate proposed snow storage locations on the plans (§185-31.C.(3)(i)).

- S3. Provide note indicating that all proposed plantings shall come from the Best Development Practices Guidebook (§185-31.C.(3)(k)).
- S4. Provide sight line information, including intersection sight distance, at the proposed driveway egress (§185-31.C.(3)(t)).
- S5. Evaluate if there will be any odor issues resulting from the two restaurant dumpsters proposed approximately 5 to 10 feet from the easterly property line.

SCREENING (§185-35)

The project proposes outdoor parking for 10 or more cars, which must be screened from adjacent residential districts or uses from which they would otherwise be visible. Although the abutting parcel to the south is within the Rural Residential 1 Zoning District, it is a Town-owned lot that is unlikely to be developed due to the presence of a well head; therefore, screening appears to be unnecessary.

WATER RESOURCES DISTRICT (§185-40)

The Site is located within the Water Resources District due to the presence of a Zone II Wellhead Protection Area. All new impervious surfaces are directed to on-site recharge systems, as required by §185-40.E.(4) and will recharge a volume in excess of that required by DEP.

- WR1. Section §185-40.D.(1)(l)(ii) requires that the proposed groundwater recharge efforts must be approved by a hydrogeologist; however, provided that the stormwater management system is revised to fully comply with the Massachusetts Stormwater Management Standards no adverse impacts to groundwater are anticipated as a result of the project. BETA defers to the preference of the Board to require approval by a hydrogeologist.
- WR2. Note that any fill placed in quantity greater than 15 yards must be certified in accordance with §185-40.E.(5).

UTILITIES

Proposed utilities include sewer, electric, gas, and domestic and fire water services. Detailed review of water and sewer utilities is anticipated to be provided by the DPW and Fire Chief (e.g. for fire hydrants), as applicable.

- U1. Provide sizing calculations for proposed grease traps in accordance with Title V regulations per DPW policy. If tenants/uses are unknown at this time, calculation must be provided prior to construction.
- U2. Clarify the need for a grease trap at Building D, which is labeled for retail use.
- U3. Provide a note that all water and sewer utility installations shall be done in accordance with the Town of Franklin Department of Public Works Standards for Sewer and Water Materials and Installation (Town Standards). Also note that where utility installation details conflict with the Town Standards that the Town Standards shall govern.
- U4. Consult the DPW to determine if the proposed water system should be looped back to an existing water main.
- U5. Recommend to provide the size and material of the existing water and sewer lines.

- U6. Consult the DPW to confirm that the proposed 4" sewer services from Buildings C and D are of acceptable size.
- U7. Clarify if any easements are needed for the new fire hydrant and utility pole located just east of the proposed site entrance.
- U8. Revise note 2 on Hydrant Installation Detail to indicate that hydrant shall be factory painted in Town colors. Also remove references to "non-draining" and "hydrant drain to be plugged" unless confirmed to be acceptable by the DPW.
- U9. Resolve discrepancy of sewer force main material between Utility Plan and Force Main Sewer Trench detail. Town Specifications require SDR 21 PVC, DR11 HDPE, or ductile iron.
- U10. Coordinate with the DPW and indicate how the existing utility services will be capped. Water services are typically required to be capped at the main.

STORMWATER MANAGEMENT

The project proposes to direct runoff from impervious areas into new closed drainage systems comprised of roof leaders, deep sump catch basins with hoods, oil/water separators, and subsurface infiltration systems. Runoff from impervious surfaces will be directed to one of three new subsurface infiltration systems. Overflows from the proposed systems will be directed into the wetland buffer zone in the southern portion of the Site.

GENERAL

- SW1. Provide a stamped Stormwater Management Checklist.
- SW2. Recommend replacing the curb break, rip rap, swale, and sidewalk scupper with a conventional catch basin and pipe.
- SW3. Provide an easement for the relocated drainage line that carries flow from East Central Street. Since this portion of East Central Street is a State Highway, confirm that required coordination with MassDOT is being conducted.
- SW4. Review structure rim, weir, and outlet elevations (e.g. DMHs 517, 518, and 525, etc.) to ensure consistency between plans, details, and HydroCAD model.
- SW5. Revise drain manhole detail to specify clay brick for invert in accordance with Subdivision Regulations.
- SW6. Remove reference to "hook lock grates" on Catch Basin (MA) detail.
- SW7. Request waiver to allow the installation of PVC pipe as part of the drainage systems at oil/water separators.
- SW8. Provide a detail for rip rap outlet protection and note required dimensions at each outfall. Recommend including a layer of filter fabric for permanent erosion control beneath stone.

MASSACHUSETTS STORMWATER MANAGEMENT STANDARDS:

The proposed development will disturb greater than one acre and is located in proximity to wetland resources; therefore, the project is subject to Chapter 153: Stormwater Management of the Town of Franklin Bylaws and MassDEP Stormwater Management Standards.

No untreated stormwater (Standard Number 1): *No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

The project does not propose any new untreated stormwater discharges to wetlands. Four new outfalls are proposed which discharge into wetland buffer zones. Riprap aprons are proposed at the end of these outfalls to mitigate erosion potential.

Post-development peak discharge rates (Standard Number 2): *Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

The project proposes an increase in impervious area and will use subsurface infiltration systems to mitigate increases in post-development peak discharge rates and total runoff volumes.

SW9. Revise HydroCAD model (i.e. finer routing) to eliminate oscillations, which may render the output data invalid.

SW10. Clarify use of HSG D for areas located in areas mapped by NRCS as HSG A/D in the existing conditions model. There is an approximate 0.82-acre reduction in Woods Good HSG D in the proposed conditions and is presumed to be new impervious area. While it is anticipated that some of the soils in proximity to the wetlands will be saturated HSG D soils, it is also anticipated there will be upland areas located in unsaturated HSG A soils.

SW11. Revise Time of Concentration to a minimum of 5 minutes for subwatersheds where the grass portion is minimal in comparison to the paved area (e.g. 210S and 219S).

SW12. Remove Reaches 1, 2, and 3 from the proposed conditions model, which appear to significantly reduce peak flow rate from the outfalls. These reaches are not included in the existing conditions model.

SW13. Recommend providing pipe sizing calculations utilizing the rational method.

Recharge to groundwater (Standard Number 3): *Loss of annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable.*

NRCS soil maps indicate the presence of Merrimac fine sandy loam with a Hydrologic Soil Group (HSG) rating of A (high infiltration potential), Scarboro and Birdsail soils with HSG A/D (very low infiltration potential when saturated) and Urban Land, with no associated HSG rating. Test pit logs indicate the presence of sand, loamy sand, and sandy loam throughout the Site. The infiltration systems have been designed to provide a recharge volume in excess of that required and will drain within 72 hrs.

SW14. Review calculations for required recharge volume. The on-site impervious areas used in these calculations are significantly lower than the total impervious area of the post-development site. The stormwater narrative indicates the project is being designed as a new development.

SW15. Depict location of hydraulic conductivity tests on the plans.

SW16. Provide test pit logs for TP #1-04 and TP #18-15, which are in the footprints of Chamber Systems #1 and #3, respectively.

SW17. Identify basis for using HSG D in recharge calculations. It appears the project can easily meet the required recharge volume assuming the more conservative HSG A soils.

- SW18. Revise subsurface recharge systems to provide the minimum required 2' separation to groundwater. Details provided on Sheet D5 generally indicate approximately 1.5' of separation. A mounding analysis will be required where separation to groundwater is less than 4 feet.
- SW19. Evaluate the estimated seasonal high groundwater elevation at Chamber System 2. TP #2-15 (approx. Elevation 279.5) indicates mottling 78" below the surface (elevation 273) and is only 0.5'± below the system bottom.
- SW20. In consideration that only a single test pit has been conducted within the limits of Chamber System 2, provide an additional test pit near the southeast corner of system to confirm soil texture and groundwater elevations. BETA notes that if loamy sand is confirmed an increased exfiltration rate to 2.41 in/hr would be justified.

80% TSS Removal (Standard Number 4): *For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids.*

The project proposes to direct runoff from roofs and new parking areas to new subsurface infiltration systems. The proposed treatment train typically includes deep sump catch basins, oil water separators, and subsurface isolator row prior to infiltration. As the Site is within a Zone II Wellhead Protection Area and qualifies as a Land Use with Higher Potential Pollutant Load, 44% pretreatment has been provided prior to infiltration.

- SW21. Review calculations for required water quality volume. The on-site impervious areas used in these calculations are significantly lower than the total impervious area of the post-development site. The stormwater narrative indicates the project is being designed as a new development.
- SW22. Revise oil/water separator to pass the 2-year storm without interference, as indicated in the Stormwater Handbook. Currently, the 1" storm calculations show bypass over the weir in the upstream DMH.
- SW23. Provide detailed long-term pollution prevention plan (LTPPP), including measures outlined in the Stormwater Handbook. Recommend incorporating the LTPPP into the Operation and Maintenance Plan.

Higher Potential Pollutant Loads (Standard Number 5): *Stormwater discharges from Land Uses with Higher Potential Pollutant Loads require the use of specific stormwater management BMPs.*

The project qualifies as a Land Use with Higher Potential Pollutant Load (LUHPPL) under the definition of a parking lot with high-intensity use (1,000 vehicle trips per day or more). The proposed treatment trains are consistent with the recommendations of MassDEP for LUHPPL areas, including the use of oil/grit separators for areas subject to higher pollutant loads of oil and grease and providing 44% TSS pretreatment prior to infiltration.

Critical Areas (Standard Number 6): *Stormwater discharges to critical areas must utilize certain stormwater management BMPs approved for critical areas.*

The project includes discharges to a Zone II Wellhead Protection Area, a critical area. The proposed treatment trains are consistent with the recommendations of MassDEP for discharges to Zone II wellhead protection areas. The required 44% pretreatment prior to discharge to infiltration structures is also provided.

Redevelopment (Standard Number 7): *Redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable.*

The project has been designed as a new development – not applicable.

Construction Period Erosion and Sediment Controls (Standard Number 8): *Erosion and sediment controls must be implemented to prevent impacts during construction or land disturbance activities.*

The project as currently depicted will disturb in excess of one acre of land; therefore, a Notice of Intent with EPA and a Stormwater Pollution Prevention Plan (SWPPP) are required. The project plans indicate the use of perimeter compost filter tube, stabilized construction entrance, catch basin inlet protection, and temporary seeding/stabilization. A basic spill / pollution prevention plan narrative has been provided.

SW24. Recommend replacing the block and gravel catch basin inlet protection with a filter insert, such as a silt sack.

SW25. Depict location of construction entrance and inlet protection on the plans.

SW26. Revise location of proposed erosion controls to be coincident with limits of clearing and work (e.g. rip rap for flared end sections), as applicable.

Operations/maintenance plan (Standard Number 9): *A Long-Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

A Long-Term Operation and Maintenance (O&M) Plan has been provided.

SW27. Provide an estimated O&M budget.

SW28. Revise inspection/maintenance frequency of catch basins and oil/water separators to a minimum of twice per year.

Illicit Discharges (Standard Number 10): *All illicit discharges to the stormwater management systems are prohibited.*

The Stormwater Management Report indicates that no illicit discharges are proposed.

SW29. Provide a signed Illicit Discharge Compliance statement.

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

Very truly yours,
BETA Group, Inc.



Matthew J. Crowley, PE
Project Manager



Stephen Borgatti
Staff Engineer

cc: Amy Love, Planner



TOWN OF FRANKLIN

DEPARTMENT OF PUBLIC WORKS

Franklin Municipal Building
257 Fisher Street
Franklin, MA 02038-3026

June 16, 2020

Mr. Anthony Padula, Chairman
Members of the Franklin Planning Board
355 East Central Street
Franklin, MA 02038

RE: Site Plan and Special Permit – 340 East Central St, Central Square

Dear Mr. Chairman and Members:

We have reviewed the submitted materials for the subject project and offer the following comments:

1. Applications that will need to be filed with the Franklin Department of Public Works may include, but are not necessarily limited to Water and Sewer Permits, Inflow & Infiltration Removal fees, Street Excavation Permits, and a Soil Erosion and Sediment Control Permit.
2. A MassDOT access permit and road excavation permit will be required for work within the public right-of-way as this section of Route 140 is a state highway.
3. The Town has a water main and easement through a portion of the site to access a town well to the rear of the property. We note that the main and easement are to remain in their current configuration with a proposed entrance to the site coinciding with the Town's easement. However, this is an entrance only and an additional access easement may be necessary for access out of the site.
4. In conjunction with the above comment, the Town does receive chemical deliveries for treatment at the well and access for tanker trucks should be verified in and out of the site.
5. It is noted on the plans that the connection to the well access drive on Town property will require a temporary grading easement from the Town. We don't see an issue with this.
6. We note that exterior grease traps are proposed for retail buildings "C and "D". Final sizing of the grease traps can be verified at the time of permitting with DPW.
7. All water and sewer materials and testing shall be in accordance with DPW requirements.

8. The plans show a detail for a shallow monitoring well however it is unclear where this will be used and for what purpose.
9. The connection of the site sidewalk to the Route 140 sidewalk on the west side of the main entrance should be revised to provide a minimum 5 foot wide accessible path. There appears to be a pinch point at the radius.
10. Covers for infiltration systems inspection ports should be cast iron.
11. There are numerous warning messages in drainage model indicating possible flooding at some of the structures. The model should be evaluated and revised as necessary to eliminate these warnings.
12. Dimensions for the weir plate inside OCS#2 should be verified, the detail calls out for a 40" wide orifice but the plate is off set from the center of the structure.
13. The piping for the oil water separators are called out as 6" PVC, we recommend a 12" pipe size to minimize the potential for clogging over the long term for these pipes.

Should you have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'M Maglio', with a stylized flourish at the end.

Michael Maglio, P.E.
Town Engineer



FRANKLIN PLANNING & COMMUNITY DEVELOPMENT

355 EAST CENTRAL STREET, ROOM 120

FRANKLIN, MA 02038-1352

TELEPHONE: 508-520-4907

FAX: 508-520-4906

MEMORANDUM

DATE: June 16, 2020
TO: Franklin Planning Board
FROM: Department of Planning and Community Development
RE: Bond Release - Retainage
Sandy Knoll Estates

General

1. The Planning Board voted at the June 8, 2020 to release all Bond monies except \$10,000, to be retained until the plans are filed at the Registry of Deeds. Plans are filed after the Town Counsel accepts the roadway. There are several steps, as outlined below, before the Town Counsel accepts the roadway.
2. DPCD has spoken with the Town Engineer and the Town Attorney and offers the following explanation.
3. Per the estimates of the Bond provided by the Town Engineer, the as-built costs were line itemed as the following:
 - a. Silver Fox 0+00-0+12 Bond Amount \$136,673 - **\$4,000** was to be held for As-Built Completion
 - b. Cotton Tail 5+00-10+50 Bond Amount \$24,050 - **\$2,000** was to be held for As-Built Completion
 - c. Blueberry Land 13+00-20+50 Bond Amount \$22,860 – No As-Built line item
 - d. Cotton Tail 0+00-5+00 Bond Amount \$10,000 - **\$4,000** was to be held for As-Built Completion
4. The Town Attorney still has the following outstanding items to complete:
 - Review acceptance plan(s)/ review with Mike from title/Registry compliance standpoint.
 - Receipt and review of deed, transfer doc(s) from developer's atty.
 - Depending upon acceptance process being used, possible notice to abutters
 - Prepare Town Council acceptance resolution
 - Place on Town Council agenda for public hearing (prior newspaper notice of hearing), legislation for action (acceptance resolution)

Summary

- DPCD recommends holding \$10,000 until streets are accepted by Town Counsel and recorded at the Registry of deeds.



FRANKLIN FIRE DEPARTMENT

To : DPCD

FROM : J. S. BARBIERI, DEPUTY FIRE CHIEF

DATE : 18 MAY 2020

RE : SPECIAL PERMIT & SITE PLAN – 340 EAST CENTRAL ST.

Thank you for the opportunity to review the above referenced plan.

We have met with the proponent to work on access around the site. The revised plans show additional fire department access around building B and the access around the remaining property is sufficient.

We have no other additional comments at this time.

Please contact me should you have any question or require any additional information.

cc: file



Amy Love <alove@franklinma.gov>

Re: 340 East Central St Application

1 message

Jennifer Delmore <jdelmore@franklinma.gov>
To: Amy Love <alove@franklinma.gov>

Tue, May 12, 2020 at 3:05 PM

Amy,

This project falls within 100' to a wetland, and therefore will need to file an NOI with the Conservation Commission. The plans show impervious structures within the 50' buffer to the wetland, which is not allowed without a variance from the Commission. According to our regs, only tree clearing and grading are allowed in the 50' buffer unless it's a previously disturbed site. Let me know if you have any questions.

Thank you,
Jen

On Tue, May 12, 2020 at 8:40 AM Amy Love <alove@franklinma.gov> wrote:

Hi All,

Please find attached plans for the [340 East Central St](#). This is a new Special Permit and Site Plan application. I expect to hold the hearing in mid-June. Please provide comments at your earliest convenience.

Please let me know if you have any questions.

Thank you

Amy

Amy Love, Town Planner
Town of Franklin
355 East Central
Franklin, MA 02038
508-520-4907

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--
Jennifer Delmore
Conservation Agent
355 East Central Street
Franklin, MA 02038
Phone: 508-520-4929
Email: jdelmore@franklinma.gov

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Transportation Impact Assessment

Central Square Mixed-Use Development
340 East Central Street (Route 140)
Franklin, Massachusetts

Prepared for:

340 East Central Street, LLC
Hampton Falls, New Hampshire

May 2020

Prepared by:

 **Vannasse &
Associates inc**
Transportation Engineers & Planners

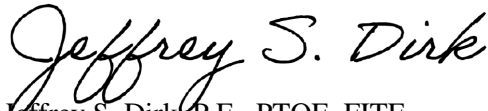
35 New England Business Center Drive
Suite 140
Andover, MA 01810

Dear Reviewer:

This letter shall certify that this *Transportation Impact Assessment* has been prepared under my direct supervision and responsible charge. I am a Registered Professional Engineer (P.E.) in the Commonwealth of Massachusetts (Massachusetts P.E. No. 38871, Civil) and hold Certification as a Professional Traffic Operations Engineer (PTOE) from the Transportation Professional Certification Board, Inc. (TPCB), an independent affiliate of the Institute of Transportation Engineers (ITE) (PTOE Certificate No. 993). I am also a Fellow of the Institute of Transportation Engineers (FITE).

Sincerely,

VANASSE & ASSOCIATES, INC.



Jeffrey S. Dirk, P.E., PTOE, FITE
Partner

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FIGURES

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1	Site Location Map
2	Existing Intersection Lane Use, Travel Lane Width and Pedestrian Facilities
3	2020 Existing Weekday Morning Peak-Hour Traffic Volumes
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9	Trip-Distribution Map Residential Component
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14	2027 Build Weekday Morning Peak-Hour Traffic Volumes
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TABLES

No.	Title
1	Study Area Intersection Description
2	2020 Existing Traffic Volumes
3	Vehicle Travel Speed Measurements
4	Motor Vehicle Crash Data Summary
5	Trip-Generation Summary
6	Traffic Volume Comparison (New Trips)
7	Peak-Hour Traffic Volume Increases
8	Level-of-Service Criteria for Signalized Intersections
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10	Signalized Intersection Level-of-Service and Vehicle Queue Summary
11	Unsignalized Intersection Level-of-Service and Vehicle Queue Summary
12	Sight Distance Measurements

EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of the Central Square mixed-use development to be located at 340 East Central Street (Route 140) in Franklin, Massachusetts (hereafter referred to as the “Project”). The Project site was the subject of a larger development proposal also known as Central Square that included the adjacent Ficco’s Bowladrome property and was approved by the Town of Franklin and subject to review under the Massachusetts Environmental Policy Act (MEPA) (EA No. 15313). The current proposal excludes the Ficco’s Bowladrome property and the development program has been revised from 116,559± square feet (sf) of mixed commercial space to include 104 multifamily residential units, 15,219± sf of retail space and a 2,250± sf coffee shop with drive-through window, representing a significant reduction in predicted traffic volumes and the associated impacts on the transportation infrastructure.

This study was prepared in consultation with the Town of Franklin and the Massachusetts Department of Transportation (MassDOT), and is consistent with the scope of work that was defined by the Secretary of Energy and Environmental Affairs for the preparation of the Draft and Final Environmental Impact Reports (EIRs) that were filed for the prior development proposal that included the Project site. The Project will require the issuance of a State Highway Access Permit from MassDOT for access to Route 140, as the segment of Route 140 along which the Project site is located is a State Highway under the jurisdiction of the MassDOT.

Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE)¹ and after adjustment to account for both internal trips and pass-by trips, the Project is expected to generate approximately 1,596 primary (new) vehicle trips on an average weekday (two-way, 24-hour volume), with 161 new vehicle trips expected during the weekday morning peak-hour, 115 new vehicle trips expected during the weekday evening peak-hour and 143 new vehicle trips expected during the Saturday midday peak-hour.
2. In comparison to the approved development program that was to include the Project site, the Project is expected to generate 6,618 fewer new vehicle trips on an average weekday, with 143 fewer new vehicle trips expected during the weekday morning peak-hour, 556 fewer new vehicle trips expected during the weekday evening peak-hour and 691 fewer

¹*Trip Generation*, 10th Edition; Institute of Transportation Engineers; Washington, DC; 2017.

new vehicle trips expected during the Saturday midday peak-hour. Based on this comparative assessment, *it is clear that the Project will result in a significant reduction in traffic (up to 83 percent) on an average weekday and during the peak hours when compared to the approved development program and, as such, the Project will be less impactful on the transportation infrastructure;*

3. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with majority of the movements at the study intersections shown to continue to operate at a level-of-service (LOS) of D or better under all analysis conditions, where an LOS of “D” or better is defined as “acceptable” traffic operations;
4. Independent of the Project, specific movements at the Route 140/Chestnut Street/King Street intersection are currently operating at capacity (defined as LOS of “E”) during the weekday evening peak-hour, with delays predicted to increase in the future during both the weekday evening and Saturday midday peak hours resulting in additional movements operating at or over capacity (LOS “E” or “F”, respectively). That being said, a review of potential traffic signal timing improvements indicates that the intersection is operating in an optimal manner given the current geometry;
5. The study area intersections were found to have motor vehicle crash rates that were below both the MassDOT statewide and District averages for a signalized or unsignalized intersection, as appropriate; and
6. Lines of sight to and from the Project site driveway intersections with Route 140 were found to exceed the required minimum distance for the intersections to function in a safe and efficient manner.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with implementation of the recommendations that follow.

RECOMMENDATIONS

A detailed transportation improvement program has been developed that is designed to provide safe and efficient access to the Project site and address any deficiencies identified at off-site locations evaluated in conjunction with this study. The improvements that have been recommended as a part of this evaluation and, where applicable, will be completed in conjunction with the Project subject to receipt of all necessary rights, permits, and approvals.

Project Access

Access to the Project site will be provided by way of two (2) driveways that will intersect the south side of Route 140 and will be configured as follows: a full access driveway that will be located opposite Glen Meadow Road and a right-turn, entrance only driveway that will be located approximately 150 feet west of the full access driveway and in the general location of the existing driveway that serves the Project site (opposite the driveway to 333 East Central Street (Franklin Liquors). In addition, an access easement will be provided that will allow for a connection between the Project site and the Big Y Market to the east. The following

recommendations are offered with respect to the design and operation of the Project site access and internal circulation, many of which are reflected on the Site Plans:

- The primary Project site driveway will be located opposite Glen Meadow Road and will include one (1) entering travel lane and two (2) exiting lanes (a left-turn lane and a through/right-turn lane) separated by a raised island. The driveway should be designed to accommodate the turning and maneuvering requirements of delivery vehicles and the Franklin Fire Department design vehicle, with exiting vehicles placed under STOP-sign control with a marked STOP-line provided.
- The right-turn, entrance only Project site driveway should be a minimum of 20-feet in width, unless a reduced width is approved by the Franklin Fire Department, and include appropriate signs (“No Left Turn”, “One-Way” and “Do Not Enter”) and pavement markings indicating the regulated flow of traffic at the driveway.
- Appropriate signs (“One-Way” and “Do Not Enter”) and pavement markings should be provided to regulate the one-way traffic flow around the perimeter of buildings where one-way traffic is to be conveyed.
- Drive aisles should be a minimum of 23-feet in width where perpendicular parking is proposed in order to allow for vehicle maneuvering.
- All signs and pavement markings to be installed within the Project shall conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).²
- Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at all pedestrian crossings internal to the Project site and for crossing the Project site driveways, or the driveways should be designed such that the sidewalks along Route 140 are flush with (i.e., cross) the driveways.
- Signs and landscaping to be installed as a part of the Project within the intersection sight triangle areas of the Project site driveways should be designed and maintained so as not to restrict lines of sight.
- Snow windrows within sight triangle areas of the Project site driveways should be promptly removed where such accumulations would impede sight lines.
- A minimum of six (6) Electric Vehicle (EV) charging stations or charging outlets will be installed within the Project site to include four (4) charging outlets for EVs within the residential area and two (2) EV charging stations within the commercial area. In addition, six (6) parking spaces will be “EV ready” (i.e., the necessary infrastructure is provided to support the future installation of an EV charging station).
- A school bus waiting area will be provided for the multifamily residential community at an appropriate location defined in consultation with the Town.

²*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

Transportation Demand Management

Public transportation services (fixed-route bus service) are provided within the study area and are accessible to the Project site. The Greater Attleboro-Taunton Regional Transit Authority (GATRA) operates fixed-route bus service along Route 140 by way of the *Franklin Area Bus* (FAB), with existing stops located proximate to the Project at the Horace Mann Plaza and at the Glen Meadow apartments. In an effort to reduce the overall number of automobile trips in the area and to integrate the Project into the available transportation resources, the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- A transportation coordinator, who may also have other operations/management responsibilities, will be assigned for the Project to coordinate the TDM program;
- Information regarding public transportation services, maps, schedules and fare information will be posted in a central location and/or otherwise made available to residents and employees;
- A “welcome packet” will be provided to residents and employees detailing available public transportation services, bicycle and walking alternatives, and commuter options;
- Tenants will be encouraged to offer specific amenities to discourage off-site trips, including providing a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; coordinating with a dry-cleaning service for on-site pick-up and delivery; allowing telecommuting or flexible work schedules; and other such measures to reduce overall traffic volumes and travel during peak traffic volume periods;
- Pedestrian accommodations will be incorporated into the Project and consist of sidewalks and ADA compliant wheelchair ramps at all pedestrian crossings where a sidewalk is present;
- A GATRA bus stop and accompanying bus shelter will be provided at an appropriate location within the Project site defined in consultation with GATRA;
- Consult with a car-sharing service to stage car-share vehicles at the Project site;
- Work-at-home workspaces will be provided within the residential buildings to support telecommuting by residents of the Project;
- An internal mail room will be provided within the residential buildings; and
- Secure bicycle parking will be provided within the Project site consisting of: i) exterior bicycle parking conveniently located proximate to building entrances; and ii) weather protected bicycle parking located in secure areas.

Loading and Deliveries

The Project has been designed to accommodate all loading and delivery functions on-site in a safe and efficient manner. Designated loading areas will be provided on-site to accommodate deliveries. Refuse/recycling will be accommodated in centralized areas for each building. Truck routes and hours of deliveries will be coordinated to minimize truck activity during the commuter peak hours. Reasonable efforts will be made to use service vendors currently delivering in the vicinity of the Project site in an effort to reduce the overall number of new trucks in the area.

Traffic Monitoring Program

The Project proponent will conduct a post-development traffic monitoring and employee survey program in order to evaluate the success and to refine the elements of the TDM program, and to validate the trip projections for the Project. The monitoring program will include:

- i) Obtaining traffic volume information over a continuous seven day, weeklong period at the driveways serving the Project site;
- ii) Performing manual turning movement and vehicle classification counts at the Project site driveway intersections with Route 140 during the weekday morning (7:00 to 9:00 AM), weekday evening (4:00 to 6:00 PM) and Saturday midday (11:00 AM to 2:00 PM) peak hours;
- iii) Evaluating motor vehicle crash data at the Project site driveway intersections with Route 140; and
- iv) Documenting bicycle parking demands

The monitoring program will commence six (6) months after issuance of the first Certificate of Occupancy for the Project and will continue on an annual basis thereafter for a period not to exceed 5-years after Project completion and occupancy. The results of the monitoring program will be summarized in a report to be provided to the Town of Franklin and MassDOT within 2-months after the completion of the data collection effort. The report will document: i) traffic volumes associated with the Project; ii) traffic operations (i.e., motorist delays, vehicle queuing and LOS), crash severity and calculated crash rates at the Project site driveway intersections; and iii) the elements of the TDM program that have been implemented and use of alternative modes of transportation to single-occupant vehicles by residents and employees of the Project.

If any of the following conditions are documented as a part of the monitoring program: i) the measured traffic volumes exceed the observed traffic volumes that are presented herein by more than 10 percent on a regular and sustained basis during the monitoring period; ii) there is a material increase in the number of motor vehicle crashes occurring at or in immediate vicinity of the Project site driveway intersections that are attributable to the Project; or iii) the overall directional distribution of Project-related traffic as measured at the Project site driveways varies by more than 10 percent from the directional distributions that form the basis of this assessment; the Project proponent will identify and undertake corrective measures in conjunction with the appropriate parties and subject to receipt of all necessary rights permits and approvals. These measures may include without limitation:

- Traffic signal timing modifications
- Sign and pavement marking improvements
- On-site operation and management strategies that are designed to reduce overall and peak traffic volumes and parking demands
- Providing financial incentives for employees to carpool or use alternative modes of transportation to SOVs

The identified corrective measures, if any, will be documented in the transportation monitoring program report, and will identify the appropriate parties responsible for implementation (assumed to be the Project proponent unless the corrective measure(s) are a part of a committed improvement project or plan that is scheduled to be implemented by others), required approvals, and the timeline

for implementation. The status of implementation of the identified improvement measure(s) will be documented in the subsequent monitoring report.

With implementation of the aforementioned recommendations, safe and efficient access will continue to be provided to the Project site and the Project can be accommodated within the confines of the existing and improved transportation system.

INTRODUCTION

Vanasse & Associates, Inc. (VAI) has conducted a Transportation Impact Assessment (TIA) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of the Central Square mixed-use development to be located at 340 East Central Street (Route 140) in Franklin, Massachusetts (hereafter referred to as the “Project”). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project, along Route 140 and at major intersections located along this roadway through which Project-related traffic will travel.

PROJECT DESCRIPTION

The Project will entail the construction of mixed-use development to be known as Central Square that will be located at 340 East Central Street (Route 140) in Franklin, Massachusetts. The Project site was the subject of a larger development proposal also known as Central Square that included the adjacent Ficco’s Bowladrome property and was approved by the Town of Franklin and subject to review under the Massachusetts Environmental Policy Act (MEPA) (EA No. 15313). The current proposal excludes the Ficco’s Bowladrome property and the development program has been revised from 116,559± square feet (sf) of commercial space to include 104 multifamily residential units, 15,219± sf of retail space and a 2,250± sf coffee shop with drive-through window.

The Project site encompasses approximately 6.51± acres of land that includes the former Keigan Chevrolet building, which will be razed to accommodate the Project. The Project site is bounded by Route 140 to the north; commercial properties to the east and west; and areas of open and wooded space owned by the Town of Franklin to the south. Figure 1 depicts the Project site location in relation to the existing roadway network.

Access to the Project site will be provided by way of two (2) driveways that will intersect the south side of Route 140 and will be configured as follows: a full access driveway that will be located opposite Glen Meadow Road and a right-turn, entrance only driveway that will be located approximately 150 feet west of the full access driveway and in the general location of the existing driveway that serves the Project site (opposite the driveway to 333 East Central Street (Franklin Liquors). In addition, an access easement will be provided that will allow for a connection between the Project site and the Big Y Market to the east. The Project will require the



Figure 1

Site Location Map

issuance of a State Highway Access Permit from MassDOT for access to Route 140, as the segment of Route 140 along which the Project site is located is a State Highway under the jurisdiction of the MassDOT.

On-site parking will be provided for approximately 268 vehicles to serve both the residential and commercial uses, which is consistent with the parking requirements allowed for the Project pursuant to Section 185-21, *Parking, loading and driveway requirements*, of Chapter 185 of the Town of Franklin Bylaw with consideration of shared parking between the uses within the site and the Project proponent's commitment to implement a comprehensive Transportation Demand Management (TDM) program as an integral part of the Project.³

STUDY METHODOLOGY

This study was: i) prepared in consultation with the Town of Franklin and MassDOT; ii) performed in accordance with MassDOT's *Transportation Impact Assessment (TIA) Guidelines* and the scope of work that was defined by the Secretary of Energy and Environmental Affairs for the preparation of the Draft and Final Environmental Impact Reports (EIRs) that were filed for the prior development proposal that included the Project site; iii) conducted pursuant to the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports; and iv) completed in three distinct stages.

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics; pedestrian and bicycle facilities; public transportation services; observations of traffic flow; and collection of daily and peak period traffic counts.

In the second stage of the study, future traffic conditions were projected and analyzed. Specific travel demand forecasts for the Project were assessed along with future traffic demands due to expected traffic growth independent of the Project. A seven-year time horizon was selected for analyses consistent with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*. The traffic analysis conducted in stage two identifies existing or projected future roadway capacity, traffic safety, and site access issues.

The third stage of the study presents and evaluates measures to address traffic and safety issues, if any, identified in stage two of the study.

³Section 185-21 A(4) states the following: "The number of required spaces may be reduced below that determined under § 185-21B by the Planning Board for places subject to site plan review or by the Building Commissioner in other cases, upon determination that a lesser provision would be adequate for all parking needs because of such special circumstances as shared parking for uses having peak parking demands at different times, unusual age or other characteristics of site users, company-sponsored car pooling or other trip-conserving measures." Absent this provision, the Project would require 295 parking spaces to satisfy the parking requirements of the Zoning Bylaw.

EXISTING CONDITIONS

A comprehensive field inventory of existing conditions within the study area was conducted in March 2020. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; public transportation services; traffic volumes; and operating characteristics; as well as posted speed limits and land use information within the study area. The study area that was assessed for the Project is consistent with the study area that was assessed as a part of both the Draft and Final EIRs that were prepared for the prior development proposal that included the Project site, and includes Route 140, King Street and Chestnut Street, as well as the intersections of Route 140 at King Street and Chestnut Street; Route 140 at the Horace Mann Plaza driveway and the CVS/Pharmacy® driveway; Route 140 at Glen Meadow Road; and Route 140 at the Big Y Market driveway and the Franklin Municipal Building driveway

The following describes the study area roadways and the intersections.

Roadways

East Central Street (Route 140)

- Route 140 is a two-lane urban principal arterial roadway under MassDOT jurisdiction from a point east of Hill Avenue (located between King Street and Horace Mann Plaza) and the Wrentham town line, and under Town jurisdiction west of Hill Avenue
- Traverses the study area in a general east-west direction providing access to I-495 to the west of the study area that is the subject of this assessment
- Provides two 11 to 13-foot wide travel lanes separated by a double-yellow centerline with 1 to 8-foot wide marked shoulders and additional turning lanes provided at major intersections
- A 5 to 8-foot wide sidewalk is provided along both sides of the roadway within the study area
- Illumination is provided by way of street lights mounted on wood poles
- The posted speed limit is 40 miles per hour (mph) within the study area
- Land use consists of the Project site and residential and commercial properties.

King Street

- King Street is a two-lane urban minor arterial roadway that is under Town jurisdiction
- Traverses study area in a general north-south direction
- Provides two 11 to 13-foot wide travel lanes separated by a double-yellow centerline with 4-foot wide marked shoulders and additional turning lanes provided at major intersections
- The posted speed limit is 30 mph
- A sidewalk is provided along both sides of the roadway within the study area
- Illumination is provided by way of street lights mounted on wood poles
- Land use consists of residential and commercial properties

Chestnut Street

- Chestnut Street is a two-lane urban minor arterial roadway that is under Town jurisdiction
- Traverses study area in a general north-south direction between Route 140 and Pleasant Street
- Provides two 16 to 18-foot wide travel lanes separated by a double-yellow centerline with no marked shoulders
- The posted speed limit is 30 mph
- A sidewalk is provided along both sides of the roadway within the study area
- Illumination is provided by way of street lights mounted on wood poles
- Land use consists of residential and commercial properties

Intersections

Table 1 and Figure 2 summarize existing lane use, traffic control, and pedestrian and bicycle accommodations at the study area intersections as observed in March 2020.

Table 1
STUDY AREA INTERSECTION DESCRIPTION

Intersection	Traffic Control Type^a	No. of Travel Lanes Provided	Shoulder Provided? (Yes/No/Width)	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/Description)
Rte. 140/ King St./ Chestnut St.	TS	1 left-turn lane and a shared through/right-turn lane on Rte. 140 approaches, with right-turn movements exiting prior to the intersection by way of a channelized lane; 1 shared left-turn/through lane and a right-turn lane on King St. northbound approach; 1 general-purpose travel lane on Chestnut St. southbound approach	Yes; 2 feet on Rte. 140; 4 feet on King St.	Yes – Sidewalks are provided along both sides of Rte. 140 and King St. and along the west side of Chestnut St. for approx. 200 lf; crosswalks provided across all legs of the intersection; pedestrian traffic signal equipment and phasing (exclusive) provided	Yes - Shared traveled-way ^b
Rte. 140/ Horace Mann Plaza Dwy/ CVS/Pharmacy Dwy	TS	1 left-turn lane, 1 through travel lane and 1 right-turn lane on Rte. 140 approaches; 1 shared left-turn/through lane and a right-turn lane on Horace Mann Plaza Dwy. and CVS/Pharmacy Dwy.	Yes – 1 to 3 feet on all approaches	Yes – Sidewalks along both sides of Rte. 140 with crosswalks provided across the north, east and west legs of the intersection; pedestrian traffic signal equipment and phasing (exclusive) provided	Yes - Shared traveled-way
Rte. 140/ Glen Meadow Rd.	S	1 general-purpose travel lane on Rte. 140 approaches; 1 wide (20 feet) general-purpose travel lane that functions as 2 approach lanes	Yes – 4 to 8 feet on Rte. 140	Yes – Sidewalks along both sides of Rte. 140 and east side of Glen Meadow Rd.	Yes - Shared traveled-way
Rte. 140/ Big Y Dwy/ Franklin Municipal Bldg. Dwy	TS	1 left-turn lane and a shared through/right-turn lane on Rte. 140 approaches; 1 shared left-turn/through lane and a right-turn lane on Big Y Market Dwy; 1 general-purpose travel lane on Franklin Municipal Bldg. Dwy	Yes; 4 to 6-feet on Rte. 140	Yes – Sidewalks along both sides of Rte. 140 and west side of Big Y Market Dwy; pedestrian traffic signal equipment and phasing (exclusive) provided	Yes - Shared traveled-way

^aTS = traffic signal control; S = STOP-sign control; Y = YIELD-sign control.

^bCombined shoulder and travel lane width equal to or exceed 14 feet.

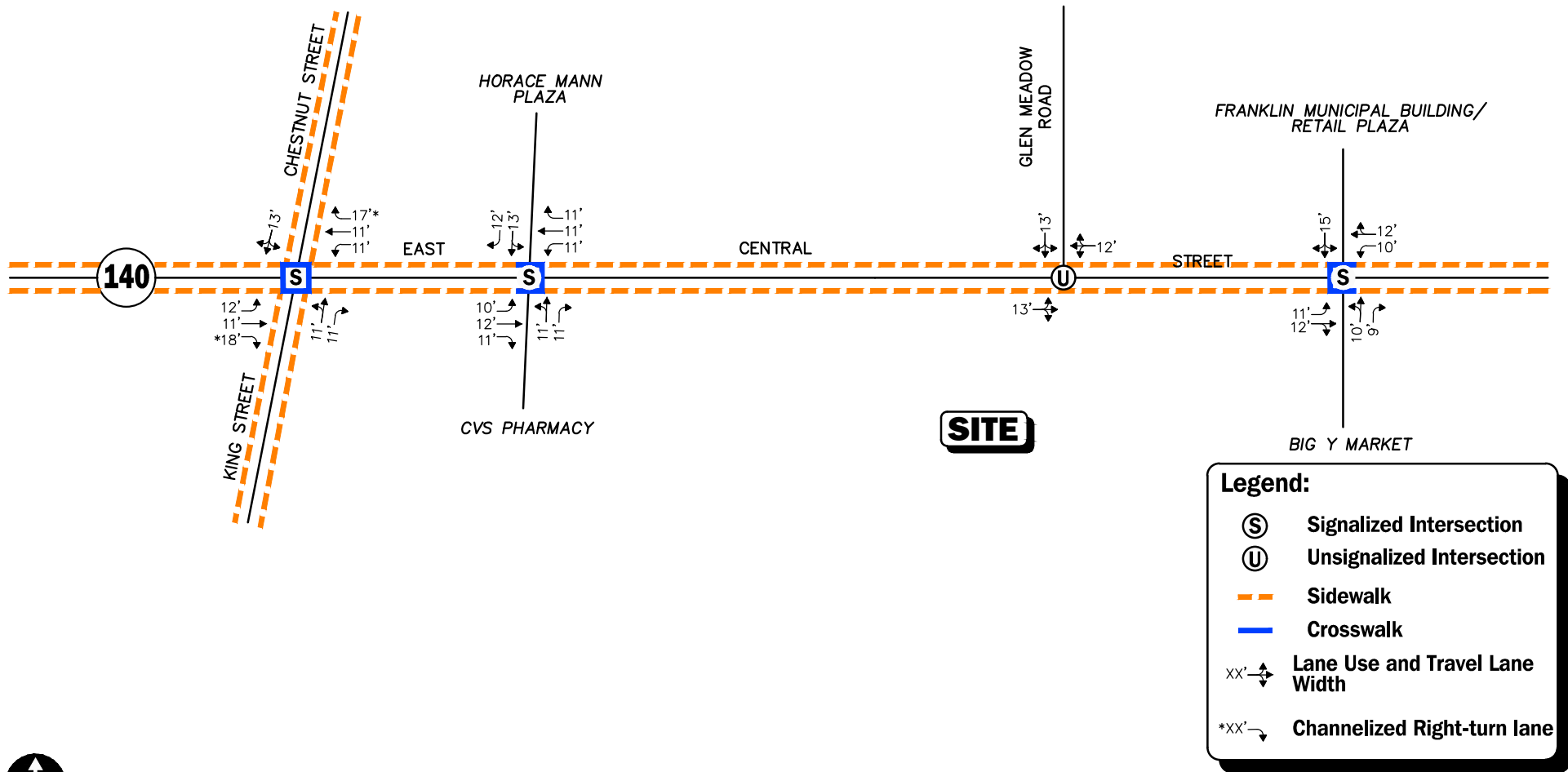


Figure 2

Existing Intersection Lane Use,
Travel Lane Width and
Pedestrian Facilities



EXISTING TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs) and vehicle classification counts were completed in March 2020 while public schools were in regular session. The ATR counts were conducted on Route 140 in the vicinity of the Project site over a continuous 72-hour period from Thursday, March 5, 2020 through Saturday, March 7, 2020 in order to record weekday and Saturday daily traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM), weekday evening (4:00 to 6:00 PM) and Saturday midday (11:00 AM to 2:00 PM) peak period manual TMCs performed at the study intersections on Thursday, March 5, 2020 and Saturday, March 7, 2020.⁴ These time periods were selected for analysis purposes as they are representative of the peak traffic volume hours for both the Project and the adjacent roadway network.

Traffic Volume Adjustments

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, traffic volume data from MassDOT Continuous Count Station No. 3180 located on Interstate 495 in Norfolk were reviewed.⁵ Based on a review of this data, it was determined that traffic volumes for the month of March are approximately 7.0 percent below average month conditions. As such, the raw traffic count data that forms the basis of the assessment was adjusted upward by 7.0 percent in order to be representative of average-month conditions in accordance with MassDOT standards. The 2020 Existing traffic volumes are summarized in Table 2, with the weekday morning, weekday evening and Saturday midday peak-hour traffic volumes graphically depicted on Figures 3, 4, and 5, respectively. Note that the peak-hour traffic volumes presented in Table 2 were obtained from the TMCs and are reflected on the aforementioned figures.

Table 2
2020 EXISTING TRAFFIC VOLUMES

Location/Peak Hour	AWT ^a	Saturday ^b	VPH ^c	K Factor ^d	Directional Distribution ^e
<i>East Central Street (Route 140), West of Glenn Meadow Road:</i>					
Weekday Morning (7:45 – 8:45 AM)	16,800	15,680	--	--	--
Weekday Evening (4:30 – 5:30 PM)	--	--	1,081	6.4	54.0% EB
Saturday Midday (12:15 – 1:15 PM)	--	--	1,446	8.6	55.9% WB
	--	--	1,547	9.9	50.6% EB

^aAverage weekday traffic in vehicles per day.

^bVehicles.

^cVehicles per hour.

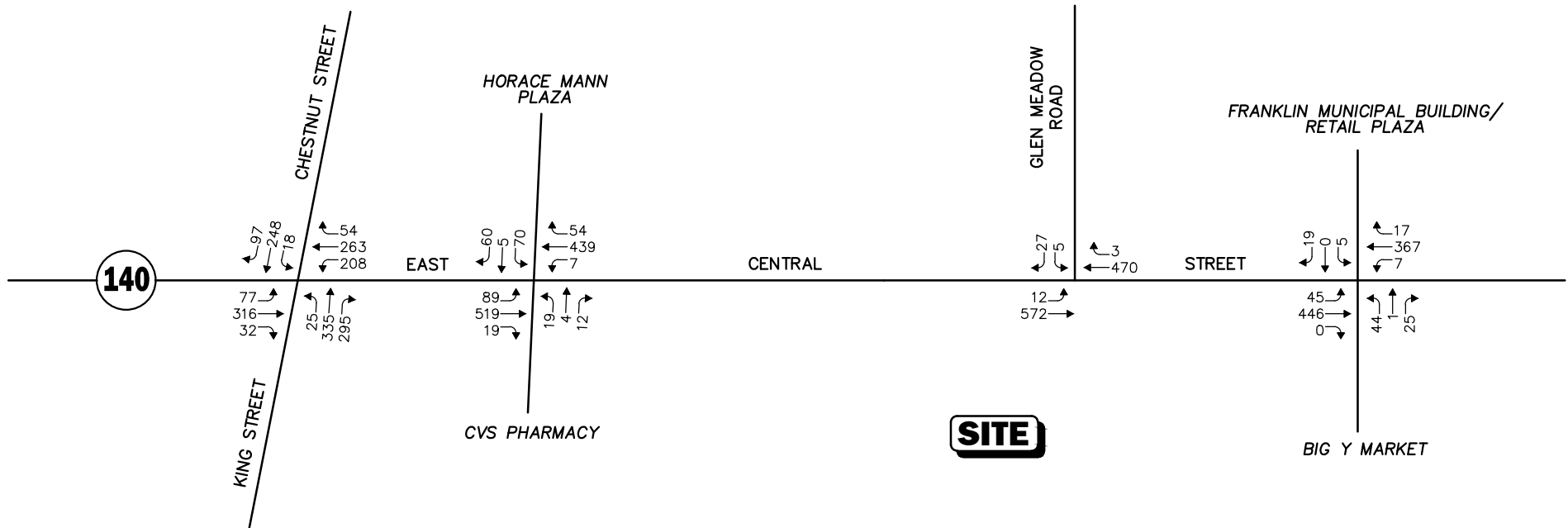
^dPercent of daily traffic occurring during the peak hour.

^ePercent traveling in peak direction.

EB = eastbound; WB = westbound.

⁴TMCs for the Route 140/Big Y Market Driveway/Franklin Municipal Building Driveway were collected on Thursday, March 12, 2020, and on Saturday, March 14, 2020.

⁵MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2020.



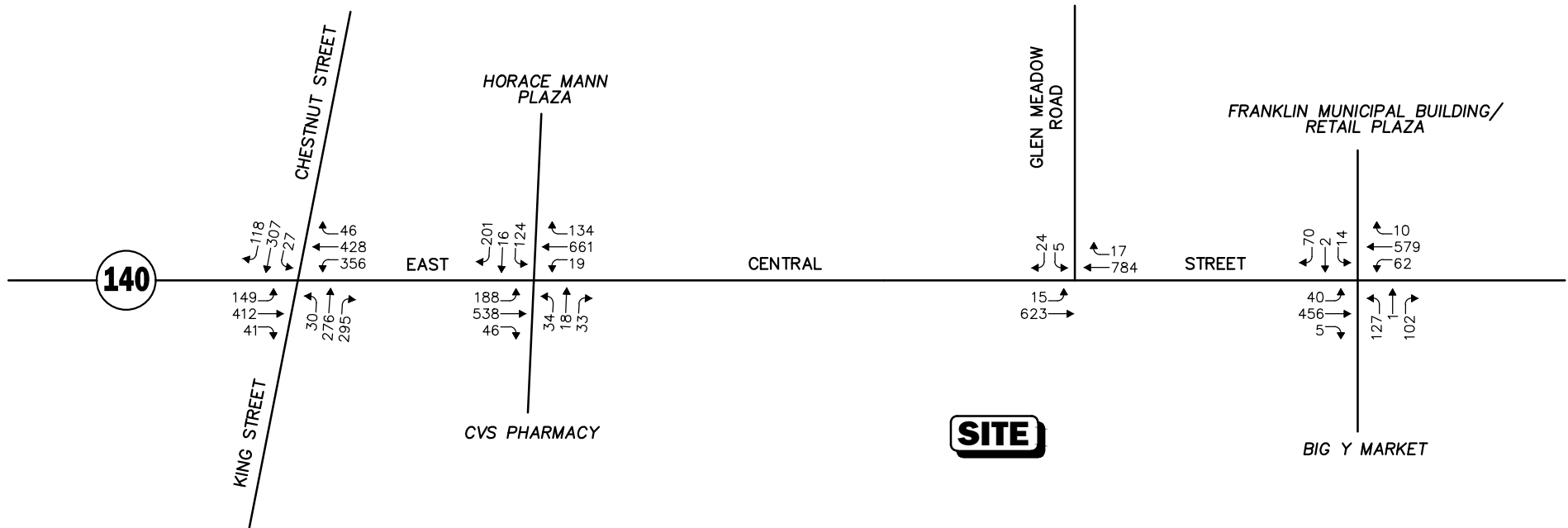
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 3

**2020 Existing
Weekday Morning
Peak Hour Traffic Volumes
(7:45 - 8:45 AM)**



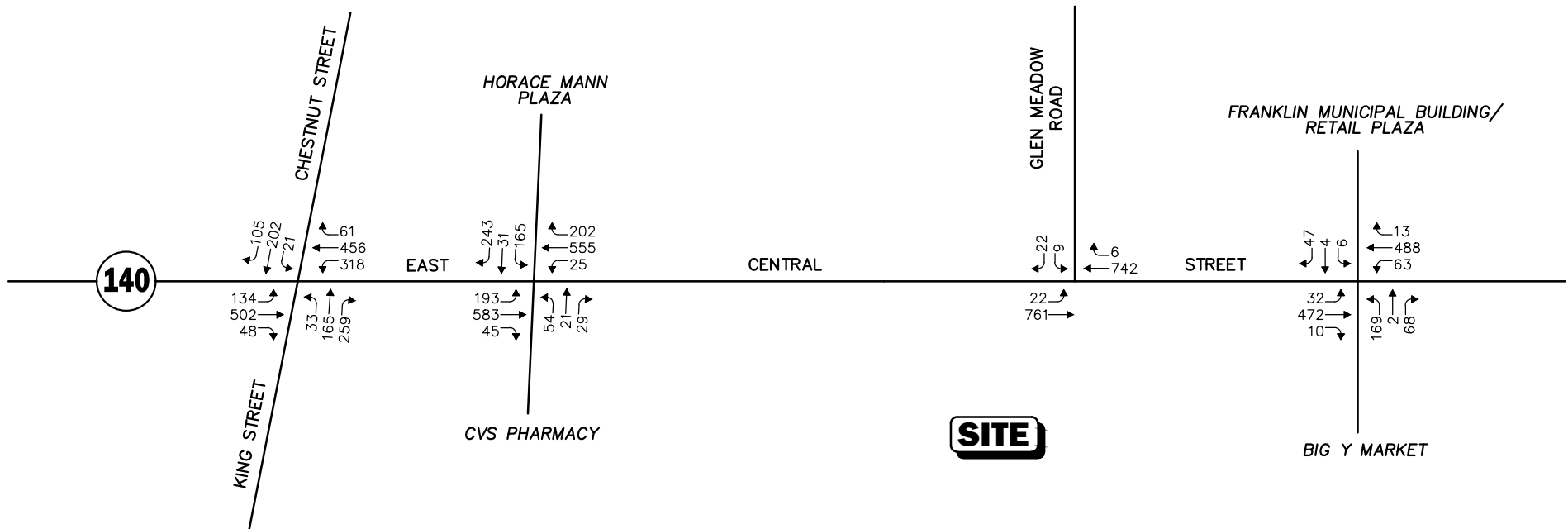
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 4

**2020 Existing
Weekday Evening
Peak Hour Traffic Volumes
(4:30-5:30 PM)**



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 5

2020 Existing
Saturday Midday
Peak Hour Traffic Volumes
(12:15 AM -1:15 PM)

As can be seen in Table 2, Route 140 in the vicinity of the Project site was found to accommodate 16,800 vehicles on an average weekday and 15,680 vehicles on a Saturday (both two-way, 24-hour volumes), with approximately 1,081 vehicles per hour (vph) during the weekday morning peak-hour, 1,446 vph during the weekday evening peak-hour and 1,547 vph during the Saturday midday peak-hour.

PEDESTRIAN AND BICYCLE FACILITIES

A comprehensive field inventory of pedestrian and bicycle facilities within the study area was undertaken in March 2020. The field inventory consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study intersections, as well as the location of existing and planned future bicycle facilities. As shown on Figure 2, sidewalks are generally provided along one or both sides of the study roadways with marked crosswalks and pedestrian traffic signal equipment and phasing provided at the signalized study intersections.

At present, no formal existing bicycle facilities were identified within the immediate study area; however, Route 140 generally provides sufficient width (combined travel lane and shoulder) to support bicycle travel in a shared travelled-way configuration.

PUBLIC TRANSPORTATION

Public transportation services are provided within the study area by the Greater Attleboro Taunton Regional Transit Authority (GATRA) via the *Franklin Area Bus* (FAB). FAB bus service is provided in Franklin between the Big Y Market located at 348 East Central Street (immediately east of the Project site) and the Village Plaza located west of the Project site and proximate to the Interstate 495 (I-495)/Route 140 interchange, with regularly scheduled stops northbound at the Horace Mann Plaza and southbound at the Glen Meadow apartments; however, buses will stop anywhere that it is safe to do so along the service route upon passenger request. Also, FAB service provides access to the Massachusetts Bay Transportation Authority (MBTA) Commuter Rail service (Franklin Line with Foxboro Pilot) at Franklin station. The FAB service area is expanded on Saturday to include the Market Basket/Walmart Plaza in Bellingham. All GATRA buses are handicapped and wheelchair accessible.

The public transportation service routes, schedules and fare information are provided in the Appendix.

SPOT SPEED MEASUREMENTS

Vehicle travel speed measurements were performed on Route 140 over a continuous 72-hour period in conjunction with the ATR counts. Table 3 summarizes the vehicle travel speed measurements.

Table 3
VEHICLE TRAVEL SPEED MEASUREMENTS

	Route 140	
	Eastbound	Westbound
Mean Travel Speed (mph)	29	25
85 th Percentile Speed (mph)	34	29
Posted Speed Limit (mph)	40	40

mph = miles per hour.

As can be seen in Table 3, the mean vehicle travel speed along Route 140 within the study area was found to be approximately 29 mph in the eastbound direction and 25 mph westbound. The measured 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be 34 mph in the eastbound direction and 29 mph westbound, which is 6 to 11 mph below the the posted speed limit (40 mph) in the vicinity of the Project site. The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances, and is often used in establishing posted speed limits.

MOTOR VEHICLE CRASH DATA

Motor vehicle crash information for the study area intersections was provided by the MassDOT Highway Division Safety Management/Traffic Operations Unit for the most recent five-year period available (2013 through 2017, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, severity, roadway and weather conditions, and day of occurrence, and presented in Table 4.

As can be seen in Table 4, the study intersections experienced an average of approximately seven (7) or fewer reported motor vehicle crashes per year over the five-year review period and were found to have a motor vehicle crash rate below both the MassDOT statewide and District averages for a signalized or unsignalized intersection, as appropriate, for the MassDOT Highway Division District in which the intersections are located (District 3). The majority of the reported crashes occurred on a weekday, under clear weather conditions during daylight, and involved rear-end or angle-type crashes that resulted in property damage only. One motor vehicle crash that resulted in a fatality was reported in front of 198 East Central Street (Route 140) and proximate to the Route 140/King Street/Chestnut Street intersection. The subject crash occurred on December 6, 2014 at 4:56 PM and involved a light truck that struck a pedestrian travelling along Route 140. It was determined that the pedestrian was crossing the roadway in an unlit area and not within a crosswalk, and that the truck operator did not have sufficient time to properly react and avoid this collision; as such, no charges were filed.

A review of the MassDOT statewide High Crash Location List indicated that none of the study intersections were included on MassDOT's Highway Safety Improvement Program (HSIP) listing as a high crash location. The detailed MassDOT Crash Rate Worksheets and high crash location mapping are provided in the Appendix.

Table 4
MOTOR VEHICLE CRASH DATA SUMMARY^a

	Route 140/ King Street/ Chestnut Street	Route 140/ Horace Mann Plaza/ CVS/Pharmacy	Route 140/ Glen Meadow Road	Route 140/ Big Y Market Driveway/ Franklin Town Hall Drive
Traffic Control Type: ^b	TS	TS	U	TS
<i>Year:</i>				
2013	14	1	2	0
2014	3	2	5	0
2015	3	1	2	0
2016	10	6	2	0
2017	<u>6</u>	<u>3</u>	<u>3</u>	<u>0</u>
Total	36	13	14	0
Average	7.20	2.60	2.80	0.00
Rate ^c	0.68	0.30	0.45	0.00
MassDOT Crash Rate: ^d	0.78/0.89	0.78/0.89	0.57/0.61	0.78/0.89
Significant? ^e	No	No	No	No
<i>Type:</i>				
Angle	9	6	3	0
Rear-End	19	4	9	0
Head-On	1	0	0	0
Sideswipe	5	1	0	0
Single Vehicle Crash	2	1	2	0
<u>Unknown/Other</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>
Total	36	13	14	0
<i>Conditions:</i>				
Clear	22	12	13	0
Cloudy	4	0	1	0
Rain	6	1	0	0
Snow/Ice	3	0	0	0
<u>Not Reported</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	36	13	14	0
<i>Lighting:</i>				
Daylight	26	10	11	0
Dawn/Dusk	1	0	2	0
Dark (Road Lit)	8	3	1	0
<u>Dark (Road Unlit)</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	36	13	14	0
<i>Day of Week:</i>				
Monday through Friday	33	12	12	0
Saturday	1	1	0	0
<u>Sunday</u>	<u>2</u>	<u>0</u>	<u>2</u>	<u>0</u>
Total	36	13	14	0
<i>Severity:</i>				
Property Damage Only	26	9	7	0
Non-fatal Injury	9	2	6	0
Not Reported	0	2	1	0
<u>Fatality</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	36	13	14	0

^aSource: MassDOT Safety Management/Traffic Operations Unit records, 2013 through 2017.

^bTraffic Control Type: U = unsignalized; TS = traffic signal.

^cCrash rate per million vehicles entering the intersection.

^dStatewide/District crash rate.

^eThe intersection crash rate is significant if it is found to exceed the MassDOT crash rate for the MassDOT Highway Division District in which the Project is located (District 3).

FUTURE CONDITIONS

Traffic volumes in the study area were projected to the year 2027, which reflects a seven-year planning horizon consistent with MassDOT's *Transportation Impact Assessment (TIA) Guidelines*. Independent of the Project, traffic volumes on the roadway network in the year 2027 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2027 No-Build traffic volumes reflect 2027 Build traffic volume conditions with the Project.

FUTURE TRAFFIC GROWTH

Future traffic growth is a function of the expected land development in the immediate area and the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This procedure produces a more realistic estimate of growth for local traffic; however, potential population growth and development external to the study area would not be accounted for in the resulting traffic projections.

To provide a conservative analysis framework, both procedures were used, the salient components of which are described below.

Specific Development by Others

The Town of Franklin Department of Planning and Community Development was contacted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes at the study intersections. Based on this discussion, the following project was identified for inclusion in this assessment:

- ***Chestnut Senior Village, Chestnut Street, Franklin, Massachusetts.*** This project consists of the construction of 44 senior housing units to be located off Chestnut Street in Franklin, Massachusetts. Traffic volumes associated with this project within the study area are

expected to be relatively minor and would be reflected in the general background traffic growth rate (discussion follows).

No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate.

General Background Traffic Growth

Traffic-volume data compiled by MassDOT from permanent count stations located along Interstate 495 were reviewed. This data indicates that traffic volumes have fluctuated over the past several years, ranging from a decrease of 3.0 percent to an increase of 2.7 percent, with the average growth rate found to be approximately 0.42 percent. In order to provide a prudent planning condition for the Project, a slightly higher 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth, new trips associated with the Chestnut Village senior housing community and presently unforeseen development within the study area.

Roadway Improvement Projects

MassDOT and the Town of Franklin were consulted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2027 within the study area. Based on these discussions, no roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area that is the subject of this assessment.

No-Build Traffic Volumes

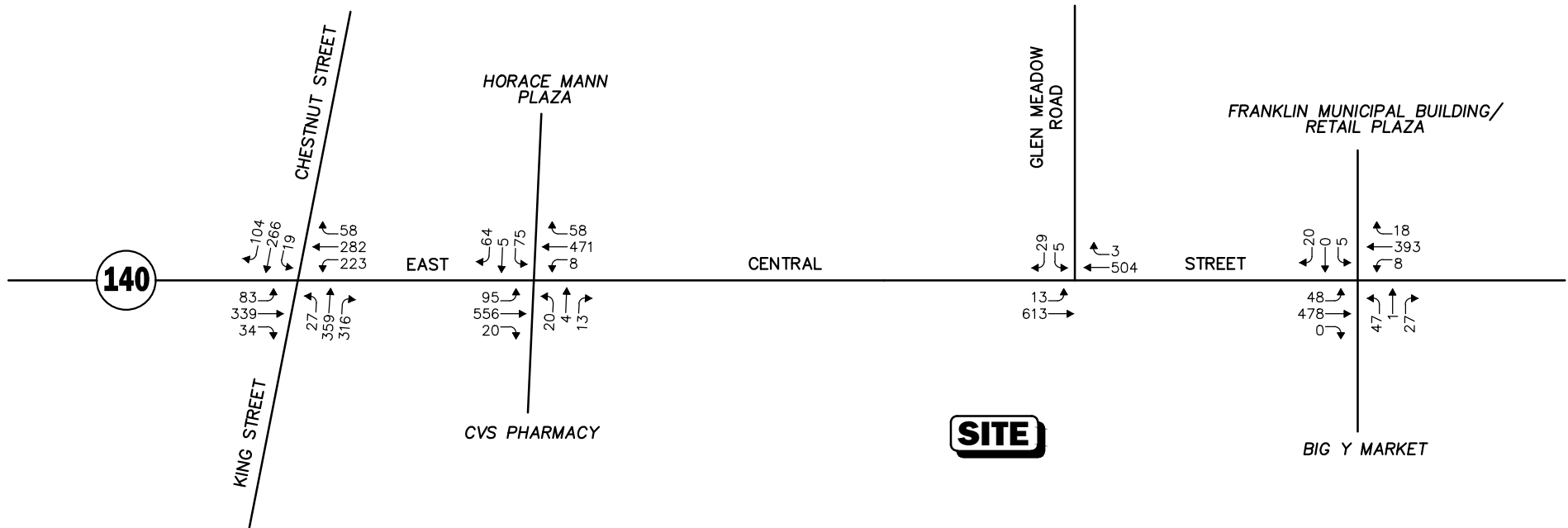
The 2027 No-Build condition peak-hour traffic-volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2020 Existing peak-hour traffic volumes. The resulting 2027 No-Build weekday morning, weekday evening and Saturday midday peak-hour traffic volumes are shown on Figures 6, 7 and 8, respectively.

PROJECT-GENERATED TRAFFIC

Design year (2027) Build traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

As proposed, the Project will entail the construction of a mixed-use development that will contain 104 multifamily residential units, 15,219± sf of retail space and a 2,250± sf coffee shop with drive-through window. In order to develop the traffic characteristics of the Project, trip-generation statistics published by the ITE⁶ for similar land uses as those proposed were used. ITE Land Use Codes (LUCs) 221, *Multifamily Housing (Mid-Rise)*; 820, *Shopping Center*; and 937, *Coffee Shop with Drive-Through Window*; were used to establish the base traffic characteristics of the Project.

⁶Ibid 1.



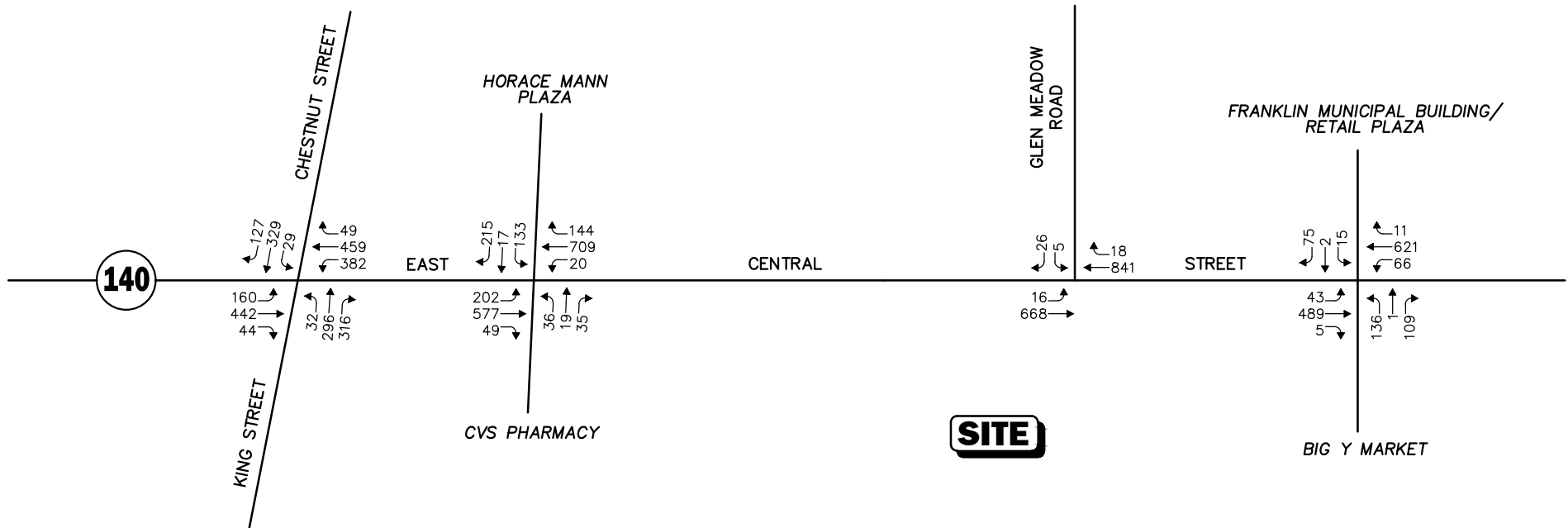
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 6

2027 No-Build
Weekday Morning
Peak Hour Traffic Volumes
(7:45 - 8:45 AM)



SITE



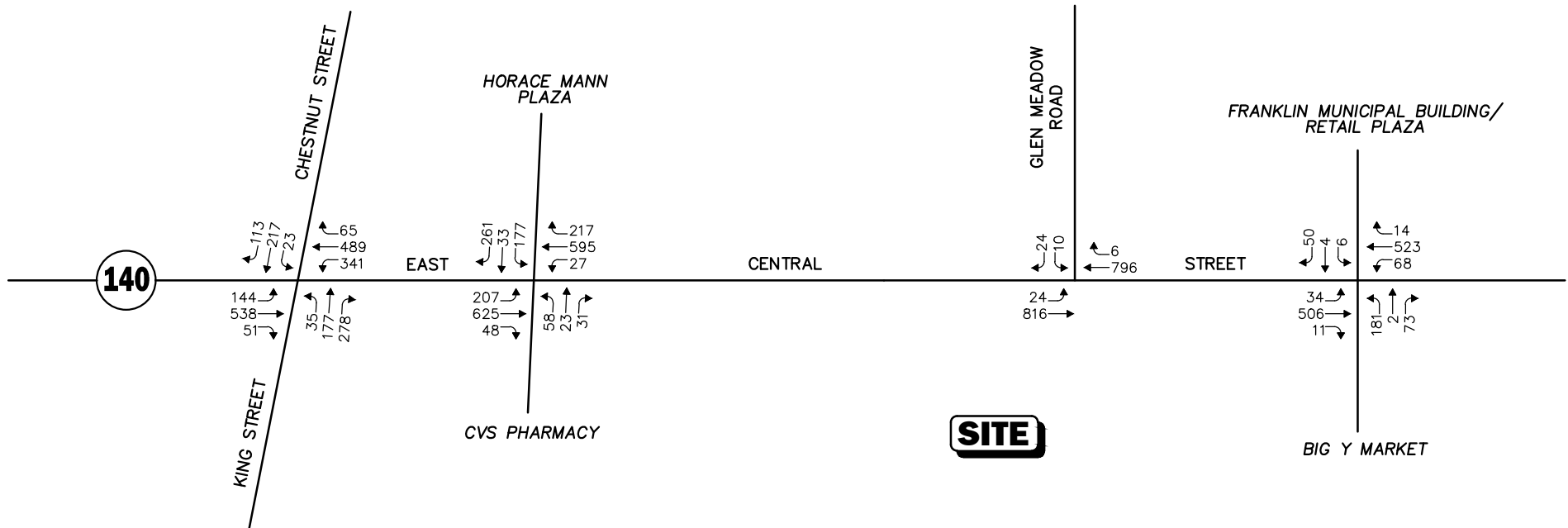
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

W Vanasse & Associates inc

Figure 7

**2027 No-Build
Weekday Evening
Peak Hour Traffic Volumes
(4:30-5:30 PM)**



SITE



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 8

**2027 No-Build
Saturday Middy
Peak Hour Traffic Volumes
(12:15 AM -1:15 PM)**

Internal Trips

A portion of the trips expected to be generated by the Project will consist of internal or dual-purpose trips. An internal trip consists of a resident, customer and/or employee that patronizes more than one of the uses planned within a development and is common in mixed-use projects with appropriate accommodations to facilitate trips between uses. By way of example, a resident of the Project may also patronize the retail space or the coffee shop that is to be located within the Project site. These “internal” trips are not accounted for when the trip-generation calculations are performed on an individual land use basis, resulting in higher traffic volumes for the overall Project than will actually be generated. In order to account for this interaction, the multi-use trip-generation calculation methodology promulgated by the ITE⁷ was applied to the base ITE trip-generation calculations.

Pass-By Trips

Not all of the trips expected to be generated by the commercial components of the Project (i.e., the retail space and coffee shop) will be new trips on the roadway network. A significant portion of these trips will consist of pass-by trips or vehicles already traveling along Route 140 and Glen Meadow Road for other purposes that will patronize the Project in conjunction with their trip and then continue to their original destination. These trips are not new trips on the roadway network as a result of the Project. Statistics published by the ITE⁸ indicate that on average up to 34 percent of the trips generated by a retail use and up to 89 percent of the trips generated by a coffee shop with drive-through window may consist of pass-by trips. In accordance with MassDOT guidelines which limits pass-by trips to the lesser of: i) 15 percent of the adjacent roadway traffic volume; or ii) the ITE pass-by trip rate for the specific use; the ITE published pass-by trips rates were applied to the base trip-generation calculations for each Project use after the internal trip reduction was applied..

Table 5 summarizes the anticipated trip characteristics of the Project using the aforementioned methodology.

⁷Trip Generation Handbook, 3rd Edition, A Recommended Practice of the Institute of Transportation Engineers; Institute of Transportation Engineers; Washington, D.C.; September 2017.

⁸Ibid.

Table 5
TRIP GENERATION SUMMARY

	Retail Space					Coffee Shop					Multifamily Residential Community			
	(A) Retail (15,219 sf) ^a	(B) Internal Trips ^b	(C = A - B) Net Trips	(D) Pass-By Trips ^c	(E = C - D) Primary Trips	(F) Coffee Shop With Drive-Through (2,250 sf) ^d	(G) Internal Trips ^e	(H = F - G) Net Trips	(I) Pass-By Trips ^f	(J = H - I) Primary Trips	(K) Multifamily Housing (104 units) ^g	(L) Internal Trips ^h	(M = K – L) Primary Trips	(N = E + J + M) Total Primary Trips
Average Weekday Daily														
Entering	836	48	788	268	520	923	53	870	774	96	283	101	182	798
Exiting	<u>836</u>	<u>48</u>	<u>788</u>	<u>268</u>	<u>520</u>	<u>923</u>	<u>53</u>	<u>870</u>	<u>774</u>	<u>96</u>	<u>283</u>	<u>101</u>	<u>182</u>	<u>798</u>
Total	1,672	96	1,576	536	1,040	1,846	106	1,740	1,548	192	566	202	364	1,596
Weekday Morning Peak Hour														
Entering	99	0	99	27	72	102	10	92	80	12	9	0	9	93
Exiting	<u>60</u>	<u>0</u>	<u>60</u>	<u>27</u>	<u>33</u>	<u>98</u>	<u>10</u>	<u>88</u>	<u>80</u>	<u>8</u>	<u>27</u>	<u>0</u>	<u>27</u>	<u>68</u>
Total	159	0	159	54	105	200	20	180	160	20	36	0	36	161
Weekday Evening Peak Hour														
Entering	65	6	59	21	38	49	5	44	39	5	28	11	17	60
Exiting	<u>70</u>	<u>6</u>	<u>64</u>	<u>21</u>	<u>43</u>	<u>49</u>	<u>5</u>	<u>44</u>	<u>39</u>	<u>5</u>	<u>18</u>	<u>11</u>	<u>7</u>	<u>55</u>
Total	135	12	123	42	81	98	10	88	78	10	46	22	24	115
Saturday Midday Peak Hour														
Entering	73	4	69	17	52	98	6	92	83	9	22	10	12	73
Exiting	<u>67</u>	<u>4</u>	<u>63</u>	<u>17</u>	<u>46</u>	<u>99</u>	<u>6</u>	<u>93</u>	<u>83</u>	<u>10</u>	<u>24</u>	<u>10</u>	<u>14</u>	<u>70</u>
Total	140	8	132	34	98	197	12	185	166	19	46	20	26	143

^aBased on ITE LUC 820, *ITE LUC 820, Shopping Center*.

^bInternal trips: weekday daily – 5.7 percent; weekday morning peak-hour– 0.0 percent; weekday evening peak hour – 9.2 percent; and Saturday midday peak hour – 5.5 percent.

^cA pass-by trip rate was applied to the traffic volumes associated with the retail use as follows: average weekday daily, weekday morning and evening peak hours - 34 percent; and Saturday midday peak-hour – 26 percent.

^dBased on ITE LUC 937, *Coffee Shop with Drive-Through Window*.

^e Internal trips: weekday daily – 5.7 percent; weekday morning and evening peak-hour– 10.2 percent; and Saturday midday peak hour – 6.1 percent.

^fA pass-by trip rate was applied to the traffic volumes associated with the coffee shop use as follows: average weekday daily, weekday morning, weekday evening and Saturday midday peak hours - 89 percent.

^gBased on ITE LUC 221, *Multifamily Housing (Mid-Rise)*.

^hInternal trips: weekday daily – 35.8 percent; weekday morning peak-hour – 0.0 percent; weekday evening peak-hour – 47.8 percent; and Saturday midday peak-hour – 45.0 percent.

Project-Generated Trip Summary

As can be seen in Table 5, using the aforementioned methodology and after adjustment (reduction) to account for both internal and pass-by trips, the Project is expected to generate approximately 1,596 primary (new) vehicle trips on an average weekday (two-way volume, 24-hour volume), with 161 new vehicle trips (93 vehicles entering and 68 exiting) expected during the weekday morning peak-hour, 115 new vehicle trips (60 vehicles entering and 55 exiting) expected during the weekday evening peak-hour and 143 new vehicle trips (73 vehicles entering and 70 exiting) expected during the Saturday midday peak-hour.

Table 6 compares the traffic characteristics of the Project (new trips) to those of the prior development program for Central Square that included the Project site and was approved by the Town and reflected in the October 2016 Final EIR.

Table 6
TRAFFIC VOLUME COMPARISON (NEW TRIPS)

Time Period	Vehicle Trips		
	(A) Proposed Development	(B) Approved Development ^a	(A-B) Difference
<i>Average Weekday:</i>	1,596	8,214	-6,618
<i>Weekday Morning Peak-Hour:</i>	161	304	-143
<i>Weekday Evening Peak-Hour:</i>	115	671	-556
<i>Weekday Evening Peak-Hour:</i>	143	834	-691

^aObtained from Table 4R of the October 2016 *Transportation Impact Assessment* that accompanied the October 2016 Final EIR for Central Square.

As can be seen in Table 6, the Project is expected to generate 6,618 fewer new vehicle trips on an average weekday when compared to the approved development program that was to include the Project site, with 143 fewer new vehicle trips expected during the weekday morning peak-hour, 556 fewer new vehicle trips expected during the weekday evening peak-hour and 691 fewer new vehicle trips expected during the Saturday midday peak-hour. Based on this comparative assessment, ***it is clear that the Project will result in a significant reduction in traffic (up to 83 percent) on an average weekday and during the peak hours when compared to the approved development program and, as such, the Project will be less impactful on the transportation infrastructure.***

TRIP DISTRIBUTION AND ASSIGNMENT

Separate trip-distribution patterns were developed for the residential and commercial components of the Project given the differing nature and purpose of the trips associated with these uses. For the residential component of the Project, the directional distribution was determined based on a review of Journey-to-Work data obtained from the U.S. Census for persons residing in the Town of Franklin and then refined based on a review of existing traffic patterns within the study area during the peak periods. For the commercial component of the Project, the directional

distribution was determined based on a review of existing traffic patterns at the Project site driveways and the refined based on a review of existing traffic patterns within the study area. The general trip distribution for the residential and commercial components of the Project are graphically depicted on Figures 9 and 10, respectively. Traffic volumes expected to be generated by the Project were assigned onto the study area roadway network as shown on Figures 11, 12 and 13 for the respective peak hours.

FUTURE TRAFFIC VOLUMES - BUILD CONDITION

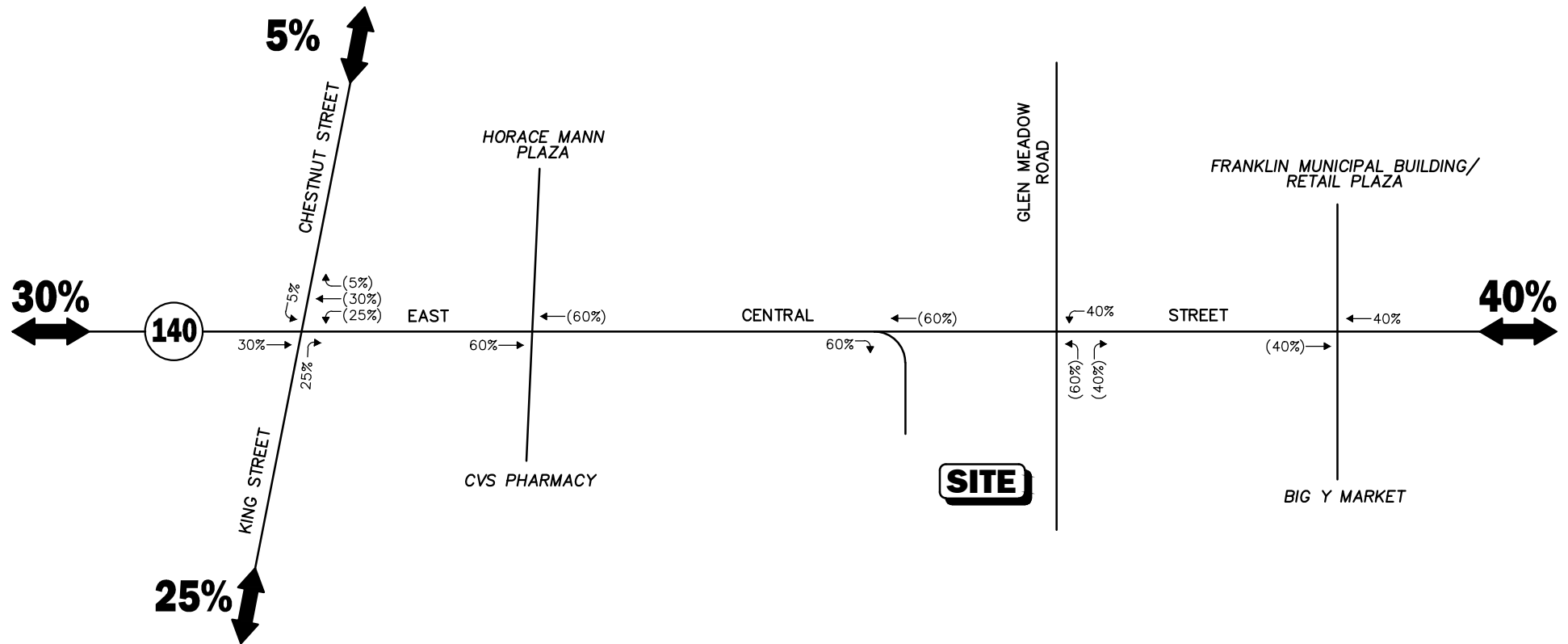
The 2027 Build condition traffic volumes consist of the 2027 No-Build traffic volumes with the addition of the traffic expected to be generated by the Project added to them. The 2027 Build weekday morning, weekday evening and Saturday midday peak-hour traffic-volumes are graphically depicted on Figures 14, 15 and 16, respectively.

A summary of peak-hour projected traffic-volume increases outside of the study area that is the subject of this assessment is shown in Table 7. These volumes are based on the expected increases from the Project.

Table 7
PEAK-HOUR TRAFFIC-VOLUME INCREASES

Location/Peak Hour	2020 Existing	2027 No-Build	2027 Build	Traffic Volume Increase Over No-Build	Percent Increase Over No-Build
<i>Route 140, east of Big Y Market</i>					
<i>Driveway:</i>					
Weekday Morning	867	929	1,000	71	7.6
Weekday Evening	1,223	1,311	1,362	51	3.9
Saturday Midday	1,110	1,190	1,254	64	5.4
<i>Route 140, west of King Street:</i>					
Weekday Morning	810	869	917	48	5.5
Weekday Evening	1,178	1,264	1,298	34	2.7
Saturday Midday	1,278	1,370	1,412	42	3.1
<i>King Street, south of Route 140:</i>					
Weekday Morning	1,427	1,225	1,259	34	2.8
Weekday Evening	1,305	1,399	1,422	23	1.6
Saturday Midday	1,025	1,099	1,127	28	2.5
<i>Chestnut Street, north of Route 140:</i>					
Weekday Morning	829	889	897	8	0.9
Weekday Evening	923	990	997	7	0.7
Saturday Midday	688	739	748	9	1.2

As shown in Table 7, Project-related traffic-volume increases external to the study area relative to 2027 No-Build conditions are anticipated to range from 0.7 to 7.6 percent during the peak periods, with vehicle increases shown to range from 7 to 71 vehicles. ***When distributed over the peak-hour, the predicted traffic volume increases would not result in a significant impact (increase) on motorist delays or vehicle queuing outside of the immediate study area that is the subject of this assessment.***

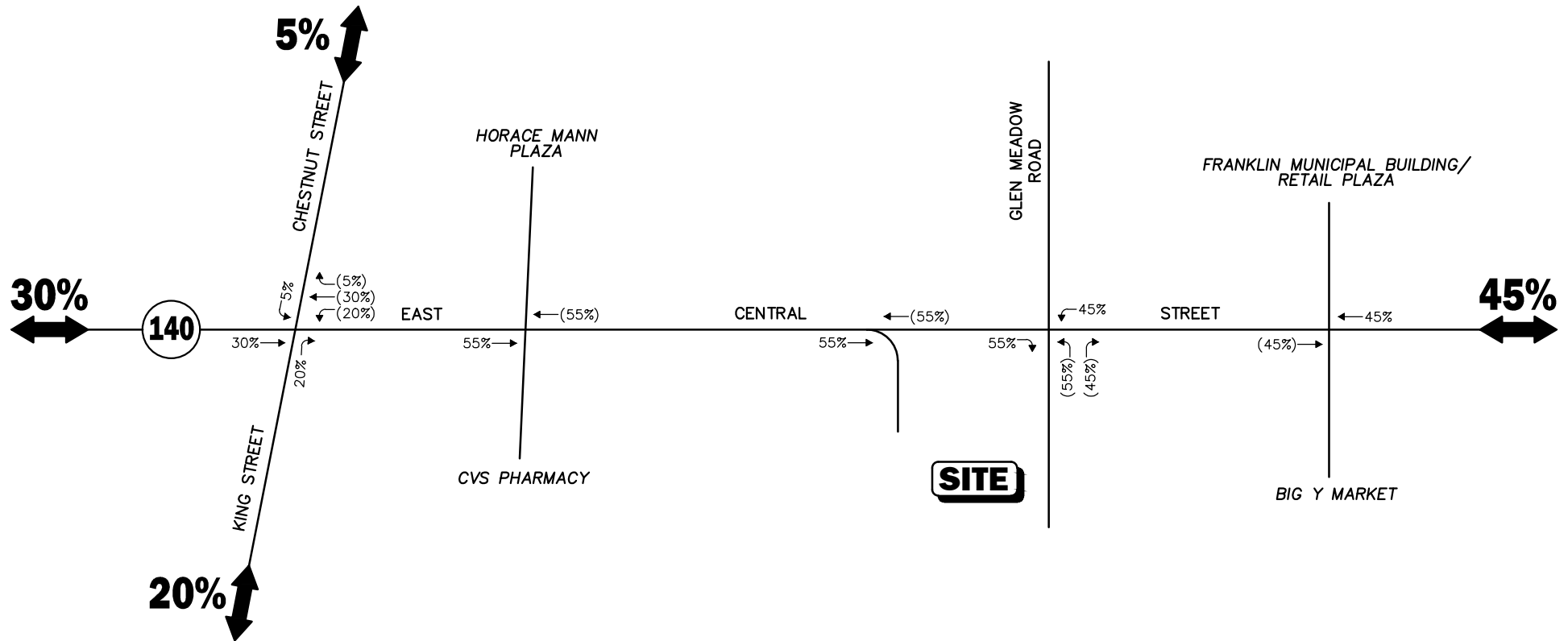


Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 9

Trip Distribution Map
Residential Component



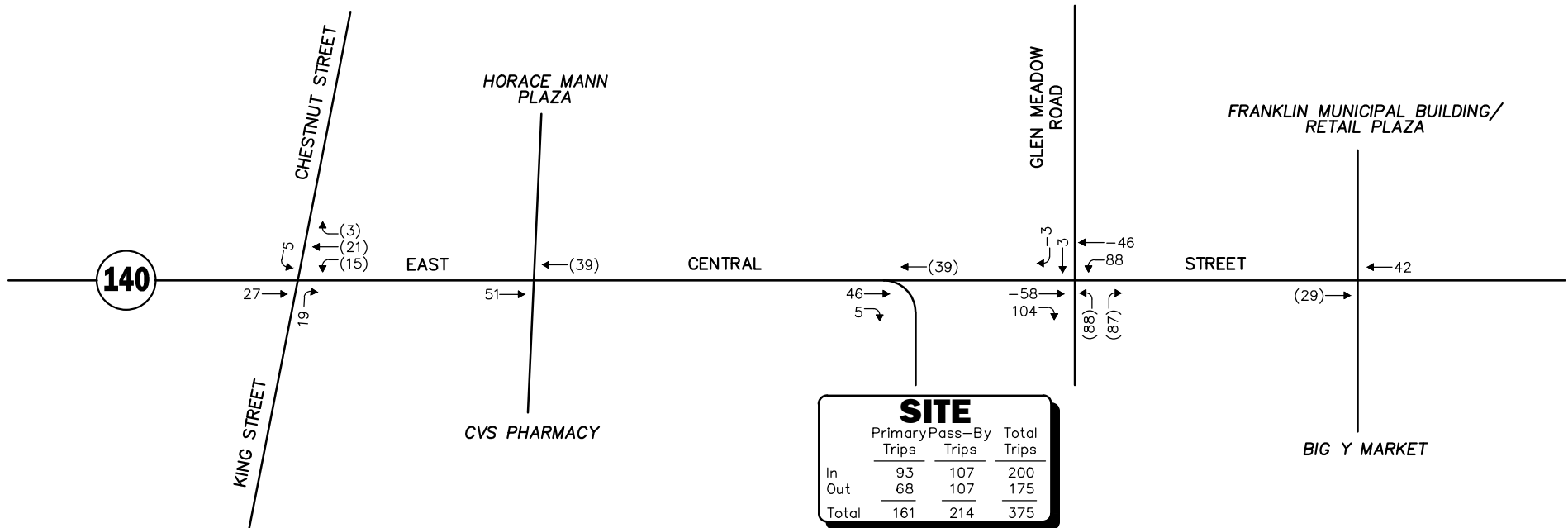
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 10

Trip Distribution Map
Commercial Component



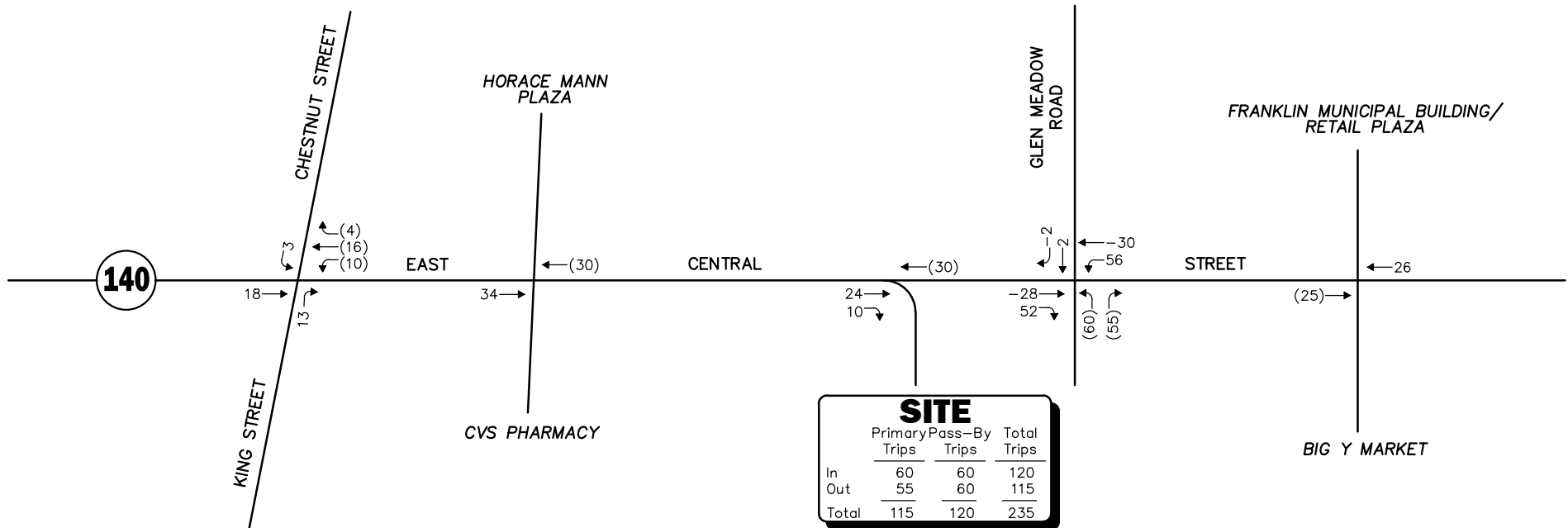
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 11

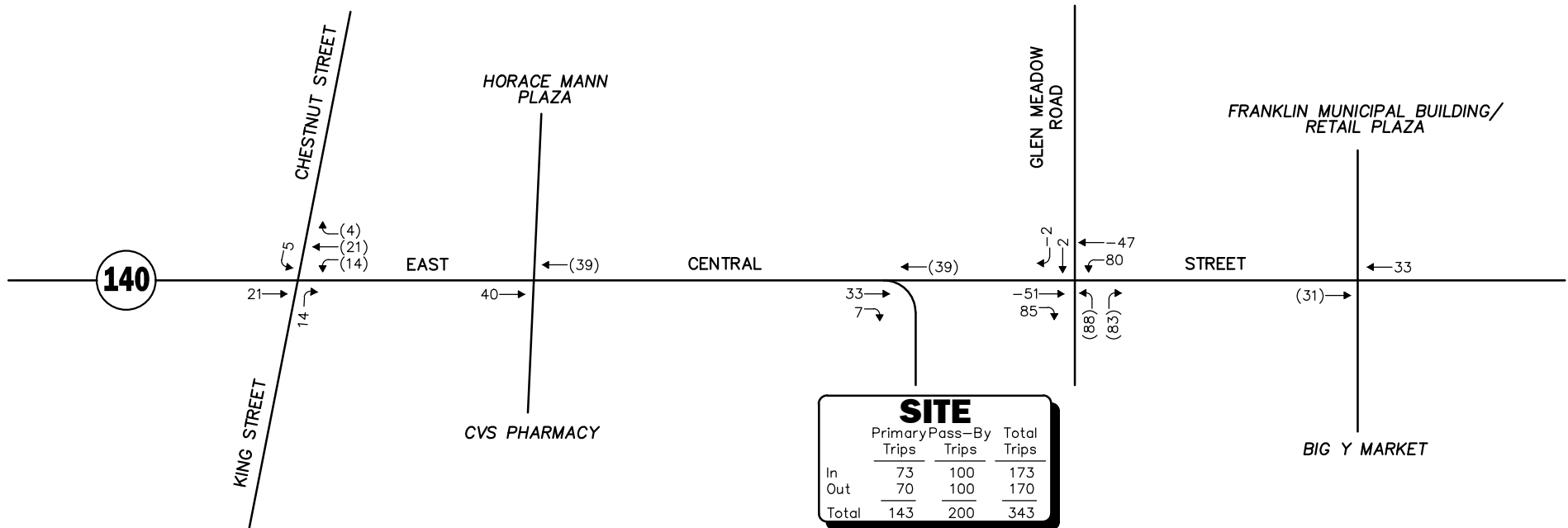
Project-Generated
Weekday Morning
Peak Hour Traffic Volumes



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale

Figure 12



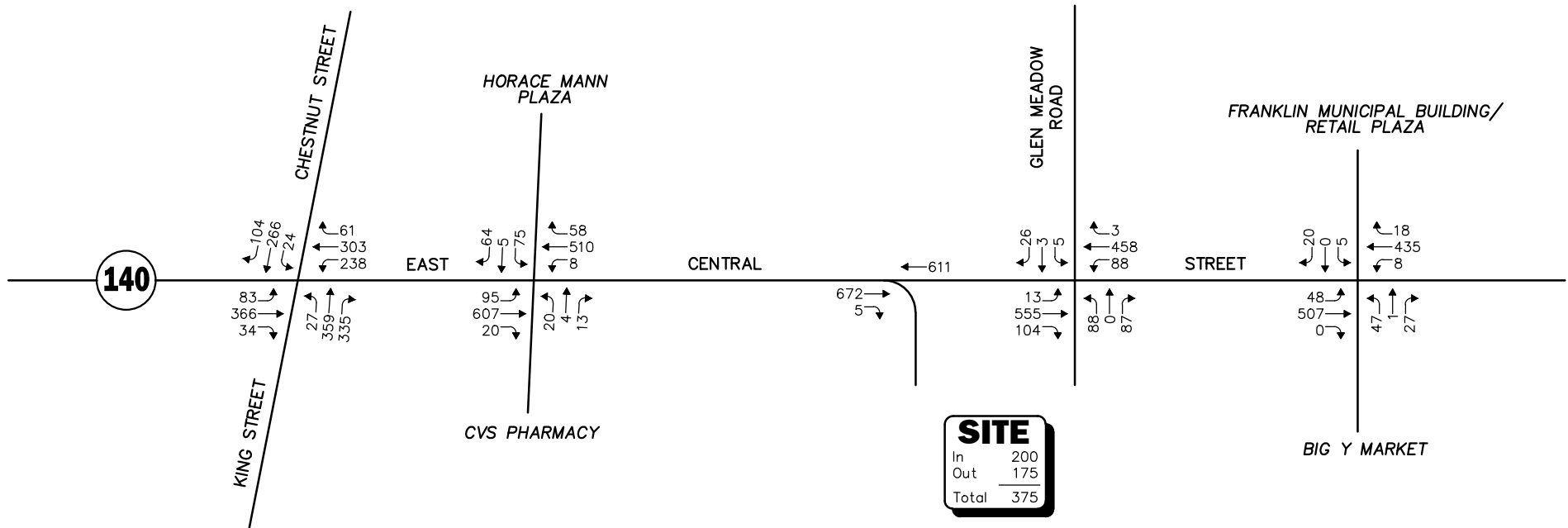
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 13

**Project-Generated
Saturday Midday
Peak Hour Traffic Volumes**



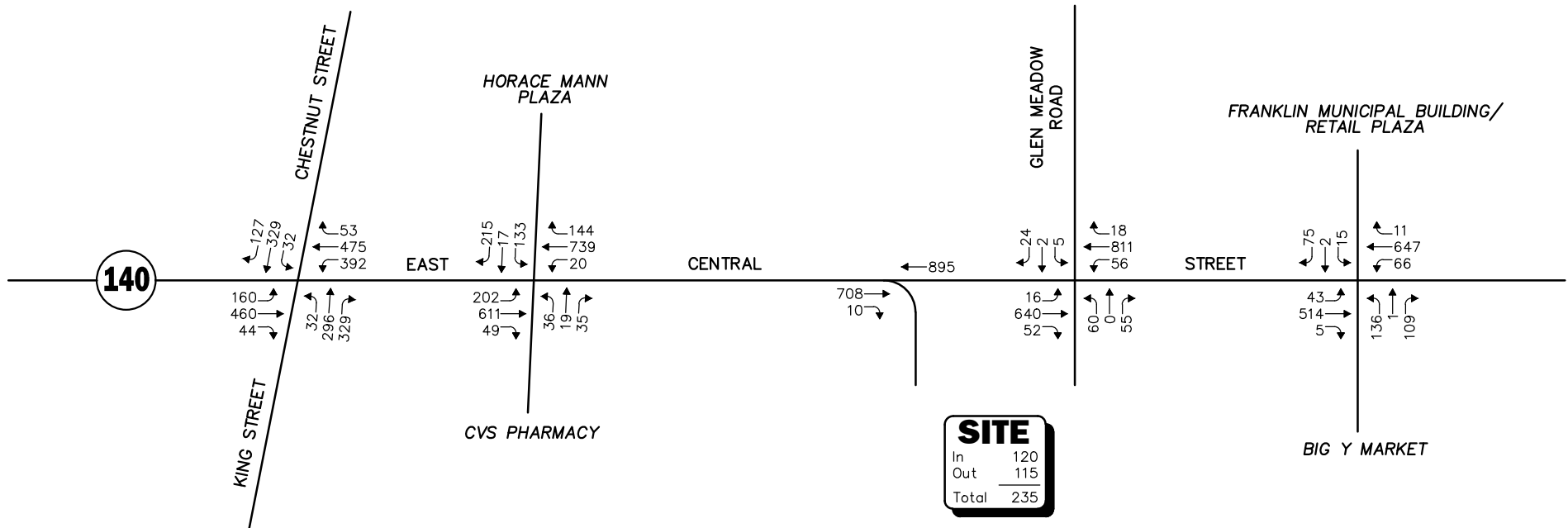
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 14

2027 Build
Weekday Morning
Peak Hour Traffic Volumes
(7:45 - 8:45 AM)



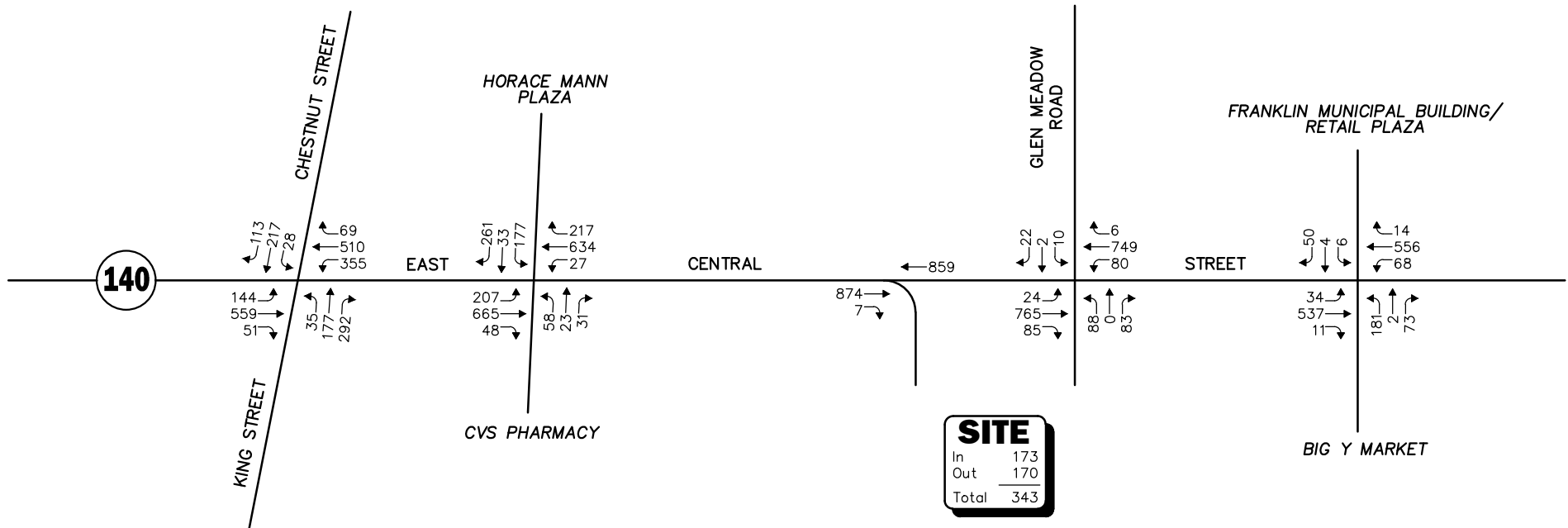
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 15

2027 Build
Weekday Evening
Peak Hour Traffic Volumes
(4:30-5:30 PM)



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 16

2027 Build
Saturday Middy
Peak Hour Traffic Volumes
(12:15 AM -1:15 PM)

TRAFFIC OPERATIONS ANALYSIS

Measuring existing and future traffic volumes quantifies traffic flow within the study area. To assess quality of flow, roadway capacity and vehicle queue analyses were conducted under Existing, No-Build and Build traffic volume conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

METHODOLOGY

Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.⁹ The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with level-of-service (LOS) A representing the best operating conditions and LOS F representing congested or constrained operating conditions.

Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year.

⁹The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

Signalized Intersections

The six levels of service for signalized intersections may be described as follows:

- *LOS A* describes operations with very low control delay; most vehicles do not stop at all.
- *LOS B* describes operations with relatively low control delay. However, more vehicles stop than *LOS A*.
- *LOS C* describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- *LOS D* describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable.
- *LOS E* describes operations with high control delay values. Individual cycle failures are frequent occurrences.
- *LOS F* describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Levels of service for signalized intersections are calculated using the operational analysis methodology of the 2000 Highway Capacity Manual and implemented as a part of the Synchro® 10 software. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. Level-of-service designations are based on the criterion of control or signal delay per vehicle. Control or signal delay is a measure of driver discomfort, frustration, and fuel consumption, and includes initial deceleration delay approaching the traffic signal, queue move-up time, stopped delay and final acceleration delay. Table 8 summarizes the relationship between level of service and control delay. The tabulated control delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 8
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS

Level of Service	Control (Signal) Delay per Vehicle (Seconds)
A	≤10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	>80.0

^aSource: *Highway Capacity Manual*, Transportation Research Board; Washington, DC; 2000; page 16-2.

Unsignalized Intersections

The six levels of service for unsignalized intersections may be described as follows:

- *LOS A* represents a condition with little or no control delay to minor street traffic.
- *LOS B* represents a condition with short control delays to minor street traffic.
- *LOS C* represents a condition with average control delays to minor street traffic.
- *LOS D* represents a condition with long control delays to minor street traffic.
- *LOS E* represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- *LOS F* represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The levels of service of unsignalized intersections are determined by application of a procedure described in the 2010 *Highway Capacity Manual*.¹⁰ Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the effects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the 2010 *Highway Capacity Manual*. Table 9 summarizes the relationship between level of service and average control delay for two way stop controlled and all-way stop controlled intersections.

Table 9
LEVEL-OF-SERVICE CRITERIA FOR
UNSIGNALIZED INTERSECTIONS^a

Level-Of-Service by Volume-to-Capacity Ratio		Average Control Delay (Seconds Per Vehicle)
$v/c \leq 1.0$	$v/c > 1.0$	
A	F	≤ 10.0
B	F	10.1 to 15.0
C	F	15.1 to 25.0
D	F	25.1 to 35.0
E	F	35.1 to 50.0
F	F	> 50.0

^aSource: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; page 19-2.

¹⁰*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

Vehicle Queue Analysis

Vehicle queue analyses are a direct measurement of an intersection's ability to process vehicles under various traffic control and volume scenarios and lane use arrangements. The vehicle queue analysis was performed using the Synchro® intersection capacity analysis software which is based upon the methodology and procedures presented in the 2010 *Highway Capacity Manual*. The Synchro® vehicle queue analysis methodology is a simulation based model which reports the number of vehicles that experience a delay of six seconds or more at an intersection. For signalized intersections, Synchro® reports both the average (50th percentile) the 95th percentile vehicle queue. For unsignalized intersections, Synchro® reports the 95th percentile vehicle queue. Vehicle queue lengths are a function of the capacity of the movement under study and the volume of traffic being processed by the intersection during the analysis period. The 95th percentile vehicle queue is the vehicle queue length that will be exceeded only 5 percent of the time, or approximately three minutes out of sixty minutes during the peak one hour of the day (during the remaining fifty-seven minutes, the vehicle queue length will be less than the 95th percentile queue length).

ANALYSIS RESULTS

Level-of-service and vehicle queue analyses were conducted for 2020 Existing, 2027 No-Build and 2027 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized in Tables 10 and 11. The detailed analysis results are presented in the Appendix.

The addition of Project-related traffic to the study area intersections is not predicted to result in a significant increase in motorist delays or vehicle queuing over No-Build conditions; however, independent of the Project, specific movements at the Route 140/Chestnut Street/King Street intersection were identified as operating at or over capacity (i.e., LOS of “E” or “F”, respectively) during the peak hours.

The following is a summary of the level-of-service and vehicle queue analysis results. For context, we note that an LOS of “D” or better is generally defined as “acceptable” operating conditions.

Signalized Intersections

The addition of Project-related traffic to the signalized study area intersections was not shown to result in a change in overall LOS, with only minor changes shown to occur for specific movements. Project-related impacts at the signalized study area intersection are shown in Table 10 and are defined as follows:

Route 140 at Chestnut Street and King Street – No change in LOS was shown to occur for any movement over No-Build conditions, with Project-related impacts defined in an increase in average motorist delay of up to 10.1 seconds and in vehicle queuing of up to two (2) vehicles. Independent of the Project, one or more movements at the intersection were shown to operate at or over capacity (i.e., LOS “E” or “F”) during the weekday evening and Saturday midday peak hours.

Route 140 at the Horace Mann Plaza Driveway and the CVS/Pharmacy® Driveway – No changes in overall LOS was shown to occur over No-Build conditions, with minor changes in LOS identified for the following movements: weekday morning peak-hour – Horace Mann Plaza left-turn/through movements were shown to degrade from LOS C to LOS D as a result of an increase in average motorist delay of 4.7 seconds; Saturday midday peak-hour – Route 140 eastbound

through movement was shown to degrade from LOS B to LOS C as a result of an increase in average motorist delay of 1.7 seconds and left-turn/through movements from the CVS/Pharmacy driveway were shown to degrade from LOS C to LOS D as a result of an increase in average motorist delay of 1.1 seconds. Vehicle queues at the intersection were shown to increase by up to four (4) vehicles with the addition of Project-related traffic.

Route 140 at the Big Y Market Driveway and the Franklin Municipal Building Driveway – No change in LOS was shown to occur for any movement, with Project-related impacts defined as an increase in overall average motorist delay of less than 1.0 seconds and in vehicle queuing of up to two (2) vehicles.

Unsignalized Intersections

Project-related impacts at the unsignalized study area intersections are shown in Table 11, and are defined as follows:

Route 140 at Glen Meadow Road and Project Site Driveway - Under 2020 Existing conditions, the critical movements at this unsignalized intersection (left-turn movements from Glen Meadow Road) were shown to operate at LOS C during the weekday morning peak-hour and at LOS E during both the weekday evening and Saturday midday peak hours. Under 2027 No-Build conditions, the critical movements were shown to continue to operate at LOS C during the weekday morning peak-hour and at LOS E during the weekday evening peak-hour, and to degrade to LOS F during the Saturday midday peak-hour as a result of traffic-volume increases independent of the Project. Under 2027 Build conditions with the addition of the Project site driveway opposite Glen Meadow Road, the critical movements (left-turn movements from Glen Meadow Road or the Project site driveway) were shown to operate at LOS F during the peak periods with vehicle queues of up to 10 vehicles.

Route 140 at the Right-Turn, Entrance Only Project Site Driveway – All movements at this intersection were shown to operate at LOS A during the peak hours with negligible vehicle queuing predicted.

Table 10
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2020 Existing				2027 No-Build				2027 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Route 140 at Chestnut Street and King Street												
<i>Weekday Morning:</i>												
Route 140 EB LT	0.22	19.0	B	20/62	0.24	19.0	B	22/66	0.24	19.0	B	22/66
Route 140 EB TH/RT	0.75	35.3	D	160/354	0.78	36.4	D	178/385	0.79	37.3	D	197/429 ^f
Route 140 WB LT	0.57	18.7	B	55/141	0.62	20.1	C	59/151	0.67	21.7	C	64/165
Route 140 WB TH/RT	0.54	25.2	C	122/277	0.56	25.4	C	133/301	0.57	25.9	C	145/326
King Street NB LT/TH	0.64	25.5	C	149/454 ^f	0.71	28.6	C	172/506 ^f	0.74	31.4	C	185/508 ^f
King Street NB RT	0.28	13.0	B	27/136	0.31	13.8	B	35/155	0.34	14.9	B	41/165
Chestnut Street SB LT/TH/RT	0.55	23.3	C	138/385	0.62	25.7	C	160/461 ^f	0.72	30.9	C	181/512 ^f
Overall	--	23.9	C	--	--	25.4	C	--	--	27.3	C	--
<i>Weekday Evening:</i>												
Route 140 EB LT	0.46	20.0	C	40/108	0.51	20.6	C	44/116	0.52	20.7	C	44/116
Route 140 EB TH/RT	0.85	43.2	D	243/525 ^f	0.86	43.8	D	268/585 ^f	0.87	43.8	D	282/619 ^f
Route 140 WB LT	1.02	77.7	E	156/486	1.12	>80.0	F	209 ^e /542 ^f	1.17	>80.0	F	228 ^e /565 ^f
Route 140 WB TH/RT	0.77	32.7	C	232/562 ^f	0.79	33.9	C	258/627 ^f	0.80	34.2	C	272/662 ^f
King Street NB LT/TH	0.69	33.0	C	163/388 ^f	0.80	41.1	D	193/446 ^f	0.82	44.5	D	194/450 ^f
King Street NB RT	0.26	15.0	B	27/112	0.29	16.5	B	36/131	0.31	17.4	B	38/136
Chestnut Street SB LT/TH/RT	0.91	49.4	D	292/570 ^f	1.12	>80.0	F	395 ^e /673 ^f	1.21	>80.0	F	420 ^e /699 ^f
Overall	--	41.4	D	--	--	60.1	E	--	--	70.2	E	--
<i>Saturday Midday:</i>												
Route 140 EB LT	0.34	14.0	B	24/98	0.41	15.2	B	27/105	0.43	15.8	B	28/105
Route 140 EB TH/RT	0.82	32.9	C	253/705 ^f	0.89	40.3	D	289/774 ^f	0.93	45.9	D	308/812 ^f
Route 140 WB LT	0.82	32.7	C	94/410 ^f	0.97	66.1	E	141/495 ^f	1.02	79.8	E	154/521 ^f
Route 140 WB TH/RT	0.67	21.7	C	196/653 ^f	0.73	24.5	C	228/722 ^f	0.77	26.4	C	247/767 ^f
King Street NB LT/TH	0.75	43.7	D	107/230	0.79	46.6	D	117/248	0.77	46.6	D	117/247
King Street NB RT	0.17	18.3	B	0/47	0.19	18.4	B	3/54	0.20	18.4	B	3/55
Chestnut Street SB LT/TH/RT	0.75	40.9	D	158/316	0.79	43.3	D	173/345	0.83	46.4	D	178/357
Overall	--	29.7	C	--	--	37.3	D	--	--	41.2	D	--

See notes at end of table.

Table 10 (Continued)

SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2020 Existing				2027 No-Build				2027 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Route 140 at Horace Mann Plaza Driveway and CVS Pharmacy Driveway												
<i>Weekday Morning:</i>												
Route 140 EB LT	0.23	5.8	A	8/52	0.25	6.1	A	9/56	0.25	6.4	A	9/56
Route 140 EB TH	0.60	9.8	A	64/413	0.62	10.1	B	75/464	0.64	10.3	B	87/552 ^f
Route 140 EB RT	0.01	6.1	A	0/0	0.01	6.1	A	0/0	0.01	6.1	A	0/0
Route 140 WB LT	0.02	8.2	A	1/8	0.03	8.2	A	1/9	0.03	8.2	A	1/9
Route 140 WB TH	0.61	12.2	B	113/356	0.62	13.3	B	130/399	0.62	13.3	B	144/449
Route 140 WB RT	0.04	8.8	A	0/5	0.04	8.8	A	0/7	0.04	8.9	A	0/7
CVS Pharmacy Driveway NB LT/TH	0.19	24.1	C	7/38	0.19	26.1	C	8/39	0.20	29.6	C	9/39
CVS Pharmacy Driveway NB RT	0.01	23.6	C	0/0	0.01	25.4	C	0/0	0.01	28.7	C	0/0
Horace Mann Plaza Driveway SB LT/TH	0.54	25.2	C	23/94	0.58	30.6	C	26/99	0.61	35.3	D	29/100
Horace Mann Plaza Driveway SB RT	0.04	18.8	B	0/1	0.05	20.4	C	0/19	0.05	23.7	C	0/19
Overall	--	12.4	B	--	--	12.9	B	--	--	13.2	B	
<i>Weekday Evening:</i>												
Route 140 EB LT	0.52	12.8	B	23/125	0.62	20.6	C	39/170	0.67	26.1	C	50/197 ^f
Route 140 EB TH	0.52	10.1	B	84/445	0.56	10.9	B	99/494	0.59	11.5	B	108/539
Route 140 EB RT	0.03	7.0	A	0/0	0.03	7.1	A	0/0	0.03	7.2	A	0/0
Route 140 WB LT	0.05	10.0	B	2/18	0.05	10.5	B	2/18	0.06	10.5	B	2/18
Route 140 WB TH	0.79	23.1	C	267/797 ^f	0.86	28.7	C	318/878 ^f	0.90	31.8	C	338/928 ^f
Route 140 WB RT	0.12	12.0	B	9/61	0.13	12.6	B	12/68	0.13	12.6	B	12/68
CVS Pharmacy Driveway NB LT/TH	0.31	34.7	C	24/71	0.33	35.0	C	26/75	0.33	35.0	C	26/75
CVS Pharmacy Driveway NB RT	0.02	33.0	C	0/0	0.02	33.0	C	0/0	0.02	33.0	C	0/0
Horace Mann Plaza Driveway SB LT/TH	0.74	49.0	D	68/162	0.77	52.4	D	74/174	0.77	52.4	D	74/174
Horace Mann Plaza Driveway SB RT	0.13	24.5	C	0/33	0.14	24.5	C	0/34	0.14	24.5	C	0/34
Overall	--	19.8	B	--	--	22.9	C	--	--	24.4	C	--
<i>Saturday Middy:</i>												
Route 140 EB LT	0.59	14.6	B	39/126	0.68	20.4	C	46/163	0.73	28.7	C	63/197 ^f
Route 140 EB TH	0.69	16.7	B	166/534	0.74	19.7	B	269/643 ^f	0.78	21.4	C	299/710 ^f
Route 140 EB RT	0.03	9.6	A	0/0	0.04	10.4	B	0/0	0.04	10.4	B	0/0
Route 140 WB LT	0.10	13.9	B	4/22	0.11	14.6	B	5/23	0.13	15.0	B	5/23
Route 140 WB TH	0.78	26.8	C	259/627 ^f	0.82	30.1	C	289/696 ^f	0.86	33.3	C	320/763 ^f
Route 140 WB RT	0.22	16.2	B	28/103	0.25	17.0	B	33/116	0.25	17.0	B	36/121
CVS Pharmacy Driveway NB LT/TH	0.45	31.6	C	43/99	0.53	34.4	C	49/107	0.54	35.5	D	49/108
CVS Pharmacy Driveway NB RT	0.02	28.3	C	0/0	0.03	29.6	C	0/0	0.03	30.1	C	0/0
Horace Mann Plaza Driveway SB LT/TH	0.75	42.3	D	102/279	0.81	51.3	D	116/311 ^f	0.83	53.8	D	116/312 ^f
Horace Mann Plaza Driveway SB RT	0.16	20.6	C	0/36	0.18	21.7	C	0/37	0.18	22.2	C	0/37
Overall	--	22.3	C	--	--	25.6	C	--	--	27.9	C	--

See notes at end of table.

Table 10 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2020 Existing				2027 No-Build				2027 Build			
	V/C ^a	Delay ^b	LOS ^c	Queue ^d 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th	V/C	Delay	LOS	Queue 50 th /95 th
Route 140 at the Big Y Market Drive and the Franklin Municipal Building Driveway												
<i>Weekday Morning:</i>												
Route 140 EB LT	0.12	5.0	A	3/32	0.14	5.0	A	4/34	0.15	5.0	A	4/35
Route 140 EB TH/RT	0.55	7.0	A	44/245	0.57	7.1	A	50/270	0.59	7.3	A	55/293
Route 140 WB LT	0.02	4.6	A	1/9	0.03	4.6	A	1/10	0.03	4.6	A	1/10
Route 140 WB TH/RT	0.46	5.9	A	34/205	0.48	6.3	A	38/224	0.52	6.5	A	44/254
Big Y Market Drive NB LT/TH	0.24	15.2	B	6/49	0.27	16.6	B	6/51	0.27	17.2	B	7/51
Big Y Market Drive NB RT	0.02	14.8	B	0/0	0.02	15.5	B	0/0	0.02	16.0	B	0/0
Municipal Building Driveway SB LT/TH/RT	0.02	14.8	B	0/0	0.02	15.5	B	0/0	0.02	16.0	B	0/0
Overall	--	7.4	A	--	--	7.5	A	--	--	7.7	A	--
<i>Weekday Evening:</i>												
Route 140 EB LT	0.18	10.9	B	7/33	0.35	11.7	B	8/44	0.35	11.7	B	8/45
Route 140 EB TH/RT	0.74	17.9	B	97/286	0.68	14.9	B	107/314	0.69	14.9	B	115/337
Route 140 WB LT	0.09	10.4	B	2/16	0.33	11.1	B	10/58	0.33	11.1	B	11/59
Route 140 WB TH/RT	0.58	13.8	B	68/231	0.79	18.6	B	133/484 ^f	0.79	18.6	B	142/518 ^f
Big Y Market Drive NB LT/TH	0.40	14.7	B	24/143 ^f	0.56	20.4	C	37/172 ^f	0.60	23.2	C	42/175 ^f
Big Y Market Drive NB RT	0.07	12.5	B	0/39	0.08	15.6	B	0/40	0.08	16.8	B	0/40
Municipal Building Driveway SB LT/TH/RT	0.16	12.9	B	6/0	0.19	16.2	B	8/0	0.19	17.4	B	9/0
Overall	--	15.0	B	--	--	16.6	B	--	--	16.7	B	--
<i>Saturday Midday:</i>												
Route 140 EB LT	0.18	9.2	A	4/30	0.22	9.7	A	5/33	0.22	9.7	A	6/34
Route 140 EB TH/RT	0.69	14.1	B	86/306	0.73	15.3	B	108/336	0.73	15.3	B	120/366
Route 140 WB LT	0.34	10.4	B	9/56	0.40	11.4	B	11/64	0.40	11.4	B	12/66
Route 140 WB TH/RT	0.70	14.4	B	87/327	0.74	15.7	B	103/362	0.74	15.7	B	122/396
Big Y Market Drive NB LT/TH	0.53	17.1	B	32/182 ^f	0.49	17.1	B	38/182 ^f	0.51	18.6	B	42/180
Big Y Market Drive NB RT	0.05	13.4	B	0/25	0.05	14.1	B	0/29	0.05	15.4	B	0/29
Municipal Building Driveway SB LT/TH/RT	0.07	13.5	B	2/26	0.07	14.2	B	2/27	0.07	15.5	B	3/27
Overall	--	14.2	B	--	--	15.3	B	--	--	15.4	B	--

^aVolume-to-capacity ratio.

^bPercentile delay per vehicle in seconds.

^cLevel-of-Service.

^dQueue length in vehicles.

^eVolume exceeds capacity, queue is theoretically infinite.

^f95th percentile volume exceeds capacity, queue may be longer.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

Table 11
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE AND VEHICLE QUEUE SUMMARY

Unsignalized Intersection/Peak Hour/Movement	2020 Existing				2027 No-Build				2027 Build			
	Demand ^a	Delay ^b	LOS ^c	Queue ^d 95 th	Demand	Delay	LOS	Queue 95 th	Demand	Delay	LOS	Queue 95 th
Route 140 at Glen Meadow Road and the Project Site Driveway												
<i>Weekday Morning:</i>												
Route 140 EB LT/TH/RT	584	0.2	A	0	626	0.2	A	0	672	0.2	A	0
Route 140 WB LT/TH/RT	473	0.0	A	0	507	0.0	A	0	549	1.5	A	0
Glen Meadow Road SB LT/TH	5	22.4	C	0	5	24.7	C	0	8	>50.0	F	1
Glen Meadow Road SB RT	27	12.0	B	0	29	12.5	B	0	26	11.9	B	0
Project Site Driveway NB LT	--	--	--	--	--	--	--	--	88	>50.0	F	6
Project Site Driveway NB TH/RT	--	--	--	--	--	--	--	--	87	14.5	B	1
<i>Weekday Evening:</i>												
Route 140 EB LT/TH/RT	638	0.2	A	0	684	0.2	A	0	708	0.2	A	0
Route 140 WB LT/TH/RT	801	0.0	A	0	859	0.0	A	0	885	0.6	A	0
Glen Meadow Road SB LT/TH	5	35.6	E	0	5	41.5	E	0	7	>50.0	F	1
Glen Meadow Road SB RT	24	15.9	C	0	26	17.0	C	0	24	16.4	C	0
Project Site Driveway NB LT	--	--	--	--	--	--	--	--	60	>50.0	F	6
Project Site Driveway NB TH/RT	--	--	--	--	--	--	--	--	55	14.6	B	1
<i>Saturday Middy:</i>												
Route 140 EB LT/TH/RT	783	0.3	A	0	840	0.3	A	0	874	0.3	A	0
Route 140 WB LT/TH/RT	748	0.0	A	0	802	0.0	A	0	835	1.0	A	0
Glen Meadow Road SB LT/TH	9	42.1	E	0	10	>50.0	F	0	12	>50.0	F	1
Glen Meadow Road SB RT	22	14.8	B	0	24	15.6	C	0	22	14.8	B	0
Project Site Driveway NB LT	--	--	--	--	--	--	--	--	88	>50.0	F	10
Project Site Driveway NB TH/RT	--	--	--	--	--	--	--	--	83	18.1	C	1
Route 140 at the Right-Turn Entrance Project Site Driveway												
<i>Weekday Morning:</i>												
Route 140 EB TH RT	--	--	--	--	--	--	--	--	677	0.0	A	0
Route 140 WB TH	--	--	--	--	--	--	--	--	611	0.0	A	0
<i>Weekday Evening:</i>												
Route 140 EB TH RT	--	--	--	--	--	--	--	--	718	0.0	A	0
Route 140 WB TH	--	--	--	--	--	--	--	--	895	0.0	A	0
<i>Saturday Middy:</i>												
Route 140 EB TH RT	--	--	--	--	--	--	--	--	881	0.0	A	0
Route 140 WB TH	--	--	--	--	--	--	--	--	859	0.0	A	0

^aDemand in vehicles per hour.

^bAverage control delay per vehicle (in seconds).

^cLevel-of-Service.

^dQueue length in vehicles.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the Project site driveway intersections with Route 140 in accordance with MassDOT and American Association of State Highway and Transportation Officials (AASHTO)¹¹ requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 12 presents the measured SSD and ISD at the subject intersections.

¹¹*A Policy on Geometric Design of Highway and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2018.

Table 12
SIGHT DISTANCE MEASUREMENTS^a

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD) ^b	Measured
Route 140 at the Main Project Site Driveway			
<i>Stopping Sight Distance:</i>			
Route 140 approaching from the east	305	--	650+
Route 140 approaching from the west	305	--	650+
<i>Intersection Sight Distance:</i>			
Looking to the east from the Project Site Driveway	305	445	650+
Looking to the west from the Project Site Driveway	305	430	650+
Route 140 at the Right-Turn Entrance Driveway			
<i>Stopping Sight Distance:</i>			
Route 140 approaching from the east	305	--	650+
Route 140 approaching from the west	305	--	650+

^aRecommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets*, 7th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2018; and based on a 40 mph approach speed on Route 140.

^bValues shown are the intersection sight distance for a vehicle turning right or left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.

As shown in Table 12, the available lines of sight at the Project site driveway intersections with Route 140 were found to exceed the recommended minimum distance to function in a safe (SSD) and efficient (ISD) manner based on a 40 mph approach speed along Route 140, which is consistent with the posted speed limit along this section of Route 140 (40 mph) and is 6 to 11 mph above the measured 85th percentile vehicle travel speeds approaching the driveways (34/29 mph).

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed construction of the Central Square mixed-use development to be located at 340 East Central Street (Route 140) in Franklin, Massachusetts. The Project represents a reduction both land area and impacts on the transportation infrastructure from the development program that was approved by the Town of Franklin and reviewed under MEPA. The following specific areas have been evaluated as a part of this assessment as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project.

Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE¹² and after adjustment to account for both internal trips and pass-by trips, the Project is expected to generate approximately 1,596 primary (new) vehicle trips on an average weekday (two-way, 24-hour volume), with 161 new vehicle trips expected during the weekday morning peak-hour, 115 new vehicle trips expected during the weekday evening peak-hour and 143 new vehicle trips expected during the Saturday midday peak-hour.
2. In comparison to the approved development program that was to include the Project site, the Project is expected to generate 6,618 fewer new vehicle trips on an average weekday, with 143 fewer new vehicle trips expected during the weekday morning peak-hour, 556 fewer new vehicle trips expected during the weekday evening peak-hour and 691 fewer new vehicle trips expected during the Saturday midday peak-hour. Based on this comparative assessment, *it is clear that the Project will result in a significant reduction in traffic (up to 83 percent) on an average weekday and during the peak hours when compared to the approved development program and, as such, the Project will be less impactful on the transportation infrastructure;*
3. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over Existing or anticipated future conditions without the Project (No-Build conditions), with majority of the movements at the study intersections shown to continue

¹²Ibid 1.

to operate at LOS D or better under all analysis conditions, where an LOS of “D” or better is defined as “acceptable” traffic operations;

4. Independent of the Project, specific movements at the Route 140/Chestnut Street/King Street intersection are currently operating at capacity (defined as LOS of “E”) during the weekday evening peak-hour, with delays predicted to increase in the future during both the weekday evening and Saturday midday peak hours resulting in additional movements operating at or over capacity (LOS “E” or “F”, respectively). That being said, a review of potential traffic signal timing improvements indicates that the intersection is operating in an optimal manner given the current geometry;
5. The study area intersections were found to have motor vehicle crash rates that were below both the MassDOT statewide and District averages for a signalized or unsignalized intersection, as appropriate; and
6. Lines of sight to and from the Project site driveway intersections with Route 140 were found to exceed the required minimum distance for the intersections to function in a safe and efficient manner.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with implementation of the recommendations that follow.

RECOMMENDATIONS

A detailed transportation improvement program has been developed that is designed to provide safe and efficient access to the Project site and address any deficiencies identified at off-site locations evaluated in conjunction with this study. The improvements that have been recommended as a part of this evaluation and, where applicable, will be completed in conjunction with the Project subject to receipt of all necessary rights, permits, and approvals.

Project Access

Access to the Project site will be provided by way of two (2) driveways that will intersect the south side of Route 140 and will be configured as follows: a full access driveway that will be located opposite Glen Meadow Road and a right-turn, entrance only driveway that will be located approximately 150 feet west of the full access driveway and in the general location of the existing driveway that serves the Project site (opposite the driveway to 333 East Central Street (Franklin Liquors). In addition, an access easement will be provided that will allow for a connection between the Project site and the Big Y Market to the east. The following recommendations are offered with respect to the design and operation of the Project site access and internal circulation, many of which are reflected on the Site Plans:

- The primary Project site driveway will be located opposite Glen Meadow Road and will include one (1) entering travel lane and two (2) exiting lanes (a left-turn lane and a through/right-turn lane) separated by a raised island. The driveway should be designed to accommodate the turning and maneuvering requirements of delivery vehicles and the Franklin Fire Department design vehicle, with exiting vehicles placed under STOP-sign control with a marked STOP-line provided.

- The right-turn, entrance only Project site driveway should be a minimum of 20-feet in width, unless a reduced width is approved by the Franklin Fire Department, and include appropriate signs (“No Left Turn”, “One-Way” and “Do Not Enter”) and pavement markings indicating the regulated flow of traffic at the driveway.
- Appropriate signs (“One-Way” and “Do Not Enter”) and pavement markings should be provided to regulate the one-way traffic flow around the perimeter of buildings where one-way traffic is to be conveyed.
- Drive aisles should be a minimum of 23-feet in width where perpendicular parking is proposed in order to allow for vehicle maneuvering.
- All signs and pavement markings to be installed within the Project shall conform to the applicable standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).¹³
- Americans with Disabilities Act (ADA) compliant wheelchair ramps should be provided at all pedestrian crossings internal to the Project site and for crossing the Project site driveways, or the driveways should be designed such that the sidewalks along Route 140 are flush with (i.e., cross) the driveways.
- Signs and landscaping to be installed as a part of the Project within the intersection sight triangle areas of the Project site driveways should be designed and maintained so as not to restrict lines of sight.
- Snow windrows within sight triangle areas of the Project site driveways should be promptly removed where such accumulations would impede sight lines.
- A minimum of six (6) Electric Vehicle (EV) charging stations or charging outlets will be installed within the Project site to include four (4) charging outlets for EVs within the residential area and two (2) EV charging stations within the commercial area. In addition, six (6) parking spaces will be “EV ready” (i.e., the necessary infrastructure is provided to support the future installation of an EV charging station).
- A school bus waiting area will be provided for the multifamily residential community at an appropriate location defined in consultation with the Town.

Transportation Demand Management

Public transportation services (fixed-route bus service) are provided within the study area and are accessible to the Project site. GATRA operates fixed-route bus service along Route 140 by way of the *Franklin Area Bus* (FAB), with existing stops located proximate to the Project at the Horace Mann Plaza and at the Glen Meadow apartments. In an effort to reduce the overall number of automobile trips in the area and to integrate the Project into the available transportation resources, the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- A transportation coordinator, who may also have other operations/management responsibilities, will be assigned for the Project to coordinate the TDM program;

¹³Ibid 2.

- Information regarding public transportation services, maps, schedules and fare information will be posted in a central location and/or otherwise made available to residents and employees;
- A “welcome packet” will be provided to residents and employees detailing available public transportation services, bicycle and walking alternatives, and commuter options;
- Tenants will be encouraged to offer specific amenities to discourage off-site trips, including providing a break-room equipped with a microwave and refrigerator; offering direct deposit of paychecks; coordinating with a dry-cleaning service for on-site pick-up and delivery; allowing telecommuting or flexible work schedules; and other such measures to reduce overall traffic volumes and travel during peak traffic volume periods;
- Pedestrian accommodations will be incorporated into the Project and consist of sidewalks and ADA compliant wheelchair ramps at all pedestrian crossings where a sidewalk is present;
- A GATRA bus stop and accompanying bus shelter will be provided at an appropriate location within the Project site defined in consultation with GATRA;
- Consult with a car-sharing service to stage car-share vehicles at the Project site;
- Work-at-home workspaces will be provided within the residential buildings to support telecommuting by residents of the Project;
- An internal mail room will be provided within the residential buildings; and
- Secure bicycle parking will be provided within the Project site consisting of: i) exterior bicycle parking conveniently located proximate to building entrances; and ii) weather protected bicycle parking located in secure areas.

Loading and Deliveries

The Project has been designed to accommodate all loading and delivery functions on-site in a safe and efficient manner. Designated loading areas will be provided on-site to accommodate deliveries. Refuse/recycling will be accommodated in centralized areas for each building. Truck routes and hours of deliveries will be coordinated to minimize truck activity during the commuter peak hours. Reasonable efforts will be made to use service vendors currently delivering in the vicinity of the Project site in an effort to reduce the overall number of new trucks in the area.

Traffic Monitoring Program

The Project proponent will conduct a post-development traffic monitoring and employee survey program in order to evaluate the success and to refine the elements of the TDM program, and to validate the trip projections for the Project. The monitoring program will include:

- i) Obtaining traffic volume information over a continuous seven day, weeklong period at the driveways serving the Project site;
- ii) Performing manual turning movement and vehicle classification counts at the Project site driveway intersections with Route 140 during the weekday morning (7:00 to 9:00 AM),

weekday evening (4:00 to 6:00 PM) and Saturday midday (11:00 AM to 2:00 PM) peak hours;

- iii) Evaluating motor vehicle crash data at the Project site driveway intersections with Route 140; and
- iv) Documenting bicycle parking demands

The monitoring program will commence six (6) months after issuance of the first Certificate of Occupancy for the Project and will continue on an annual basis thereafter for a period not to exceed 5-years after Project completion and occupancy. The results of the monitoring program will be summarized in a report to be provided to the Town of Franklin and MassDOT within 2-months after the completion of the data collection effort. The report will document: i) traffic volumes associated with the Project; ii) traffic operations (i.e., motorist delays, vehicle queuing and LOS), crash severity and calculated crash rates at the Project site driveway intersections; and iii) the elements of the TDM program that have been implemented and use of alternative modes of transportation to single-occupant vehicles by residents and employees of the Project.

If any of the following conditions are documented as a part of the monitoring program: i) the measured traffic volumes exceed the observed traffic volumes that are presented herein by more than 10 percent on a regular and sustained basis during the monitoring period; ii) there is a material increase in the number of motor vehicle crashes occurring at or in immediate vicinity of the Project site driveway intersections that are attributable to the Project; or iii) the overall directional distribution of Project-related traffic as measured at the Project site driveways varies by more than 10 percent from the directional distributions that form the basis of this assessment; the Project proponent will identify and undertake corrective measures in conjunction with the appropriate parties and subject to receipt of all necessary rights permits and approvals. These measures may include without limitation:

- Traffic signal timing modifications
- Sign and pavement marking improvements
- On-site operation and management strategies that are designed to reduce overall and peak traffic volumes and parking demands
- Providing financial incentives for employees to carpool or use alternative modes of transportation to SOVs

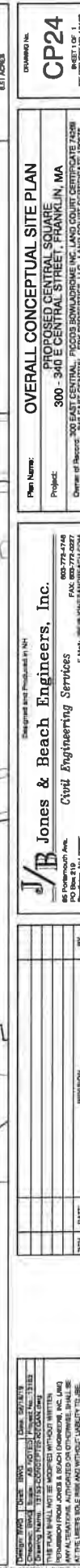
The identified corrective measures, if any, will be documented in the transportation monitoring program report, and will identify the appropriate parties responsible for implementation (assumed to be the Project proponent unless the corrective measure(s) are a part of a committed improvement project or plan that is scheduled to be implemented by others), required approvals, and the timeline for implementation. The status of implementation of the identified improvement measure(s) will be documented in the subsequent monitoring report.

With implementation of the aforementioned recommendations, safe and efficient access will continue to be provided to the Project site and the Project can be accommodated within the confines of the existing and improved transportation system.

APPENDIX

PROJECT SITE PLAN
AUTOMATIC TRAFFIC RECORDER COUNT DATA
MANUAL TURNING MOVEMENT COUNT DATA
SEASONAL ADJUSTMENT DATA
PUBLIC TRANSPORTATION SCHEDULES
VEHICLE TRAVEL SPEED DATA
MOTOR VEHICLE CRASH DATA
MASSDOT CRASH RATE WORKSHEETS
GENERAL BACKGROUND TRAFFIC GROWTH
TRIP-GENERATION CALCULATIONS
TRIP-DISTRIBUTION CALCULATIONS
CAPACITY ANALYSIS WORKSHEETS

PROJECT SITE PLAN



AUTOMATIC TRAFFIC RECORDER COUNT DATA

Accurate Counts
978-664-2565

Page 1

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641VOL1

Start Time	3/5/2020 Thu	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		9	145			8	158				
12:15		7	165			5	171				
12:30		10	172			6	146				
12:45		3	149	29	631	4	147	23	622	52	1253
01:00		4	136			0	150				
01:15		1	135			1	144				
01:30		4	116			1	122				
01:45		1	151	10	538	1	146	3	562	13	1100
02:00		3	149			4	132				
02:15		0	135			0	153				
02:30		1	158			0	133				
02:45		1	146	5	588	3	169	7	587	12	1175
03:00		2	145			2	167				
03:15		2	171			1	160				
03:30		1	160			3	168				
03:45		2	169	7	645	2	158	8	653	15	1298
04:00		4	162			5	152				
04:15		5	173			4	144				
04:30		5	170			3	147				
04:45		5	168	19	673	8	158	20	601	39	1274
05:00		11	197			15	139				
05:15		13	173			17	159				
05:30		15	150			24	131				
05:45		30	136	69	656	43	165	99	594	168	1250
06:00		32	142			48	128				
06:15		42	119			54	112				
06:30		66	109			59	121				
06:45		80	98	220	468	108	110	269	471	489	939
07:00		106	108			104	76				
07:15		104	78			131	84				
07:30		98	72			146	95				
07:45		107	84	415	342	132	74	513	329	928	671
08:00		109	79			137	90				
08:15		118	61			129	57				
08:30		111	68			153	59				
08:45		122	69	460	277	127	44	546	250	1006	527
09:00		102	47			124	64				
09:15		106	33			119	37				
09:30		105	25			104	30				
09:45		128	22	441	127	132	30	479	161	920	288
10:00		131	26			122	30				
10:15		114	30			109	18				
10:30		122	13			106	21				
10:45		136	15	503	84	120	18	457	87	960	171
11:00		107	33			137	12				
11:15		128	15			129	12				
11:30		138	6			156	8				
11:45		127	9	500	63	126	10	548	42	1048	105
Total		2678	5092			2972	4959			5650	10051
Percent		34.5%	65.5%			37.5%	62.5%			36.0%	64.0%

Accurate Counts
978-664-2565

Page 2

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641VOL1

Start Time	3/6/2020 Fri	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		9	176			5	177				
12:15		8	156			2	168				
12:30		9	144			5	147				
12:45		7	171	33	647	4	145	16	637	49	1284
01:00		4	159			2	150				
01:15		4	156			3	146				
01:30		5	142			4	150				
01:45		1	148	14	605	1	151	10	597	24	1202
02:00		3	157			3	135				
02:15		2	158			1	143				
02:30		0	145			1	131				
02:45		0	165	5	625	3	155	8	564	13	1189
03:00		2	142			2	155				
03:15		2	170			3	151				
03:30		2	172			2	176				
03:45		1	164	7	648	5	171	12	653	19	1301
04:00		3	184			7	126				
04:15		9	179			4	146				
04:30		7	157			3	135				
04:45		5	156	24	676	5	153	19	560	43	1236
05:00		11	179			20	167				
05:15		17	151			12	174				
05:30		16	158			26	153				
05:45		22	125	66	613	37	154	95	648	161	1261
06:00		27	115			54	116				
06:15		48	133			53	120				
06:30		57	128			76	123				
06:45		73	120	205	496	105	122	288	481	493	977
07:00		110	102			98	102				
07:15		110	87			126	97				
07:30		108	83			145	72				
07:45		102	73	430	345	153	73	522	344	952	689
08:00		99	53			116	60				
08:15		103	58			140	39				
08:30		106	45			163	52				
08:45		135	48	443	204	130	65	549	216	992	420
09:00		116	52			119	47				
09:15		113	46			128	48				
09:30		116	43			141	34				
09:45		145	37	490	178	132	38	520	167	1010	345
10:00		150	39			107	35				
10:15		98	23			121	27				
10:30		115	24			135	38				
10:45		124	19	487	105	142	24	505	124	992	229
11:00		148	25			127	24				
11:15		154	23			112	19				
11:30		137	22			136	16				
11:45		157	20	596	90	162	9	537	68	1133	158
Total		2800	5232			3081	5059			5881	10291
Percent		34.9%	65.1%			37.9%	62.1%			36.4%	63.6%

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641VOL1

Start Time	3/7/2020 Sat	WB		Hour Totals		EB		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		19	157			9	161				
12:15		17	162			7	180				
12:30		18	177			12	194				
12:45		13	165	67	661	7	173	35	708	102	1369
01:00		9	172			3	183				
01:15		13	176			3	175				
01:30		5	154			2	160				
01:45		1	176	28	678	6	155	14	673	42	1351
02:00		3	161			7	178				
02:15		4	128			2	147				
02:30		1	138			0	154				
02:45		3	161	11	588	3	146	12	625	23	1213
03:00		2	138			1	123				
03:15		2	141			6	141				
03:30		3	139			2	138				
03:45		5	127	12	545	3	140	12	542	24	1087
04:00		4	138			7	134				
04:15		2	129			2	126				
04:30		3	153			2	151				
04:45		5	143	14	563	6	118	17	529	31	1092
05:00		3	135			9	106				
05:15		9	116			7	102				
05:30		10	110			7	117				
05:45		8	106	30	467	19	89	42	414	72	881
06:00		13	109			31	95				
06:15		24	115			24	109				
06:30		36	102			28	89				
06:45		37	75	110	401	42	96	125	389	235	790
07:00		46	75			57	85				
07:15		57	63			59	79				
07:30		56	67			67	69				
07:45		55	77	214	282	86	54	269	287	483	569
08:00		65	56			75	64				
08:15		58	61			74	48				
08:30		92	62			88	38				
08:45		96	32	311	211	99	43	336	193	647	404
09:00		113	41			102	47				
09:15		133	45			144	47				
09:30		123	44			116	44				
09:45		142	41	511	171	127	33	489	171	1000	342
10:00		144	28			170	38				
10:15		161	28			165	33				
10:30		147	24			132	22				
10:45		144	24	596	104	169	27	636	120	1232	224
11:00		155	26			169	15				
11:15		178	19			150	18				
11:30		135	16			166	18				
11:45		175	20	643	81	164	13	649	64	1292	145
Total		2547	4752			2636	4715			5183	9467
Percent		34.9%	65.1%			35.9%	64.1%			35.4%	64.6%
Grand Total		8025	15076			8689	14733			16714	29809
Percent		34.7%	65.3%			37.1%	62.9%			35.9%	64.1%
ADT	ADT 15,508		AADT 15,508								

Accurate Counts 978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641VOL1

Start Time	3/2/2020		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB
12:00 AM	*	*	*	*	29	23	33	16	67	35	*	*	*	*	43	25
01:00	*	*	*	*	10	3	14	10	28	14	*	*	*	*	17	9
02:00	*	*	*	*	5	7	5	8	11	12	*	*	*	*	7	9
03:00	*	*	*	*	7	8	7	12	12	12	*	*	*	*	9	11
04:00	*	*	*	*	19	20	24	19	14	17	*	*	*	*	19	19
05:00	*	*	*	*	69	99	66	95	30	42	*	*	*	*	55	79
06:00	*	*	*	*	220	269	205	288	110	125	*	*	*	*	178	227
07:00	*	*	*	*	415	513	430	522	214	269	*	*	*	*	353	435
08:00	*	*	*	*	460	546	443	549	311	336	*	*	*	*	405	477
09:00	*	*	*	*	441	479	490	520	511	489	*	*	*	*	481	496
10:00	*	*	*	*	503	457	487	505	596	636	*	*	*	*	529	533
11:00	*	*	*	*	500	548	596	537	643	649	*	*	*	*	580	578
12:00 PM	*	*	*	*	631	622	647	637	661	708	*	*	*	*	646	656
01:00	*	*	*	*	538	562	605	597	678	673	*	*	*	*	607	611
02:00	*	*	*	*	588	587	625	564	588	625	*	*	*	*	600	592
03:00	*	*	*	*	645	653	648	653	545	542	*	*	*	*	613	616
04:00	*	*	*	*	673	601	676	560	563	529	*	*	*	*	637	563
05:00	*	*	*	*	656	594	613	648	467	414	*	*	*	*	579	552
06:00	*	*	*	*	468	471	496	481	401	389	*	*	*	*	455	447
07:00	*	*	*	*	342	329	345	344	282	287	*	*	*	*	323	320
08:00	*	*	*	*	277	250	204	216	211	193	*	*	*	*	231	220
09:00	*	*	*	*	127	161	178	167	171	171	*	*	*	*	159	166
10:00	*	*	*	*	84	87	105	124	104	120	*	*	*	*	98	110
11:00	*	*	*	*	63	42	90	68	81	64	*	*	*	*	78	58
Lane	0	0	0	0	7770	7931	8032	8140	7299	7351	0	0	0	0	7702	7809
Day	0	0	0	0	15701	16172	16172	14650	14650	7351	0	0	0	0	15511	
AM Peak	-	-	-	-	10:00	11:00	11:00	08:00	11:00	11:00	-	-	-	-	11:00	11:00
Vol.	-	-	-	-	503	548	596	549	643	649	-	-	-	-	580	578
PM Peak	-	-	-	-	16:00	15:00	16:00	15:00	13:00	12:00	-	-	-	-	12:00	12:00
Vol.	-	-	-	-	673	653	676	653	678	708	-	-	-	-	646	656

MANUAL TURNING MOVEMENT COUNT DATA

Accurate Counts

978-664-2565

File Name : 66410001

Site Code : 66410001

Start Date : 3/5/2020

Page No : 1

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	5	51	32	37	68	7	3	84	37	19	62	4	409
07:15 AM	1	64	25	32	71	12	2	81	64	30	77	2	461
07:30 AM	1	58	15	40	65	10	6	85	53	27	86	6	452
07:45 AM	4	55	18	42	65	15	7	88	76	14	68	6	458
Total	11	228	90	151	269	44	18	338	230	90	293	18	1780
08:00 AM	6	63	25	52	60	11	1	77	60	15	73	9	452
08:15 AM	2	55	23	59	53	12	7	73	72	28	74	6	464
08:30 AM	5	59	25	41	68	12	8	75	68	15	80	9	465
08:45 AM	13	39	20	50	82	11	3	48	58	17	66	4	411
Total	26	216	93	202	263	46	19	273	258	75	293	28	1792
Grand Total	37	444	183	353	532	90	37	611	488	165	586	46	3572
Apprch %	5.6	66.9	27.6	36.2	54.6	9.2	3.3	53.8	43	20.7	73.5	5.8	
Total %	1	12.4	5.1	9.9	14.9	2.5	1	17.1	13.7	4.6	16.4	1.3	
Cars	34	436	179	348	525	88	37	603	479	160	578	46	3513
% Cars	91.9	98.2	97.8	98.6	98.7	97.8	100	98.7	98.2	97	98.6	100	98.3
Trucks	3	8	4	5	7	2	0	8	9	5	8	0	59
% Trucks	8.1	1.8	2.2	1.4	1.3	2.2	0	1.3	1.8	3	1.4	0	1.7

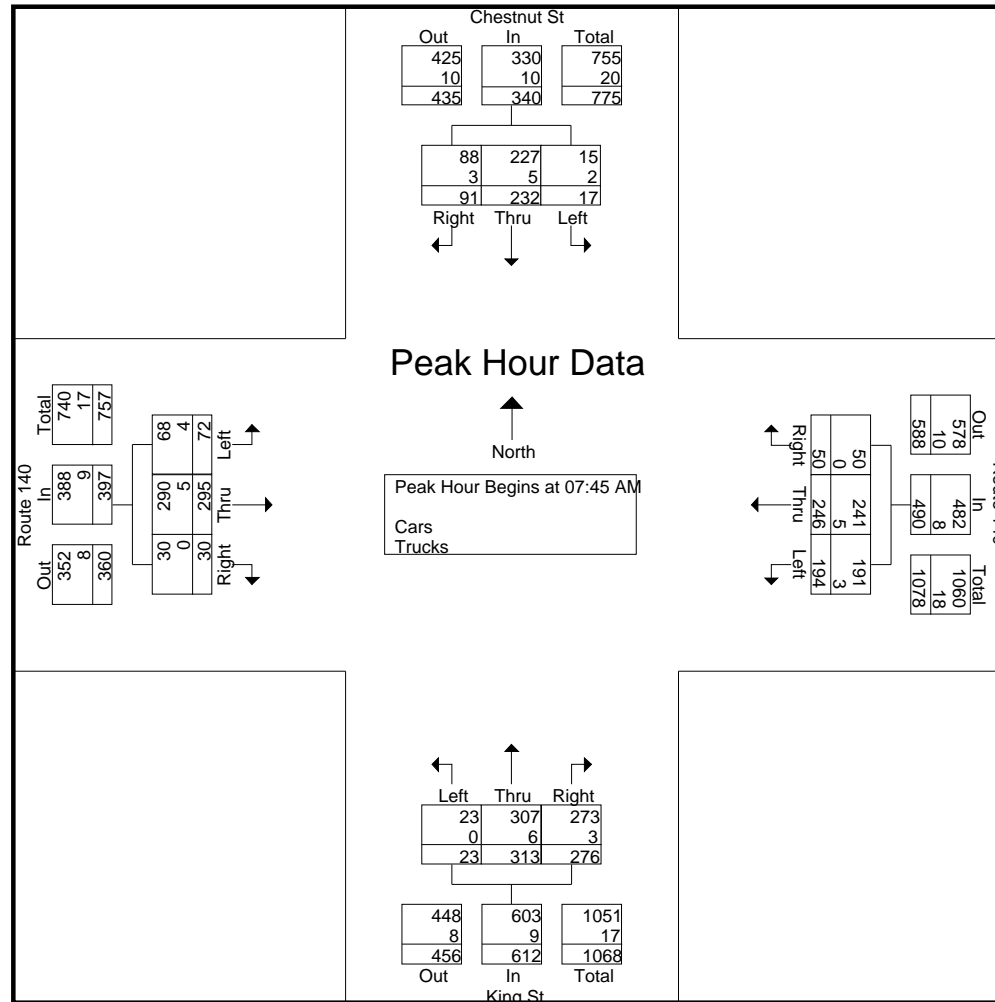
	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	4	55	18	77	42	65	15	122	7	88	76	171	14	68	6	88	458
08:00 AM	6	63	25	94	52	60	11	123	1	77	60	138	15	73	9	97	452
08:15 AM	2	55	23	80	59	53	12	124	7	73	72	152	28	74	6	108	464
08:30 AM	5	59	25	89	41	68	12	121	8	75	68	151	15	80	9	104	465
Total Volume	17	232	91	340	194	246	50	490	23	313	276	612	72	295	30	397	1839
% App. Total	5	68.2	26.8		39.6	50.2	10.2		3.8	51.1	45.1		18.1	74.3	7.6		
PHF	.708	.921	.910	.904	.822	.904	.833	.988	.719	.889	.908	.895	.643	.922	.833	.919	.989
Cars	15	227	88	330	191	241	50	482	23	307	273	603	68	290	30	388	1803
% Cars	88.2	97.8	96.7	97.1	98.5	98.0	100	98.4	100	98.1	98.9	98.5	94.4	98.3	100	97.7	98.0
Trucks	2	5	3	10	3	5	0	8	0	6	3	9	4	5	0	9	36
% Trucks	11.8	2.2	3.3	2.9	1.5	2.0	0	1.6	0	1.9	1.1	1.5	5.6	1.7	0	2.3	2.0

Accurate Counts

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 2

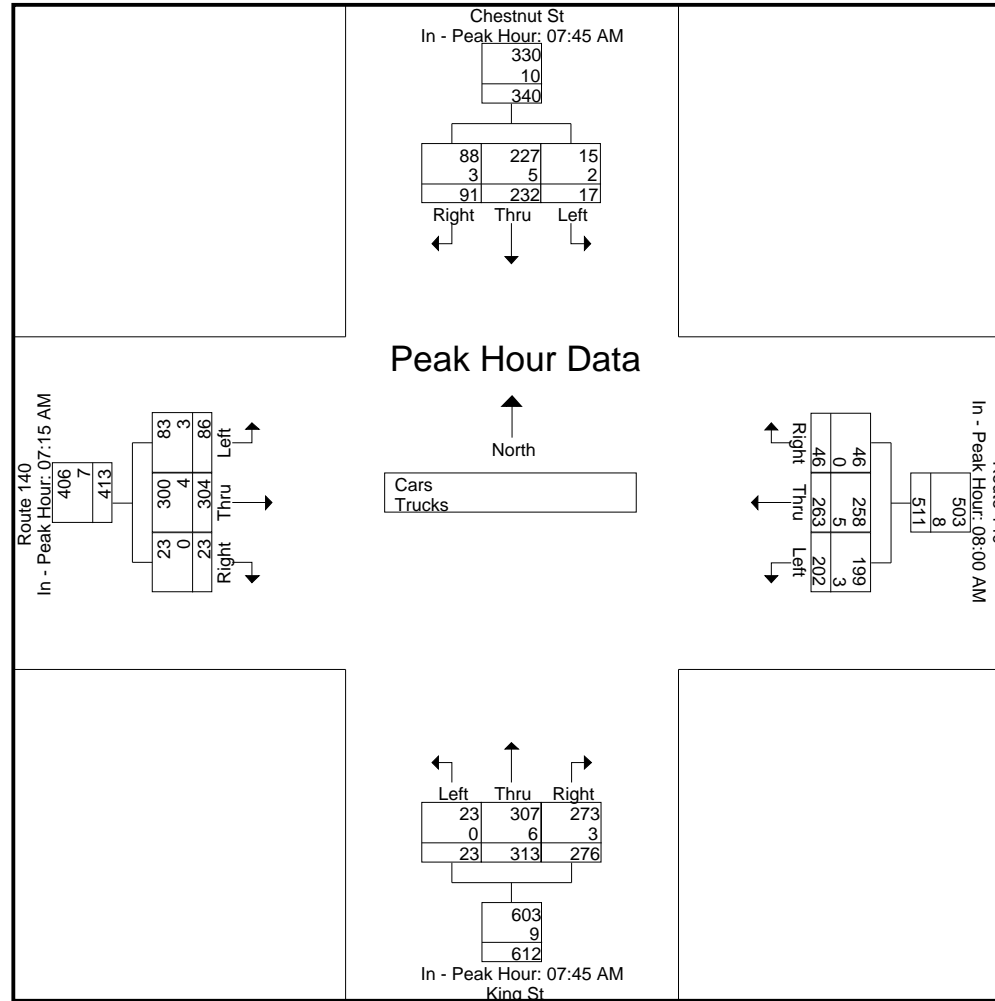


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				08:00 AM				07:45 AM				07:15 AM			
+0 mins.	4	55	18	77	52	60	11	123	7	88	76	171	30	77	2	109
+15 mins.	6	63	25	94	59	53	12	124	1	77	60	138	27	86	6	119
+30 mins.	2	55	23	80	41	68	12	121	7	73	72	152	14	68	6	88
+45 mins.	5	59	25	89	50	82	11	143	8	75	68	151	15	73	9	97
Total Volume	17	232	91	340	202	263	46	511	23	313	276	612	86	304	23	413
% App. Total	5	68.2	26.8		39.5	51.5	9		3.8	51.1	45.1		20.8	73.6	5.6	
PHF	.708	.921	.910	.904	.856	.802	.958	.893	.719	.889	.908	.895	.717	.884	.639	.868
Cars	15	227	88	330	199	258	46	503	23	307	273	603	83	300	23	406
% Cars	88.2	97.8	96.7	97.1	98.5	98.1	100	98.4	100	98.1	98.9	98.5	96.5	98.7	100	98.3
Trucks	2	5	3	10	3	5	0	8	0	6	3	9	3	4	0	7

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 4

Groups Printed- Cars

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	4	51	32	37	67	6	3	83	36	18	62	4	403
07:15 AM	1	64	25	32	71	12	2	81	59	30	75	2	454
07:30 AM	1	56	15	39	64	9	6	85	53	27	86	6	447
07:45 AM	4	55	18	41	65	15	7	88	76	12	67	6	454
Total	10	226	90	149	267	42	18	337	224	87	290	18	1758
08:00 AM	5	61	25	52	57	11	1	73	59	14	72	9	439
08:15 AM	1	55	22	58	52	12	7	71	70	27	74	6	455
08:30 AM	5	56	23	40	67	12	8	75	68	15	77	9	455
08:45 AM	13	38	19	49	82	11	3	47	58	17	65	4	406
Total	24	210	89	199	258	46	19	266	255	73	288	28	1755
Grand Total	34	436	179	348	525	88	37	603	479	160	578	46	3513
Apprch %	5.2	67.2	27.6	36.2	54.6	9.2	3.3	53.9	42.8	20.4	73.7	5.9	
Total %	1	12.4	5.1	9.9	14.9	2.5	1.1	17.2	13.6	4.6	16.5	1.3	

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	4	55	18	77	41	65	15	121	7	88	76	171	12	67	6	85	454
08:00 AM	5	61	25	91	52	57	11	120	1	73	59	133	14	72	9	95	439
08:15 AM	1	55	22	78	58	52	12	122	7	71	70	148	27	74	6	107	455
08:30 AM	5	56	23	84	40	67	12	119	8	75	68	151	15	77	9	101	455
Total Volume	15	227	88	330	191	241	50	482	23	307	273	603	68	290	30	388	1803
% App. Total	4.5	68.8	26.7		39.6	50	10.4		3.8	50.9	45.3		17.5	74.7	7.7		
PHF	.750	.930	.880	.907	.823	.899	.833	.988	.719	.872	.898	.882	.630	.942	.833	.907	.991

Accurate Counts

978-664-2565

File Name : 66410001

Site Code : 66410001

Start Date : 3/5/2020

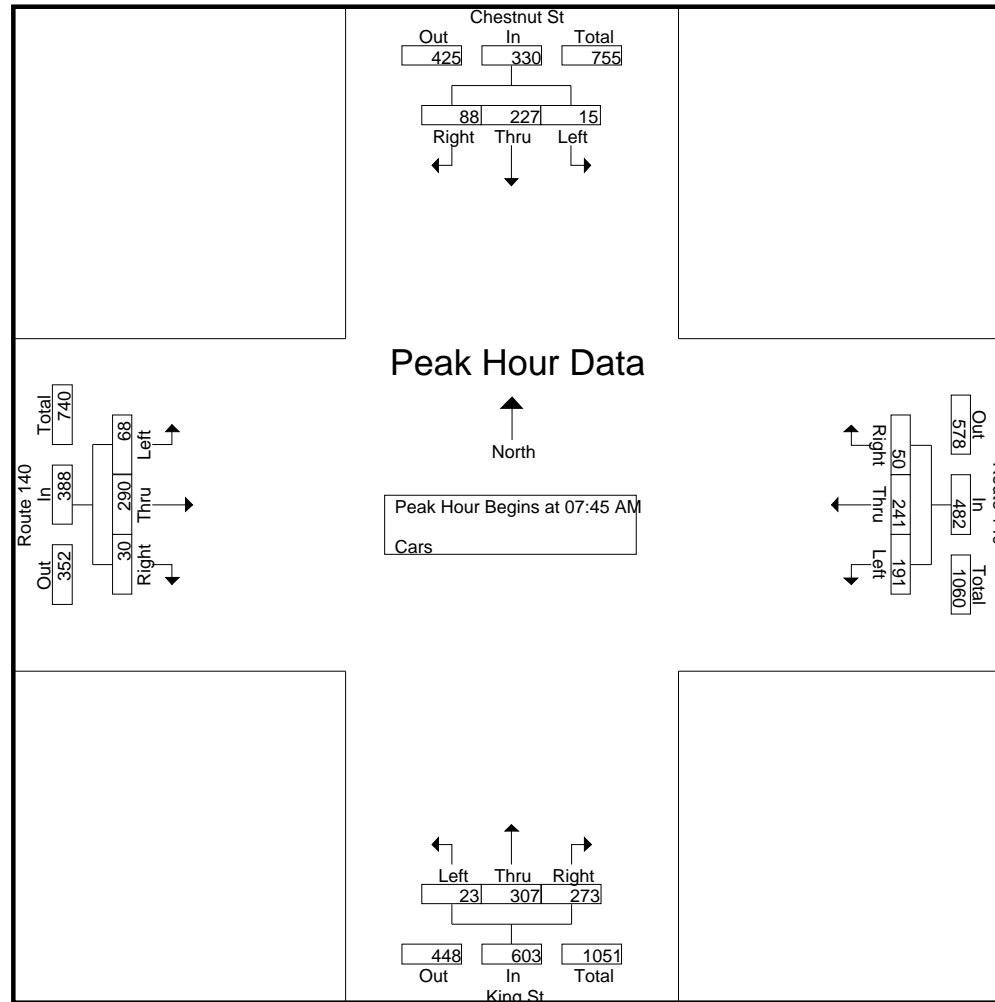
Page No : 5

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

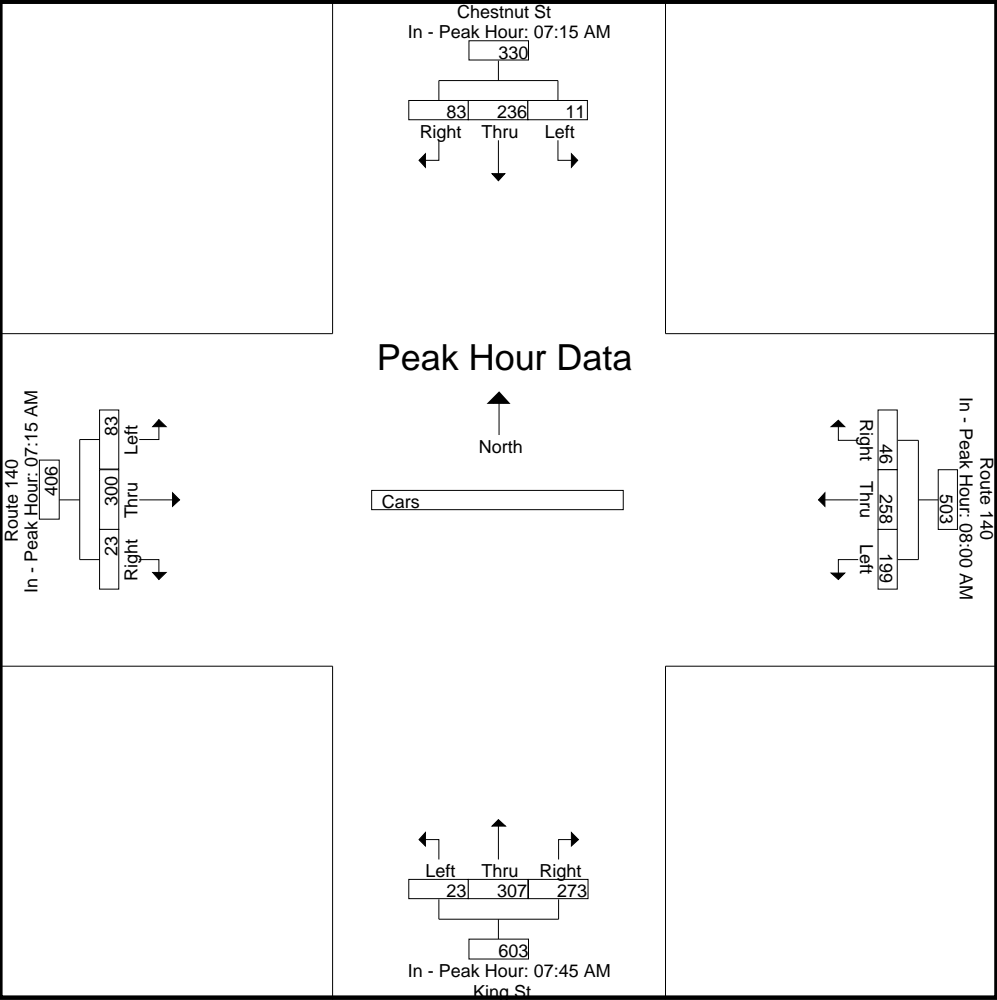
Peak Hour for Each Approach Begins at:

	07:15 AM				08:00 AM				07:45 AM				07:15 AM			
+0 mins.	1	64	25	90	52	57	11	120	7	88	76	171	30	75	2	107
+15 mins.	1	56	15	72	58	52	12	122	1	73	59	133	27	86	6	119
+30 mins.	4	55	18	77	40	67	12	119	7	71	70	148	12	67	6	85
+45 mins.	5	61	25	91	49	82	11	142	8	75	68	151	14	72	9	95
Total Volume	11	236	83	330	199	258	46	503	23	307	273	603	83	300	23	406
% App. Total	3.3	71.5	25.2		39.6	51.3	9.1		3.8	50.9	45.3		20.4	73.9	5.7	
PHF	.550	.922	.830	.907	.858	.787	.958	.886	.719	.872	.898	.882	.692	.872	.639	.853

Accurate Counts
978-664-2565

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 6

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 7

Groups Printed- Trucks

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	1	0	0	0	1	1	0	1	1	1	0	0	6
07:15 AM	0	0	0	0	0	0	0	0	5	0	2	0	7
07:30 AM	0	2	0	1	1	1	0	0	0	0	0	0	5
07:45 AM	0	0	0	1	0	0	0	0	0	2	1	0	4
Total	1	2	0	2	2	2	0	1	6	3	3	0	22
08:00 AM	1	2	0	0	3	0	0	4	1	1	1	0	13
08:15 AM	1	0	1	1	1	0	0	2	2	1	0	0	9
08:30 AM	0	3	2	1	1	0	0	0	0	0	3	0	10
08:45 AM	0	1	1	1	0	0	0	1	0	0	1	0	5
Total	2	6	4	3	5	0	0	7	3	2	5	0	37
Grand Total	3	8	4	5	7	2	0	8	9	5	8	0	59
Apprch %	20	53.3	26.7	35.7	50	14.3	0	47.1	52.9	38.5	61.5	0	
Total %	5.1	13.6	6.8	8.5	11.9	3.4	0	13.6	15.3	8.5	13.6	0	

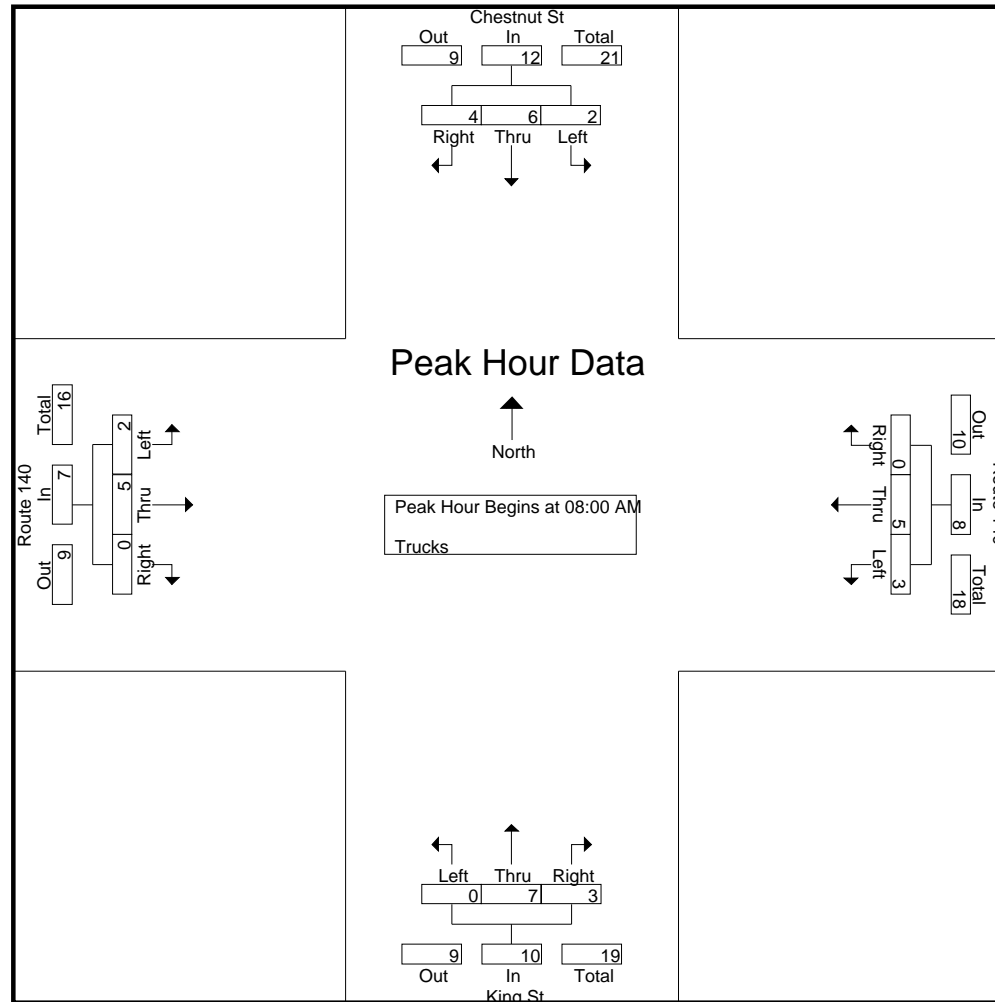
	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	1	2	0	3	0	3	0	3	0	4	1	5	1	1	0	2	13
08:15 AM	1	0	1	2	1	1	0	2	0	2	2	4	1	0	0	1	9
08:30 AM	0	3	2	5	1	1	0	2	0	0	0	0	0	3	0	3	10
08:45 AM	0	1	1	2	1	0	0	1	0	1	0	1	0	1	0	1	5
Total Volume	2	6	4	12	3	5	0	8	0	7	3	10	2	5	0	7	37
% App. Total	16.7	50	33.3		37.5	62.5	0		0	70	30		28.6	71.4	0		
PHF	.500	.500	.500	.600	.750	.417	.000	.667	.000	.438	.375	.500	.500	.417	.000	.583	.712

Accurate Counts

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 8



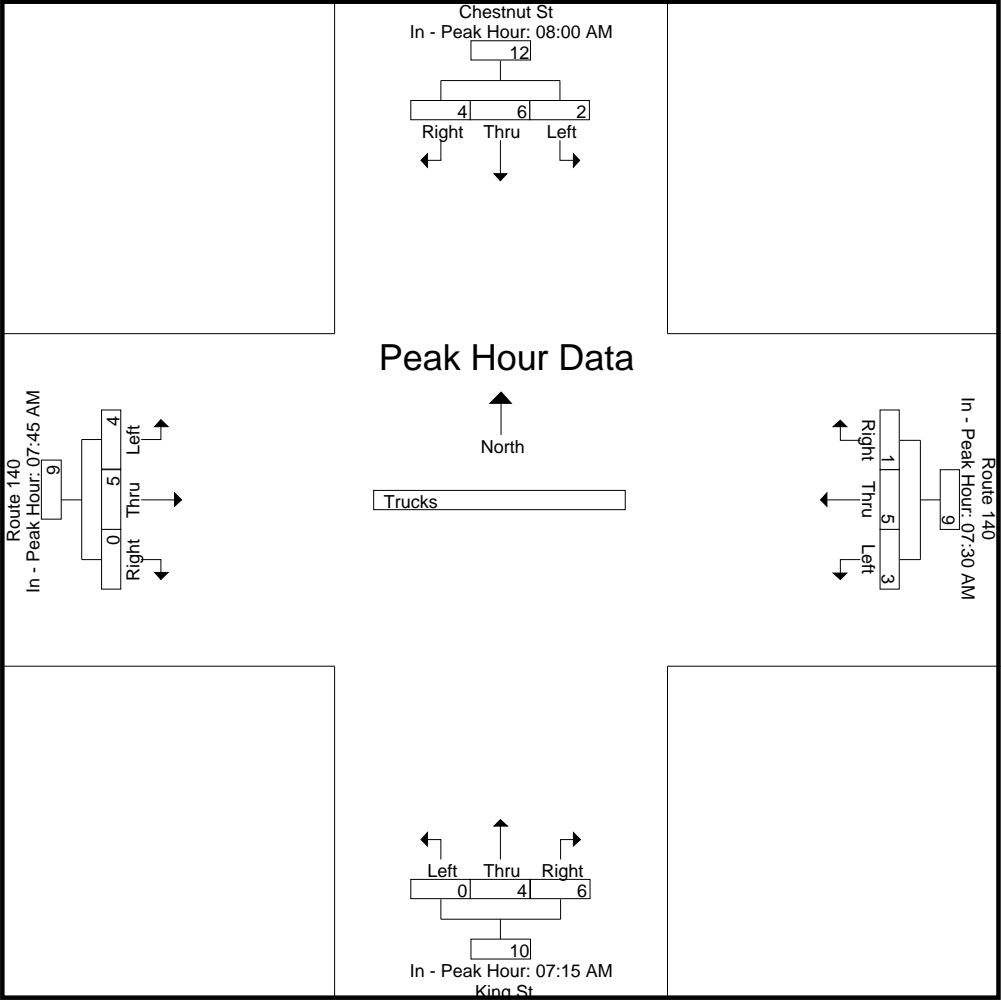
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:15 AM				07:45 AM			
+0 mins.	1	2	0	3	1	1	1	3	0	0	5	5	2	1	0	3
+15 mins.	1	0	1	2	1	0	0	1	0	0	0	0	1	1	0	2
+30 mins.	0	3	2	5	0	3	0	3	0	0	0	0	1	0	0	1
+45 mins.	0	1	1	2	1	1	0	2	0	4	1	5	0	3	0	3
Total Volume	2	6	4	12	3	5	1	9	0	4	6	10	4	5	0	9
% App. Total	16.7	50	33.3		33.3	55.6	11.1		0	40	60		44.4	55.6	0	
PHF	.500	.500	.500	.600	.750	.417	.250	.750	.000	.250	.300	.500	.500	.417	.000	.750

Accurate Counts
978-664-2565

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 9

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



978-664-2565

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 10

Groups Printed- Bikes Peds

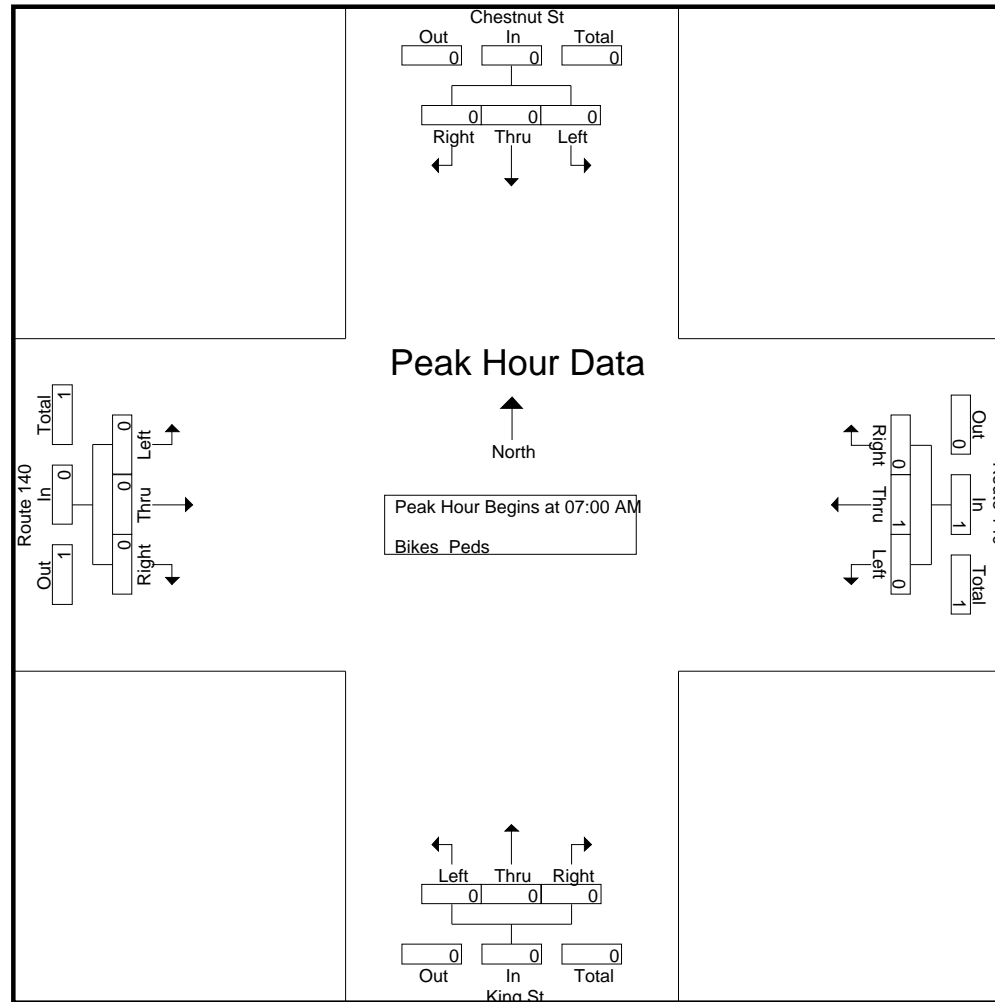
	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
07:00 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	3	1	4
07:45 AM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	2
Total	0	0	0	3	0	1	0	0	0	0	0	2	0	0	0	1	6	1	7
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
08:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
Grand Total	0	0	0	7	0	1	0	0	0	0	0	2	0	0	0	1	10	1	11
Apprch %	0	0	0		0	100	0		0	0	0		0	0	0				
Total %	0	0	0		0	100	0		0	0	0		0	0	0		90.9	9.1	

[illegible]

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 11



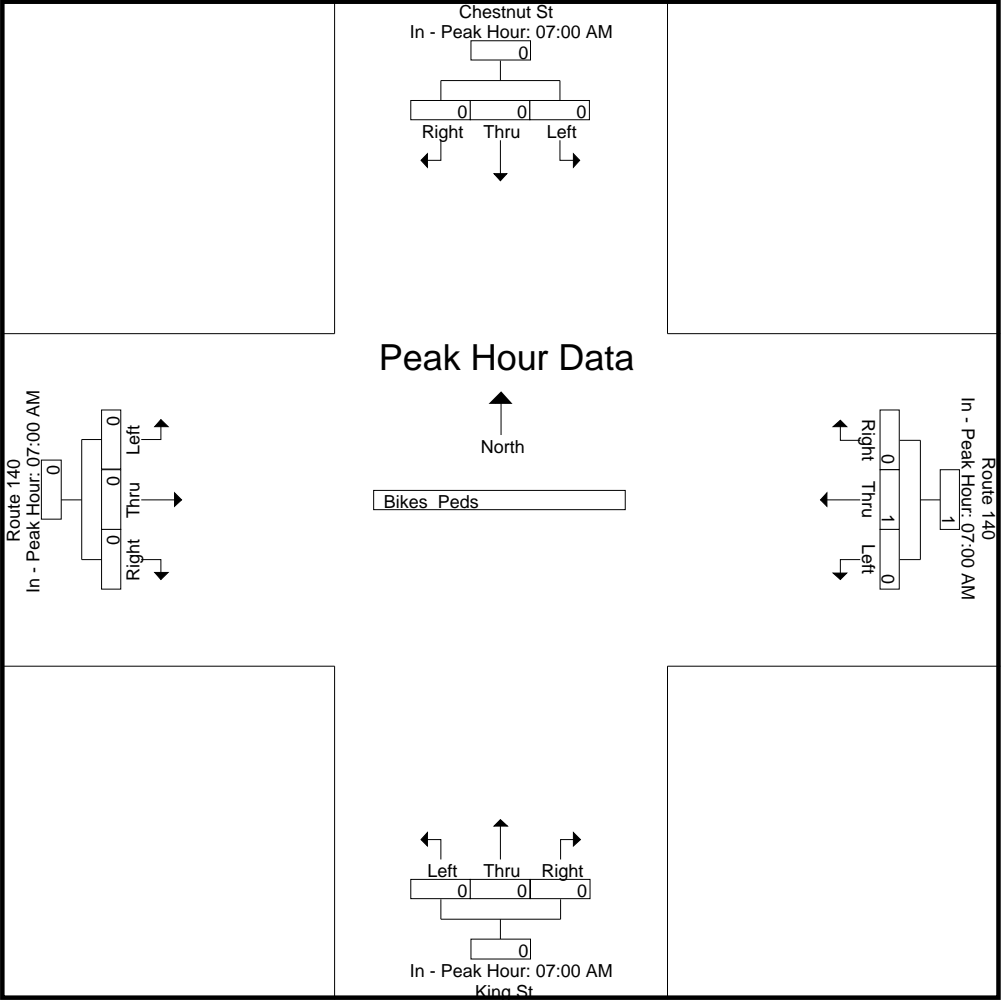
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

Peak Hour for Each Approach Begins at:																
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000

Accurate Counts
978-664-2565

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 12

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410001

Site Code : 66410001

Start Date : 3/5/2020

Page No : 1

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	8	74	14	78	100	9	4	49	54	29	98	10	527
04:15 PM	6	87	26	72	124	11	3	62	68	24	66	10	559
04:30 PM	5	83	25	78	110	10	5	53	56	32	105	11	573
04:45 PM	5	71	23	72	107	15	12	60	64	28	79	6	542
Total	24	315	88	300	441	45	24	224	242	113	348	37	2201
05:00 PM	7	49	20	83	109	8	8	64	83	31	102	3	567
05:15 PM	4	94	32	99	99	11	6	52	62	27	94	9	589
05:30 PM	7	75	31	81	99	12	11	75	67	42	86	17	603
05:45 PM	7	69	27	70	93	12	3	67	64	39	103	9	563
Total	25	287	110	333	400	43	28	258	276	139	385	38	2322
Grand Total	49	602	198	633	841	88	52	482	518	252	733	75	4523
Apprch %	5.8	70.9	23.3	40.5	53.8	5.6	4.9	45.8	49.2	23.8	69.2	7.1	
Total %	1.1	13.3	4.4	14	18.6	1.9	1.1	10.7	11.5	5.6	16.2	1.7	
Cars	49	598	197	631	840	88	51	477	516	251	730	75	4503
% Cars	100	99.3	99.5	99.7	99.9	100	98.1	99	99.6	99.6	99.6	100	99.6
Trucks	0	4	1	2	1	0	1	5	2	1	3	0	20
% Trucks	0	0.7	0.5	0.3	0.1	0	1.9	1	0.4	0.4	0.4	0	0.4

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	7	49	20	76	83	109	8	200	8	64	83	155	31	102	3	136	567
05:15 PM	4	94	32	130	99	99	11	209	6	52	62	120	27	94	9	130	589
05:30 PM	7	75	31	113	81	99	12	192	11	75	67	153	42	86	17	145	603
05:45 PM	7	69	27	103	70	93	12	175	3	67	64	134	39	103	9	151	563
Total Volume	25	287	110	422	333	400	43	776	28	258	276	562	139	385	38	562	2322
% App. Total	5.9	68	26.1		42.9	51.5	5.5		5	45.9	49.1		24.7	68.5	6.8		
PHF	.893	.763	.859	.812	.841	.917	.896	.928	.636	.860	.831	.906	.827	.934	.559	.930	.963
Cars	25	285	110	420	332	400	43	775	27	256	274	557	139	384	38	561	2313
% Cars	100	99.3	100	99.5	99.7	100	100	99.9	96.4	99.2	99.3	99.1	100	99.7	100	99.8	99.6
Trucks	0	2	0	2	1	0	0	1	1	2	2	5	0	1	0	1	9
% Trucks	0	0.7	0	0.5	0.3	0	0	0.1	3.6	0.8	0.7	0.9	0	0.3	0	0.2	0.4

Accurate Counts

978-664-2565

File Name : 66410001

Site Code : 66410001

Start Date : 3/5/2020

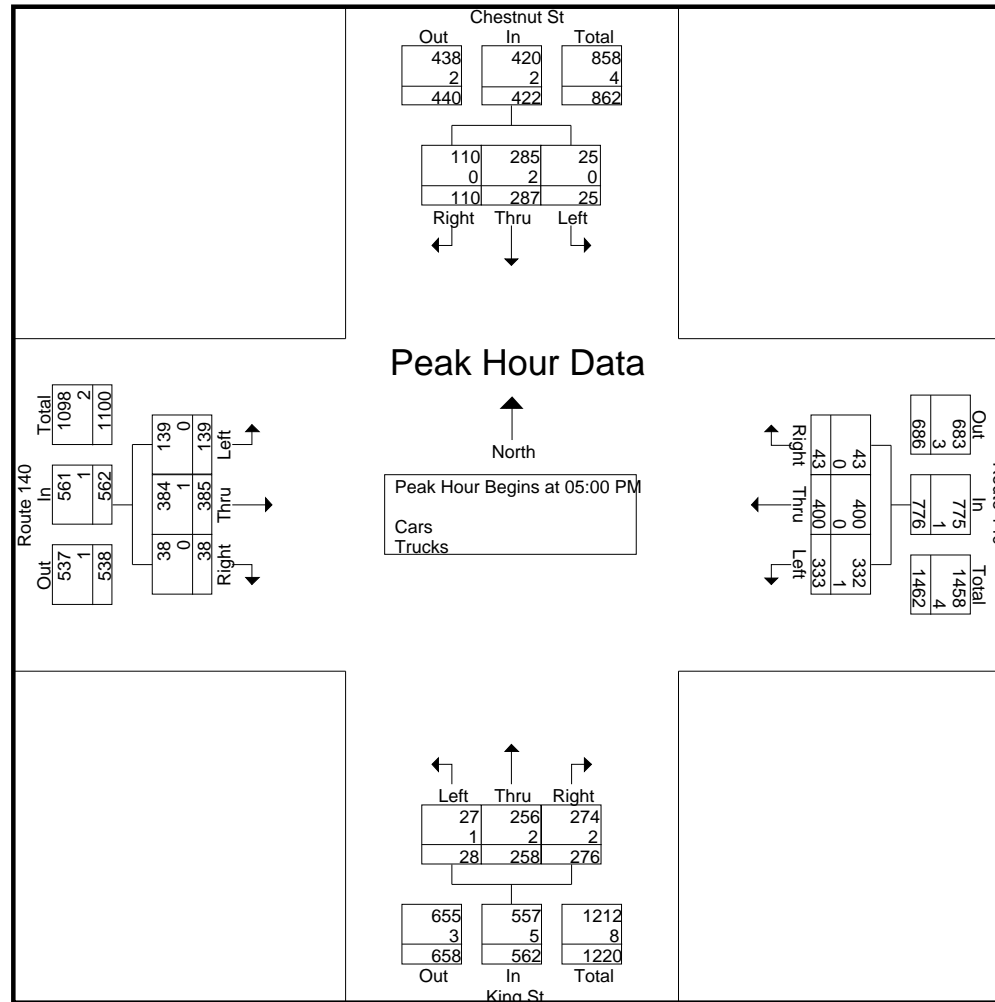
Page No : 2

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



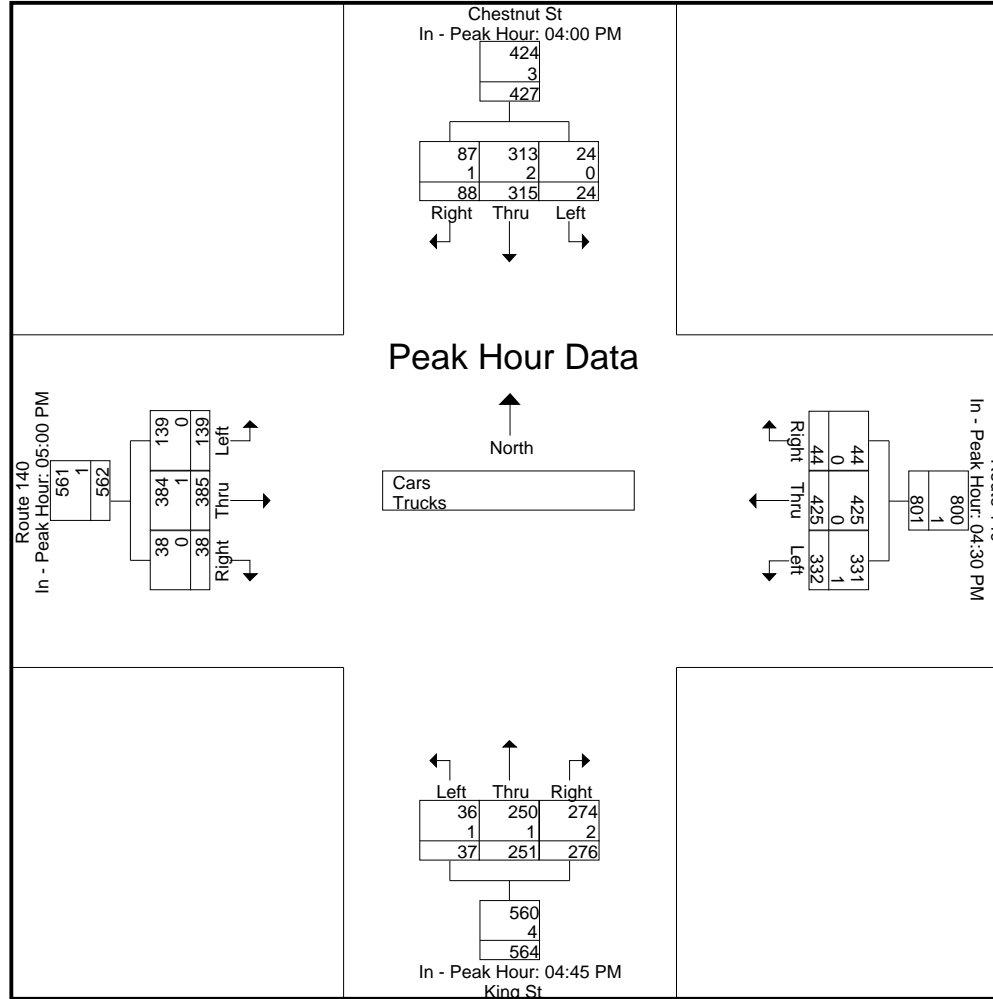
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:45 PM				05:00 PM			
+0 mins.	8	74	14	96	78	110	10	198	12	60	64	136	31	102	3	136
+15 mins.	6	87	26	119	72	107	15	194	8	64	83	155	27	94	9	130
+30 mins.	5	83	25	113	83	109	8	200	6	52	62	120	42	86	17	145
+45 mins.	5	71	23	99	99	99	11	209	11	75	67	153	39	103	9	151
Total Volume	24	315	88	427	332	425	44	801	37	251	276	564	139	385	38	562
% App. Total	5.6	73.8	20.6		41.4	53.1	5.5		6.6	44.5	48.9		24.7	68.5	6.8	
PHF	.750	.905	.846	.897	.838	.966	.733	.958	.771	.837	.831	.910	.827	.934	.559	.930
Cars	24	313	87	424	331	425	44	800	36	250	274	560	139	384	38	561
% Cars	100	99.4	98.9	99.3	99.7	100	100	99.9	97.3	99.6	99.3	99.3	100	99.7	100	99.8
Trucks	0	2	1	3	1	0	0	1	1	1	2	4	0	1	0	1

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

File Name : 66410001

Site Code : 66410001

Start Date : 3/5/2020

Page No : 4

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	8	73	13	78	100	9	4	48	54	29	98	10	524
04:15 PM	6	87	26	72	123	11	3	61	68	23	65	10	555
04:30 PM	5	82	25	77	110	10	5	52	56	32	105	11	570
04:45 PM	5	71	23	72	107	15	12	60	64	28	78	6	541
Total	24	313	87	299	440	45	24	221	242	112	346	37	2190
05:00 PM	7	48	20	83	109	8	7	64	81	31	102	3	563
05:15 PM	4	94	32	99	99	11	6	51	62	27	94	9	588
05:30 PM	7	74	31	80	99	12	11	75	67	42	86	17	601
05:45 PM	7	69	27	70	93	12	3	66	64	39	102	9	561
Total	25	285	110	332	400	43	27	256	274	139	384	38	2313
Grand Total	49	598	197	631	840	88	51	477	516	251	730	75	4503
Apprch %	5.8	70.9	23.3	40.5	53.9	5.6	4.9	45.7	49.4	23.8	69.1	7.1	
Total %	1.1	13.3	4.4	14	18.7	2	1.1	10.6	11.5	5.6	16.2	1.7	

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	7	48	20	75	83	109	8	200	7	64	81	152	31	102	3	136	563
05:15 PM	4	94	32	130	99	99	11	209	6	51	62	119	27	94	9	130	588
05:30 PM	7	74	31	112	80	99	12	191	11	75	67	153	42	86	17	145	601
05:45 PM	7	69	27	103	70	93	12	175	3	66	64	133	39	102	9	150	561
Total Volume	25	285	110	420	332	400	43	775	27	256	274	557	139	384	38	561	2313
% App. Total	6	67.9	26.2		42.8	51.6	5.5		4.8	46	49.2		24.8	68.4	6.8		
PHF	.893	.758	.859	.808	.838	.917	.896	.927	.614	.853	.846	.910	.827	.941	.559	.935	.962

Accurate Counts

978-664-2565

File Name : 66410001

Site Code : 66410001

Start Date : 3/5/2020

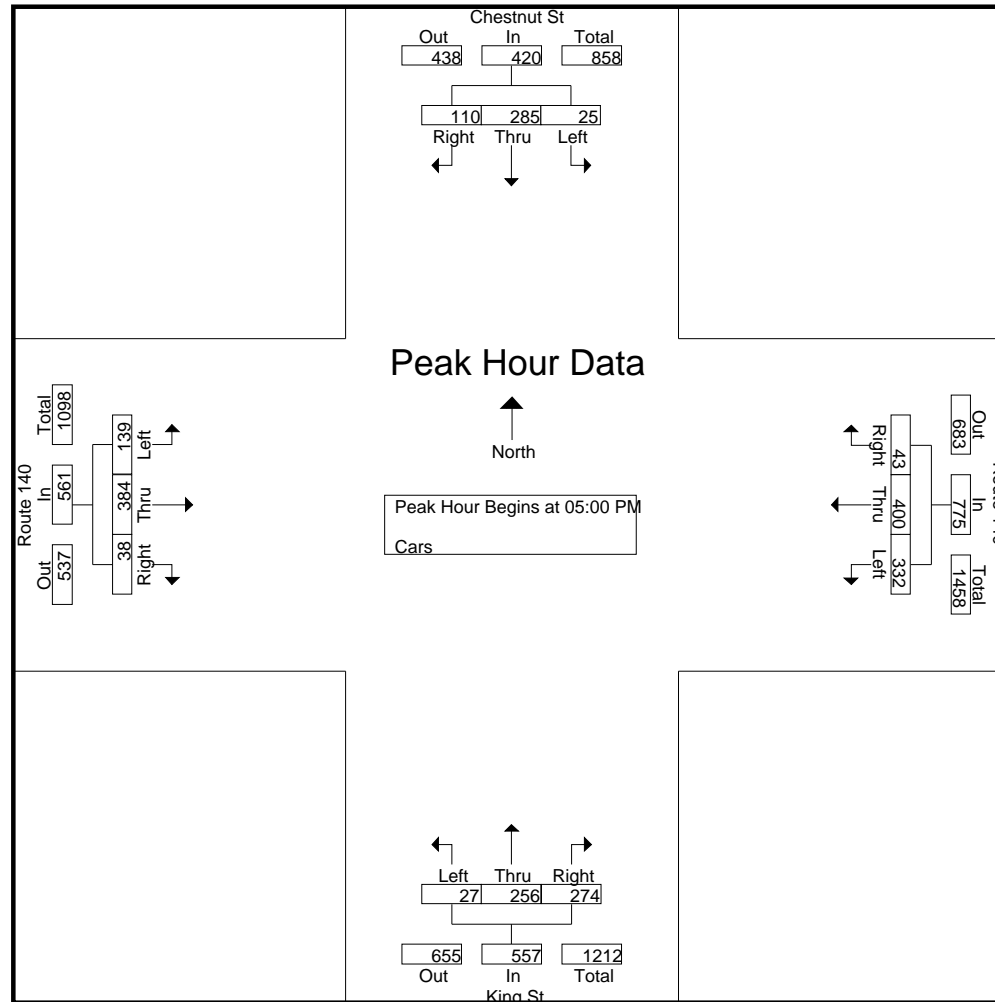
Page No : 5

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

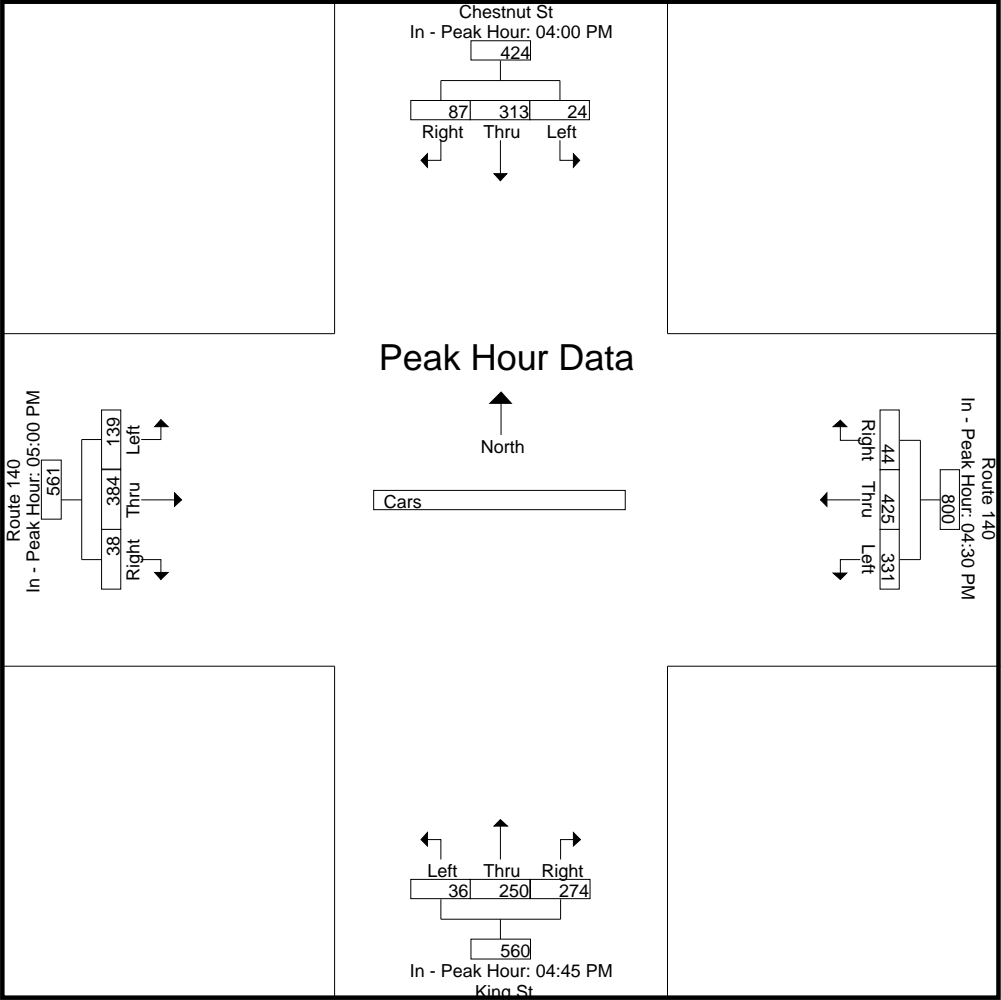
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:45 PM				05:00 PM			
+0 mins.	8	73	13	94	77	110	10	197	12	60	64	136	31	102	3	136
+15 mins.	6	87	26	119	72	107	15	194	7	64	81	152	27	94	9	130
+30 mins.	5	82	25	112	83	109	8	200	6	51	62	119	42	86	17	145
+45 mins.	5	71	23	99	99	99	11	209	11	75	67	153	39	102	9	150
Total Volume	24	313	87	424	331	425	44	800	36	250	274	560	139	384	38	561
% App. Total	5.7	73.8	20.5		41.4	53.1	5.5		6.4	44.6	48.9		24.8	68.4	6.8	
PHF	.750	.899	.837	.891	.836	.966	.733	.957	.750	.833	.846	.915	.827	.941	.559	.935

Accurate Counts
978-664-2565

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 6

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 7

Groups Printed- Trucks

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	1	1	0	0	0	0	1	0	0	0	0	3
04:15 PM	0	0	0	0	1	0	0	1	0	1	1	0	4
04:30 PM	0	1	0	1	0	0	0	1	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	2	1	1	1	0	0	3	0	1	2	0	11
05:00 PM	0	1	0	0	0	0	1	0	2	0	0	0	4
05:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
05:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	1	0	0	1	0	2
Total	0	2	0	1	0	0	1	2	2	0	1	0	9
Grand Total	0	4	1	2	1	0	1	5	2	1	3	0	20
Apprch %	0	80	20	66.7	33.3	0	12.5	62.5	25	25	75	0	
Total %	0	20	5	10	5	0	5	25	10	5	15	0	

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	0	0	0	0	1	0	1	0	1	0	1	1	1	0	2	4
04:30 PM	0	1	0	1	1	0	0	1	0	1	0	1	0	0	0	0	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	1	0	1	0	0	0	0	1	0	2	3	0	0	0	0	4
Total Volume	0	2	0	2	1	1	0	2	1	2	2	5	1	2	0	3	12
% App. Total	0	100	0		50	50	0		20	40	40		33.3	66.7	0		
PHF	.000	.500	.000	.500	.250	.250	.000	.500	.250	.500	.250	.417	.250	.500	.000	.375	.750

Accurate Counts

978-664-2565

File Name : 66410001

Site Code : 66410001

Start Date : 3/5/2020

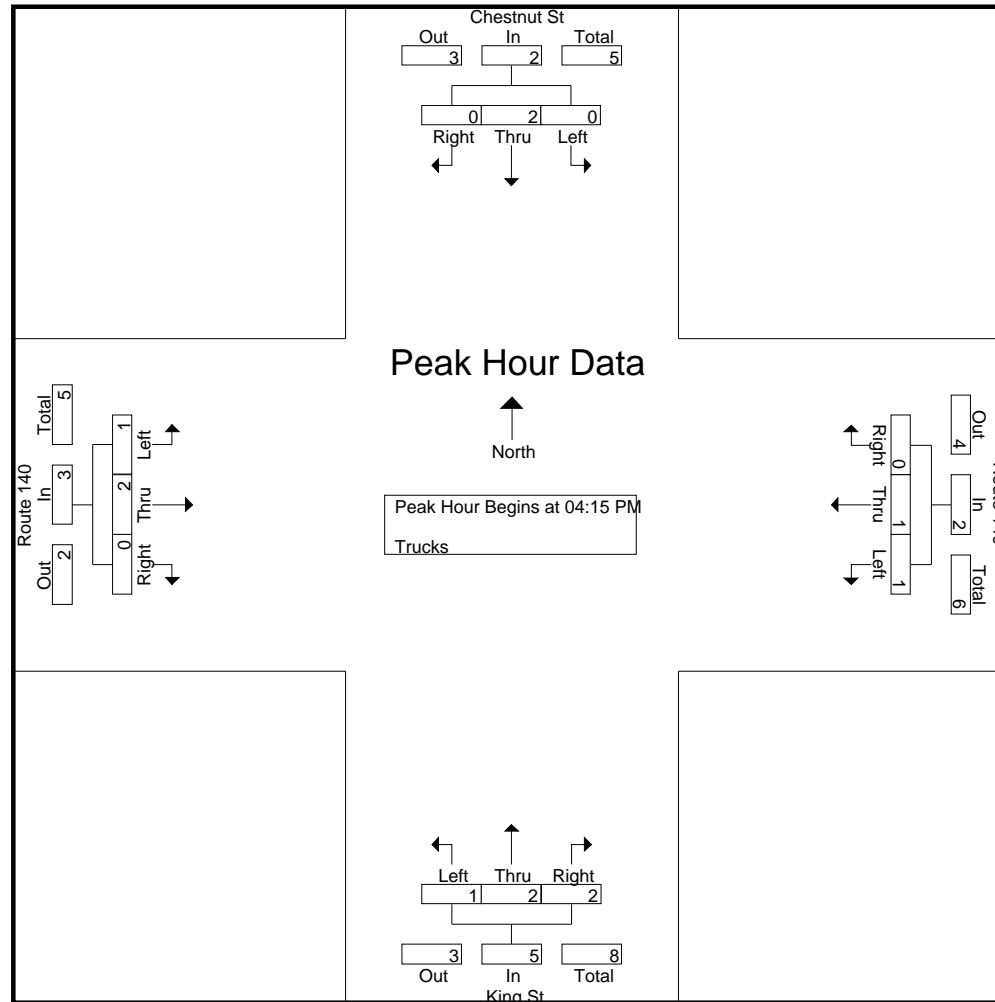
Page No : 8

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

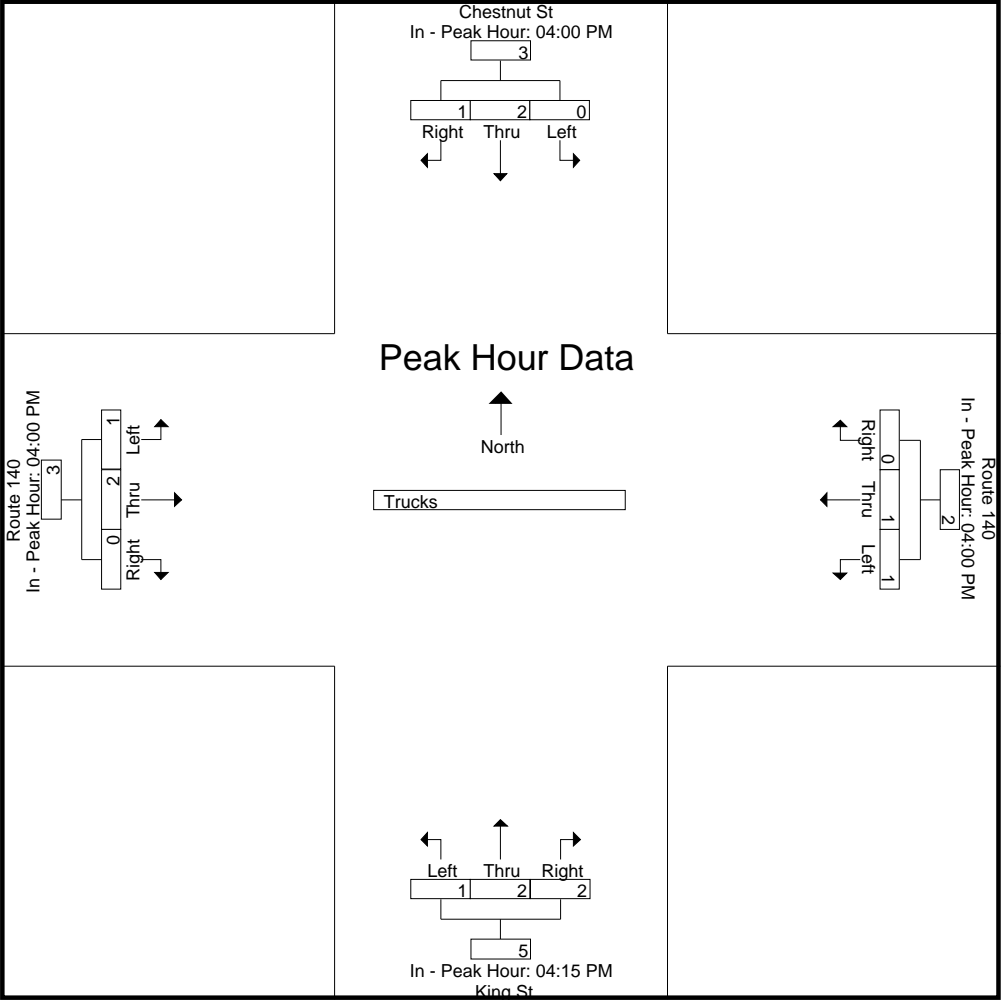
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:15 PM				04:00 PM			
+0 mins.	0	1	1	2	0	0	0	0	0	1	0	1	0	0	0	0
+15 mins.	0	0	0	0	0	1	0	1	0	1	0	1	1	1	0	2
+30 mins.	0	1	0	1	1	0	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	1	0	2	3	0	1	0	1
Total Volume	0	2	1	3	1	1	0	2	1	2	2	5	1	2	0	3
% App. Total	0	66.7	33.3		50	50	0		20	40	40		33.3	66.7	0	
PHF	.000	.500	.250	.375	.250	.250	.000	.500	.250	.500	.250	.417	.250	.500	.000	.375

Accurate Counts
978-664-2565

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 9

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



978-664-2565

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 10

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West						
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	2	6	0	6
04:15 PM	0	0	1	0	0	0	0	0	0	0	0	5	0	0	0	0	5	1	6
04:30 PM	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	1	5	0	5
04:45 PM	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	2	6	0	6
Total	0	0	1	10	0	0	0	0	0	0	0	7	0	0	0	5	22	1	23
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
05:15 PM	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	2	1	3
05:30 PM	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	3	0	3
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	4	0	0	0	0	0	0	0	3	1	0	0	0	7	1	8
Grand Total	0	0	1	14	0	0	0	0	0	0	0	10	1	0	0	5	29	2	31
Apprch %	0	0	100		0	0	0		0	0	0		100	0	0				
Total %	0	0	50		0	0	0		0	0	0		50	0	0		93.5	6.5	

[illegible]

Accurate Counts

978-664-2565

File Name : 66410001

Site Code : 66410001

Start Date : 3/5/2020

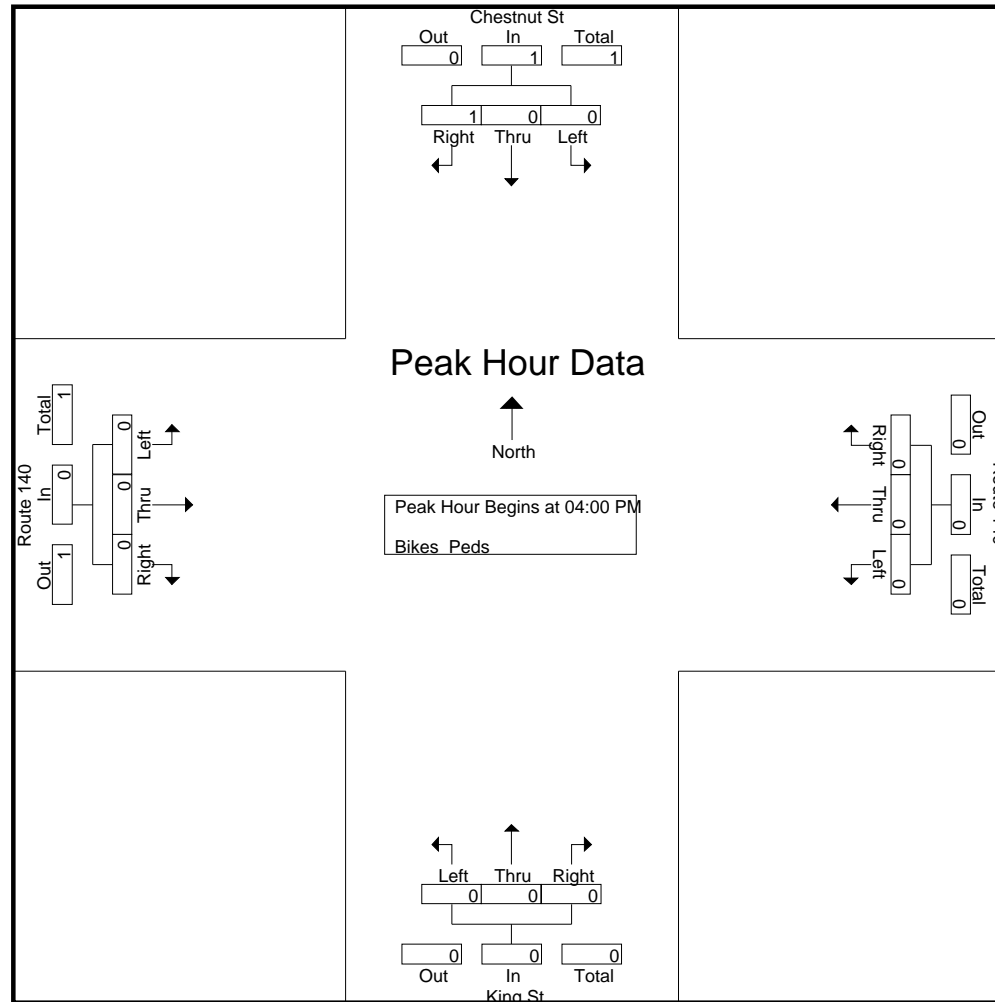
Page No : 11

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

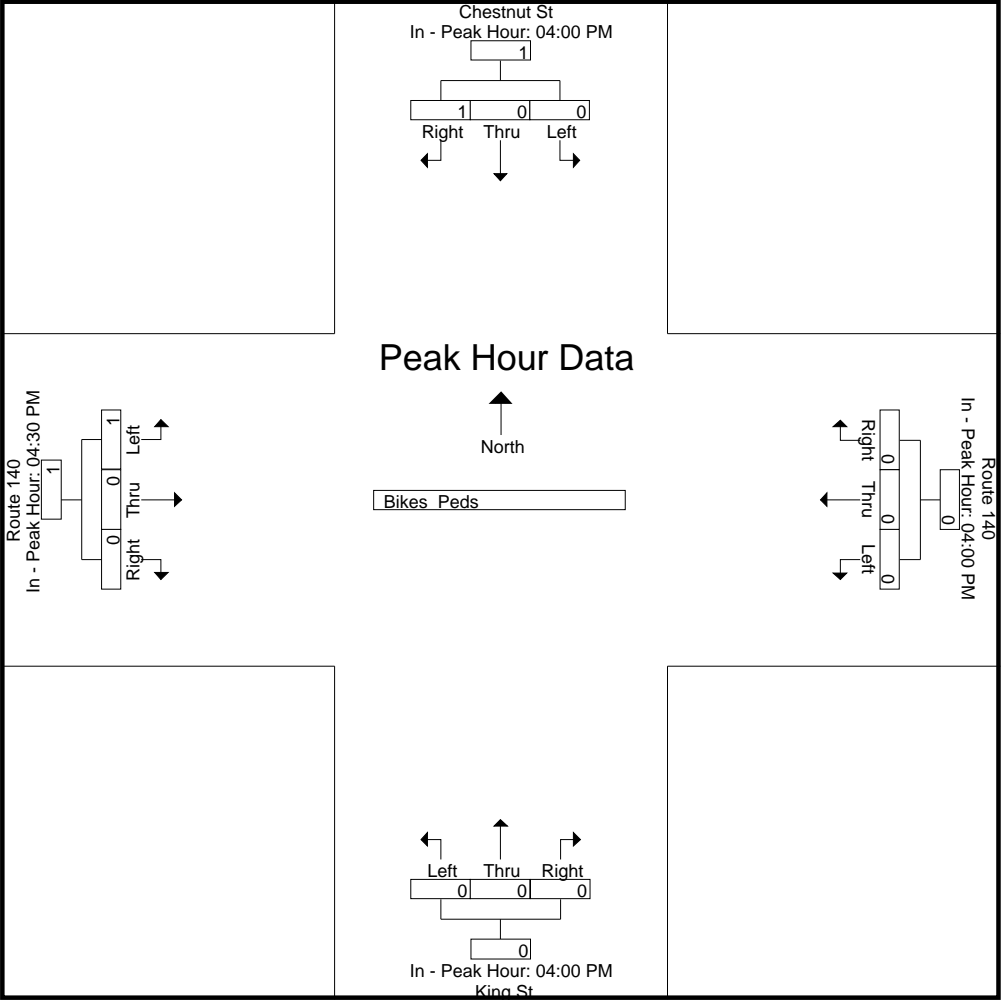
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Total Volume	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	1
% App. Total	0	0	100		0	0	0		0	0	0		100	0	0	
PHF	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250

Accurate Counts
978-664-2565

File Name : 66410001
Site Code : 66410001
Start Date : 3/5/2020
Page No : 12

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 664100S1
Site Code : 66410001
Start Date : 3/7/2020
Page No : 1

Groups Printed- Cars - Trucks

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	5	35	29	66	98	8	7	32	68	17	120	11	496
11:15 AM	6	42	32	59	103	11	6	38	62	27	105	13	504
11:30 AM	8	52	20	51	101	11	8	56	76	26	106	8	523
11:45 AM	3	45	26	78	98	14	7	41	57	34	113	10	526
Total	22	174	107	254	400	44	28	167	263	104	444	42	2049
12:00 PM	6	49	22	79	120	14	6	39	52	34	126	11	558
12:15 PM	4	48	23	78	94	16	6	42	72	27	113	14	537
12:30 PM	7	47	27	62	114	13	12	32	61	30	117	10	532
12:45 PM	7	30	33	70	105	12	7	35	66	24	107	12	508
Total	24	174	105	289	433	55	31	148	251	115	463	47	2135
01:00 PM	11	46	24	66	105	9	9	36	65	38	104	12	525
01:15 PM	6	52	27	70	103	11	9	46	78	28	107	10	547
01:30 PM	4	45	21	83	105	7	5	38	83	31	86	11	519
01:45 PM	7	49	20	66	121	12	2	33	69	26	98	10	513
Total	28	192	92	285	434	39	25	153	295	123	395	43	2104
Grand Total	74	540	304	828	1267	138	84	468	809	342	1302	132	6288
Apprch %	8.1	58.8	33.1	37.1	56.7	6.2	6.2	34.4	59.4	19.3	73.3	7.4	
Total %	1.2	8.6	4.8	13.2	20.1	2.2	1.3	7.4	12.9	5.4	20.7	2.1	
Cars	74	537	302	827	1265	138	84	464	808	340	1301	132	6272
% Cars	100	99.4	99.3	99.9	99.8	100	100	99.1	99.9	99.4	99.9	100	99.7
Trucks	0	3	2	1	2	0	0	4	1	2	1	0	16
% Trucks	0	0.6	0.7	0.1	0.2	0	0	0.9	0.1	0.6	0.1	0	0.3

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	3	45	26	74	78	98	14	190	7	41	57	105	34	113	10	157	526
12:00 PM	6	49	22	77	79	120	14	213	6	39	52	97	34	126	11	171	558
12:15 PM	4	48	23	75	78	94	16	188	6	42	72	120	27	113	14	154	537
12:30 PM	7	47	27	81	62	114	13	189	12	32	61	105	30	117	10	157	532
Total Volume	20	189	98	307	297	426	57	780	31	154	242	427	125	469	45	639	2153
% App. Total	6.5	61.6	31.9		38.1	54.6	7.3		7.3	36.1	56.7		19.6	73.4	7		
PHF	.714	.964	.907	.948	.940	.888	.891	.915	.646	.917	.840	.890	.919	.931	.804	.934	.965
Cars	20	189	98	307	297	426	57	780	31	153	242	426	125	468	45	638	2151
% Cars	100	100	100	100	100	100	100	100	100	99.4	100	99.8	100	99.8	100	99.8	99.9
Trucks	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2
% Trucks	0	0	0	0	0	0	0	0	0	0.6	0	0.2	0	0.2	0	0.2	0.1

Accurate Counts

978-664-2565

File Name : 664100S1

Site Code : 66410001

Start Date : 3/7/2020

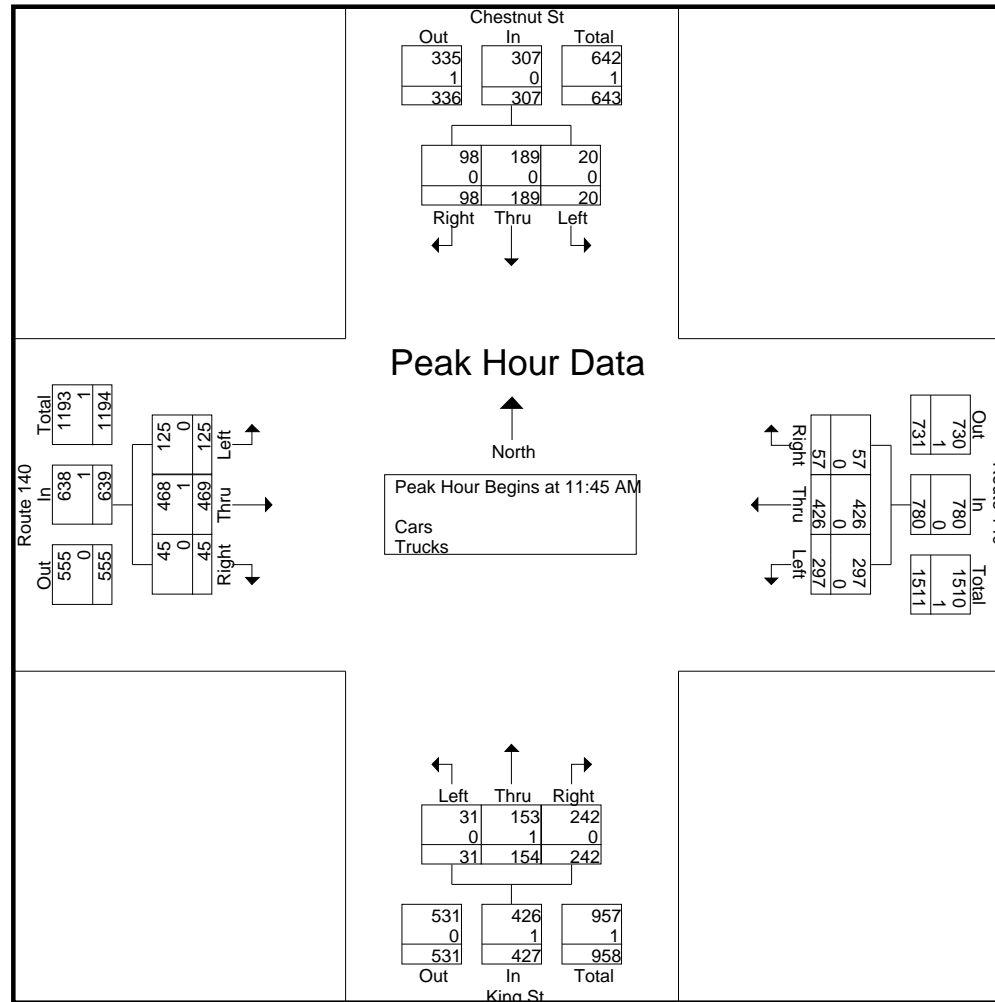
Page No : 2

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



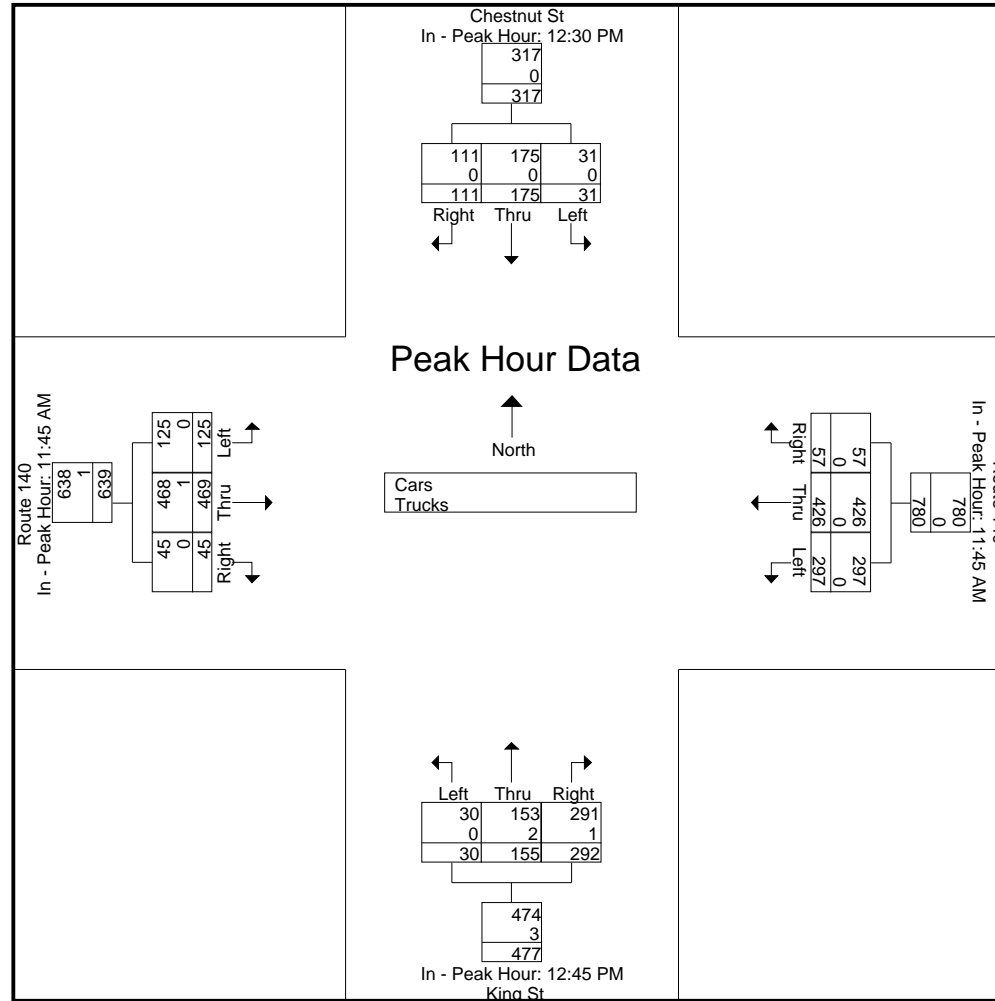
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	12:30 PM				11:45 AM				12:45 PM				11:45 AM			
+0 mins.	7	47	27	81	78	98	14	190	7	35	66	108	34	113	10	157
+15 mins.	7	30	33	70	79	120	14	213	9	36	65	110	34	126	11	171
+30 mins.	11	46	24	81	78	94	16	188	9	46	78	133	27	113	14	154
+45 mins.	6	52	27	85	62	114	13	189	5	38	83	126	30	117	10	157
Total Volume	31	175	111	317	297	426	57	780	30	155	292	477	125	469	45	639
% App. Total	9.8	55.2	35		38.1	54.6	7.3		6.3	32.5	61.2		19.6	73.4	7	
PHF	.705	.841	.841	.932	.940	.888	.891	.915	.833	.842	.880	.897	.919	.931	.804	.934
Cars	31	175	111	317	297	426	57	780	30	153	291	474	125	468	45	638
% Cars	100	100	100	100	100	100	100	100	100	98.7	99.7	99.4	100	99.8	100	99.8
Trucks	0	0	0	0	0	0	0	0	0	2	1	3	0	1	0	1

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 664100S1
Site Code : 66410001
Start Date : 3/7/2020
Page No : 4

Groups Printed- Cars

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	5	35	29	65	96	8	7	32	68	16	120	11	492
11:15 AM	6	42	32	59	103	11	6	37	62	27	105	13	503
11:30 AM	8	51	19	51	101	11	8	56	76	26	106	8	521
11:45 AM	3	45	26	78	98	14	7	41	57	34	113	10	526
Total	22	173	106	253	398	44	28	166	263	103	444	42	2042
12:00 PM	6	49	22	79	120	14	6	39	52	34	126	11	558
12:15 PM	4	48	23	78	94	16	6	41	72	27	113	14	536
12:30 PM	7	47	27	62	114	13	12	32	61	30	116	10	531
12:45 PM	7	30	33	70	105	12	7	34	65	24	107	12	506
Total	24	174	105	289	433	55	31	146	250	115	462	47	2131
01:00 PM	11	46	24	66	105	9	9	36	65	37	104	12	524
01:15 PM	6	52	27	70	103	11	9	45	78	28	107	10	546
01:30 PM	4	44	20	83	105	7	5	38	83	31	86	11	517
01:45 PM	7	48	20	66	121	12	2	33	69	26	98	10	512
Total	28	190	91	285	434	39	25	152	295	122	395	43	2099
Grand Total	74	537	302	827	1265	138	84	464	808	340	1301	132	6272
Apprch %	8.1	58.8	33.1	37.1	56.7	6.2	6.2	34.2	59.6	19.2	73.4	7.4	
Total %	1.2	8.6	4.8	13.2	20.2	2.2	1.3	7.4	12.9	5.4	20.7	2.1	

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	3	45	26	74	78	98	14	190	7	41	57	105	34	113	10	157	526
12:00 PM	6	49	22	77	79	120	14	213	6	39	52	97	34	126	11	171	558
12:15 PM	4	48	23	75	78	94	16	188	6	41	72	119	27	113	14	154	536
12:30 PM	7	47	27	81	62	114	13	189	12	32	61	105	30	116	10	156	531
Total Volume	20	189	98	307	297	426	57	780	31	153	242	426	125	468	45	638	2151
% App. Total	6.5	61.6	31.9		38.1	54.6	7.3		7.3	35.9	56.8		19.6	73.4	7.1		
PHF	.714	.964	.907	.948	.940	.888	.891	.915	.646	.933	.840	.895	.919	.929	.804	.933	.964

Accurate Counts

978-664-2565

File Name : 664100S1

Site Code : 66410001

Start Date : 3/7/2020

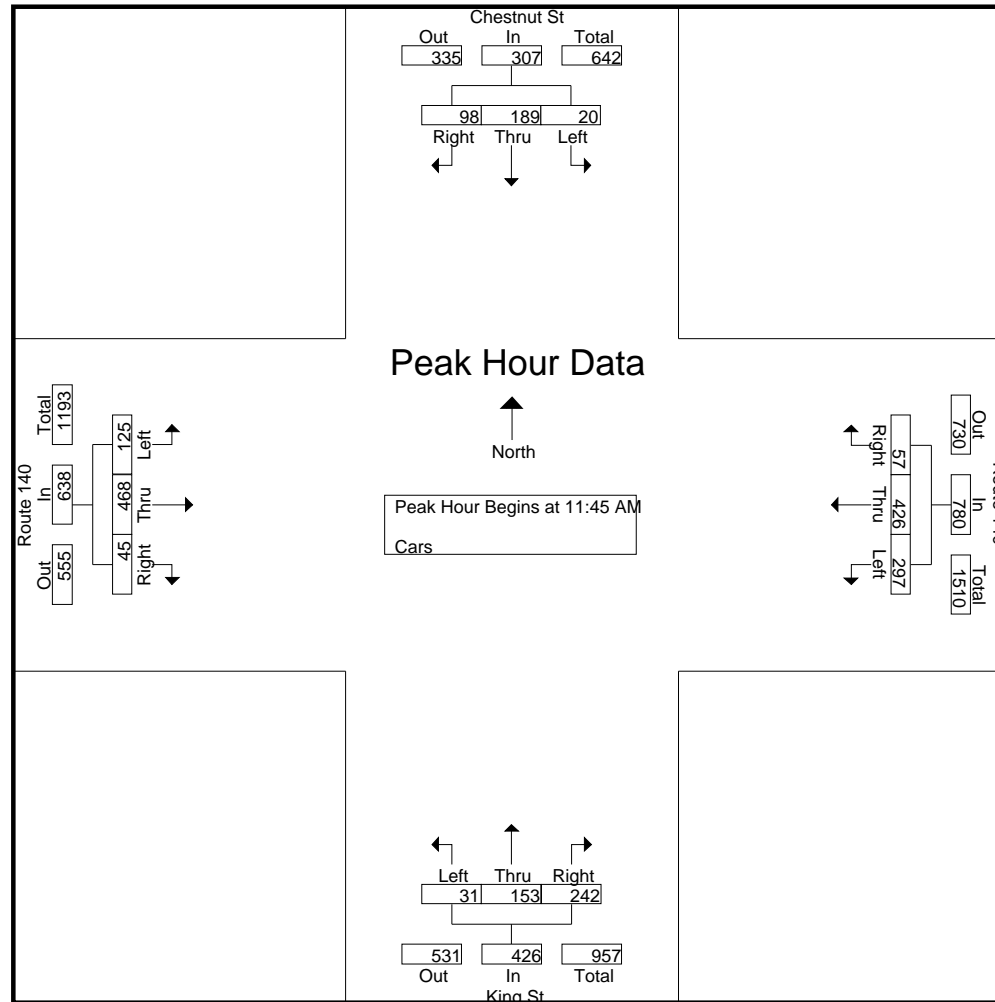
Page No : 5

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

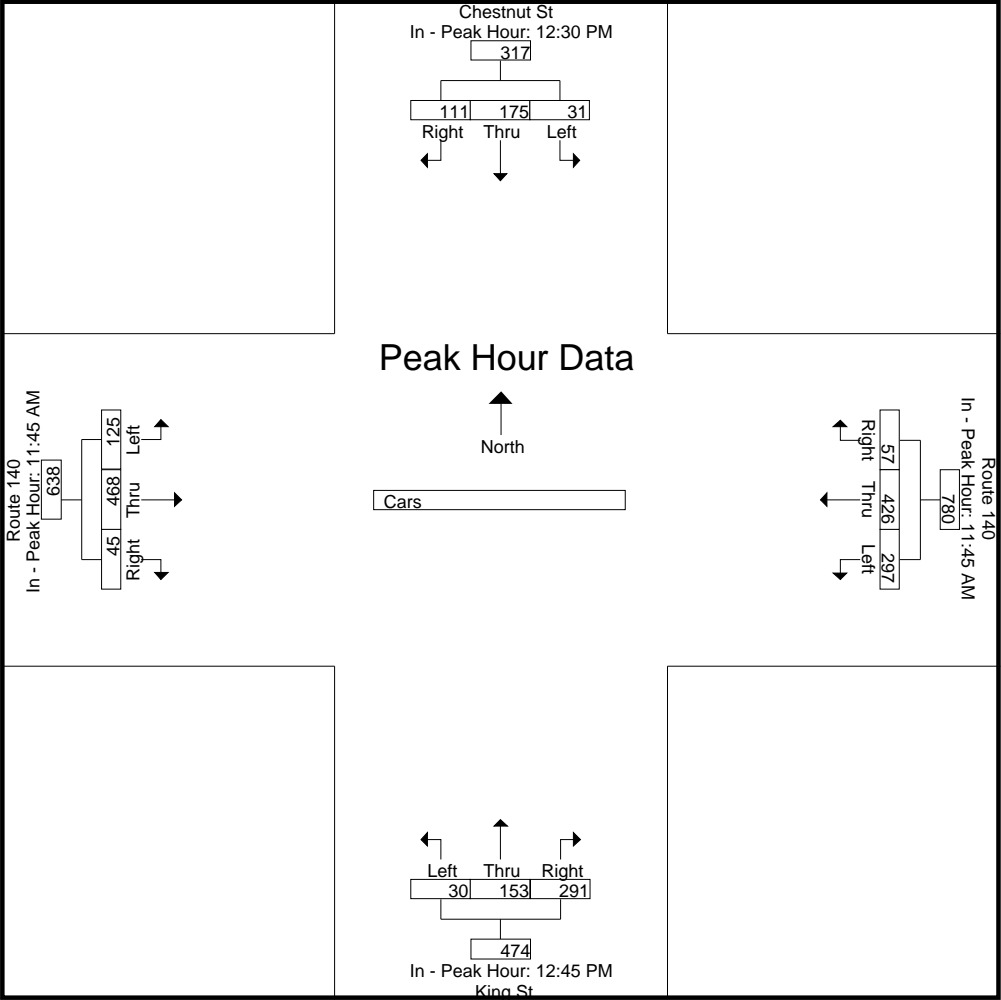
Peak Hour for Each Approach Begins at:

	12:30 PM				11:45 AM				12:45 PM				11:45 AM			
+0 mins.	7	47	27	81	78	98	14	190	7	34	65	106	34	113	10	157
+15 mins.	7	30	33	70	79	120	14	213	9	36	65	110	34	126	11	171
+30 mins.	11	46	24	81	78	94	16	188	9	45	78	132	27	113	14	154
+45 mins.	6	52	27	85	62	114	13	189	5	38	83	126	30	116	10	156
Total Volume	31	175	111	317	297	426	57	780	30	153	291	474	125	468	45	638
% App. Total	9.8	55.2	35		38.1	54.6	7.3		6.3	32.3	61.4		19.6	73.4	7.1	
PHF	.705	.841	.841	.932	.940	.888	.891	.915	.833	.850	.877	.898	.919	.929	.804	.933

Accurate Counts
978-664-2565

File Name : 664100S1
Site Code : 66410001
Start Date : 3/7/2020
Page No : 6

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 664100S1
Site Code : 66410001
Start Date : 3/7/2020
Page No : 7

Groups Printed- Trucks

	Chestnut St From North			Route 140 From East			King St From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	0	0	0	1	2	0	0	0	0	1	0	0	4
11:15 AM	0	0	0	0	0	0	0	1	0	0	0	0	1
11:30 AM	0	1	1	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	1	1	2	0	0	1	0	1	0	0	7
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
12:45 PM	0	0	0	0	0	0	0	1	1	0	0	0	2
Total	0	0	0	0	0	0	0	2	1	0	1	0	4
01:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	1
01:15 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
01:30 PM	0	1	1	0	0	0	0	0	0	0	0	0	2
01:45 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	2	1	0	0	0	0	1	0	1	0	0	5
Grand Total	0	3	2	1	2	0	0	4	1	2	1	0	16
Apprch %	0	60	40	33.3	66.7	0	0	80	20	66.7	33.3	0	
Total %	0	18.8	12.5	6.2	12.5	0	0	25	6.2	12.5	6.2	0	

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:00 AM																	
11:00 AM	0	0	0	0	1	2	0	3	0	0	0	0	1	0	0	0	1
11:15 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
11:30 AM	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	2
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	1	2	1	2	0	3	0	1	0	1	1	0	0	1	7
% App. Total	0	50	50		33.3	66.7	0		0	100	0		100	0	0		
PHF	.000	.250	.250	.250	.250	.250	.000	.250	.000	.250	.000	.250	.250	.000	.000	.250	.438

Accurate Counts

978-664-2565

File Name : 664100S1

Site Code : 66410001

Start Date : 3/7/2020

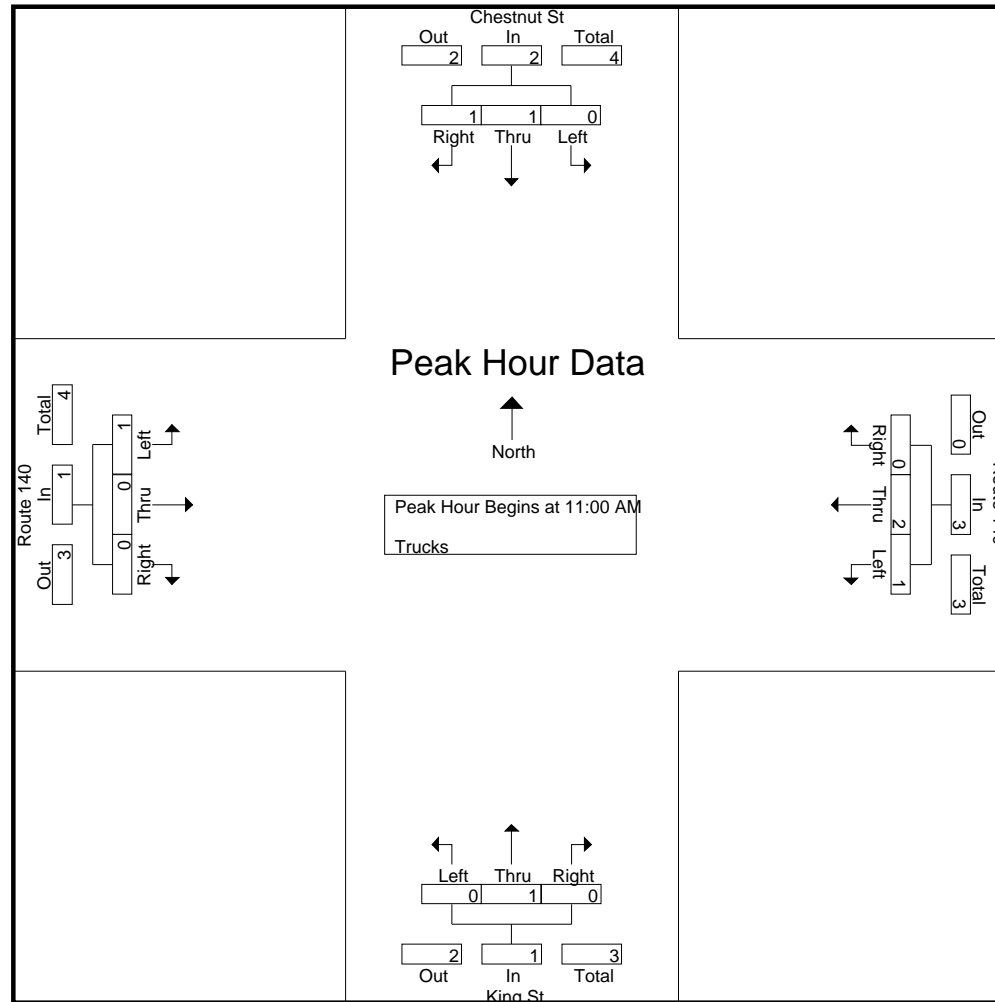
Page No : 8

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

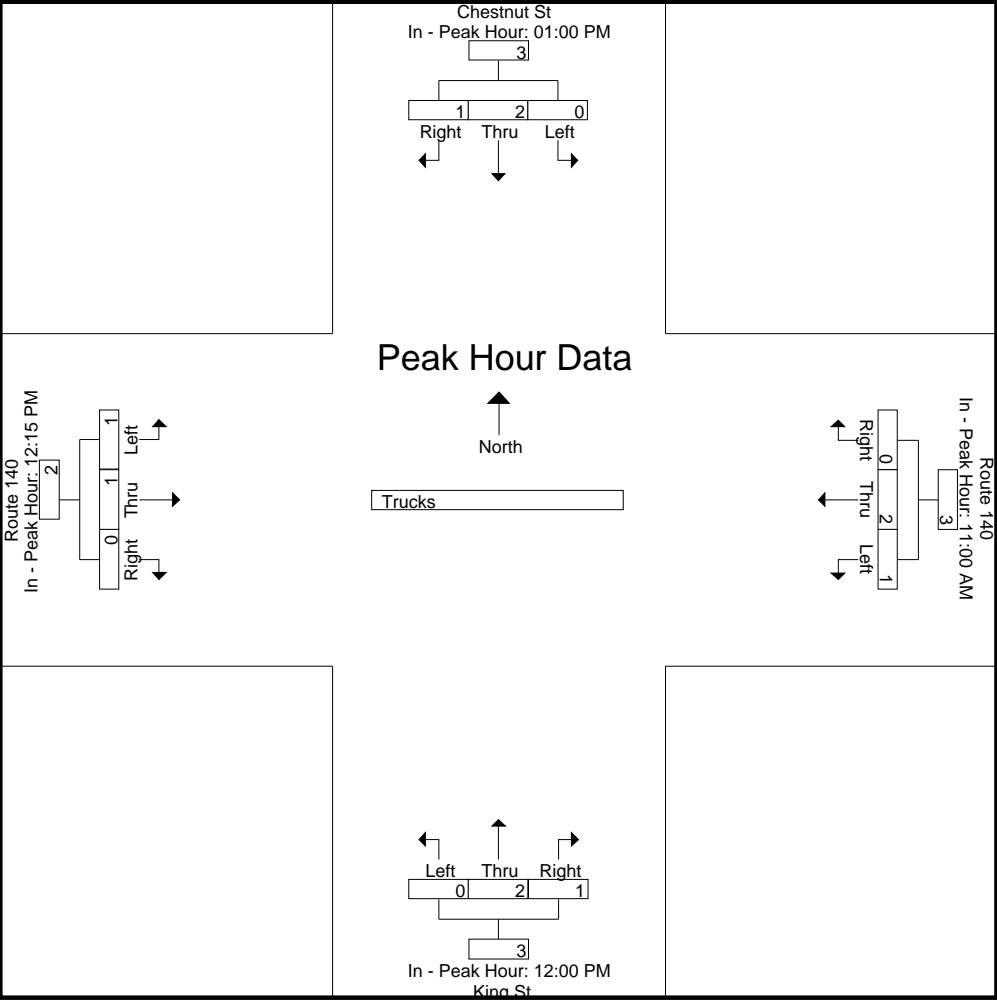
Peak Hour for Each Approach Begins at:

	01:00 PM				11:00 AM				12:00 PM				12:15 PM			
+0 mins.	0	0	0	0	1	2	0	3	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1
+30 mins.	0	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	1	0	1	0	0	0	0	0	1	1	2	1	0	0	1
Total Volume	0	2	1	3	1	2	0	3	0	2	1	3	1	1	0	2
% App. Total	0	66.7	33.3		33.3	66.7	0		0	66.7	33.3		50	50	0	
PHF	.000	.500	.250	.375	.250	.250	.000	.250	.000	.500	.250	.375	.250	.250	.000	.500

Accurate Counts
978-664-2565

File Name : 664100S1
Site Code : 66410001
Start Date : 3/7/2020
Page No : 9

N/S Street : Chestnut St / King St
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 664100S1

Site Code : 66410001

Start Date : 3/7/2020

Page No : 10

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Bikes Peds

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	0	2	1	3
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
11:30 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
11:45 AM	0	0	0	5	0	0	0	0	0	0	0	1	0	0	0	0	6	0	6
Total	0	0	0	8	0	1	0	0	0	0	0	1	0	0	0	1	10	1	11
12:00 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	2
12:15 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	2	0	2
12:30 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
12:45 PM	0	0	0	2	5	0	0	0	0	0	0	0	0	0	0	1	3	5	8
Total	0	0	0	7	5	0	0	0	0	0	0	2	0	0	0	1	10	5	15
01:00 PM	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	1	3	1	4
01:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	1	1	2
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
Total	0	0	0	6	0	1	0	0	0	0	0	0	0	1	0	1	7	2	9
Grand Total	0	0	0	21	5	2	0	0	0	0	0	3	0	1	0	3	27	8	35
Apprch %	0	0	0		71.4	28.6	0		0	0	0		0	100	0				
Total %	0	0	0		62.5	25	0		0	0	0		0	12.5	0		77.1	22.9	

	Chestnut St From North				Route 140 From East				King St From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:30 PM																	
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0	5
01:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	0	0	0	5	1	0	6	0	0	0	0	0	1	0	1	7
% App. Total	0	0	0		83.3	16.7	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.250	.250	.000	.300	.000	.000	.000	.000	.000	.250	.000	.250	.350

Accurate Counts

978-664-2565

File Name : 664100S1

Site Code : 66410001

Start Date : 3/7/2020

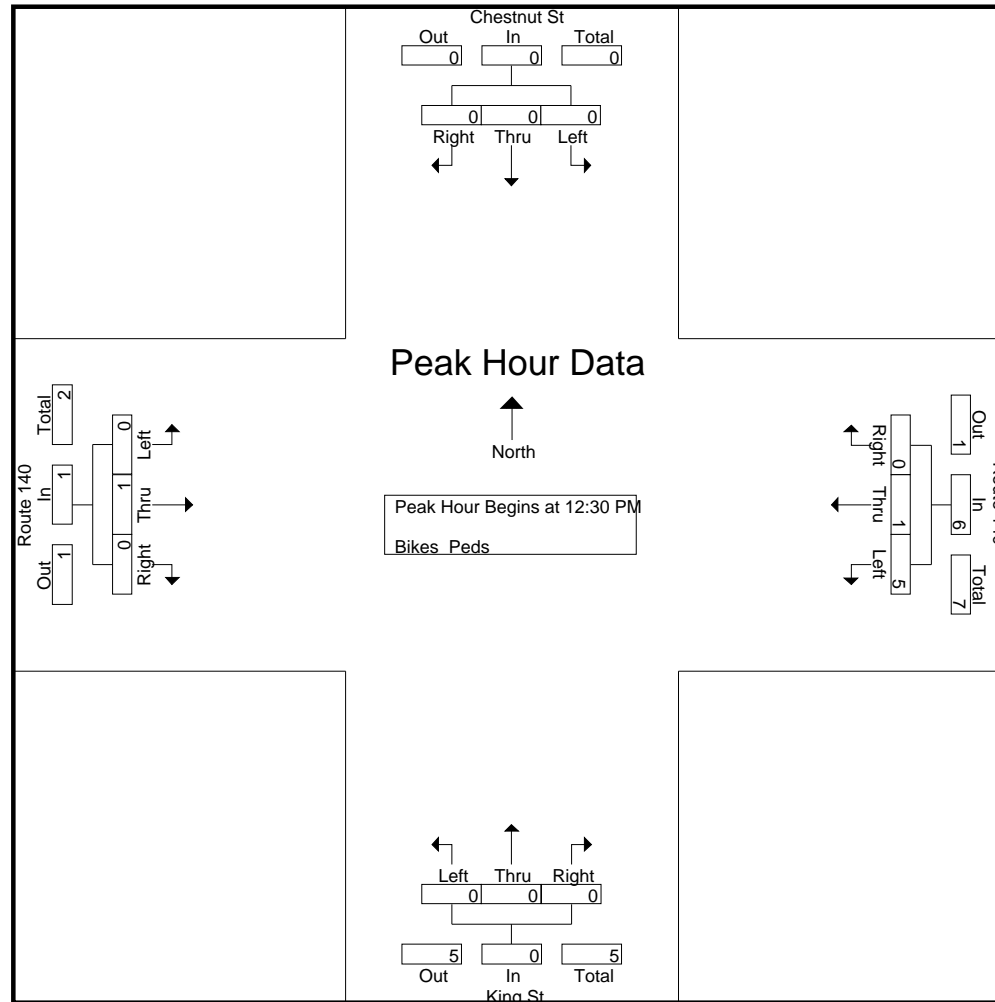
Page No : 11

N/S Street : Chestnut St / King St

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

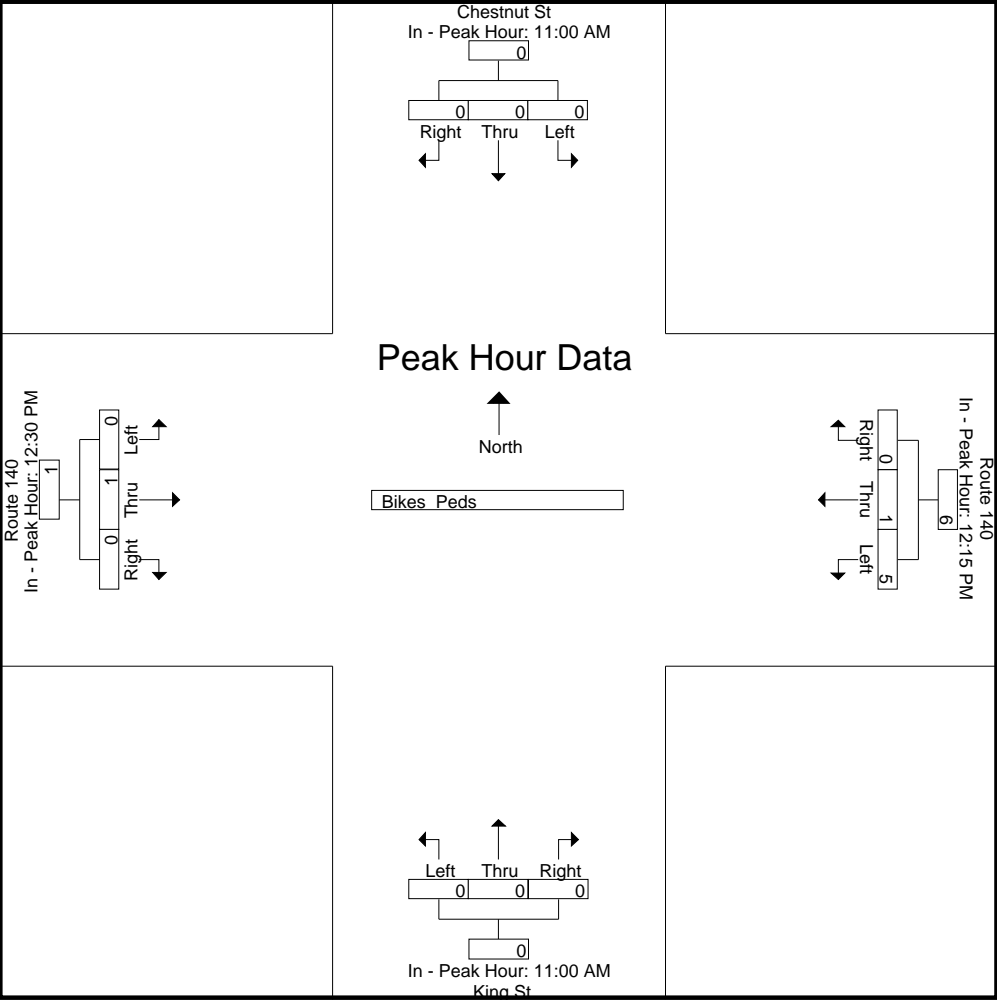
	11:00 AM				12:15 PM				11:00 AM				12:30 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	5	0	0	5	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	5	1	0	6	0	0	0	0	0	1	0	1
% App. Total	0	0	0	0	83.3	16.7	0	0	0	0	0	0	0	100	0	0
PHF	.000	.000	.000	.000	.250	.250	.000	.300	.000	.000	.000	.000	.000	.250	.000	.250

Accurate Counts

978-664-2565

File Name : 664100S1
 Site Code : 66410001
 Start Date : 3/7/2020
 Page No : 12

N/S Street : Chestnut St / King St
 E/W Street : Route 140
 City/State : Franklin, MA
 Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

Page No : 1

Groups Printed- Cars - Trucks

	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	4	1	3	1	107	10	2	0	4	9	90	1	232
07:15 AM	9	2	17	1	95	20	1	2	4	15	127	5	298
07:30 AM	10	1	14	3	94	12	2	2	2	18	131	5	294
07:45 AM	11	5	15	2	89	16	2	1	6	9	126	10	292
Total	34	9	49	7	385	58	7	5	16	51	474	21	1116
08:00 AM	12	0	14	4	97	11	8	0	2	13	112	3	276
08:15 AM	15	1	21	0	87	11	4	1	2	13	130	5	290
08:30 AM	22	3	10	2	106	12	1	3	2	20	117	5	303
08:45 AM	16	1	11	1	120	16	5	0	5	37	126	5	343
Total	65	5	56	7	410	50	18	4	11	83	485	18	1212
Grand Total	99	14	105	14	795	108	25	9	27	134	959	39	2328
Apprch %	45.4	6.4	48.2	1.5	86.7	11.8	41	14.8	44.3	11.8	84.7	3.4	
Total %	4.3	0.6	4.5	0.6	34.1	4.6	1.1	0.4	1.2	5.8	41.2	1.7	
Cars	99	14	105	14	788	108	25	9	27	134	943	39	2305
% Cars	100	100	100	100	99.1	100	100	100	100	100	98.3	100	99
Trucks	0	0	0	0	7	0	0	0	0	0	16	0	23
% Trucks	0	0	0	0	0.9	0	0	0	0	0	1.7	0	1

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	12	0	14	26	4	97	11	112	8	0	2	10	13	112	3	128	276
08:15 AM	15	1	21	37	0	87	11	98	4	1	2	7	13	130	5	148	290
08:30 AM	22	3	10	35	2	106	12	120	1	3	2	6	20	117	5	142	303
08:45 AM	16	1	11	28	1	120	16	137	5	0	5	10	37	126	5	168	343
Total Volume	65	5	56	126	7	410	50	467	18	4	11	33	83	485	18	586	1212
% App. Total	51.6	4	44.4		1.5	87.8	10.7		54.5	12.1	33.3		14.2	82.8	3.1		
PHF	.739	.417	.667	.851	.438	.854	.781	.852	.563	.333	.550	.825	.561	.933	.900	.872	.883
Cars	65	5	56	126	7	408	50	465	18	4	11	33	83	475	18	576	1200
% Cars	100	100	100	100	100	99.5	100	99.6	100	100	100	100	100	97.9	100	98.3	99.0
Trucks	0	0	0	0	0	2	0	2	0	0	0	0	0	10	0	10	12
% Trucks	0	0	0	0	0	0.5	0	0.4	0	0	0	0	0	2.1	0	1.7	1.0

Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

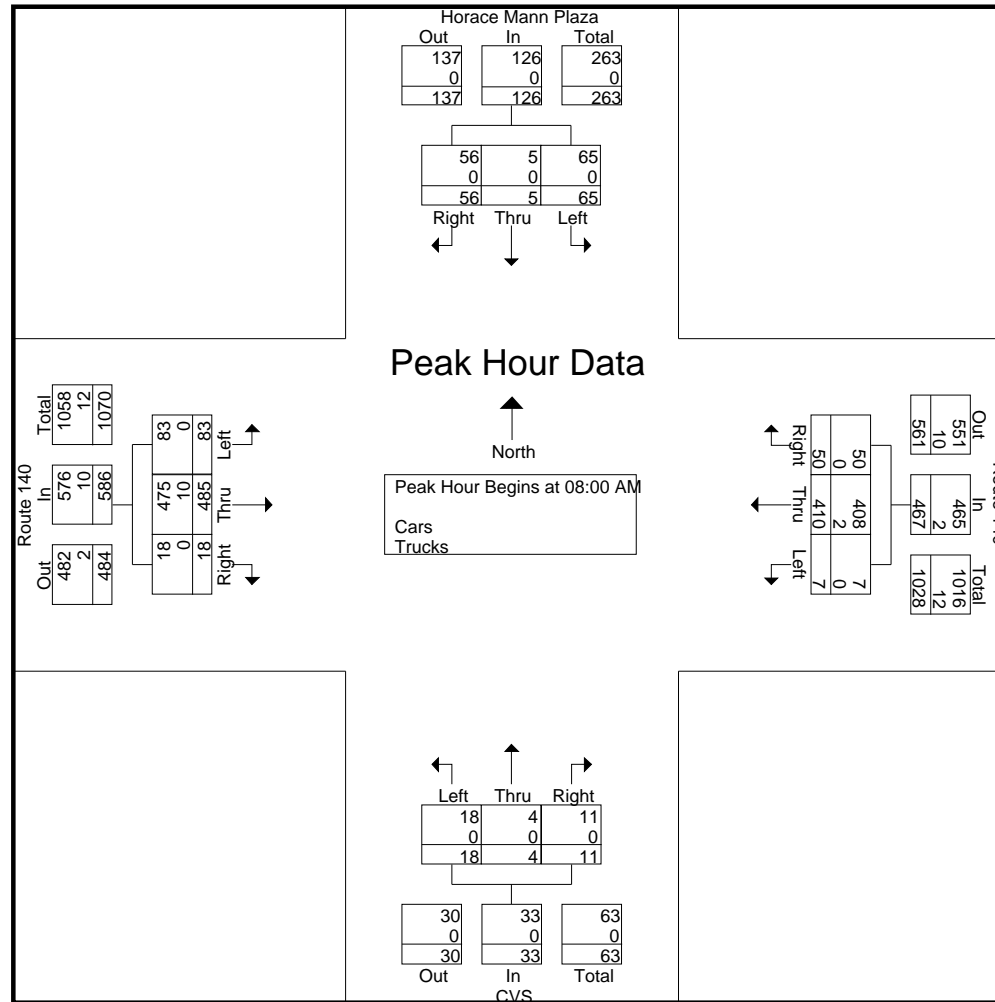
Page No : 2

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



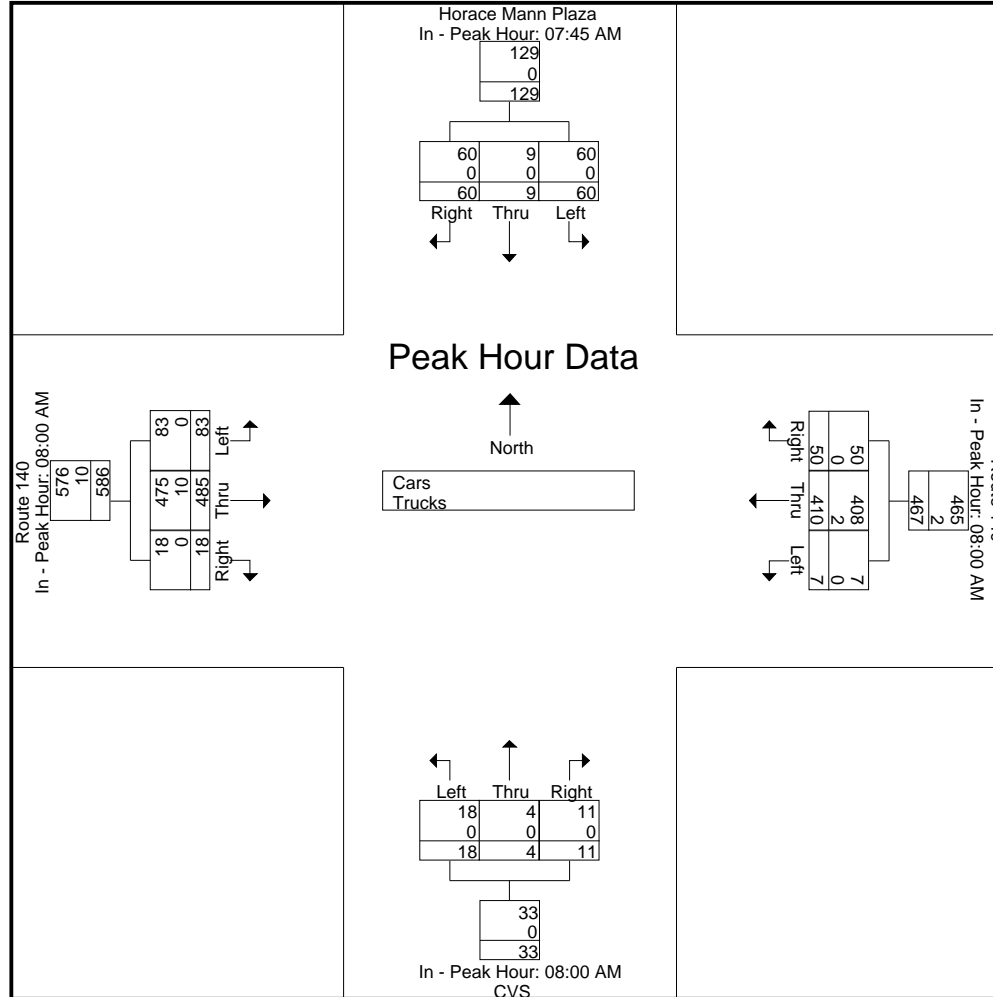
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	11	5	15	31	4	97	11	112	8	0	2	10	13	112	3	128
+15 mins.	12	0	14	26	0	87	11	98	4	1	2	7	13	130	5	148
+30 mins.	15	1	21	37	2	106	12	120	1	3	2	6	20	117	5	142
+45 mins.	22	3	10	35	1	120	16	137	5	0	5	10	37	126	5	168
Total Volume	60	9	60	129	7	410	50	467	18	4	11	33	83	485	18	586
% App. Total	46.5	7	46.5		1.5	87.8	10.7		54.5	12.1	33.3		14.2	82.8	3.1	
PHF	.682	.450	.714	.872	.438	.854	.781	.852	.563	.333	.550	.825	.561	.933	.900	.872
Cars	60	9	60	129	7	408	50	465	18	4	11	33	83	475	18	576
% Cars	100	100	100	100	100	99.5	100	99.6	100	100	100	100	100	97.9	100	98.3
Trucks	0	0	0	0	0	2	0	2	0	0	0	0	0	10	0	10

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

Page No : 4

Groups Printed- Cars

	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	4	1	3	1	104	10	2	0	4	9	89	1	228
07:15 AM	9	2	17	1	93	20	1	2	4	15	124	5	293
07:30 AM	10	1	14	3	94	12	2	2	2	18	130	5	293
07:45 AM	11	5	15	2	89	16	2	1	6	9	125	10	291
Total	34	9	49	7	380	58	7	5	16	51	468	21	1105
08:00 AM	12	0	14	4	96	11	8	0	2	13	110	3	273
08:15 AM	15	1	21	0	87	11	4	1	2	13	124	5	284
08:30 AM	22	3	10	2	105	12	1	3	2	20	116	5	301
08:45 AM	16	1	11	1	120	16	5	0	5	37	125	5	342
Total	65	5	56	7	408	50	18	4	11	83	475	18	1200
Grand Total	99	14	105	14	788	108	25	9	27	134	943	39	2305
Apprch %	45.4	6.4	48.2	1.5	86.6	11.9	41	14.8	44.3	12	84.5	3.5	
Total %	4.3	0.6	4.6	0.6	34.2	4.7	1.1	0.4	1.2	5.8	40.9	1.7	

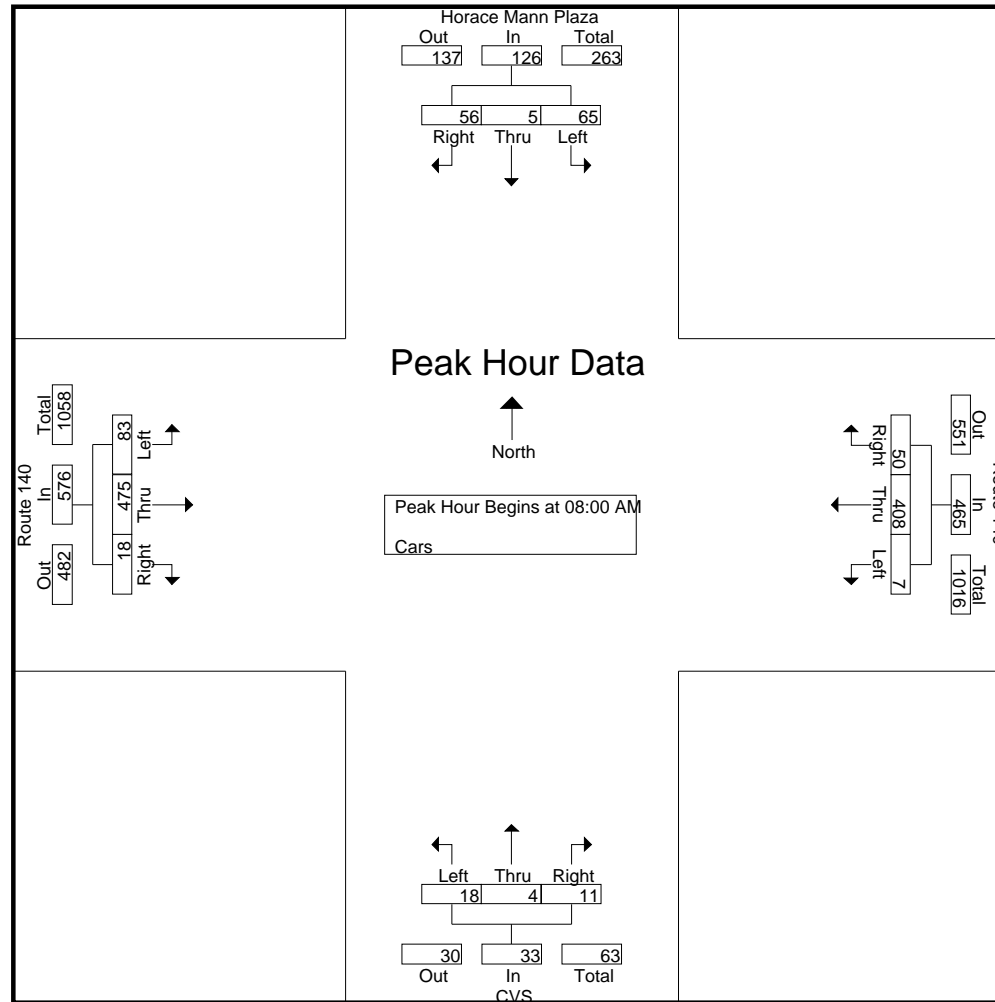
	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:00 AM																	
08:00 AM	12	0	14	26	4	96	11	111	8	0	2	10	13	110	3	126	273
08:15 AM	15	1	21	37	0	87	11	98	4	1	2	7	13	124	5	142	284
08:30 AM	22	3	10	35	2	105	12	119	1	3	2	6	20	116	5	141	301
08:45 AM	16	1	11	28	1	120	16	137	5	0	5	10	37	125	5	167	342
Total Volume	65	5	56	126	7	408	50	465	18	4	11	33	83	475	18	576	1200
% App. Total	51.6	4	44.4		1.5	87.7	10.8		54.5	12.1	33.3		14.4	82.5	3.1		
PHF	.739	.417	.667	.851	.438	.850	.781	.849	.563	.333	.550	.825	.561	.950	.900	.862	.877

Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410002
Site Code : 66410002
Start Date : 3/5/2020
Page No : 5



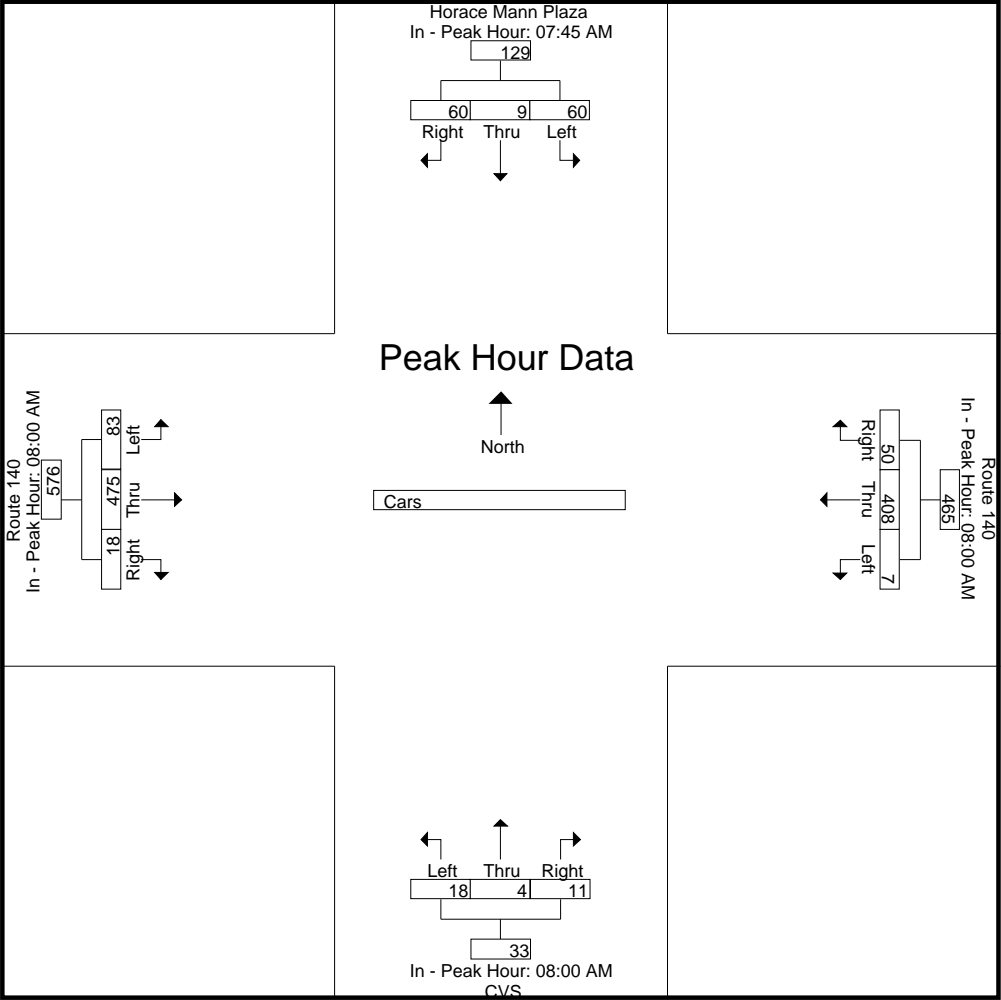
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				08:00 AM				08:00 AM				08:00 AM			
+0 mins.	11	5	15	31	4	96	11	111	8	0	2	10	13	110	3	126
+15 mins.	12	0	14	26	0	87	11	98	4	1	2	7	13	124	5	142
+30 mins.	15	1	21	37	2	105	12	119	1	3	2	6	20	116	5	141
+45 mins.	22	3	10	35	1	120	16	137	5	0	5	10	37	125	5	167
Total Volume	60	9	60	129	7	408	50	465	18	4	11	33	83	475	18	576
% App. Total	46.5	7	46.5		1.5	87.7	10.8		54.5	12.1	33.3		14.4	82.5	3.1	
PHF	.682	.450	.714	.872	.438	.850	.781	.849	.563	.333	.550	.825	.561	.950	.900	.862

Accurate Counts
978-664-2565

File Name : 66410002
Site Code : 66410002
Start Date : 3/5/2020
Page No : 6

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

Page No : 7

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Trucks

	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	3	0	0	0	0	0	1	0	4
07:15 AM	0	0	0	0	2	0	0	0	0	0	3	0	5
07:30 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	5	0	0	0	0	0	6	0	11
08:00 AM	0	0	0	0	1	0	0	0	0	0	2	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	6	0	6
08:30 AM	0	0	0	0	1	0	0	0	0	0	1	0	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	0	2	0	0	0	0	0	10	0	12
Grand Total	0	0	0	0	7	0	0	0	0	0	16	0	23
Apprch %	0	0	0	0	100	0	0	0	0	0	100	0	
Total %	0	0	0	0	30.4	0	0	0	0	0	69.6	0	

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	6
08:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	10	0	10	12
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.417	.000	.417	.500

Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

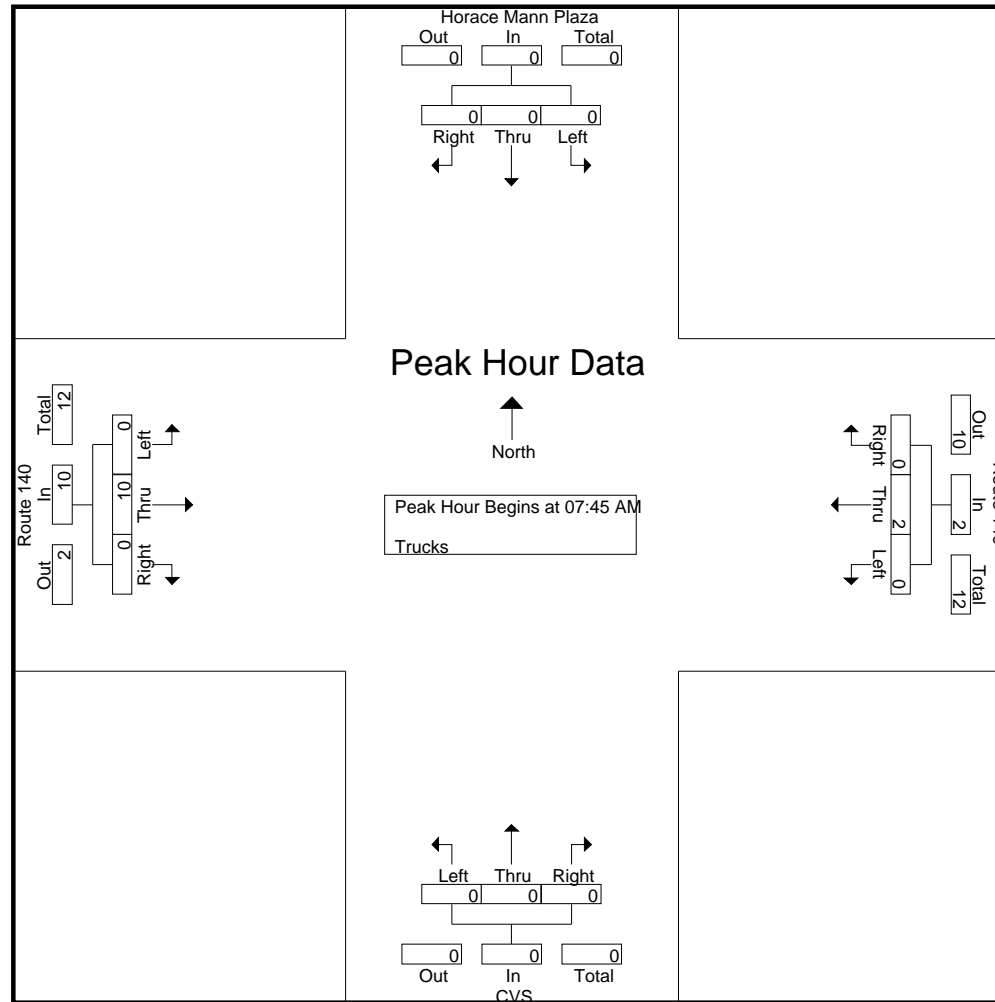
Page No : 8

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

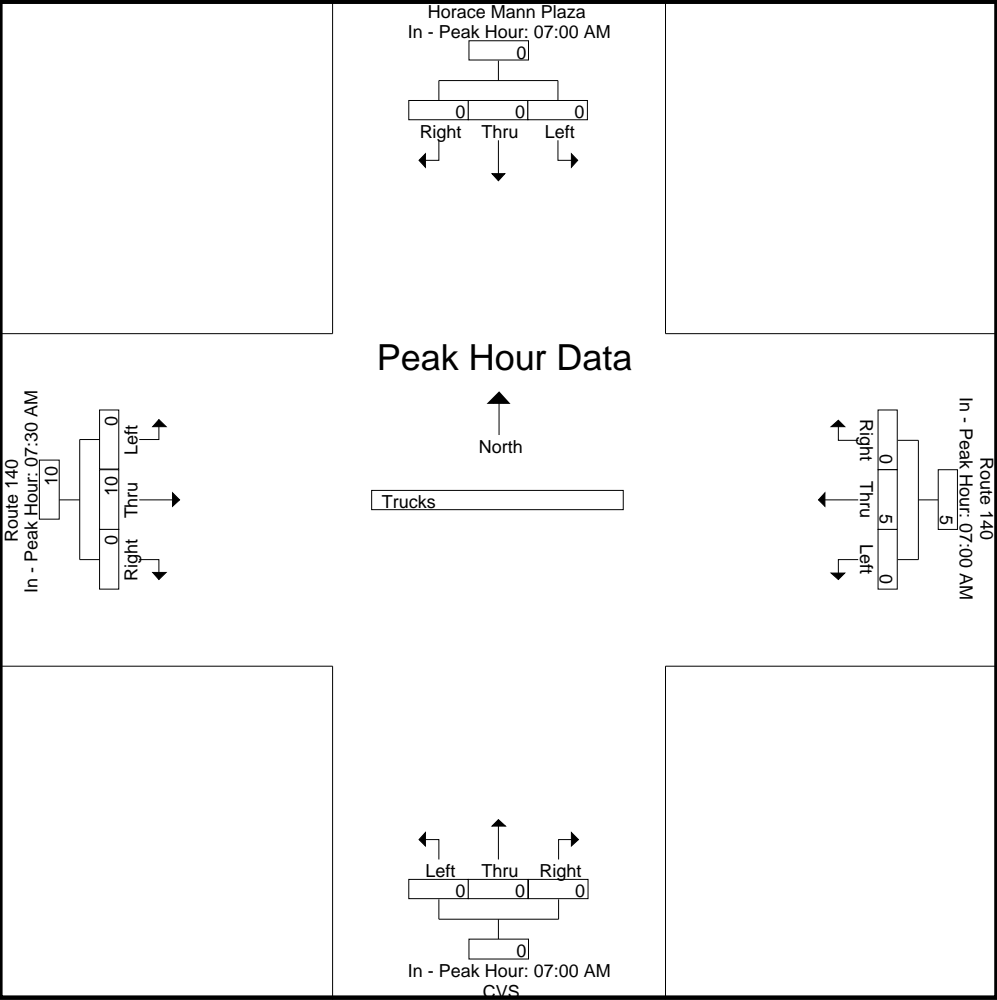
Peak Hour for Each Approach Begins at:

	07:00 AM				07:00 AM				07:00 AM				07:30 AM			
+0 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6
Total Volume	0	0	0	0	0	5	0	5	0	0	0	0	0	10	0	10
% App. Total	0	0	0	0	0	100	0		0	0	0	0	0	100	0	
PHF	.000	.000	.000	.000	.000	.417	.000	.417	.000	.000	.000	.000	.000	.417	.000	.417

Accurate Counts
978-664-2565

File Name : 66410002
Site Code : 66410002
Start Date : 3/5/2020
Page No : 9

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

Page No : 10

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Bikes Peds

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2
07:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	2	0	1	0	0	0	0	0	0	0	1	0	0	2	2	4
Total	0	0	0	2	0	1	0	1	0	0	0	3	0	1	0	0	6	2	8
08:00 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0	0	4	0	4
Grand Total	0	0	0	5	0	1	0	1	0	0	0	4	0	1	0	0	10	2	12
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0				
Total %	0	0	0		0	50	0		0	0	0		0	50	0		83.3	16.7	

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West						
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total		
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:00 AM																			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2		
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2		
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0				
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.250		

Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

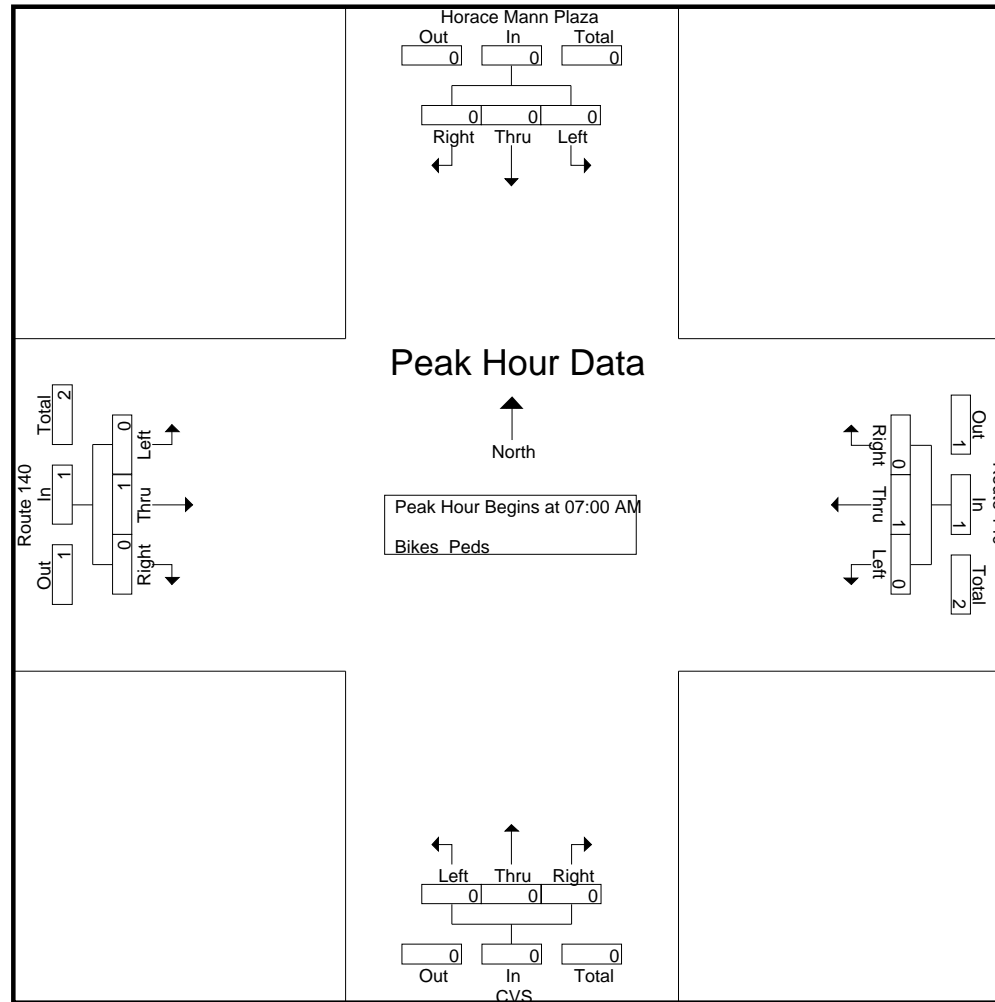
Page No : 11

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

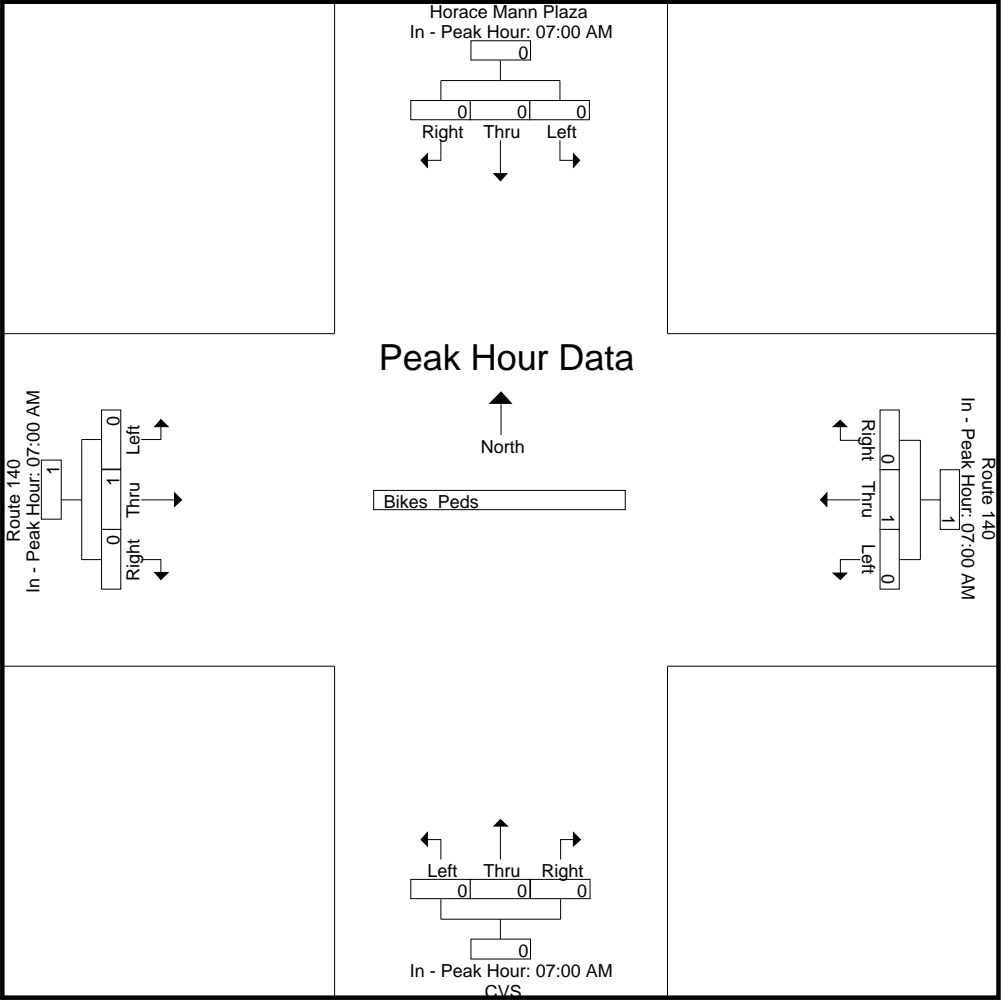
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

File Name : 66410002
Site Code : 66410002
Start Date : 3/5/2020
Page No : 12

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

Page No : 1

Groups Printed- Cars - Trucks

	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	24	3	51	9	156	29	8	4	9	24	100	12	429
04:15 PM	24	4	48	3	151	29	9	4	8	30	110	10	430
04:30 PM	23	4	47	5	133	27	11	3	7	29	121	11	421
04:45 PM	30	4	49	6	155	28	5	8	8	53	128	11	485
Total	101	15	195	23	595	113	33	19	32	136	459	44	1765
05:00 PM	32	3	47	2	173	33	9	3	6	53	122	9	492
05:15 PM	31	4	45	5	157	37	7	3	10	41	132	12	484
05:30 PM	28	2	56	4	126	26	11	5	4	37	100	14	413
05:45 PM	37	4	47	3	98	24	4	6	11	37	116	11	398
Total	128	13	195	14	554	120	31	17	31	168	470	46	1787
Grand Total	229	28	390	37	1149	233	64	36	63	304	929	90	3552
Apprch %	35.4	4.3	60.3	2.6	81	16.4	39.3	22.1	38.7	23	70.2	6.8	
Total %	6.4	0.8	11	1	32.3	6.6	1.8	1	1.8	8.6	26.2	2.5	
Cars	228	28	390	37	1142	233	64	36	63	304	922	90	3537
% Cars	99.6	100	100	100	99.4	100	100	100	100	100	99.2	100	99.6
Trucks	1	0	0	0	7	0	0	0	0	0	7	0	15
% Trucks	0.4	0	0	0	0.6	0	0	0	0	0	0.8	0	0.4

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	23	4	47	74	5	133	27	165	11	3	7	21	29	121	11	161	421
04:45 PM	30	4	49	83	6	155	28	189	5	8	8	21	53	128	11	192	485
05:00 PM	32	3	47	82	2	173	33	208	9	3	6	18	53	122	9	184	492
05:15 PM	31	4	45	80	5	157	37	199	7	3	10	20	41	132	12	185	484
Total Volume	116	15	188	319	18	618	125	761	32	17	31	80	176	503	43	722	1882
% App. Total	36.4	4.7	58.9		2.4	81.2	16.4		40	21.2	38.8		24.4	69.7	6		
PHF	.906	.938	.959	.961	.750	.893	.845	.915	.727	.531	.775	.952	.830	.953	.896	.940	.956
Cars	116	15	188	319	18	615	125	758	32	17	31	80	176	499	43	718	1875
% Cars	100	100	100	100	100	99.5	100	99.6	100	100	100	100	100	99.2	100	99.4	99.6
Trucks	0	0	0	0	0	3	0	3	0	0	0	0	0	4	0	4	7
% Trucks	0	0	0	0	0	0.5	0	0.4	0	0	0	0	0	0.8	0	0.6	0.4

Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

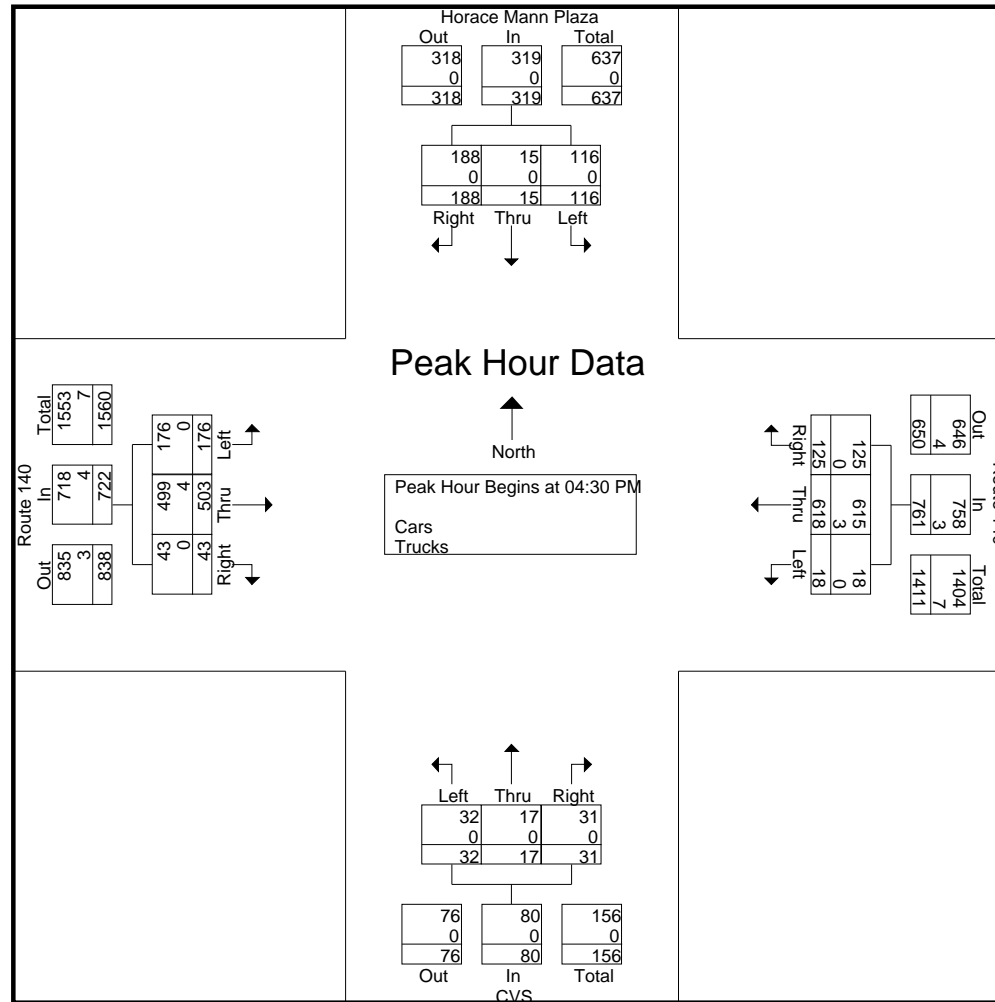
Page No : 2

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



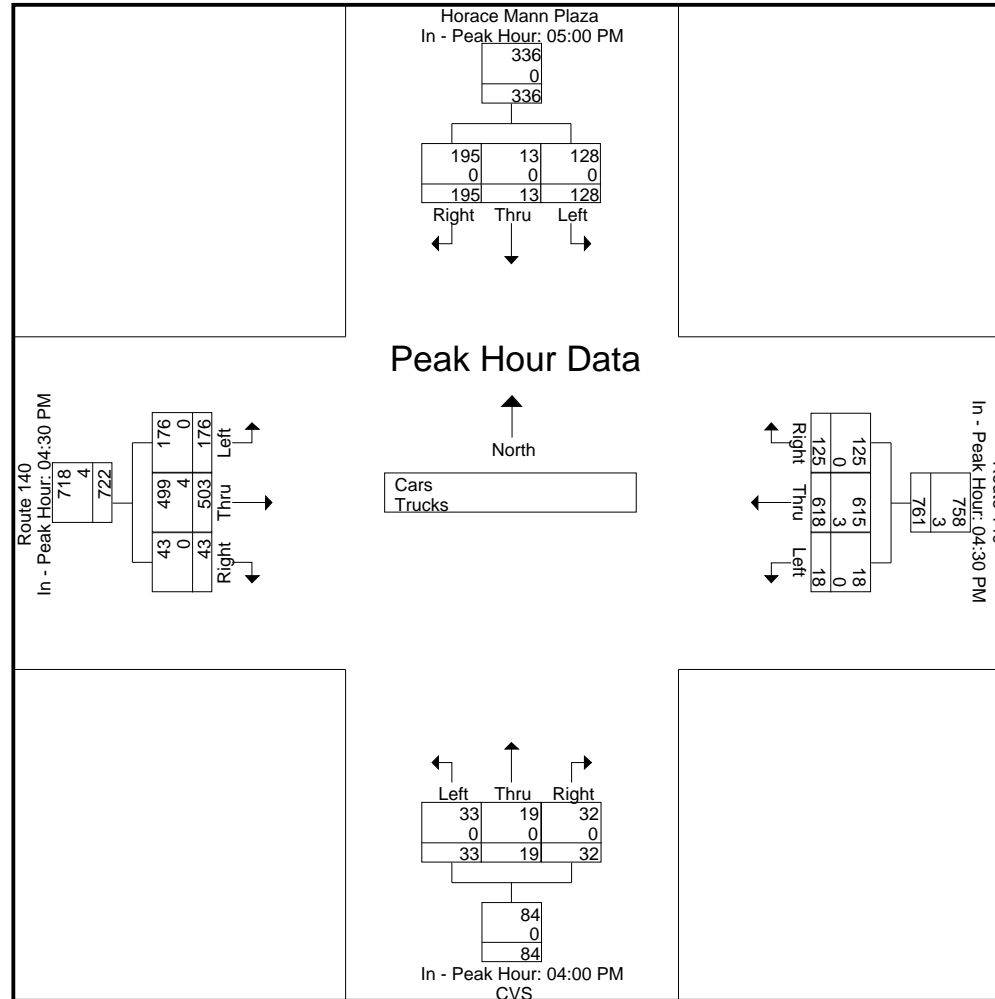
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:00 PM				04:30 PM			
+0 mins.	32	3	47	82	5	133	27	165	8	4	9	21	29	121	11	161
+15 mins.	31	4	45	80	6	155	28	189	9	4	8	21	53	128	11	192
+30 mins.	28	2	56	86	2	173	33	208	11	3	7	21	53	122	9	184
+45 mins.	37	4	47	88	5	157	37	199	5	8	8	21	41	132	12	185
Total Volume	128	13	195	336	18	618	125	761	33	19	32	84	176	503	43	722
% App. Total	38.1	3.9	58		2.4	81.2	16.4		39.3	22.6	38.1		24.4	69.7	6	
PHF	.865	.813	.871	.955	.750	.893	.845	.915	.750	.594	.889	1.000	.830	.953	.896	.940
Cars	128	13	195	336	18	615	125	758	33	19	32	84	176	499	43	718
% Cars	100	100	100	100	100	99.5	100	99.6	100	100	100	100	100	99.2	100	99.4
Trucks	0	0	0	0	0	3	0	3	0	0	0	0	0	4	0	4

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

Page No : 4

Groups Printed- Cars

	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	23	3	51	9	154	29	8	4	9	24	100	12	426
04:15 PM	24	4	48	3	150	29	9	4	8	30	109	10	428
04:30 PM	23	4	47	5	131	27	11	3	7	29	120	11	418
04:45 PM	30	4	49	6	155	28	5	8	8	53	128	11	485
Total	100	15	195	23	590	113	33	19	32	136	457	44	1757
05:00 PM	32	3	47	2	172	33	9	3	6	53	121	9	490
05:15 PM	31	4	45	5	157	37	7	3	10	41	130	12	482
05:30 PM	28	2	56	4	126	26	11	5	4	37	100	14	413
05:45 PM	37	4	47	3	97	24	4	6	11	37	114	11	395
Total	128	13	195	14	552	120	31	17	31	168	465	46	1780
Grand Total	228	28	390	37	1142	233	64	36	63	304	922	90	3537
Apprch %	35.3	4.3	60.4	2.6	80.9	16.5	39.3	22.1	38.7	23.1	70.1	6.8	
Total %	6.4	0.8	11	1	32.3	6.6	1.8	1	1.8	8.6	26.1	2.5	

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	23	4	47	74	5	131	27	163	11	3	7	21	29	120	11	160	418
04:45 PM	30	4	49	83	6	155	28	189	5	8	8	21	53	128	11	192	485
05:00 PM	32	3	47	82	2	172	33	207	9	3	6	18	53	121	9	183	490
05:15 PM	31	4	45	80	5	157	37	199	7	3	10	20	41	130	12	183	482
Total Volume	116	15	188	319	18	615	125	758	32	17	31	80	176	499	43	718	1875
% App. Total	36.4	4.7	58.9		2.4	81.1	16.5		40	21.2	38.8		24.5	69.5	6		
PHF	.906	.938	.959	.961	.750	.894	.845	.915	.727	.531	.775	.952	.830	.960	.896	.935	.957

Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

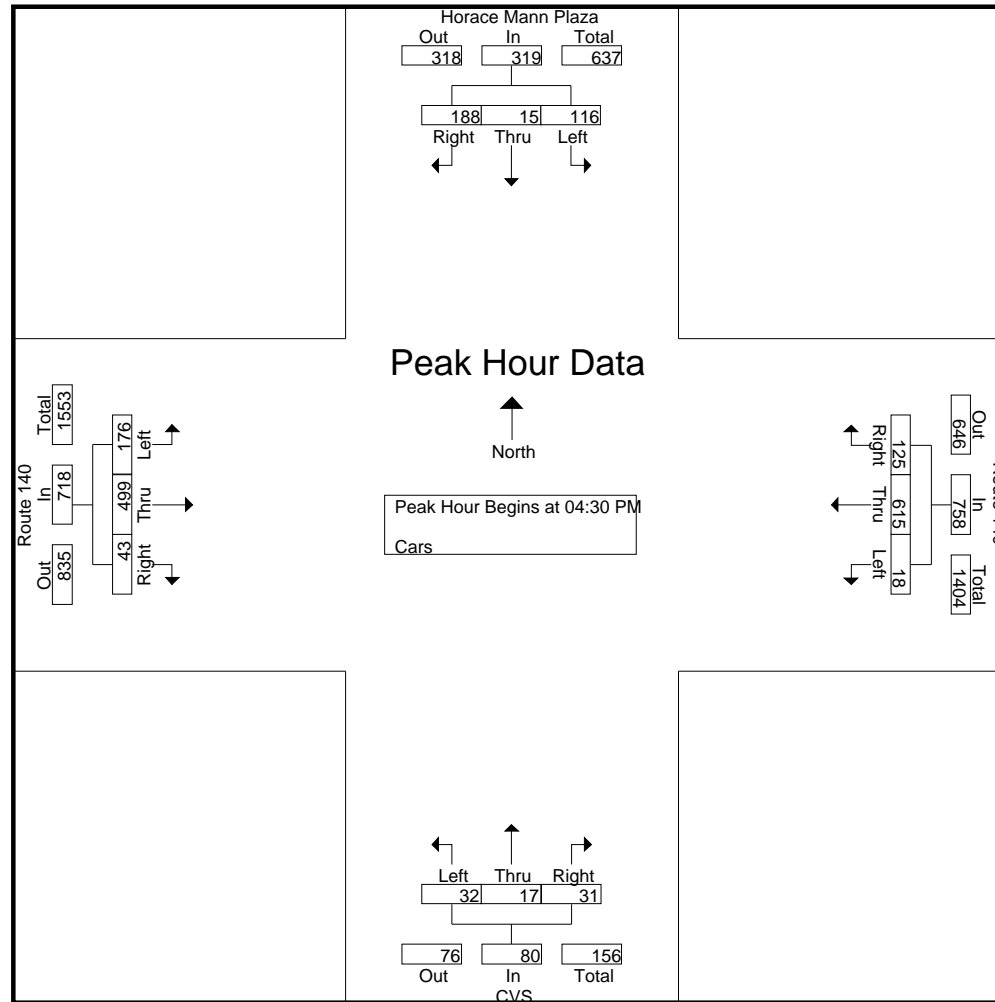
Page No : 5

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

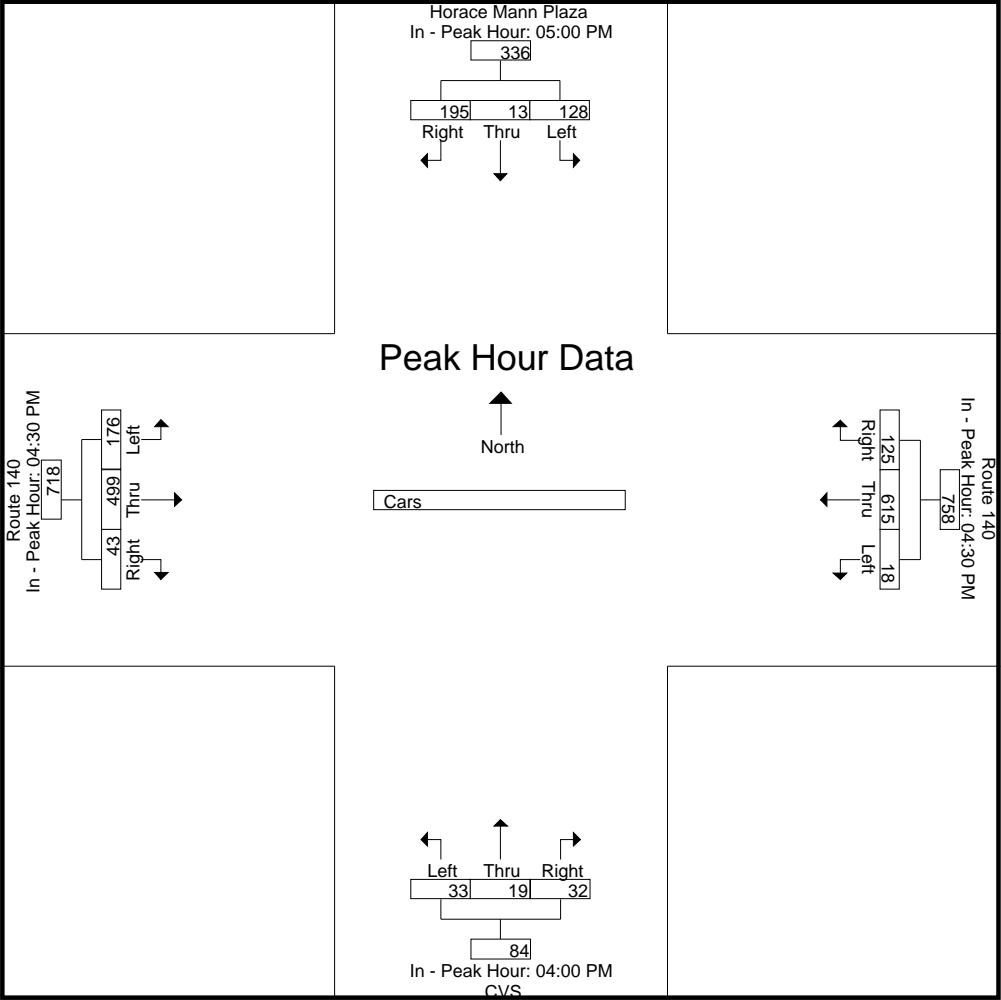
Peak Hour for Each Approach Begins at:

	05:00 PM				04:30 PM				04:00 PM				04:30 PM			
+0 mins.	32	3	47	82	5	131	27	163	8	4	9	21	29	120	11	160
+15 mins.	31	4	45	80	6	155	28	189	9	4	8	21	53	128	11	192
+30 mins.	28	2	56	86	2	172	33	207	11	3	7	21	53	121	9	183
+45 mins.	37	4	47	88	5	157	37	199	5	8	8	21	41	130	12	183
Total Volume	128	13	195	336	18	615	125	758	33	19	32	84	176	499	43	718
% App. Total	38.1	3.9	58		2.4	81.1	16.5		39.3	22.6	38.1		24.5	69.5	6	
PHF	.865	.813	.871	.955	.750	.894	.845	.915	.750	.594	.889	1.000	.830	.960	.896	.935

Accurate Counts
978-664-2565

File Name : 66410002
Site Code : 66410002
Start Date : 3/5/2020
Page No : 6

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410002
Site Code : 66410002
Start Date : 3/5/2020
Page No : 7

Groups Printed- Trucks

	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	1	0	0	0	2	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
04:30 PM	0	0	0	0	2	0	0	0	0	0	1	0	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	5	0	0	0	0	0	2	0	8
05:00 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	1	0	0	0	0	0	2	0	3
Total	0	0	0	0	2	0	0	0	0	0	5	0	7
Grand Total	1	0	0	0	7	0	0	0	0	0	7	0	15
Apprch %	100	0	0	0	100	0	0	0	0	0	100	0	
Total %	6.7	0	0	0	46.7	0	0	0	0	0	46.7	0	

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	1	0	0	1	0	2	0	2	0	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	1	0	0	1	0	5	0	5	0	0	0	0	0	2	0	2	8
% App. Total	100	0	0		0	100	0		0	0	0		0	100	0		
PHF	.250	.000	.000	.250	.000	.625	.000	.625	.000	.000	.000	.000	.000	.500	.000	.500	.667

Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

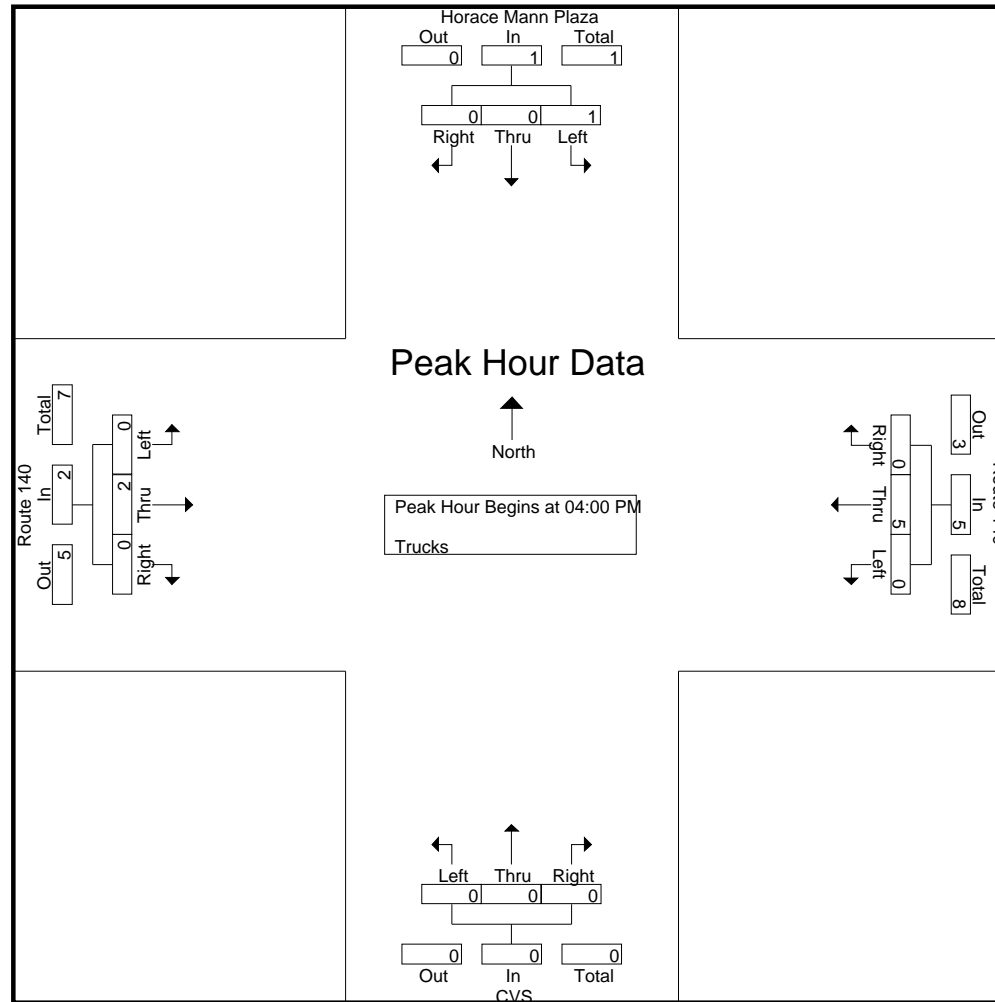
Page No : 8

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

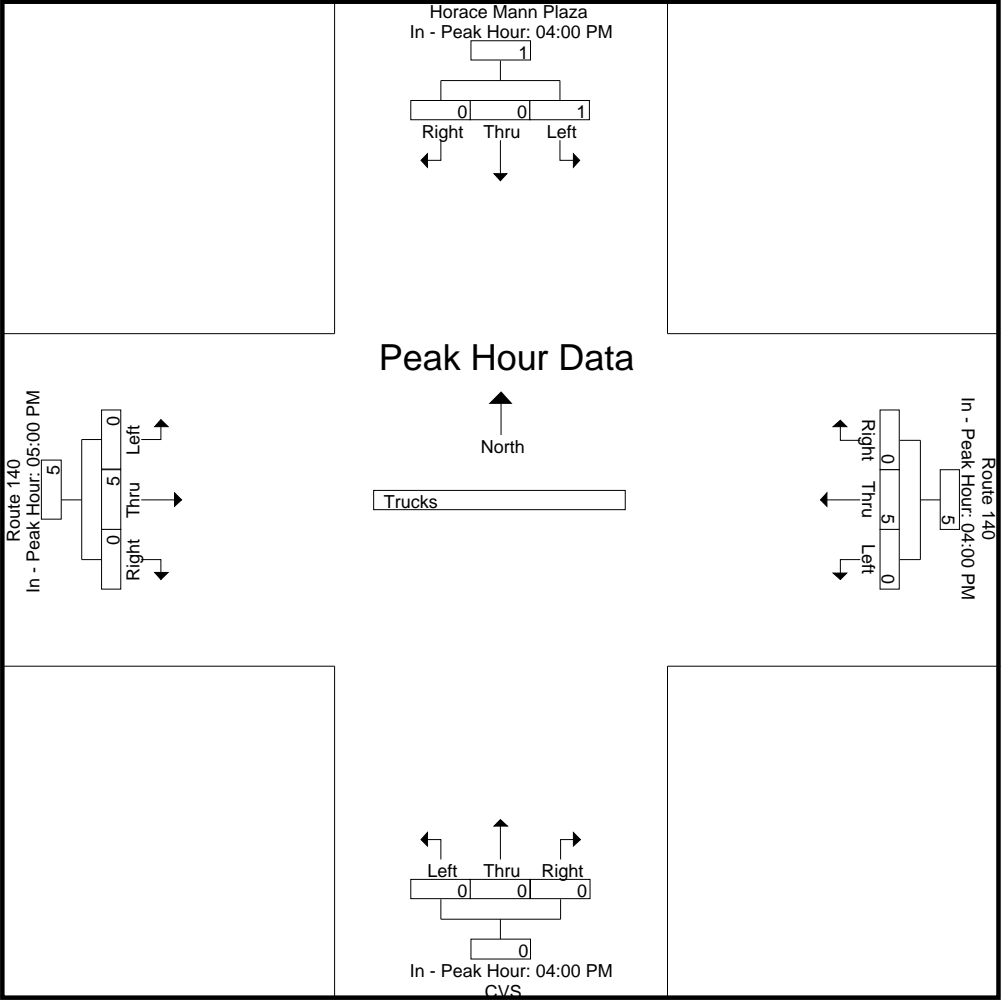
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				05:00 PM			
+0 mins.	1	0	0	1	0	2	0	2	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total Volume	1	0	0	1	0	5	0	5	0	0	0	0	0	5	0	5
% App. Total	100	0	0		0	100	0		0	0	0	0	0	100	0	
PHF	.250	.000	.000	.250	.000	.625	.000	.625	.000	.000	.000	.000	.000	.625	.000	.625

Accurate Counts
978-664-2565

File Name : 66410002
Site Code : 66410002
Start Date : 3/5/2020
Page No : 9

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

Page No : 10

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Bikes Peds

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	3	0	3
04:15 PM	0	0	0	5	0	0	0	2	0	0	0	0	0	0	0	0	7	0	7
04:30 PM	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	2	1	3
04:45 PM	0	0	0	6	0	1	0	0	0	0	0	0	0	0	0	1	7	1	8
Total	0	0	0	12	0	2	0	6	0	0	0	0	0	0	0	1	19	2	21
05:00 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	1	3	0	1	5	6
05:15 PM	0	0	0	0	0	1	0	1	0	4	0	1	0	0	0	0	2	5	7
05:30 PM	0	0	0	1	0	3	0	1	0	0	0	1	0	0	0	0	3	3	6
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	0	0	0	2	0	6	0	2	0	4	0	2	0	1	3	0	6	14	20
Grand Total	0	0	0	14	0	8	0	8	0	4	0	2	0	1	3	1	25	16	41
Apprch %	0	0	0		0	100	0		0	100	0		0	25	75				
Total %	0	0	0		0	50	0		0	25	0		0	6.2	18.8		61	39	

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West						
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:45 PM																			
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0		1
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	3	4			5
05:15 PM	0	0	0	0	0	1	0	1	0	4	0	4	0	0	0	0			5
05:30 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0			3
Total Volume	0	0	0	0	0	6	0	6	0	4	0	4	0	1	3	4			14
% App. Total	0	0	0		0	100	0		0	100	0		0	25	75				
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.250	.000	.250	.000	.250	.250	.250			.700

Accurate Counts

978-664-2565

File Name : 66410002

Site Code : 66410002

Start Date : 3/5/2020

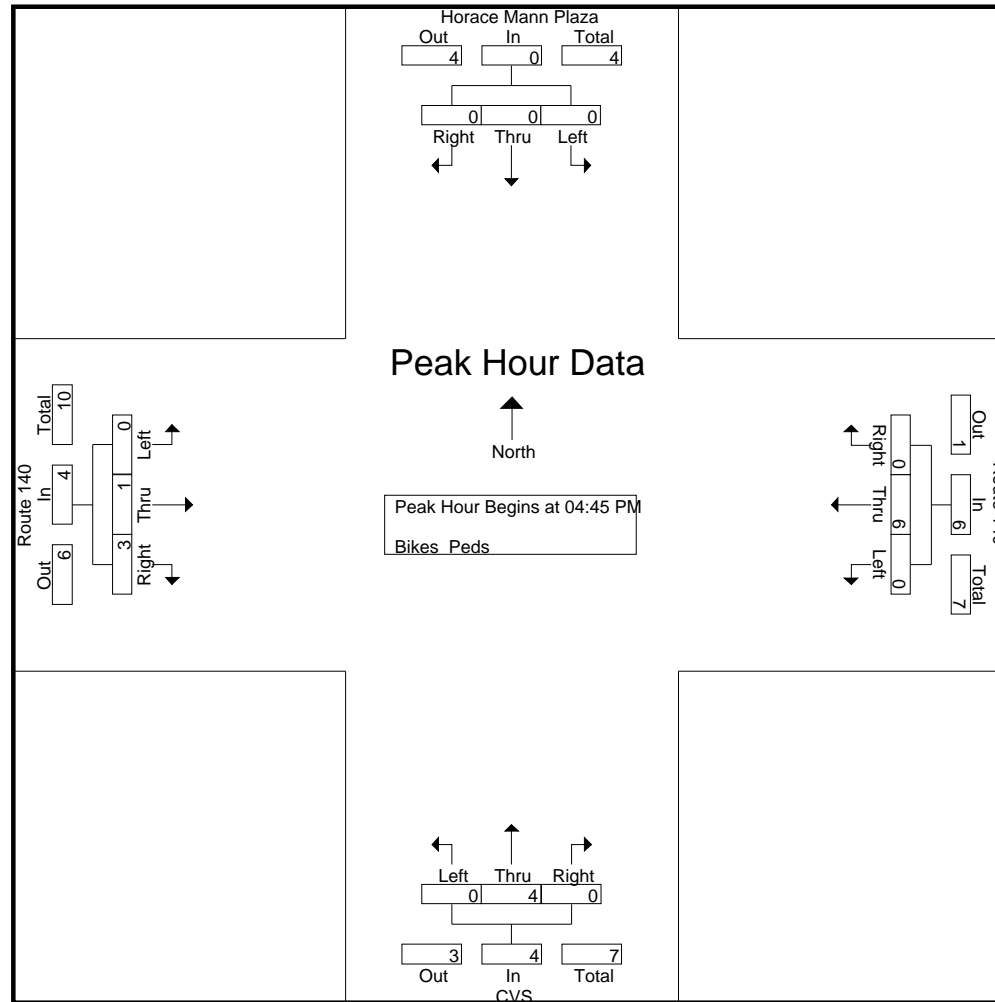
Page No : 11

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

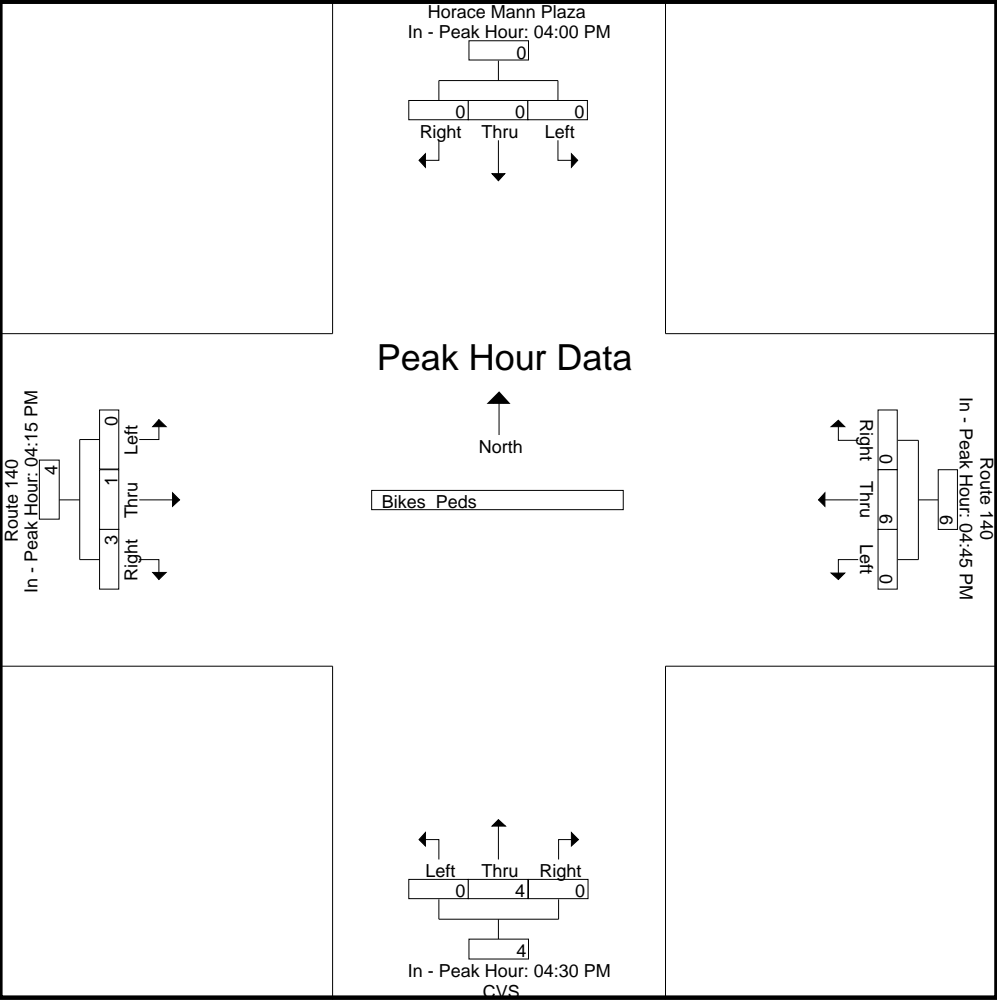
Peak Hour for Each Approach Begins at:

	04:00 PM				04:45 PM				04:30 PM				04:15 PM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	3	0	3	0	4	0	4	0	1	3	4
Total Volume	0	0	0	0	0	6	0	6	0	4	0	4	0	1	3	4
% App. Total	0	0	0	0	0	100	0	100	0	100	0	100	0	25	75	100
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.250	.000	.250	.000	.250	.250	.250

Accurate Counts
978-664-2565

File Name : 66410002
Site Code : 66410002
Start Date : 3/5/2020
Page No : 12

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 664100S2

Site Code : 66410002

Start Date : 3/14/2020

Page No : 1

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

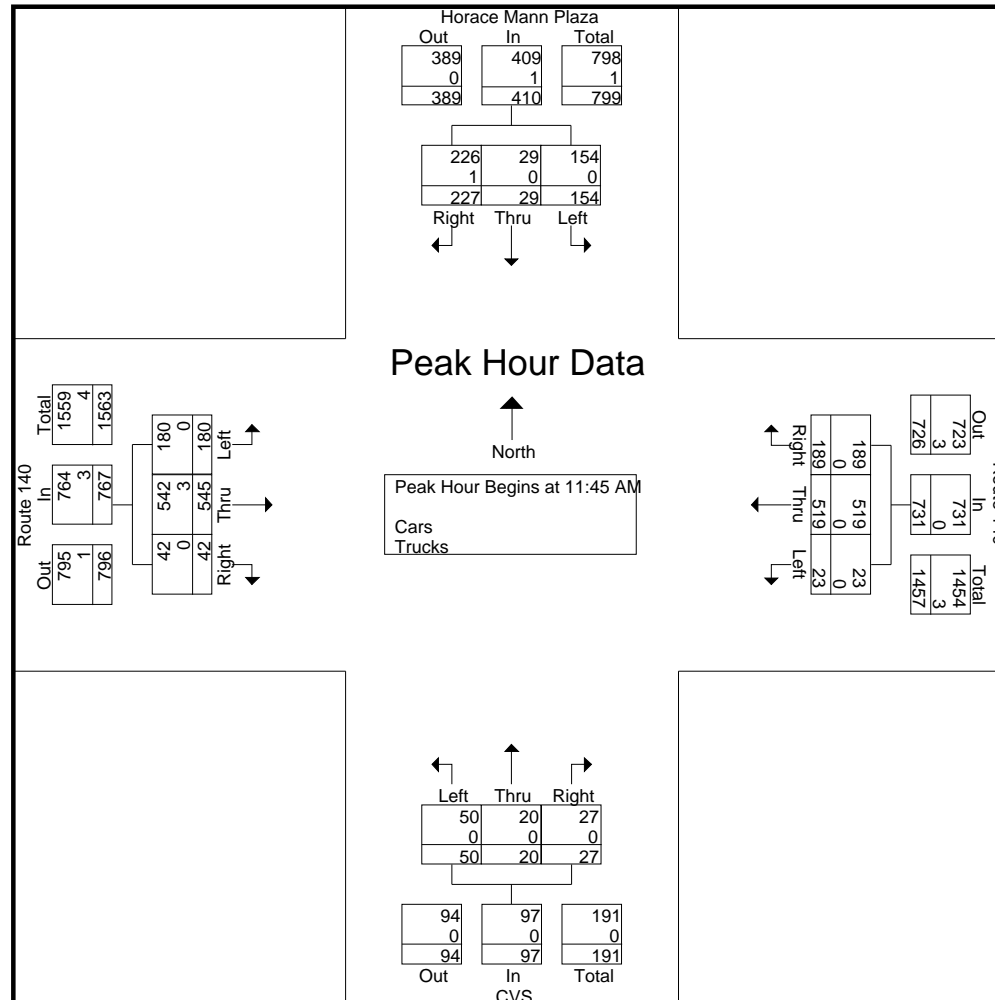
	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	24	3	55	6	107	45	8	4	5	56	129	18	460
11:15 AM	34	8	55	10	123	49	12	9	8	36	113	8	465
11:30 AM	32	6	43	6	137	46	12	8	11	44	112	19	476
11:45 AM	34	9	56	6	145	49	19	6	6	39	170	13	552
Total	124	26	209	28	512	189	51	27	30	175	524	58	1953
12:00 PM	39	8	47	4	110	50	11	6	7	53	136	5	476
12:15 PM	43	6	58	7	143	54	10	3	6	38	105	12	485
12:30 PM	38	6	66	6	121	36	10	5	8	50	134	12	492
12:45 PM	39	8	43	7	112	25	9	5	14	48	116	10	436
Total	159	28	214	24	486	165	40	19	35	189	491	39	1889
01:00 PM	38	6	63	4	116	40	13	5	4	37	116	11	453
01:15 PM	23	6	57	6	127	30	7	6	6	34	110	7	419
01:30 PM	33	2	41	2	119	30	8	5	6	33	100	17	396
01:45 PM	31	4	45	2	97	32	4	3	8	33	123	9	391
Total	125	18	206	14	459	132	32	19	24	137	449	44	1659
Grand Total	408	72	629	66	1457	486	123	65	89	501	1464	141	5501
Apprch %	36.8	6.5	56.7	3.3	72.5	24.2	44.4	23.5	32.1	23.8	69.5	6.7	
Total %	7.4	1.3	11.4	1.2	26.5	8.8	2.2	1.2	1.6	9.1	26.6	2.6	
Cars	408	72	628	66	1456	486	123	65	89	501	1461	141	5496
% Cars	100	100	99.8	100	99.9	100	100	100	100	100	99.8	100	99.9
Trucks	0	0	1	0	1	0	0	0	0	0	3	0	5
% Trucks	0	0	0.2	0	0.1	0	0	0	0	0	0.2	0	0.1

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	34	9	56	99	6	145	49	200	19	6	6	31	39	170	13	222	552
12:00 PM	39	8	47	94	4	110	50	164	11	6	7	24	53	136	5	194	476
12:15 PM	43	6	58	107	7	143	54	204	10	3	6	19	38	105	12	155	485
12:30 PM	38	6	66	110	6	121	36	163	10	5	8	23	50	134	12	196	492
Total Volume	154	29	227	410	23	519	189	731	50	20	27	97	180	545	42	767	2005
% App. Total	37.6	7.1	55.4		3.1	71	25.9		51.5	20.6	27.8		23.5	71.1	5.5		
PHF	.895	.806	.860	.932	.821	.895	.875	.896	.658	.833	.844	.782	.849	.801	.808	.864	.908
Cars	154	29	226	409	23	519	189	731	50	20	27	97	180	542	42	764	2001
% Cars	100	100	99.6	99.8	100	100	100	100	100	100	100	100	100	99.4	100	99.6	99.8
Trucks	0	0	1	1	0	0	0	0	0	0	0	0	0	3	0	3	4
% Trucks	0	0	0.4	0.2	0	0	0	0	0	0	0	0	0	0.6	0	0.4	0.2

978-664-2565

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 664100S2
Site Code : 66410002
Start Date : 3/14/2020
Page No : 2

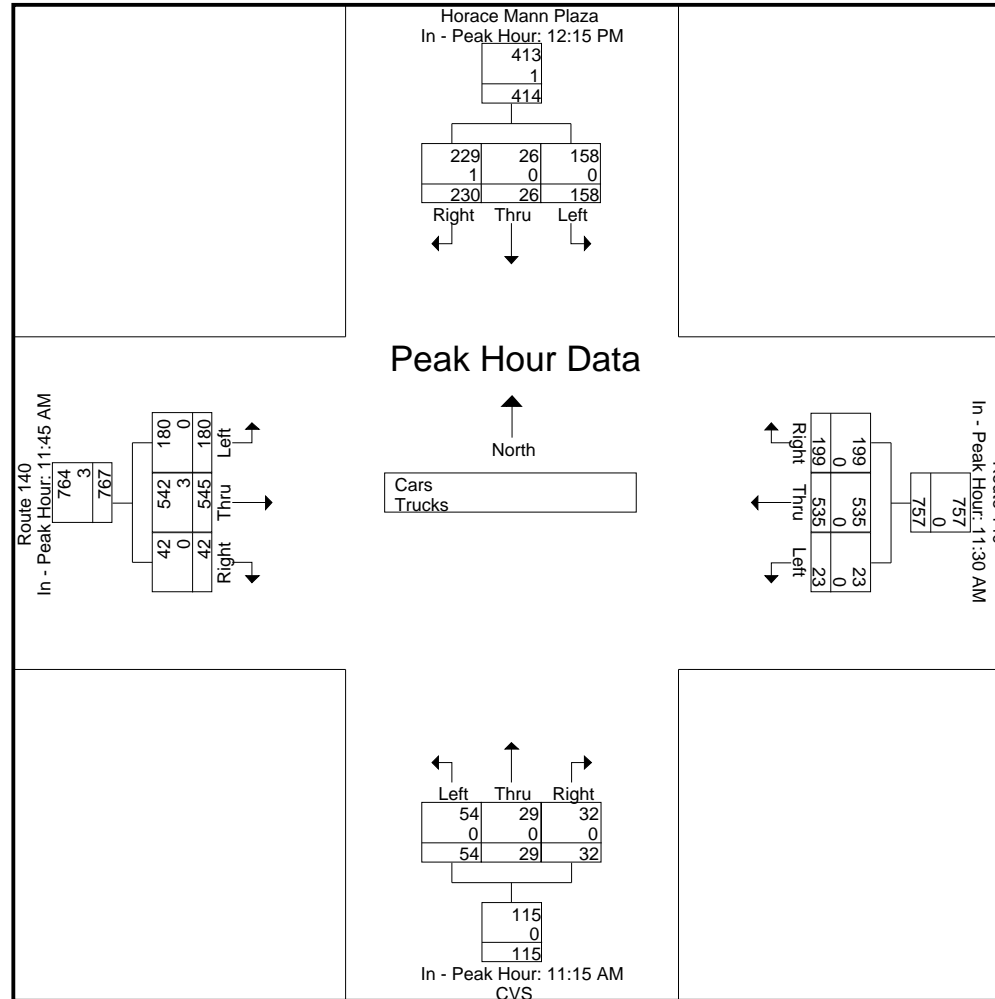


Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

[illegible]

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

File Name : 664100S2

Site Code : 66410002

Start Date : 3/14/2020

Page No : 4

Groups Printed- Cars

	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	24	3	55	6	107	45	8	4	5	56	129	18	460
11:15 AM	34	8	55	10	123	49	12	9	8	36	113	8	465
11:30 AM	32	6	43	6	137	46	12	8	11	44	112	19	476
11:45 AM	34	9	56	6	145	49	19	6	6	39	170	13	552
Total	124	26	209	28	512	189	51	27	30	175	524	58	1953
12:00 PM	39	8	47	4	110	50	11	6	7	53	136	5	476
12:15 PM	43	6	57	7	143	54	10	3	6	38	102	12	481
12:30 PM	38	6	66	6	121	36	10	5	8	50	134	12	492
12:45 PM	39	8	43	7	111	25	9	5	14	48	116	10	435
Total	159	28	213	24	485	165	40	19	35	189	488	39	1884
01:00 PM	38	6	63	4	116	40	13	5	4	37	116	11	453
01:15 PM	23	6	57	6	127	30	7	6	6	34	110	7	419
01:30 PM	33	2	41	2	119	30	8	5	6	33	100	17	396
01:45 PM	31	4	45	2	97	32	4	3	8	33	123	9	391
Total	125	18	206	14	459	132	32	19	24	137	449	44	1659
Grand Total	408	72	628	66	1456	486	123	65	89	501	1461	141	5496
Apprch %	36.8	6.5	56.7	3.3	72.5	24.2	44.4	23.5	32.1	23.8	69.5	6.7	
Total %	7.4	1.3	11.4	1.2	26.5	8.8	2.2	1.2	1.6	9.1	26.6	2.6	

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:45 AM																	
11:45 AM	34	9	56	99	6	145	49	200	19	6	6	31	39	170	13	222	552
12:00 PM	39	8	47	94	4	110	50	164	11	6	7	24	53	136	5	194	476
12:15 PM	43	6	57	106	7	143	54	204	10	3	6	19	38	102	12	152	481
12:30 PM	38	6	66	110	6	121	36	163	10	5	8	23	50	134	12	196	492
Total Volume	154	29	226	409	23	519	189	731	50	20	27	97	180	542	42	764	2001
% App. Total	37.7	7.1	55.3		3.1	71	25.9		51.5	20.6	27.8		23.6	70.9	5.5		
PHF	.895	.806	.856	.930	.821	.895	.875	.896	.658	.833	.844	.782	.849	.797	.808	.860	.906

Accurate Counts

978-664-2565

File Name : 664100S2

Site Code : 66410002

Start Date : 3/14/2020

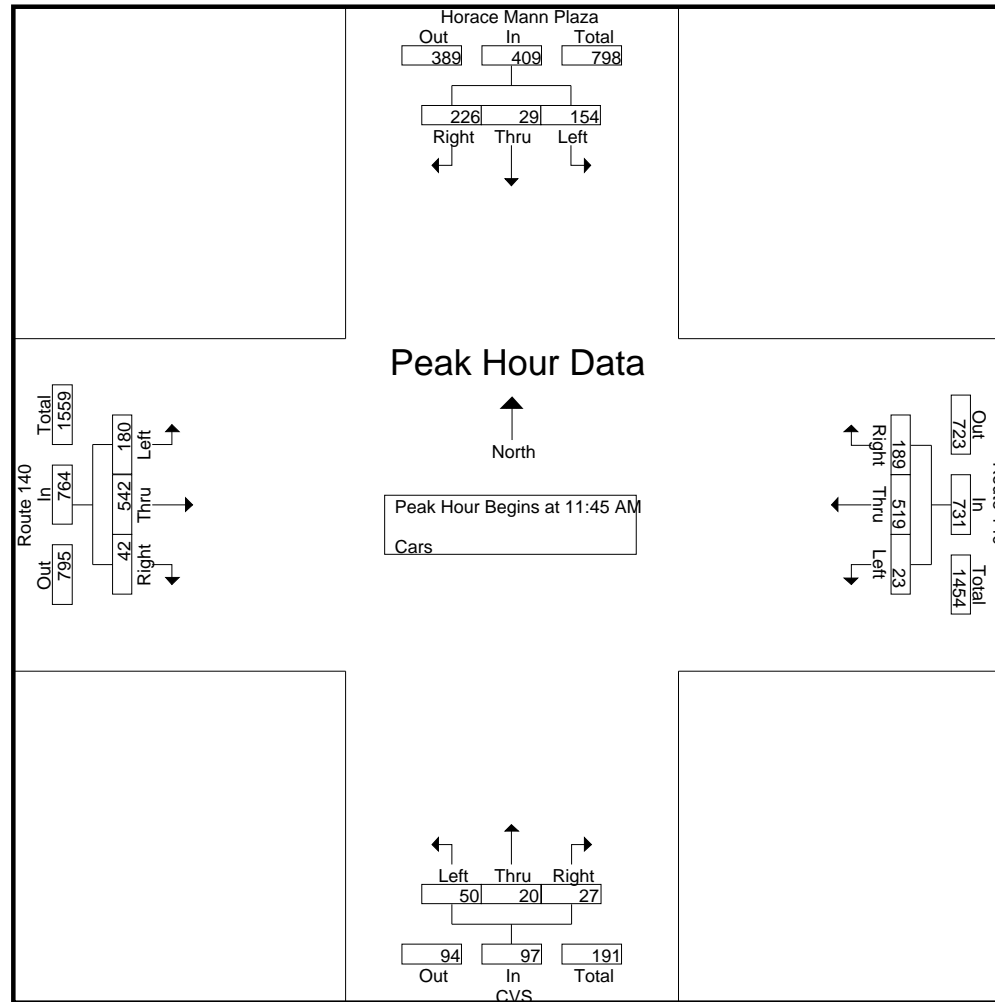
Page No : 5

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

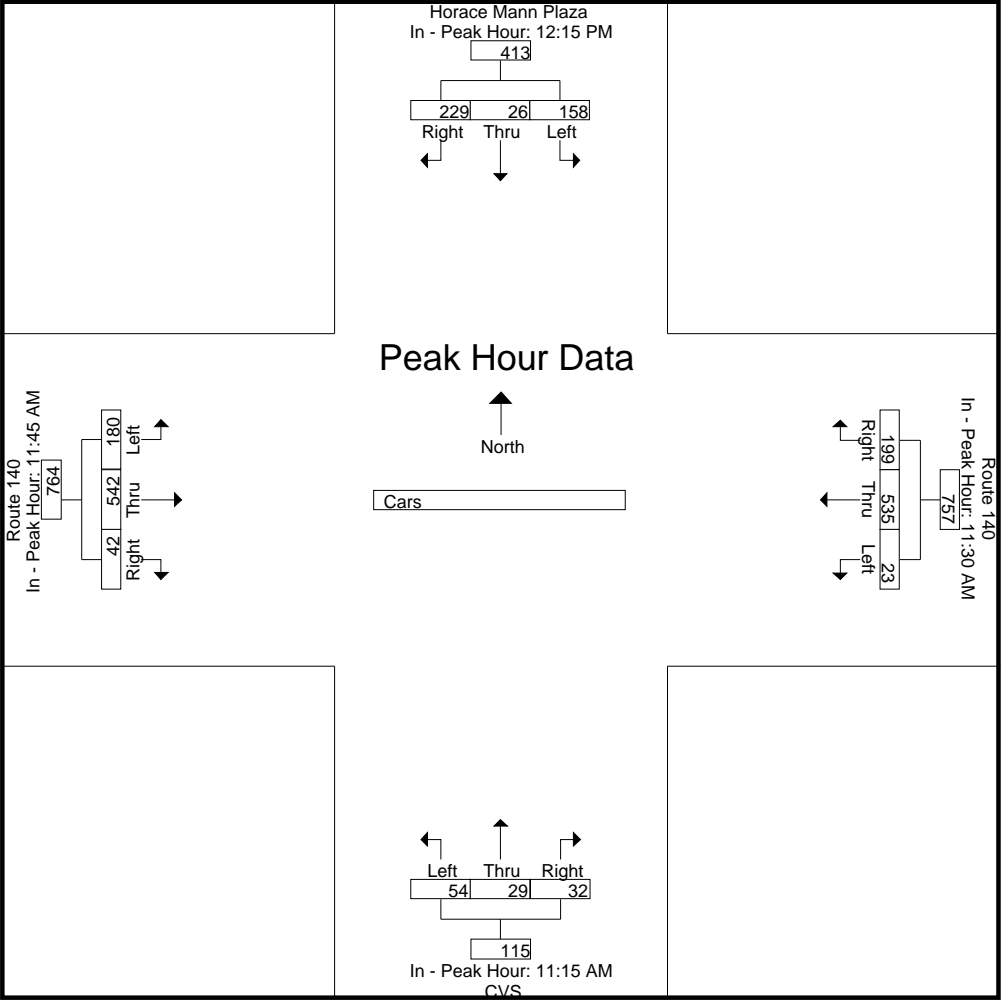
	12:15 PM				11:30 AM				11:15 AM				11:45 AM			
+0 mins.	43	6	57	106	6	137	46	189	12	9	8	29	39	170	13	222
+15 mins.	38	6	66	110	6	145	49	200	12	8	11	31	53	136	5	194
+30 mins.	39	8	43	90	4	110	50	164	19	6	6	31	38	102	12	152
+45 mins.	38	6	63	107	7	143	54	204	11	6	7	24	50	134	12	196
Total Volume	158	26	229	413	23	535	199	757	54	29	32	115	180	542	42	764
% App. Total	38.3	6.3	55.4		3	70.7	26.3		47	25.2	27.8		23.6	70.9	5.5	
PHF	.919	.813	.867	.939	.821	.922	.921	.928	.711	.806	.727	.927	.849	.797	.808	.860

Accurate Counts

978-664-2565

File Name : 664100S2
Site Code : 66410002
Start Date : 3/14/2020
Page No : 6

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

File Name : 664100S2

Site Code : 66410002

Start Date : 3/14/2020

Page No : 7

Groups Printed- Trucks

	Horace Mann Plaza From North			Route 140 From East			CVS From South			Route 140 From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	0	0	0	0	0	0	0	3	0	4
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	1	0	1	0	0	0	0	0	3	0	5
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	1	0	1	0	0	0	0	0	3	0	5
Apprch %	0	0	100	0	100	0	0	0	0	0	100	0	
Total %	0	0	20	0	20	0	0	0	0	0	60	0	

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				Int. Total
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	3	0	3	4
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	1	1	0	1	0	1	0	0	0	0	0	3	0	3	5
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.250	.250	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.313

Accurate Counts

978-664-2565

File Name : 664100S2

Site Code : 66410002

Start Date : 3/14/2020

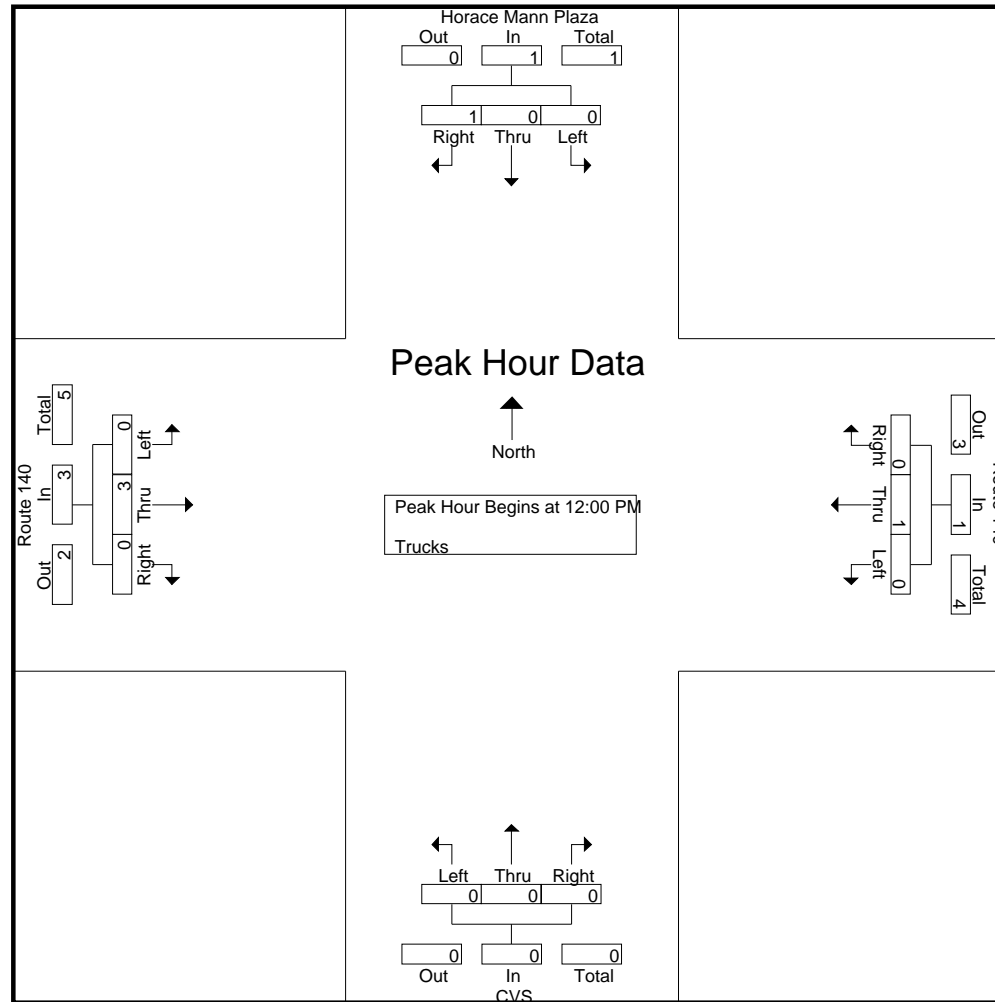
Page No : 8

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

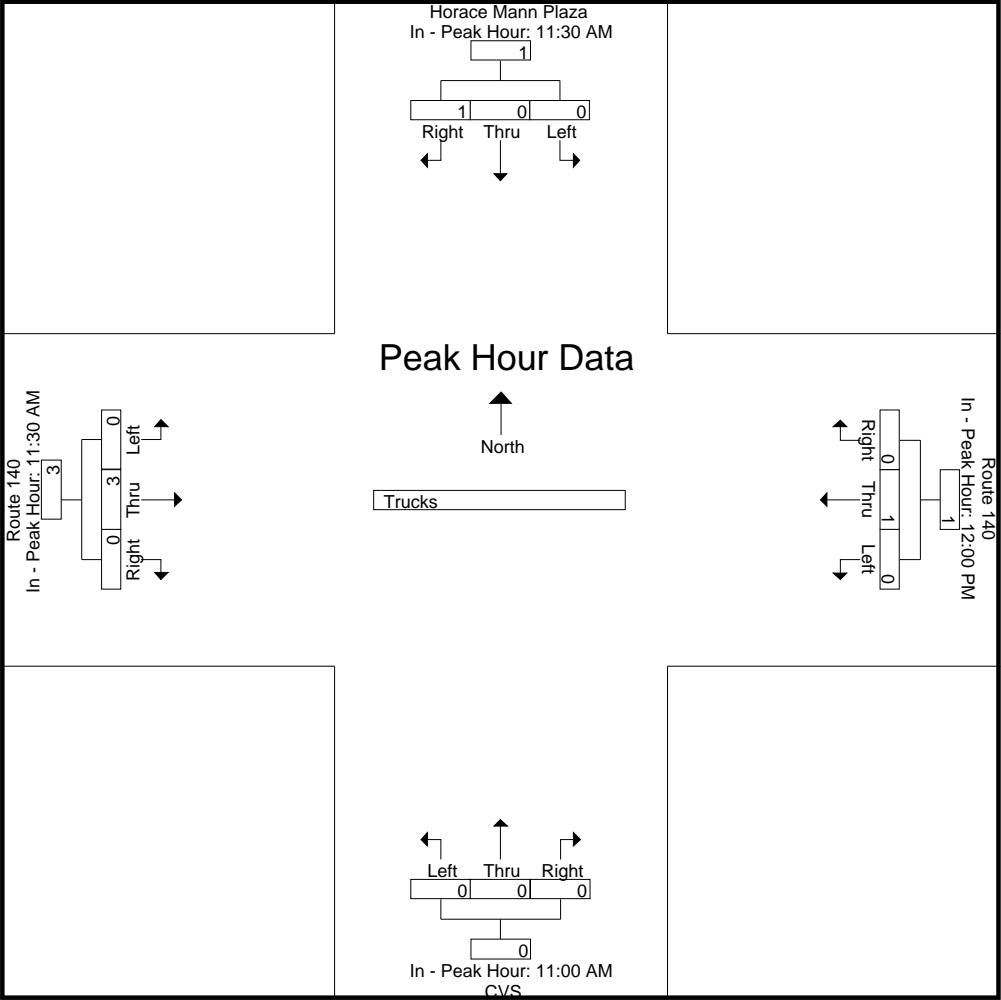
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

File Name : 664100S2
Site Code : 66410002
Start Date : 3/14/2020
Page No : 9

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 664100S2

Site Code : 66410002

Start Date : 3/14/2020

Page No : 10

N/S Street : Horace Mann Plaza / CVS

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Bikes Peds

	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	3	0	3
11:15 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	2	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	1	0	0	0	0	0	0	0	4	0	1	0	0	5	1	6
Total	0	0	0	4	0	0	0	1	0	0	0	4	0	1	0	1	10	1	11
12:00 PM	0	0	0	1	0	0	0	2	0	0	0	3	0	0	0	0	6	0	6
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	1	0	1	0	2	0	0	0	2	0	0	0	0	5	1	6
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
Total	0	0	0	2	0	1	0	4	0	0	0	6	0	0	0	0	12	1	13
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	3	0	0	0	1	0	0	0	0	2	0	0	0	4	2	6
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
01:45 PM	0	0	0	0	0	1	0	2	0	0	0	2	0	0	0	0	4	1	5
Total	0	0	0	3	0	1	0	3	0	0	0	2	2	1	0	0	8	4	12
Grand Total	0	0	0	9	0	2	0	8	0	0	0	12	2	2	0	1	30	6	36
Apprch %	0	0	0		0	100	0		0	0	0		50	50	0				
Total %	0	0	0		0	33.3	0		0	0	0		33.3	33.3	0		83.3	16.7	

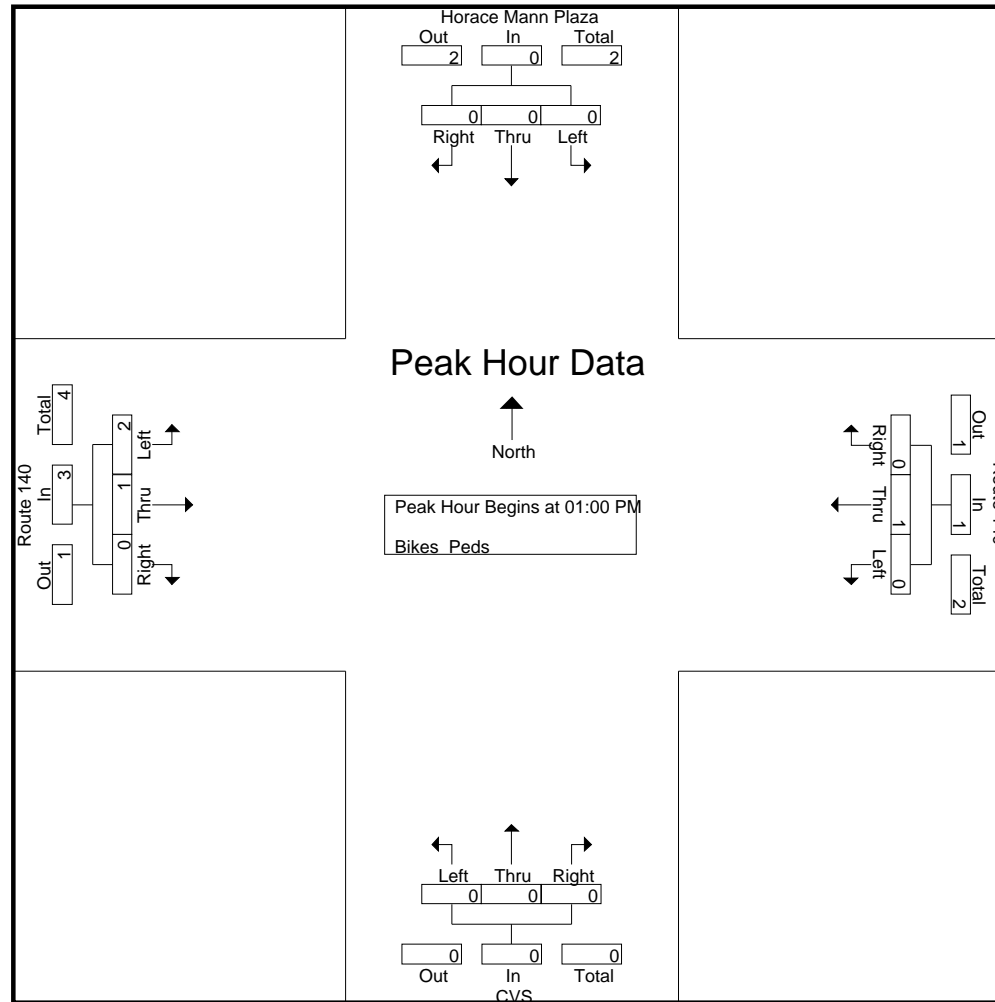
	Horace Mann Plaza From North				Route 140 From East				CVS From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 01:00 PM																	
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
01:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	2	1	0	3	4
% App. Total	0	0	0		0	100	0		0	0	0		66.7	33.3	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250	.250	.000	.375	.500

Accurate Counts

978-664-2565

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 664100S2
Site Code : 66410002
Start Date : 3/14/2020
Page No : 11



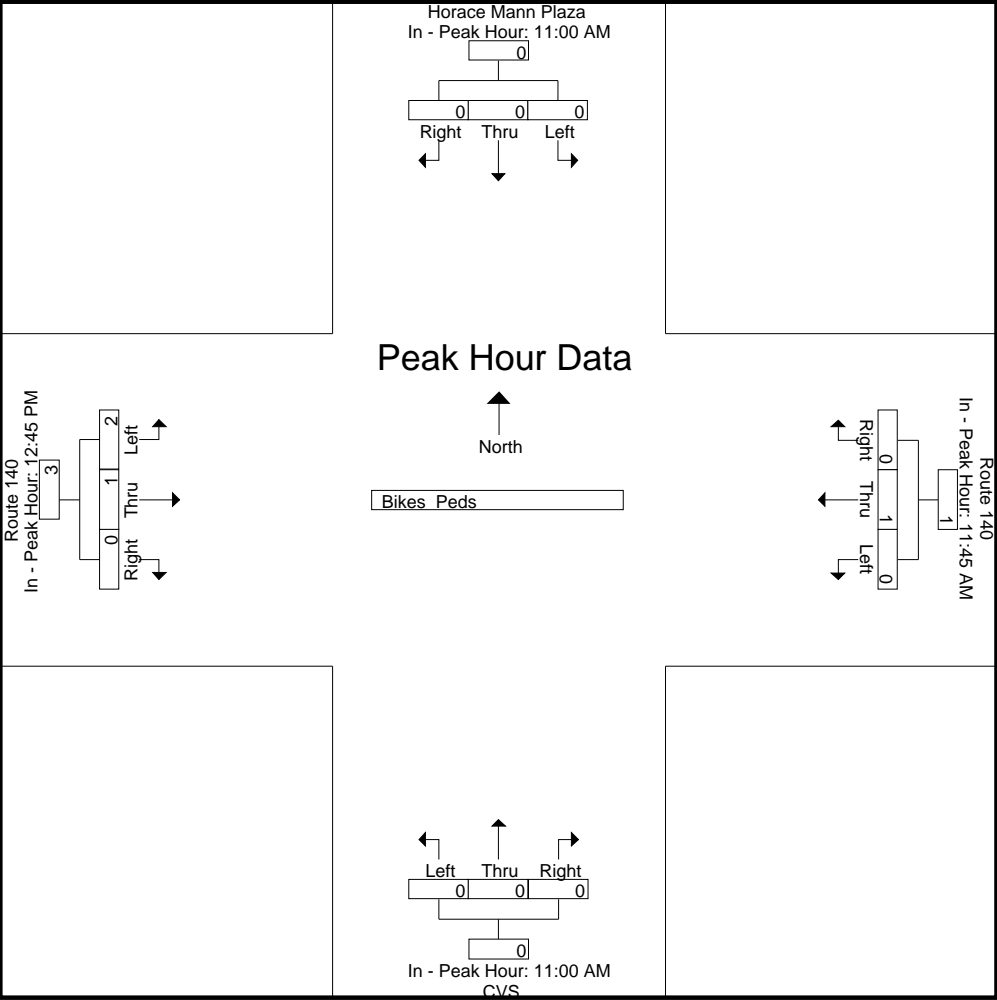
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	11:00 AM				11:45 AM				12:00 AM				12:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	2	1	0	3
% App. Total	0	0	0	0	0	100	0	100	0	0	0	0	66.7	33.3	0	66.7
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.250	.250	.000	.375

Accurate Counts
978-664-2565

File Name : 664100S2
Site Code : 66410002
Start Date : 3/14/2020
Page No : 12

N/S Street : Horace Mann Plaza / CVS
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410003

Site Code : 66410003

Start Date : 3/5/2020

Page No : 1

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	2	6	107	0	4	106	225
07:15 AM	2	5	91	0	2	132	232
07:30 AM	4	3	108	1	6	131	253
07:45 AM	2	7	103	1	1	136	250
Total	10	21	409	2	13	505	960
08:00 AM	0	1	106	1	3	125	236
08:15 AM	2	12	114	0	4	133	265
08:30 AM	1	7	98	1	3	133	243
08:45 AM	2	5	121	1	1	144	274
Total	5	25	439	3	11	535	1018
Grand Total	15	46	848	5	24	1040	1978
Apprch %	24.6	75.4	99.4	0.6	2.3	97.7	
Total %	0.8	2.3	42.9	0.3	1.2	52.6	
Cars	15	46	835	4	23	1025	1948
% Cars	100	100	98.5	80	95.8	98.6	98.5
Trucks	0	0	13	1	1	15	30
% Trucks	0	0	1.5	20	4.2	1.4	1.5

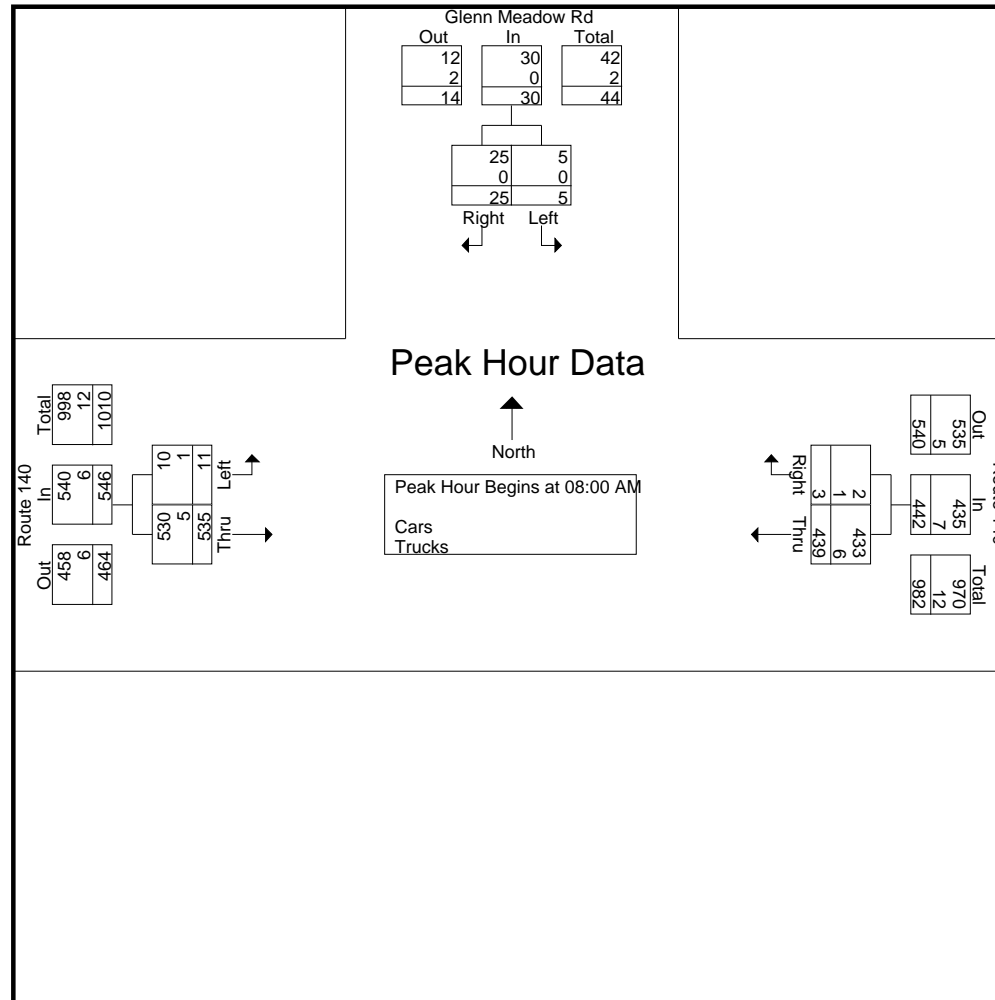
	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	1	1	106	1	107	3	125	128	236
08:15 AM	2	12	14	114	0	114	4	133	137	265
08:30 AM	1	7	8	98	1	99	3	133	136	243
08:45 AM	2	5	7	121	1	122	1	144	145	274
Total Volume	5	25	30	439	3	442	11	535	546	1018
% App. Total	16.7	83.3		99.3	0.7		2	98		
PHF	.625	.521	.536	.907	.750	.906	.688	.929	.941	.929
Cars	5	25	30	433	2	435	10	530	540	1005
% Cars	100	100	100	98.6	66.7	98.4	90.9	99.1	98.9	98.7
Trucks	0	0	0	6	1	7	1	5	6	13
% Trucks	0	0	0	1.4	33.3	1.6	9.1	0.9	1.1	1.3

Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

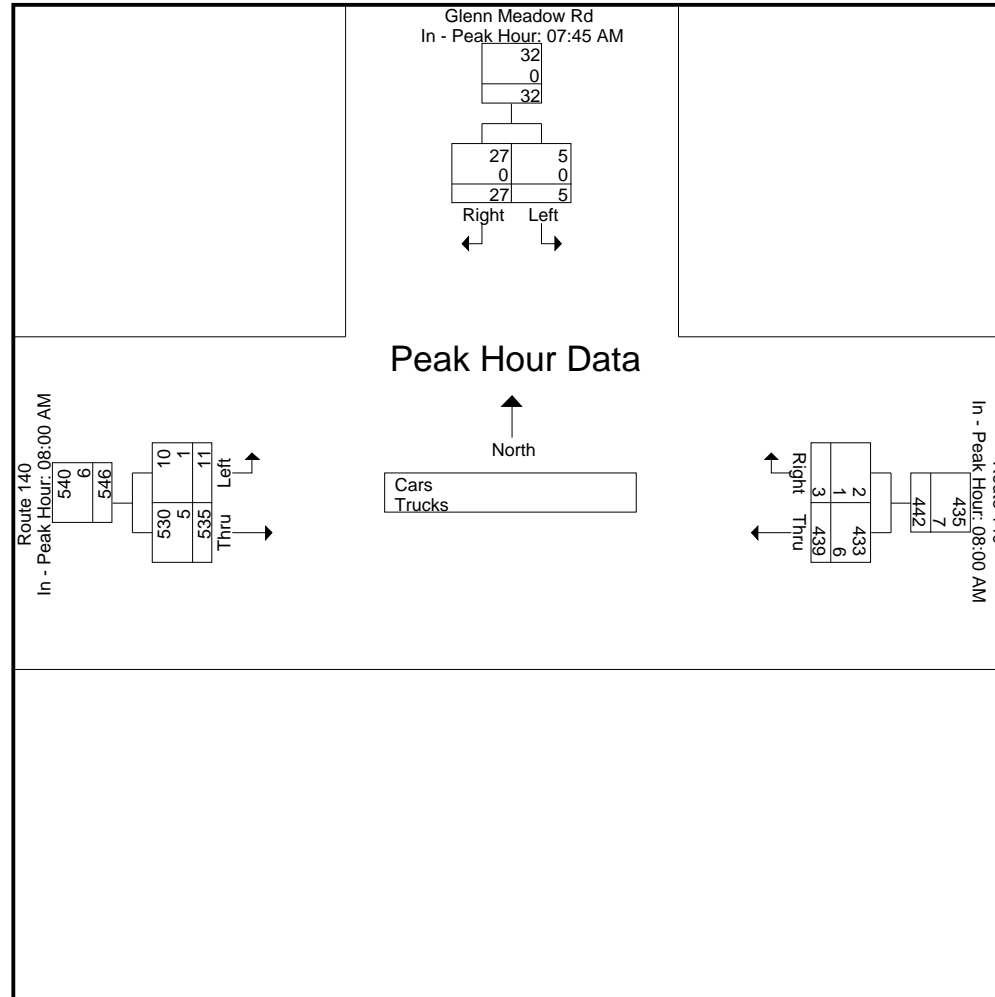
File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM			08:00 AM			08:00 AM		
+0 mins.	2	7	9	106	1	107	3	125	128
+15 mins.	0	1	1	114	0	114	4	133	137
+30 mins.	2	12	14	98	1	99	3	133	136
+45 mins.	1	7	8	121	1	122	1	144	145
Total Volume	5	27	32	439	3	442	11	535	546
% App. Total	15.6	84.4		99.3	0.7		2	98	
PHF	.625	.563	.571	.907	.750	.906	.688	.929	.941
Cars	5	27	32	433	2	435	10	530	540
% Cars	100	100	100	98.6	66.7	98.4	90.9	99.1	98.9
Trucks	0	0	0	6	1	7	1	5	6

Accurate Counts
978-664-2565



Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 4

Groups Printed- Cars

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		Int. Total
Start Time	Left	Right	Thru	Right	Left	Thru	
07:00 AM	2	6	106	0	4	105	223
07:15 AM	2	5	91	0	2	126	226
07:30 AM	4	3	104	1	6	130	248
07:45 AM	2	7	101	1	1	134	246
Total	10	21	402	2	13	495	943
08:00 AM	0	1	103	1	2	124	231
08:15 AM	2	12	113	0	4	131	262
08:30 AM	1	7	97	0	3	131	239
08:45 AM	2	5	120	1	1	144	273
Total	5	25	433	2	10	530	1005
Grand Total	15	46	835	4	23	1025	1948
Apprch %	24.6	75.4	99.5	0.5	2.2	97.8	
Total %	0.8	2.4	42.9	0.2	1.2	52.6	

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			Int. Total
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 08:00 AM										
08:00 AM	0	1	1	103	1	104	2	124	126	231
08:15 AM	2	12	14	113	0	113	4	131	135	262
08:30 AM	1	7	8	97	0	97	3	131	134	239
08:45 AM	2	5	7	120	1	121	1	144	145	273
Total Volume	5	25	30	433	2	435	10	530	540	1005
% App. Total	16.7	83.3		99.5	0.5		1.9	98.1		
PHF	.625	.521	.536	.902	.500	.899	.625	.920	.931	.920

Accurate Counts

978-664-2565

File Name : 66410003

Site Code : 66410003

Start Date : 3/5/2020

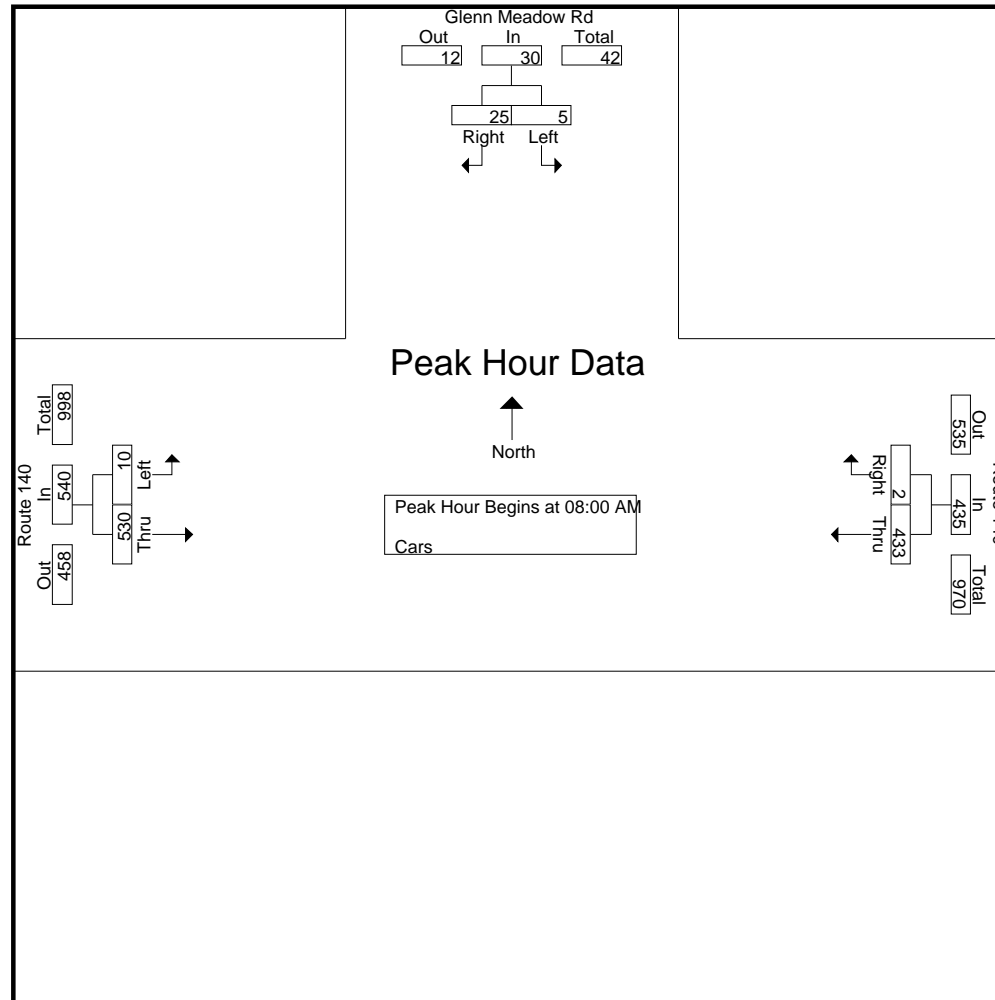
Page No : 5

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

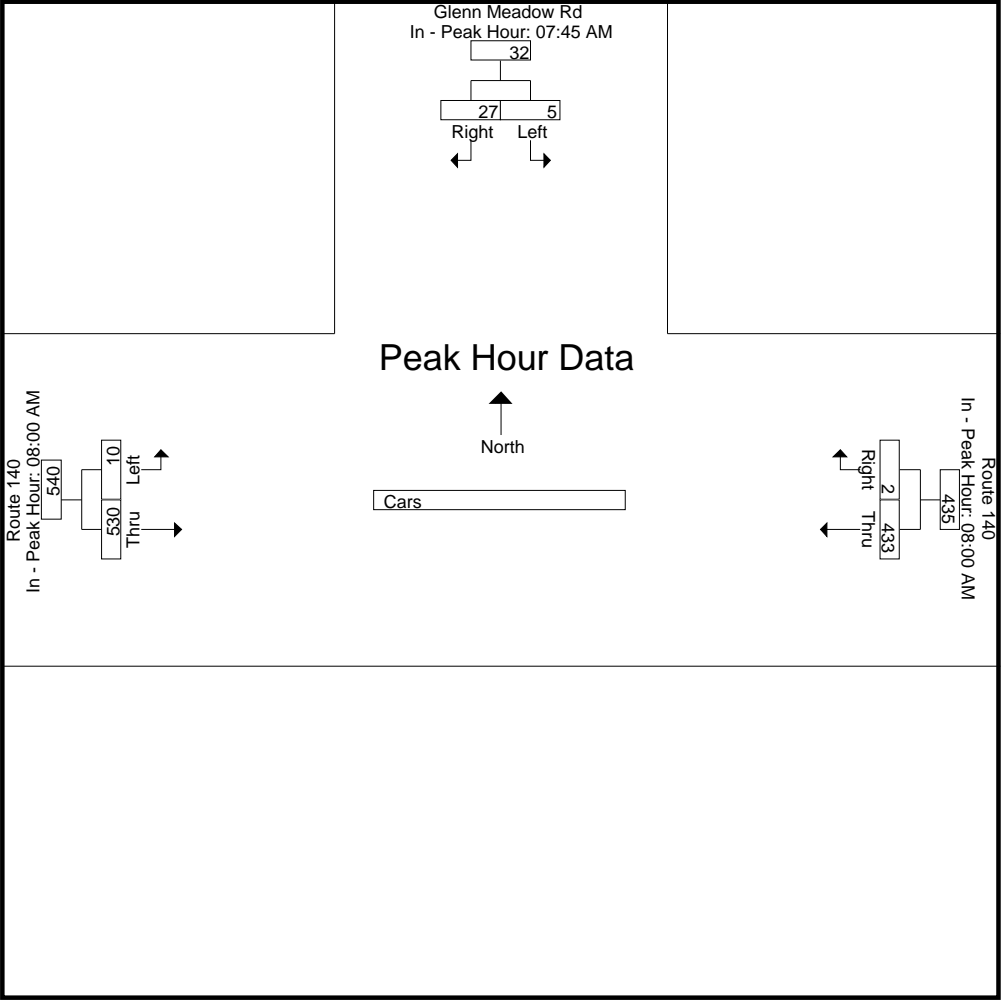
Peak Hour for Each Approach Begins at:

	07:45 AM			08:00 AM			08:00 AM		
+0 mins.	2	7	9	103	1	104	2	124	126
+15 mins.	0	1	1	113	0	113	4	131	135
+30 mins.	2	12	14	97	0	97	3	131	134
+45 mins.	1	7	8	120	1	121	1	144	145
Total Volume	5	27	32	433	2	435	10	530	540
% App. Total	15.6	84.4		99.5	0.5		1.9	98.1	
PHF	.625	.563	.571	.902	.500	.899	.625	.920	.931

Accurate Counts
978-664-2565

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 6

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 7

Groups Printed- Trucks

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	0	1	0	0	1	2
07:15 AM	0	0	0	0	0	6	6
07:30 AM	0	0	4	0	0	1	5
07:45 AM	0	0	2	0	0	2	4
Total	0	0	7	0	0	10	17
08:00 AM	0	0	3	0	1	1	5
08:15 AM	0	0	1	0	0	2	3
08:30 AM	0	0	1	1	0	2	4
08:45 AM	0	0	1	0	0	0	1
Total	0	0	6	1	1	5	13
Grand Total	0	0	13	1	1	15	30
Apprch %	0	0	92.9	7.1	6.2	93.8	
Total %	0	0	43.3	3.3	3.3	50	

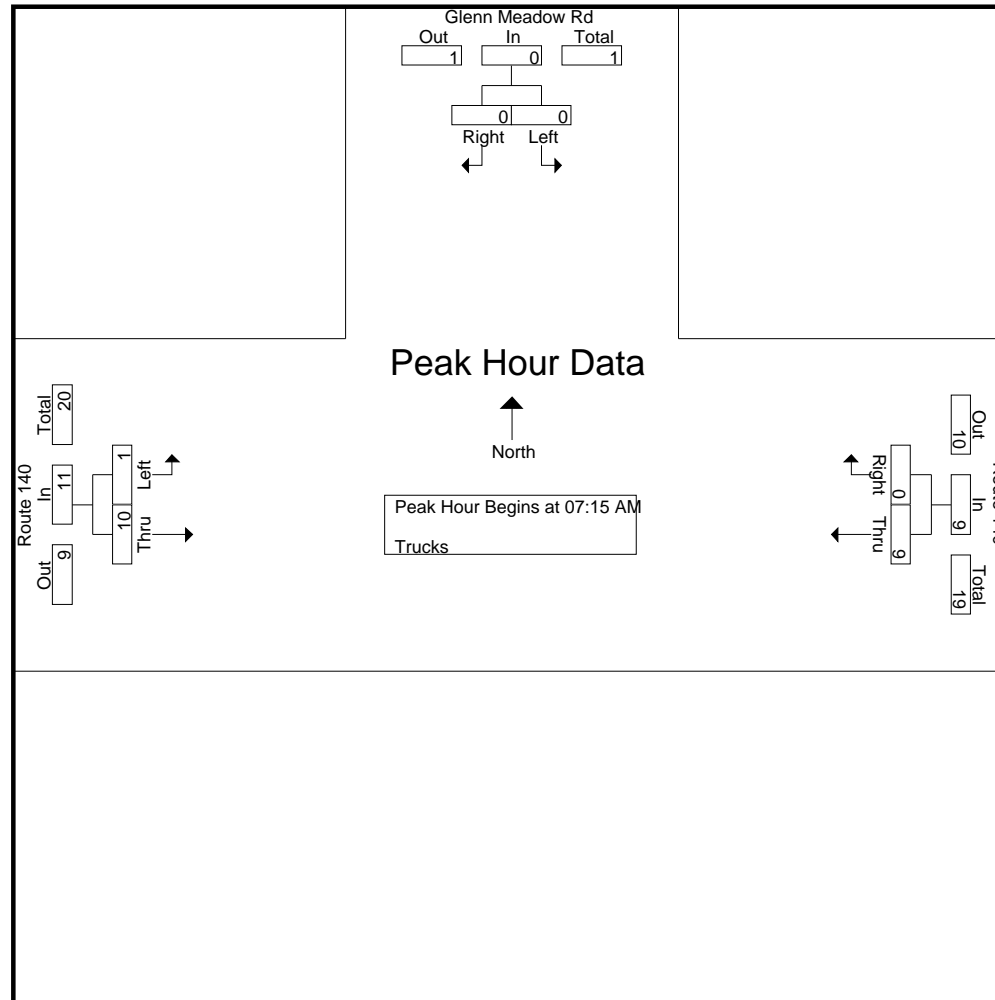
	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	6	6	6
07:30 AM	0	0	0	4	0	4	0	1	1	5
07:45 AM	0	0	0	2	0	2	0	2	2	4
08:00 AM	0	0	0	3	0	3	1	1	2	5
Total Volume	0	0	0	9	0	9	1	10	11	20
% App. Total	0	0		100	0		9.1	90.9		
PHF	.000	.000	.000	.563	.000	.563	.250	.417	.458	.833

Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 8



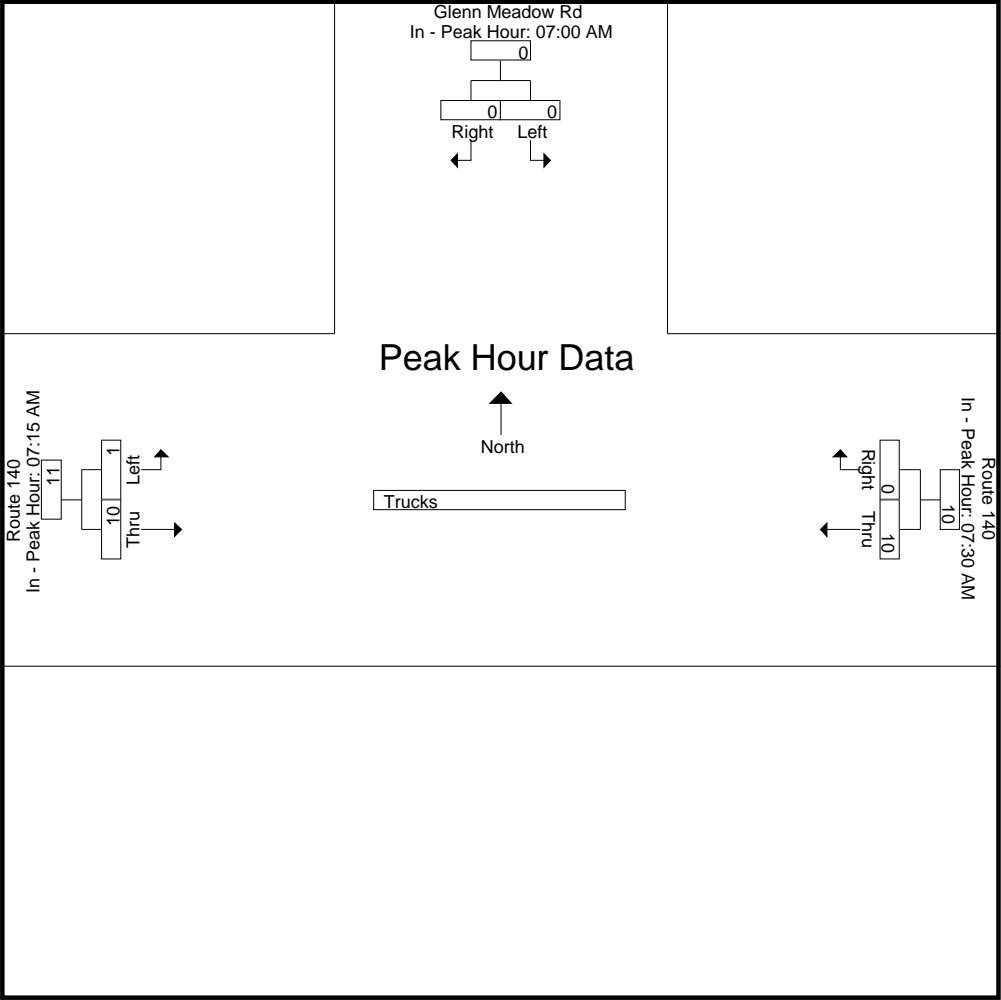
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:30 AM			07:15 AM		
+0 mins.	0	0	0	4	0	4	0	6	6
+15 mins.	0	0	0	2	0	2	0	1	1
+30 mins.	0	0	0	3	0	3	0	2	2
+45 mins.	0	0	0	1	0	1	1	1	2
Total Volume	0	0	0	10	0	10	1	10	11
% App. Total	0	0		100	0		9.1	90.9	
PHF	.000	.000	.000	.625	.000	.625	.250	.417	.458

Accurate Counts
978-664-2565

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 9

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 10

Groups Printed- Bikes Peds

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	1	1	0	0	0	0	0	1	1	2
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	0	0	0	1	1	2
08:00 AM	0	0	1	0	0	0	0	0	0	1	0	1
08:15 AM	0	0	1	0	0	0	0	0	0	1	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	2	0	0	0	0	0	0	2	0	2
Grand Total	0	0	3	1	0	0	0	0	0	3	1	4
Apprch %	0	0		100	0		0	0				
Total %	0	0		100	0		0	0		75	25	

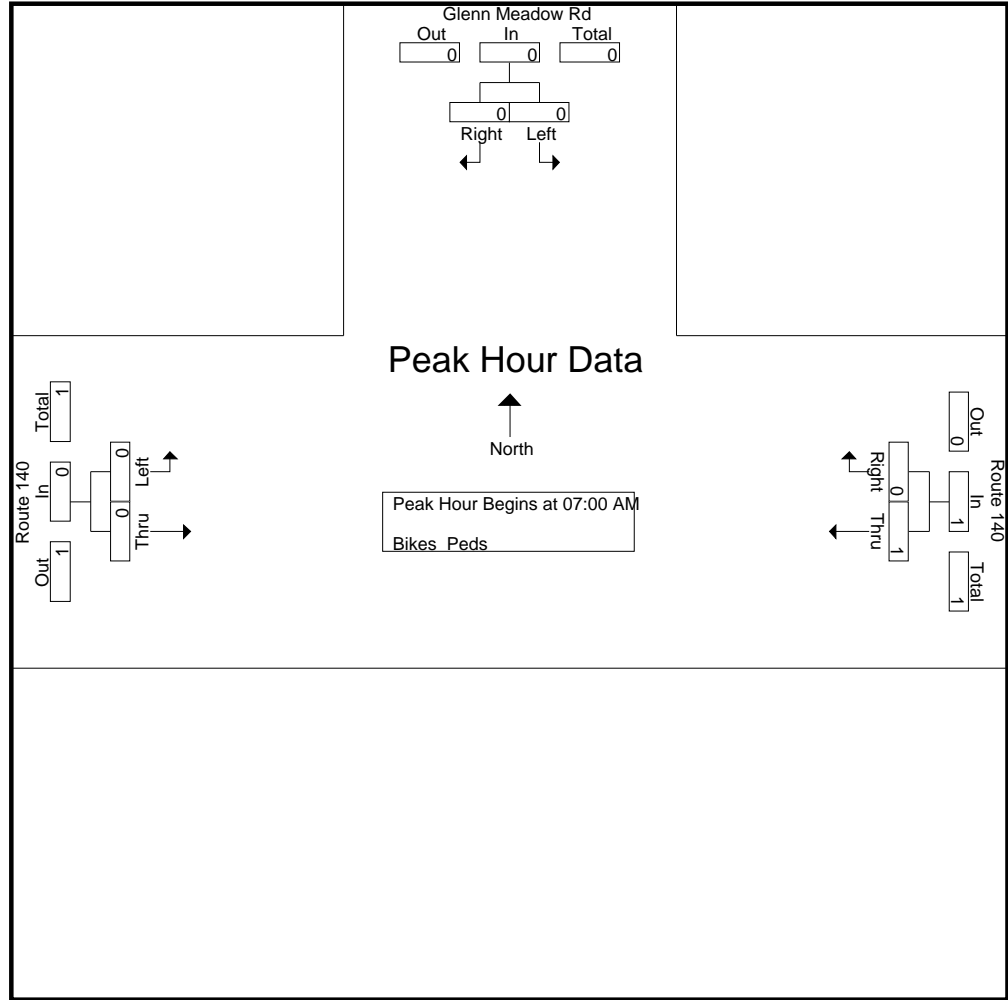
	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	1	0	1	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	1	0	1	0	0	0	1
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250

Accurate Counts

978-664-2565

File Name : 66410003
 Site Code : 66410003
 Start Date : 3/5/2020
 Page No : 11

N/S Street : Glenn Meadow Road
 E/W Street : Route 140
 City/State : Franklin, MA
 Weather : Clear



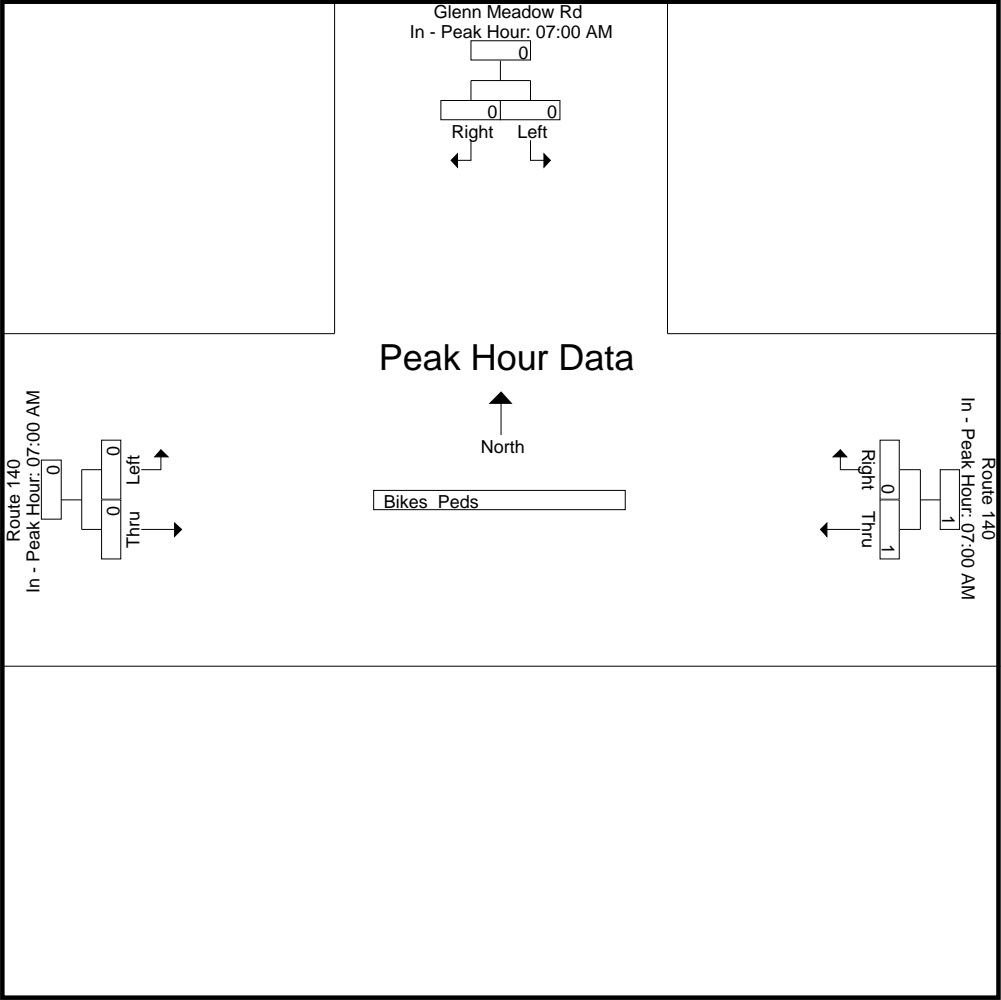
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 12

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410003

Site Code : 66410003

Start Date : 3/5/2020

Page No : 1

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	3	4	166	1	7	156	337
04:15 PM	1	9	178	2	4	129	323
04:30 PM	0	1	180	8	4	155	348
04:45 PM	3	4	178	4	3	142	334
Total	7	18	702	15	18	582	1342
05:00 PM	1	8	197	2	3	156	367
05:15 PM	0	7	169	1	2	137	316
05:30 PM	2	7	146	3	2	129	289
05:45 PM	0	2	143	5	5	162	317
Total	3	24	655	11	12	584	1289
Grand Total	10	42	1357	26	30	1166	2631
Apprch %	19.2	80.8	98.1	1.9	2.5	97.5	
Total %	0.4	1.6	51.6	1	1.1	44.3	
Cars	10	42	1355	26	30	1163	2626
% Cars	100	100	99.9	100	100	99.7	99.8
Trucks	0	0	2	0	0	3	5
% Trucks	0	0	0.1	0	0	0.3	0.2

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	1	9	10	178	2	180	4	129	133	323
04:30 PM	0	1	1	180	8	188	4	155	159	348
04:45 PM	3	4	7	178	4	182	3	142	145	334
05:00 PM	1	8	9	197	2	199	3	156	159	367
Total Volume	5	22	27	733	16	749	14	582	596	1372
% App. Total	18.5	81.5		97.9	2.1		2.3	97.7		
PHF	.417	.611	.675	.930	.500	.941	.875	.933	.937	.935
Cars	5	22	27	731	16	747	14	579	593	1367
% Cars	100	100	100	99.7	100	99.7	100	99.5	99.5	99.6
Trucks	0	0	0	2	0	2	0	3	3	5
% Trucks	0	0	0	0.3	0	0.3	0	0.5	0.5	0.4

Accurate Counts

978-664-2565

File Name : 66410003

Site Code : 66410003

Start Date : 3/5/2020

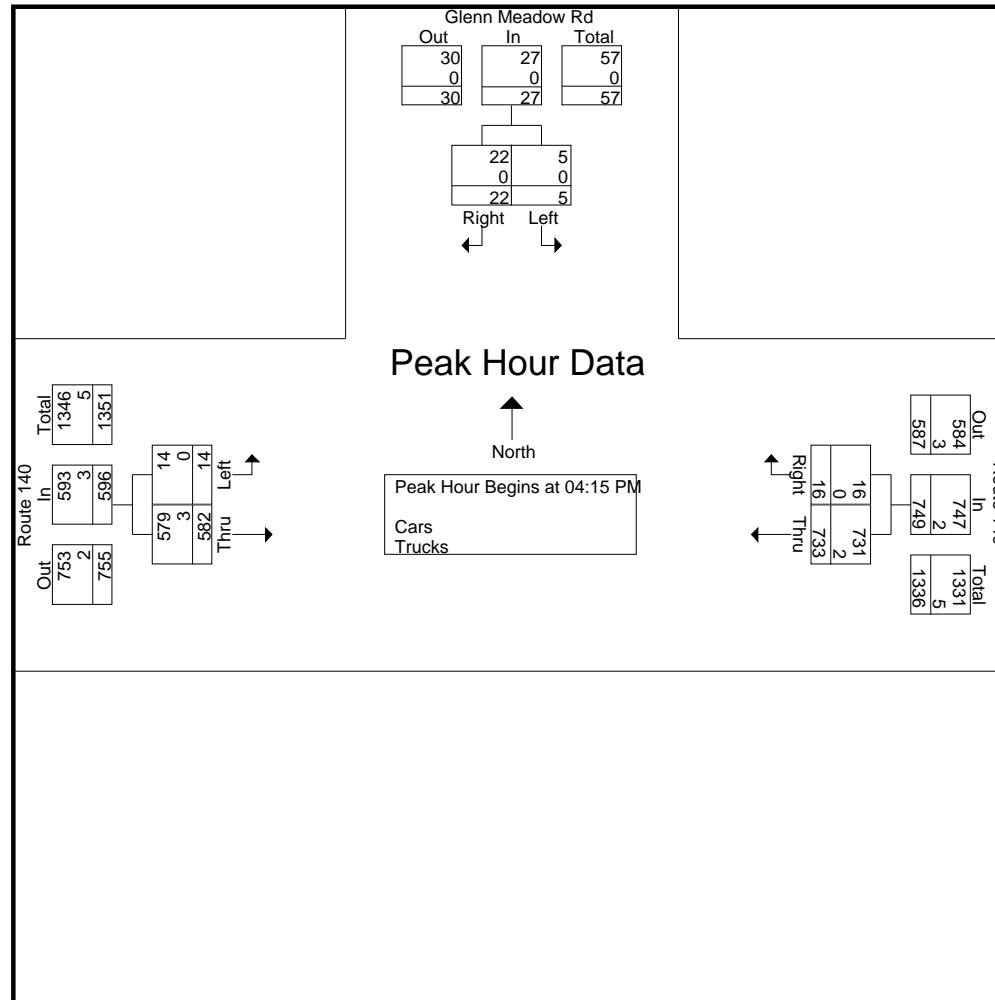
Page No : 2

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

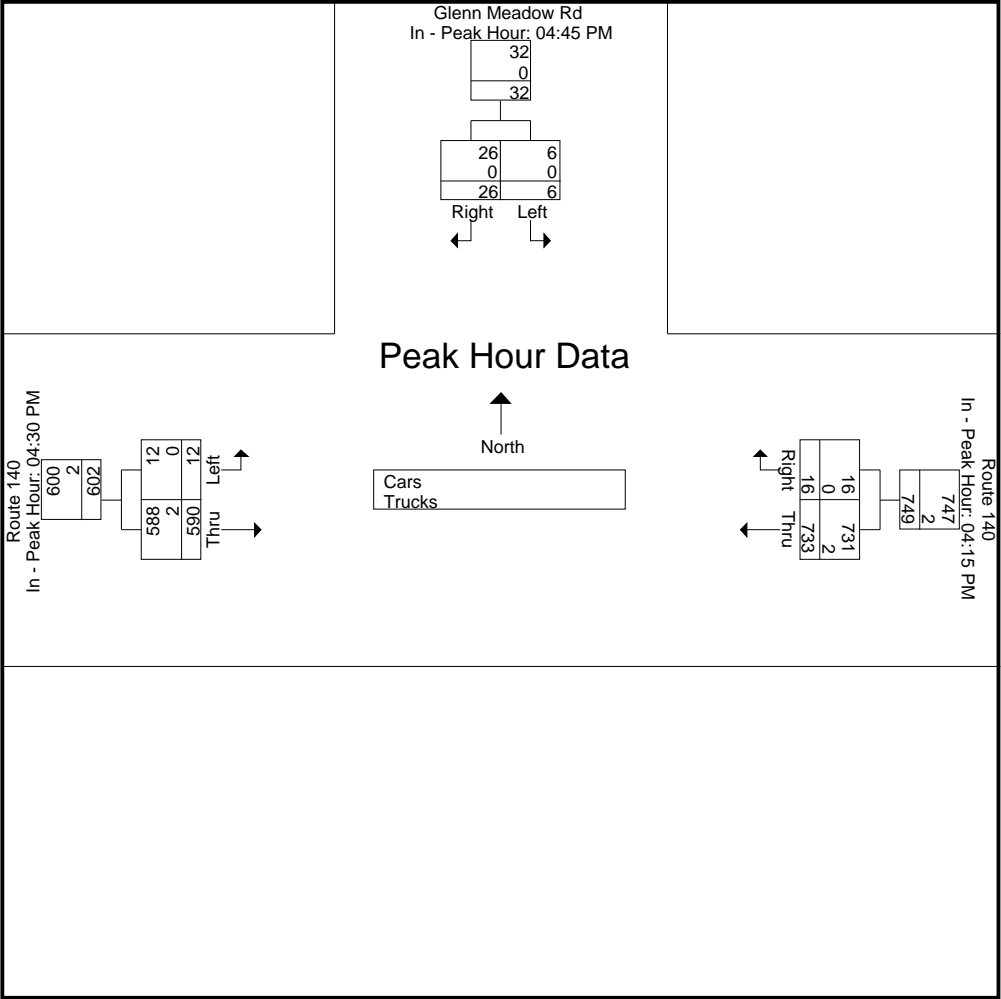
Weather : Clear



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

Peak Hour for Each Approach Begins at:

	04:45 PM			04:15 PM			04:30 PM		
+0 mins.	3	4	7	178	2	180	4	155	159
+15 mins.	1	8	9	180	8	188	3	142	145
+30 mins.	0	7	7	178	4	182	3	156	159
+45 mins.	2	7	9	197	2	199	2	137	139
Total Volume	6	26	32	733	16	749	12	590	602
% App. Total	18.8	81.2		97.9	2.1		2	98	
PHF	.500	.813	.889	.930	.500	.941	.750	.946	.947
Cars	6	26	32	731	16	747	12	588	600
% Cars	100	100	100	99.7	100	99.7	100	99.7	99.7
Trucks	0	0	0	2	0	2	0	2	2



Accurate Counts

978-664-2565

File Name : 66410003

Site Code : 66410003

Start Date : 3/5/2020

Page No : 4

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	3	4	166	1	7	156	337
04:15 PM	1	9	177	2	4	128	321
04:30 PM	0	1	179	8	4	155	347
04:45 PM	3	4	178	4	3	142	334
Total	7	18	700	15	18	581	1339
05:00 PM	1	8	197	2	3	154	365
05:15 PM	0	7	169	1	2	137	316
05:30 PM	2	7	146	3	2	129	289
05:45 PM	0	2	143	5	5	162	317
Total	3	24	655	11	12	582	1287
Grand Total	10	42	1355	26	30	1163	2626
Apprch %	19.2	80.8	98.1	1.9	2.5	97.5	
Total %	0.4	1.6	51.6	1	1.1	44.3	

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	1	9	10	177	2	179	4	128	132	321
04:30 PM	0	1	1	179	8	187	4	155	159	347
04:45 PM	3	4	7	178	4	182	3	142	145	334
05:00 PM	1	8	9	197	2	199	3	154	157	365
Total Volume	5	22	27	731	16	747	14	579	593	1367
% App. Total	18.5	81.5		97.9	2.1		2.4	97.6		
PHF	.417	.611	.675	.928	.500	.938	.875	.934	.932	.936

Accurate Counts

978-664-2565

File Name : 66410003

Site Code : 66410003

Start Date : 3/5/2020

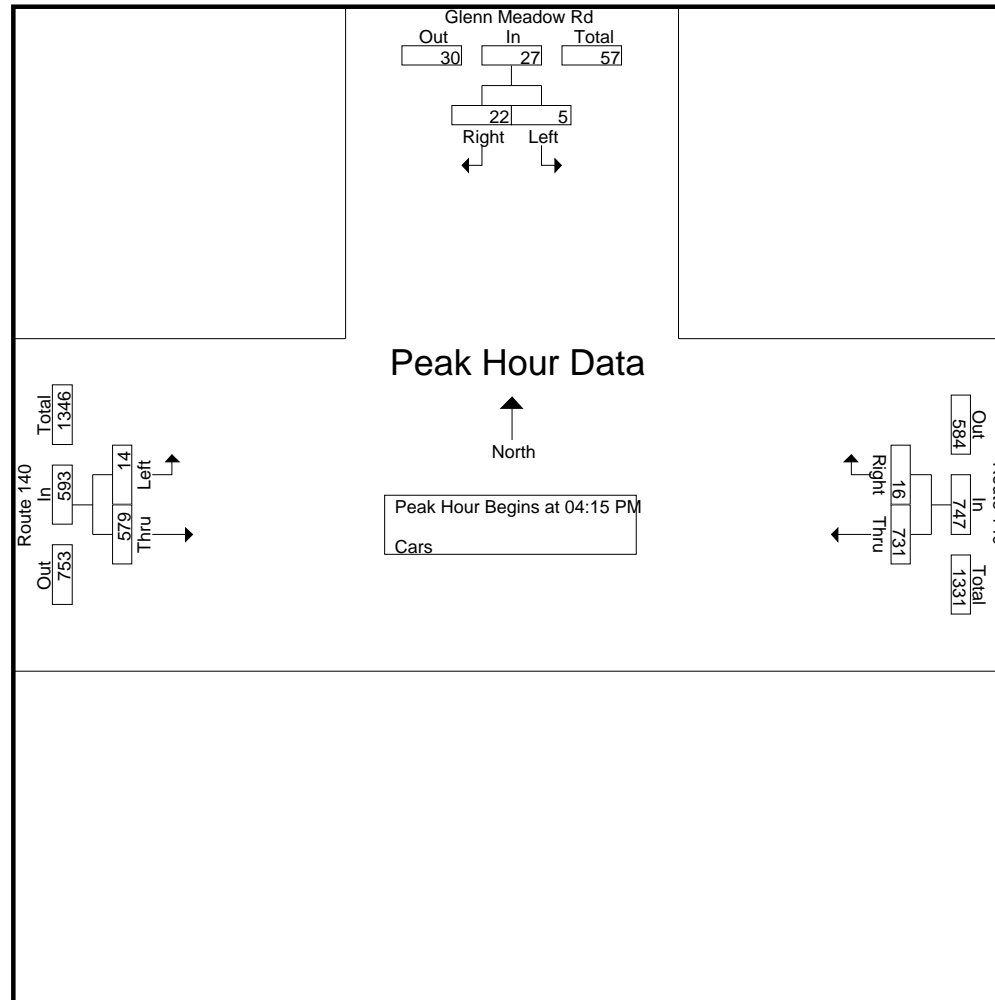
Page No : 5

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

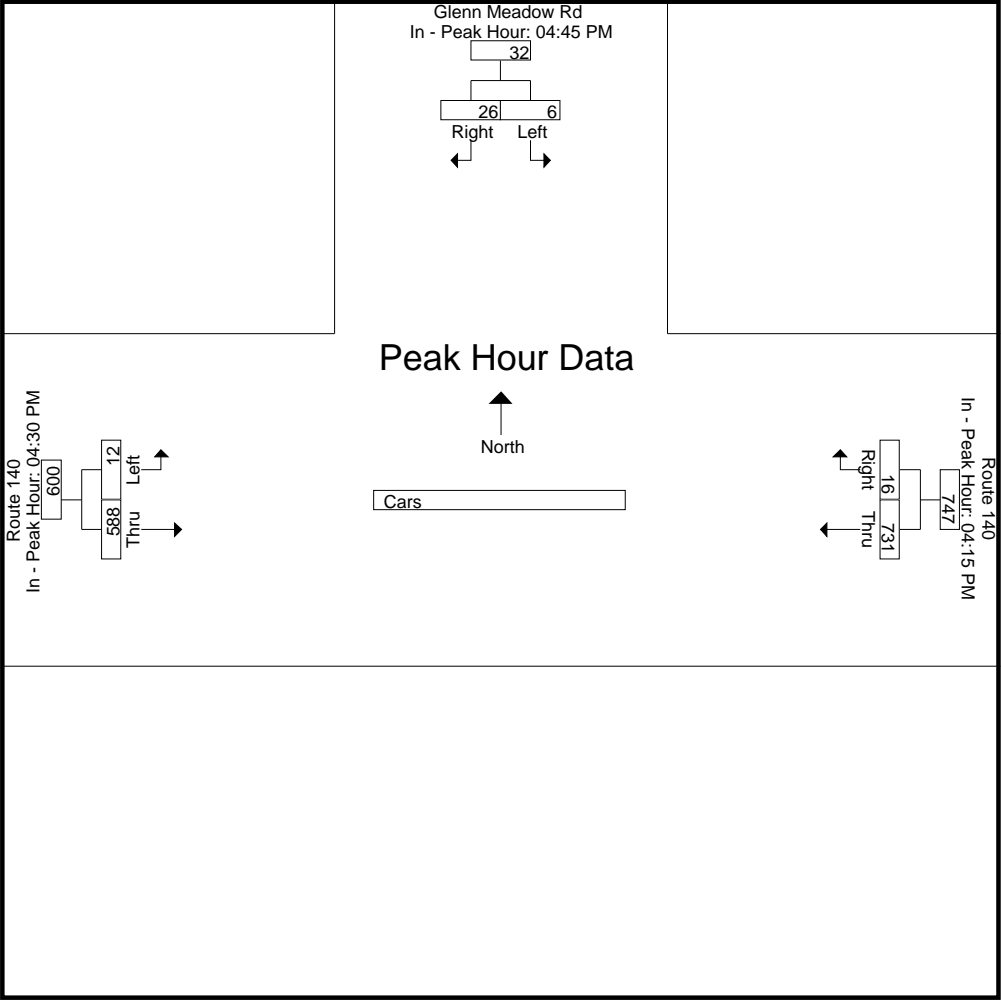
Peak Hour for Each Approach Begins at:

	04:45 PM			04:15 PM			04:30 PM		
+0 mins.	3	4	7	177	2	179	4	155	159
+15 mins.	1	8	9	179	8	187	3	142	145
+30 mins.	0	7	7	178	4	182	3	154	157
+45 mins.	2	7	9	197	2	199	2	137	139
Total Volume	6	26	32	731	16	747	12	588	600
% App. Total	18.8	81.2		97.9	2.1		2	98	
PHF	.500	.813	.889	.928	.500	.938	.750	.948	.943

Accurate Counts
978-664-2565

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 6

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 7

Groups Printed- Trucks

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	0	0	0	0	0
04:15 PM	0	0	1	0	0	1	2
04:30 PM	0	0	1	0	0	0	1
04:45 PM	0	0	0	0	0	0	0
Total	0	0	2	0	0	1	3
05:00 PM	0	0	0	0	0	2	2
05:15 PM	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	2
Grand Total	0	0	2	0	0	3	5
Apprch %	0	0	100	0	0	100	
Total %	0	0	40	0	0	60	

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:15 PM										
04:15 PM	0	0	0	1	0	1	0	1	1	2
04:30 PM	0	0	0	1	0	1	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	2	2	2
Total Volume	0	0	0	2	0	2	0	3	3	5
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.500	.000	.500	.000	.375	.375	.625

Accurate Counts

978-664-2565

File Name : 66410003

Site Code : 66410003

Start Date : 3/5/2020

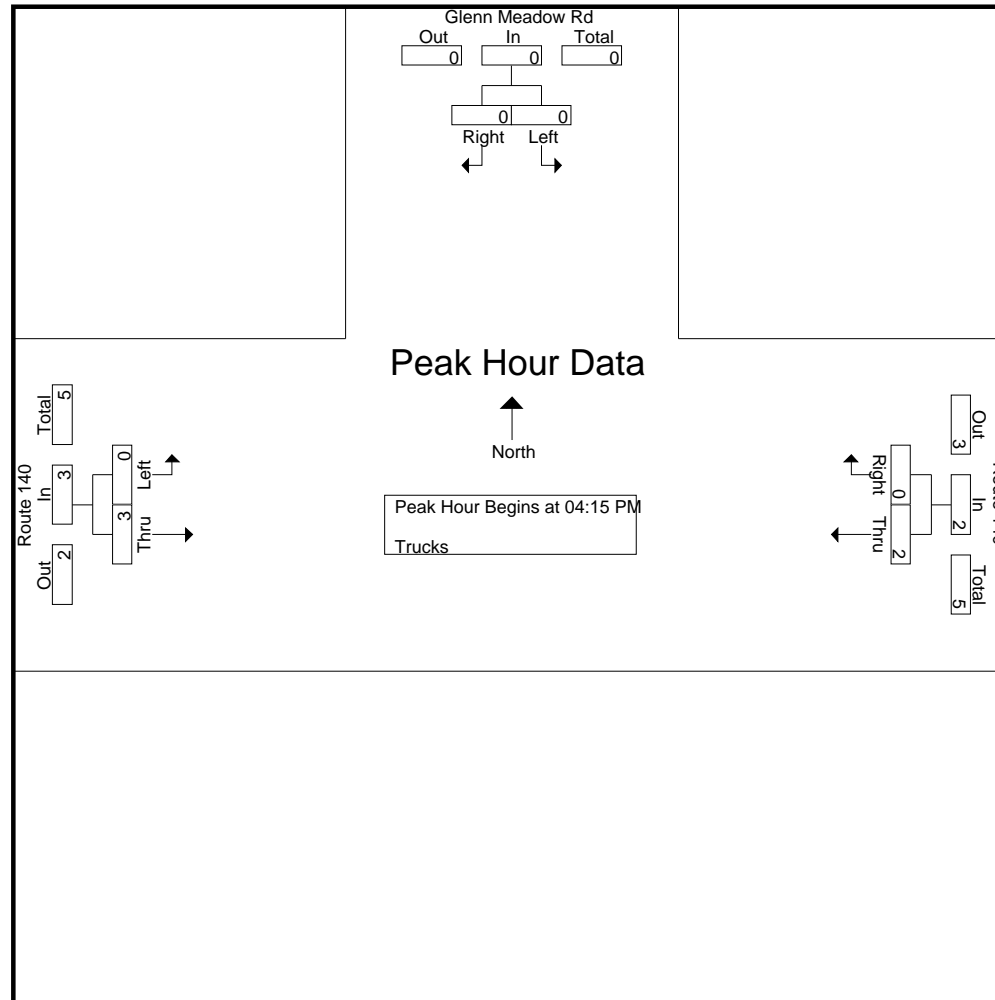
Page No : 8

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

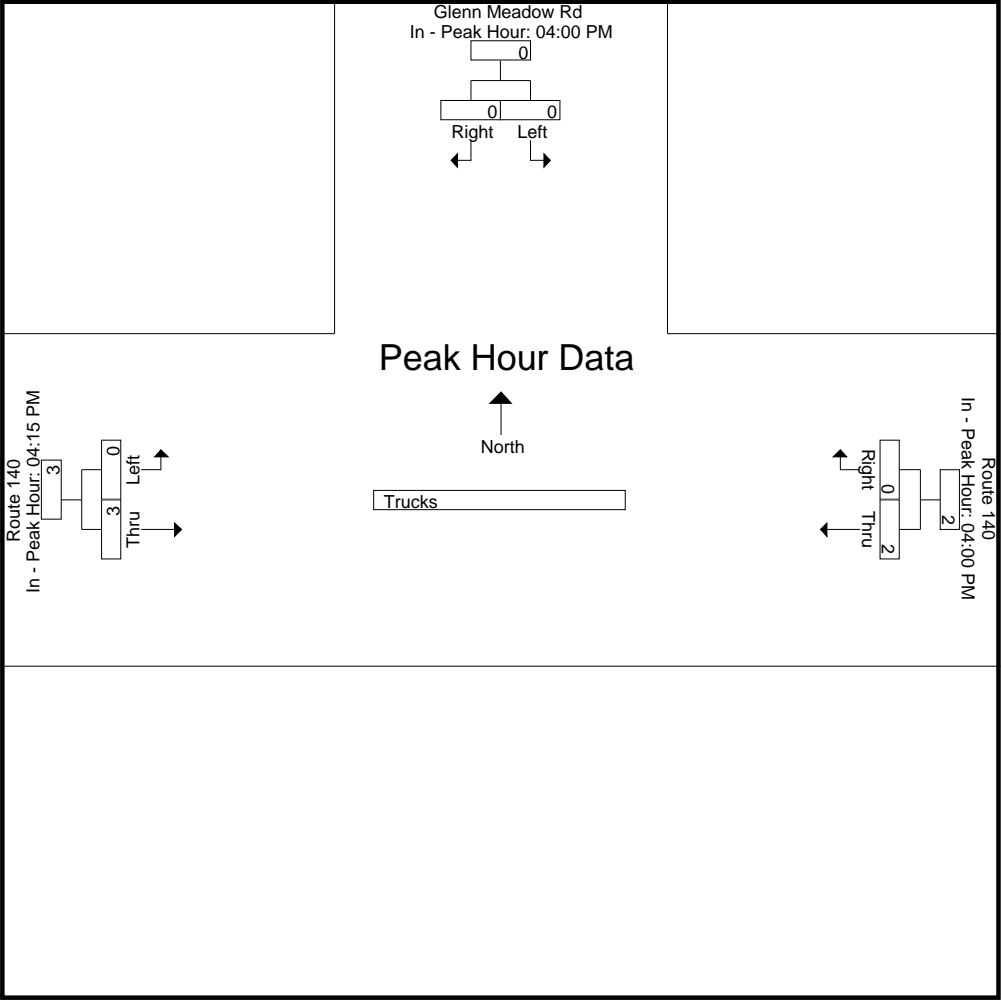
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:15 PM		
+0 mins.	0	0	0	0	0	0	0	1	1
+15 mins.	0	0	0	1	0	1	0	0	0
+30 mins.	0	0	0	1	0	1	0	0	0
+45 mins.	0	0	0	0	0	0	0	2	2
Total Volume	0	0	0	2	0	2	0	3	3
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.500	.000	.500	.000	.375	.375

Accurate Counts
978-664-2565

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 9

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 10

Groups Printed- Bikes Peds

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
04:00 PM	0	0	0	1	0	0	0	0	0	0	1	1
04:15 PM	0	0	1	0	0	0	0	0	0	1	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	1	1	0	0	0	0	0	1	1	2
Total	0	0	2	2	0	0	0	0	0	2	2	4
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	1	0	0	0	0	1	0	1	1	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	0	1	0	1	1	2
Grand Total	0	0	3	2	0	0	0	1	0	3	3	6
Apprch %	0	0		100	0		0	100				
Total %	0	0		66.7	0		0	33.3		50	50	

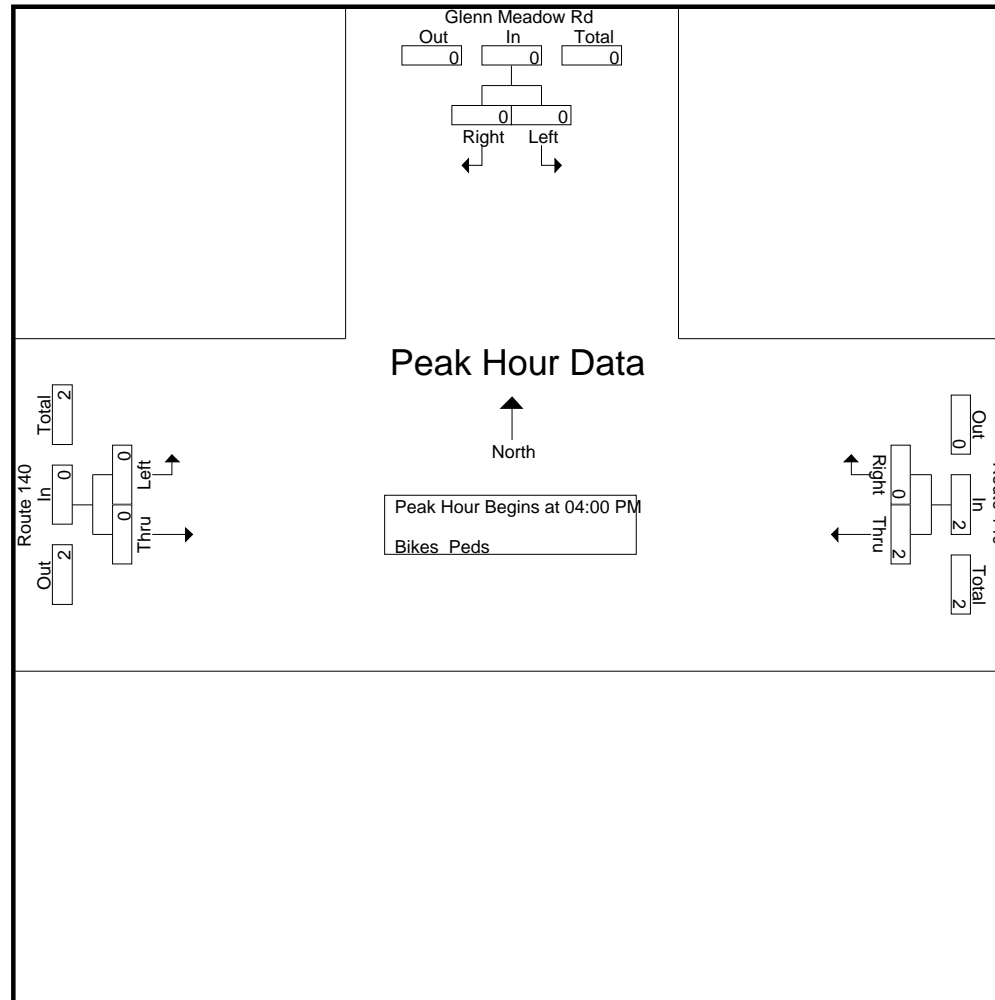
	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	1	0	1	0	0	0	1
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	1	0	1	0	0	0	1
Total Volume	0	0	0	2	0	2	0	0	0	2
% App. Total	0	0		100	0		0	0		
PHF	.000	.000	.000	.500	.000	.500	.000	.000	.000	.500

Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 11



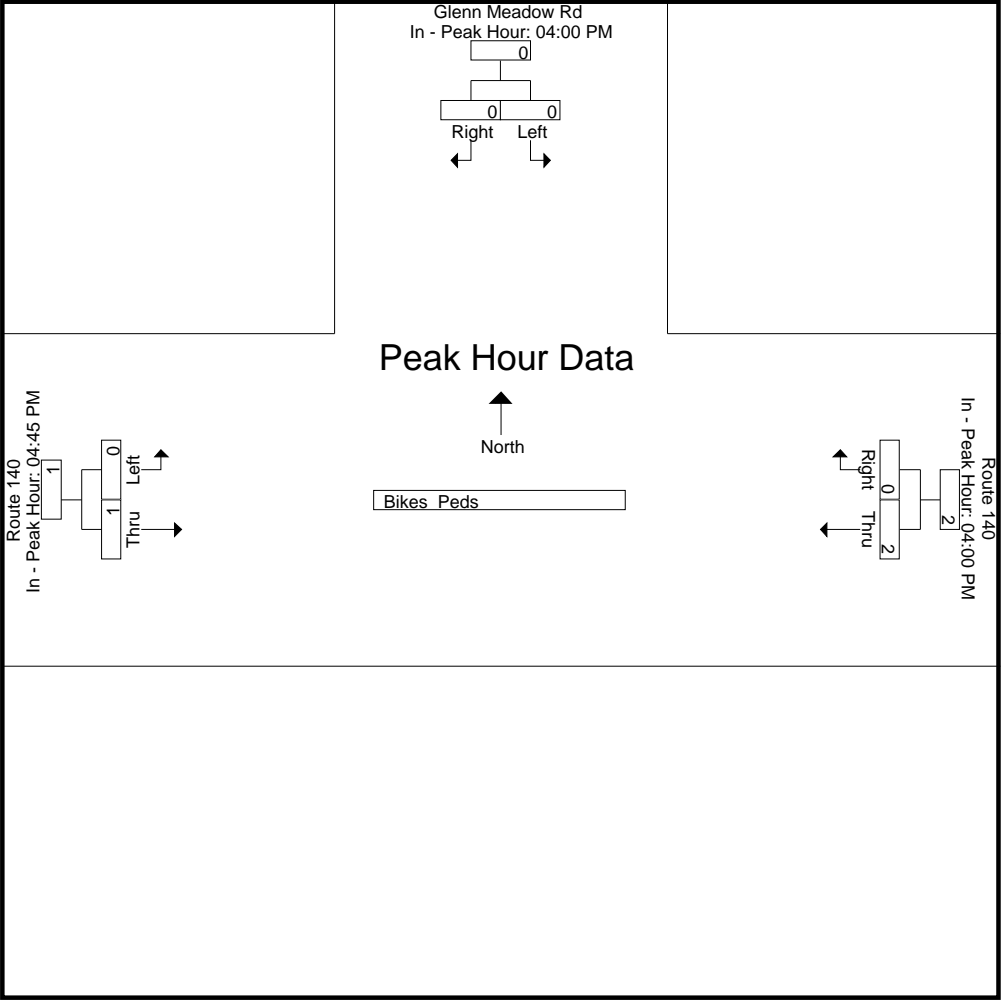
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

File Name : 66410003
Site Code : 66410003
Start Date : 3/5/2020
Page No : 12

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 664100S3

Site Code : 66410003

Start Date : 3/7/2020

Page No : 1

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
11:00 AM	3	6	169	1	2	165	346
11:15 AM	2	8	164	1	3	140	318
11:30 AM	1	3	145	2	0	162	313
11:45 AM	1	3	170	2	2	162	340
Total	7	20	648	6	7	629	1317
12:00 PM	4	10	167	1	5	165	352
12:15 PM	2	7	170	3	6	181	369
12:30 PM	0	9	174	1	3	187	374
12:45 PM	4	3	168	0	10	161	346
Total	10	29	679	5	24	694	1441
01:00 PM	2	2	181	2	2	182	371
01:15 PM	0	6	184	3	5	165	363
01:30 PM	2	3	163	1	2	157	328
01:45 PM	4	3	178	3	3	151	342
Total	8	14	706	9	12	655	1404
Grand Total	25	63	2033	20	43	1978	4162
Apprch %	28.4	71.6	99	1	2.1	97.9	
Total %	0.6	1.5	48.8	0.5	1	47.5	
Cars	25	63	2033	20	43	1977	4161
% Cars	100	100	100	100	100	99.9	100
Trucks	0	0	0	0	0	1	1
% Trucks	0	0	0	0	0	0.1	0

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:15 PM										
12:15 PM	2	7	9	170	3	173	6	181	187	369
12:30 PM	0	9	9	174	1	175	3	187	190	374
12:45 PM	4	3	7	168	0	168	10	161	171	346
01:00 PM	2	2	4	181	2	183	2	182	184	371
Total Volume	8	21	29	693	6	699	21	711	732	1460
% App. Total	27.6	72.4		99.1	0.9		2.9	97.1		
PHF	.500	.583	.806	.957	.500	.955	.525	.951	.963	.976
Cars	8	21	29	693	6	699	21	710	731	1459
% Cars	100	100	100	100	100	100	100	99.9	99.9	99.9
Trucks	0	0	0	0	0	0	0	1	1	1
% Trucks	0	0	0	0	0	0	0	0.1	0.1	0.1

978-664-2565

978-664-2565

File Name : 664100S3

Site Code : 66410003

Start Date : 3/7/2020

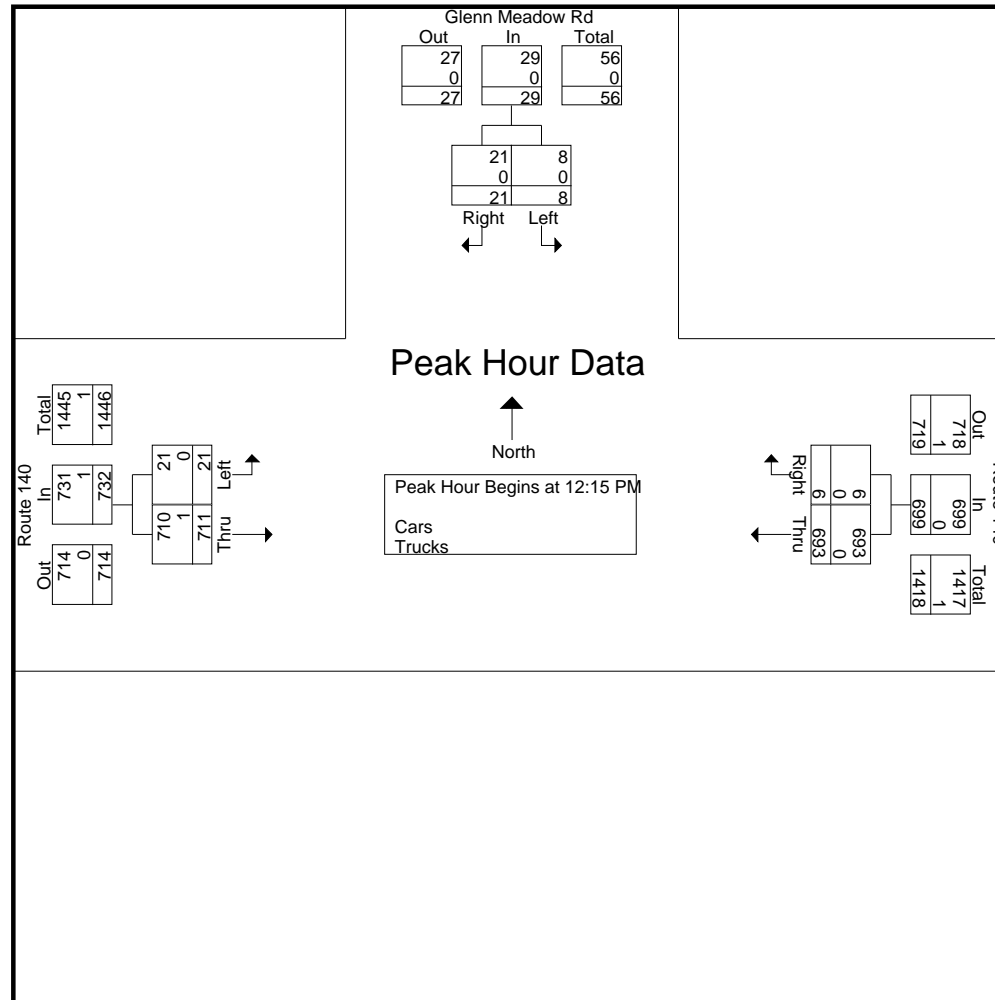
Page No : 2

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

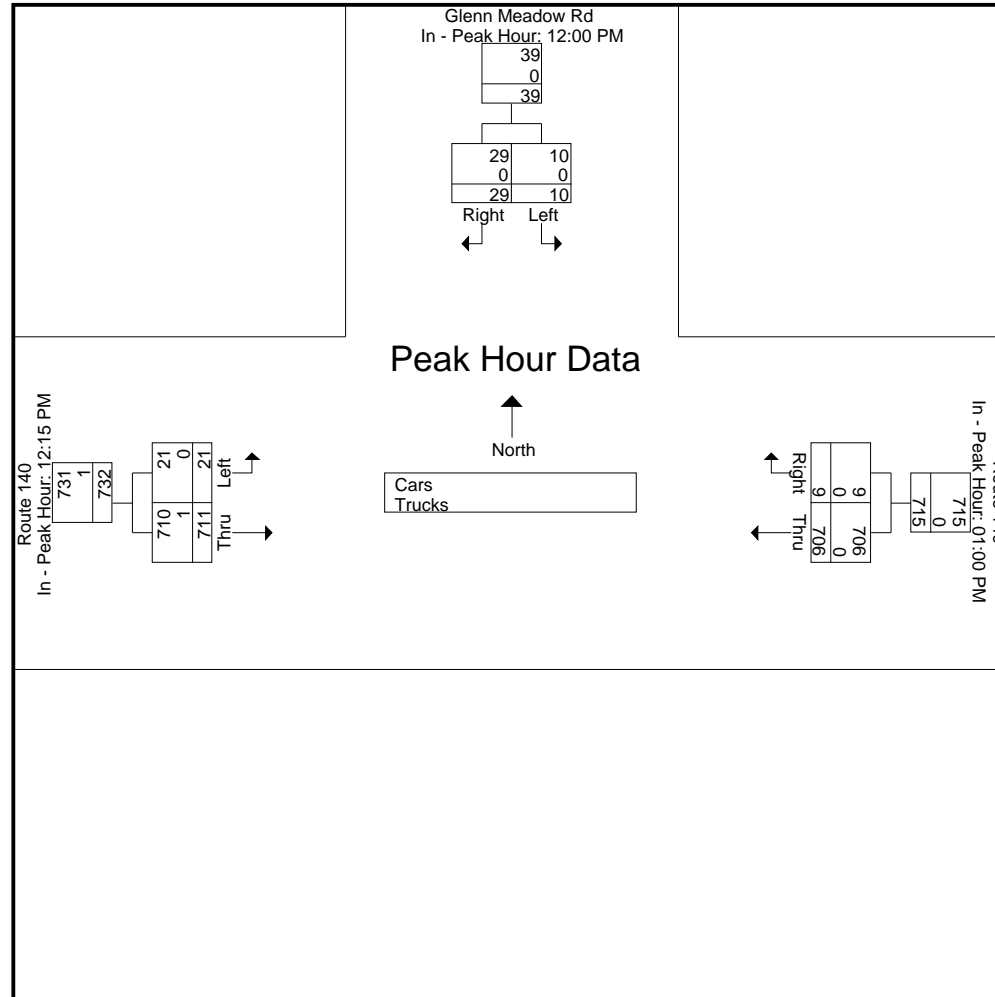


Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

[illegible]

Accurate Counts
978-664-2565



Accurate Counts

978-664-2565

File Name : 664100S3

Site Code : 66410003

Start Date : 3/7/2020

Page No : 4

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		Int. Total
Start Time	Left	Right	Thru	Right	Left	Thru	
11:00 AM	3	6	169	1	2	165	346
11:15 AM	2	8	164	1	3	140	318
11:30 AM	1	3	145	2	0	162	313
11:45 AM	1	3	170	2	2	162	340
Total	7	20	648	6	7	629	1317
12:00 PM	4	10	167	1	5	165	352
12:15 PM	2	7	170	3	6	181	369
12:30 PM	0	9	174	1	3	187	374
12:45 PM	4	3	168	0	10	160	345
Total	10	29	679	5	24	693	1440
01:00 PM	2	2	181	2	2	182	371
01:15 PM	0	6	184	3	5	165	363
01:30 PM	2	3	163	1	2	157	328
01:45 PM	4	3	178	3	3	151	342
Total	8	14	706	9	12	655	1404
Grand Total	25	63	2033	20	43	1977	4161
Apprch %	28.4	71.6	99	1	2.1	97.9	
Total %	0.6	1.5	48.9	0.5	1	47.5	

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			Int. Total
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:15 PM										
12:15 PM	2	7	9	170	3	173	6	181	187	369
12:30 PM	0	9	9	174	1	175	3	187	190	374
12:45 PM	4	3	7	168	0	168	10	160	170	345
01:00 PM	2	2	4	181	2	183	2	182	184	371
Total Volume	8	21	29	693	6	699	21	710	731	1459
% App. Total	27.6	72.4		99.1	0.9		2.9	97.1		
PHF	.500	.583	.806	.957	.500	.955	.525	.949	.962	.975

Accurate Counts

978-664-2565

File Name : 664100S3

Site Code : 66410003

Start Date : 3/7/2020

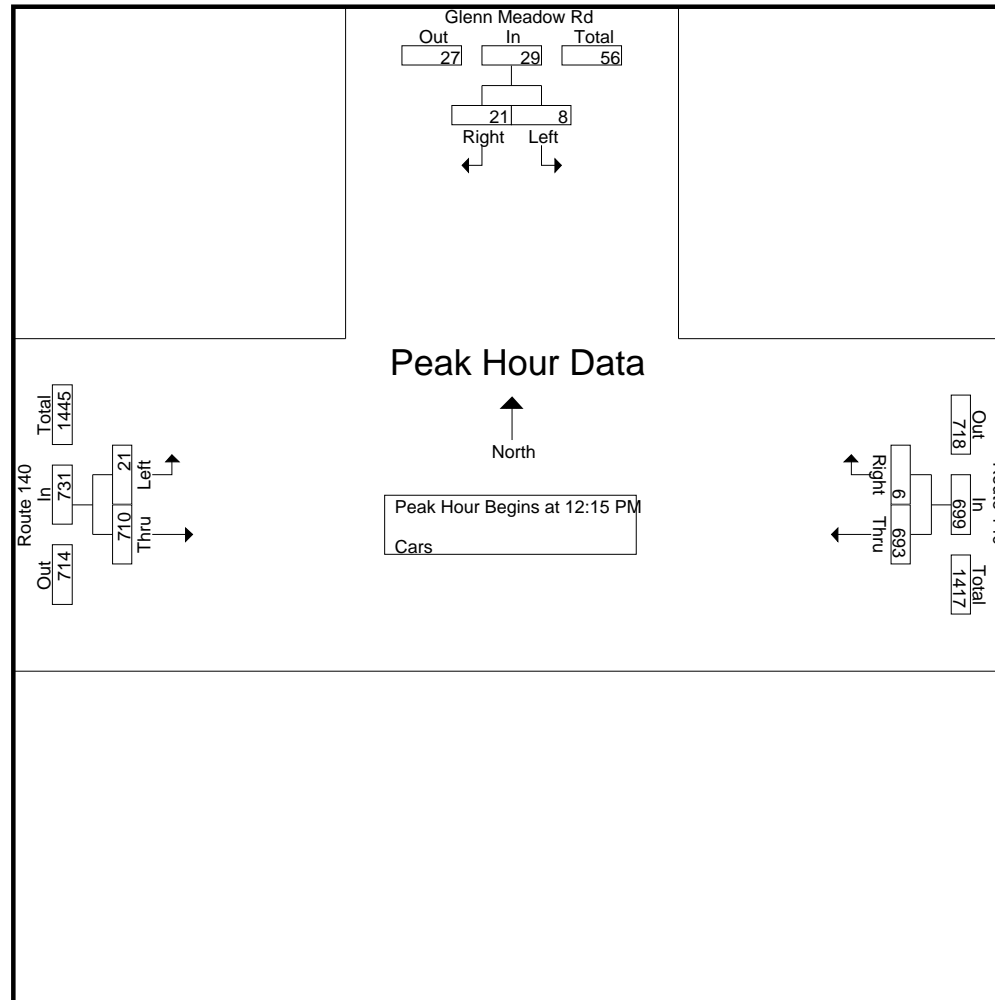
Page No : 5

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

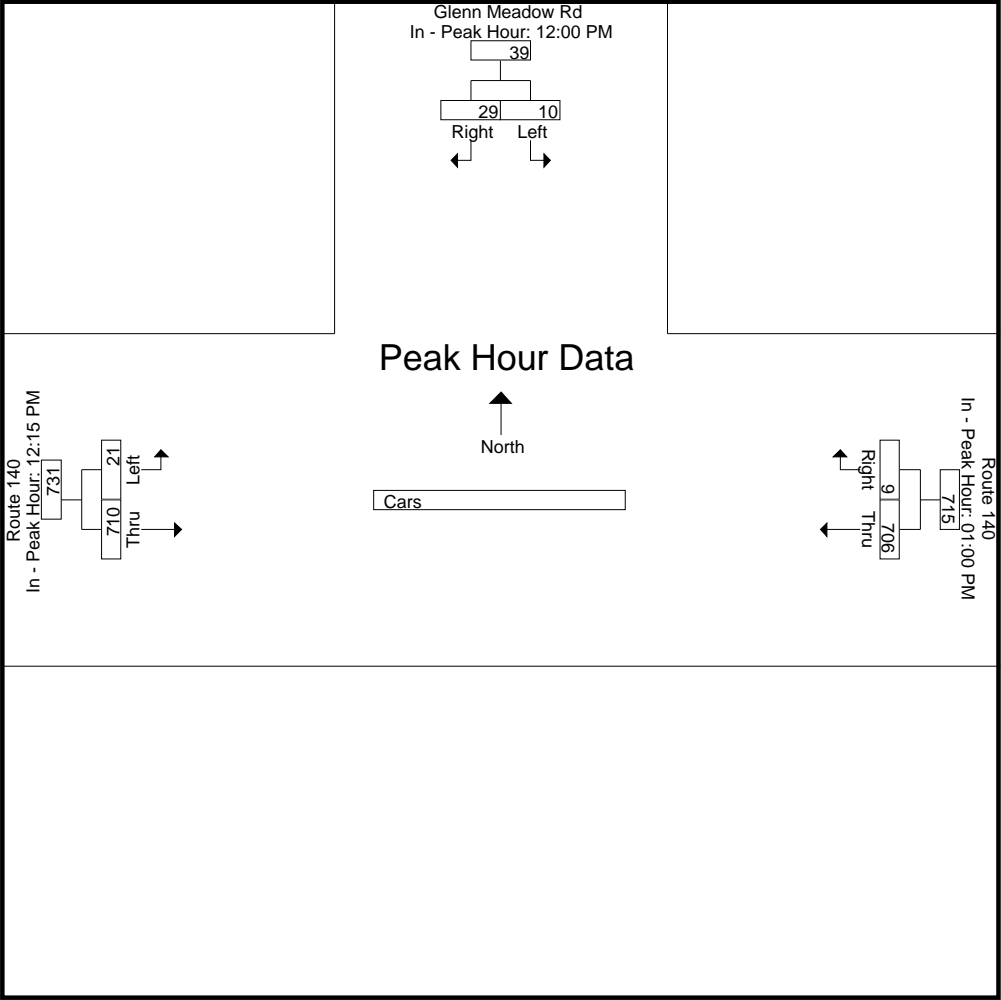
Peak Hour for Each Approach Begins at:

	12:00 PM			01:00 PM			12:15 PM		
+0 mins.	4	10	14	181	2	183	6	181	187
+15 mins.	2	7	9	184	3	187	3	187	190
+30 mins.	0	9	9	163	1	164	10	160	170
+45 mins.	4	3	7	178	3	181	2	182	184
Total Volume	10	29	39	706	9	715	21	710	731
% App. Total	25.6	74.4		98.7	1.3		2.9	97.1	
PHF	.625	.725	.696	.959	.750	.956	.525	.949	.962

Accurate Counts
978-664-2565

File Name : 664100S3
Site Code : 66410003
Start Date : 3/7/2020
Page No : 6

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 664100S3
Site Code : 66410003
Start Date : 3/7/2020
Page No : 7

Groups Printed- Trucks

	Glenn Meadow Rd From North		Route 140 From East		Route 140 From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
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	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0
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	0	0	0	1	1
Total	0	0	0	0	0	1	1
01:00 PM	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	1
Apprch %	0	0	0	0	0	100	
Total %	0	0	0	0	0	100	

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 12:00 PM										
12:00 PM	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	1	1	1
Total Volume	0	0	0	0	0	0	0	1	1	1
% App. Total	0	0		0	0		0	100		
PHF	.000	.000	.000	.000	.000	.000	.000	.250	.250	.250

Accurate Counts

978-664-2565

File Name : 664100S3

Site Code : 66410003

Start Date : 3/7/2020

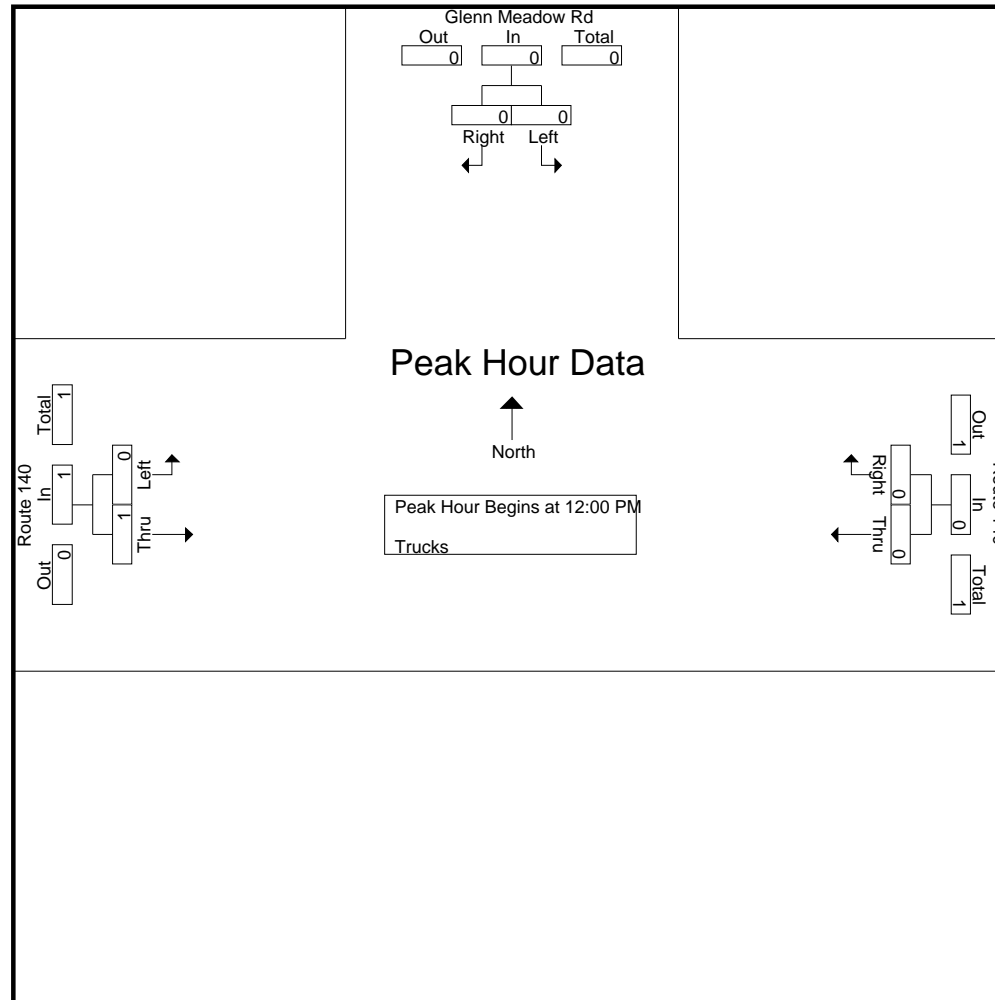
Page No : 8

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

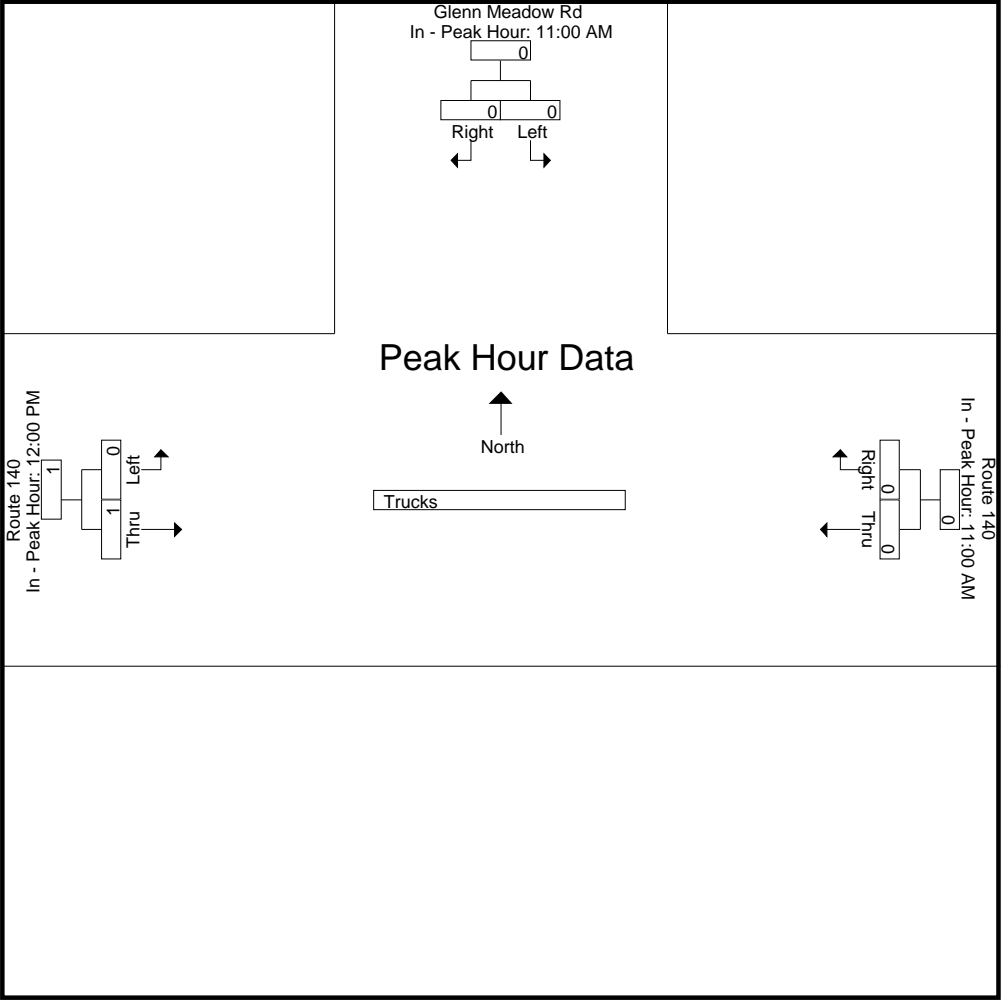
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

File Name : 664100S3
Site Code : 66410003
Start Date : 3/7/2020
Page No : 9

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 664100S3

Site Code : 66410003

Start Date : 3/7/2020

Page No : 10

N/S Street : Glenn Meadow Road

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Bikes Peds

	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
11:00 AM	0	0	0	2	0	0	0	0	0	0	2	2
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	1	1	0	0	0	1	0	1	2	3
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	3	0	0	0	1	0	1	4	5
12:00 PM	0	0	3	0	0	0	0	0	0	3	0	3
12:15 PM	0	0	1	0	0	0	0	0	0	1	0	1
12:30 PM	0	0	1	0	0	0	0	0	0	1	0	1
12:45 PM	0	0	1	1	0	0	0	0	0	1	1	2
Total	0	0	6	1	0	0	0	0	0	6	1	7
01:00 PM	0	0	0	1	0	0	0	0	0	0	1	1
01:15 PM	0	0	1	0	0	0	0	0	0	1	0	1
01:30 PM	0	0	0	0	0	0	0	1	0	0	1	1
01:45 PM	0	0	1	0	0	0	0	0	0	1	0	1
Total	0	0	2	1	0	0	0	1	0	2	2	4
Grand Total	0	0	9	5	0	0	0	2	0	9	7	16
Apprch %	0	0		100	0		0	100				
Total %	0	0		71.4	0		0	28.6		56.2	43.8	

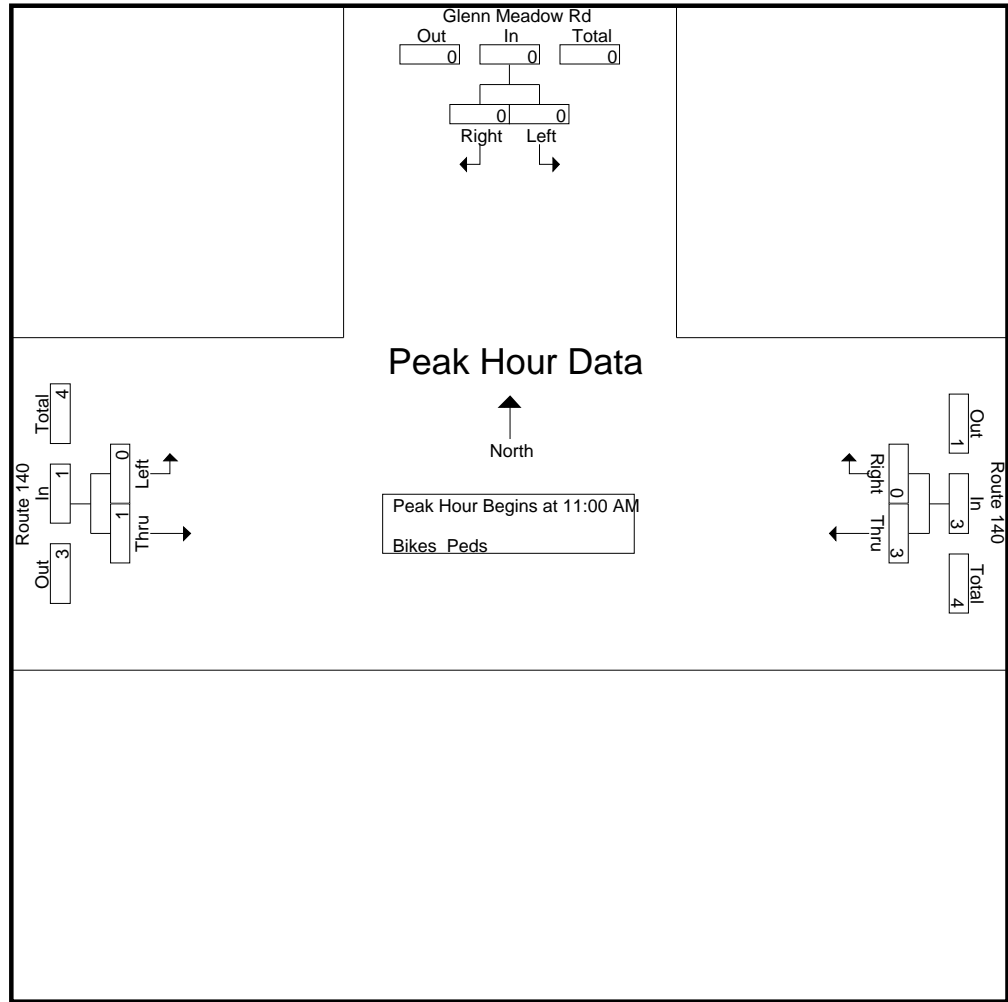
	Glenn Meadow Rd From North			Route 140 From East			Route 140 From West			Int. Total
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 11:00 AM										
11:00 AM	0	0	0	2	0	2	0	0	0	2
11:15 AM	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	1	0	1	0	1	1	2
11:45 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	3	0	3	0	1	1	4
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.375	.000	.375	.000	.250	.250	.500

Accurate Counts

978-664-2565

File Name : 664100S3
 Site Code : 66410003
 Start Date : 3/7/2020
 Page No : 11

N/S Street : Glenn Meadow Road
 E/W Street : Route 140
 City/State : Franklin, MA
 Weather : Clear



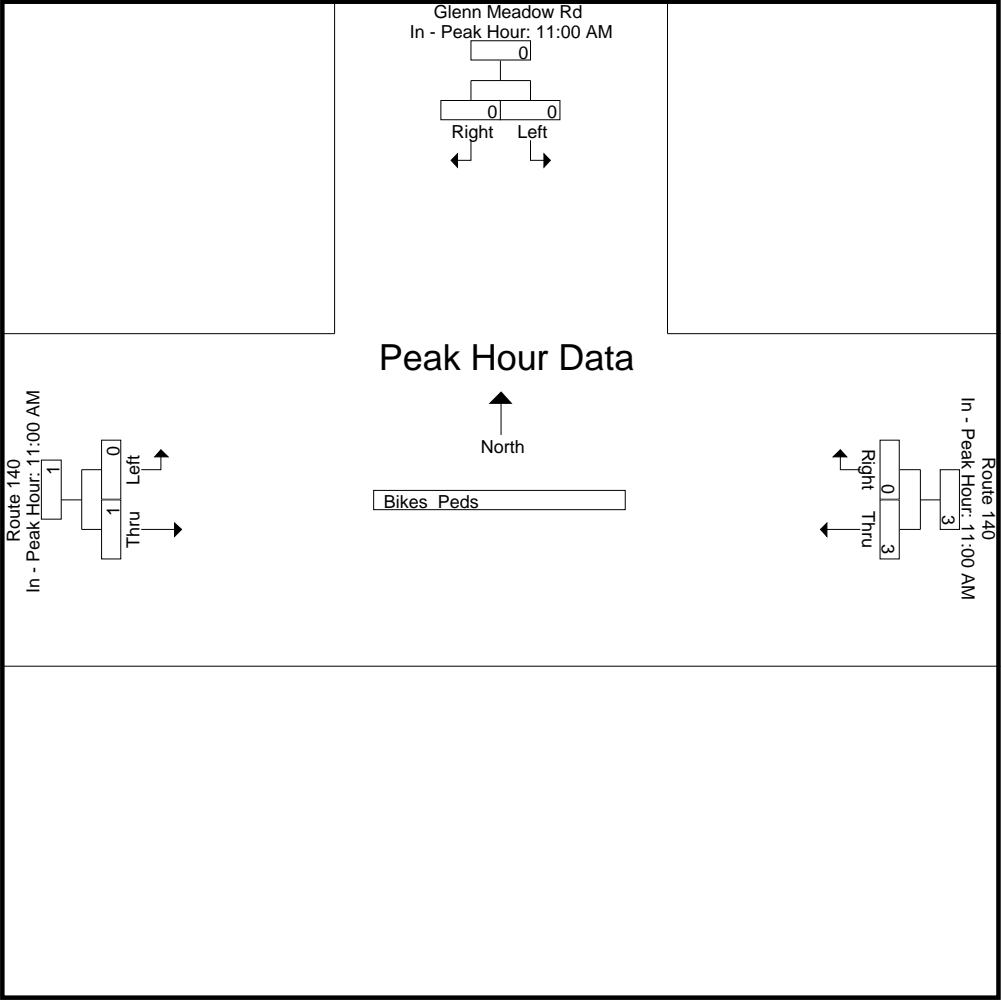
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

File Name : 664100S3
Site Code : 66410003
Start Date : 3/7/2020
Page No : 12

N/S Street : Glenn Meadow Road
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

Page No : 1

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	3	88	4	3	0	1	1	87	0	187
07:15 AM	0	0	1	3	93	1	3	0	2	8	94	2	207
07:30 AM	0	0	3	7	76	6	8	0	4	12	107	1	224
07:45 AM	1	0	3	2	73	8	10	0	6	15	118	0	236
Total	1	0	7	15	330	19	24	0	13	36	406	3	854
08:00 AM	1	0	4	1	89	2	6	0	10	10	97	0	220
08:15 AM	2	0	6	3	82	3	13	0	3	11	108	0	231
08:30 AM	1	0	5	1	99	3	12	1	4	6	94	0	226
08:45 AM	3	1	3	6	79	3	7	0	6	14	98	0	220
Total	7	1	18	11	349	11	38	1	23	41	397	0	897
Grand Total	8	1	25	26	679	30	62	1	36	77	803	3	1751
Apprch %	23.5	2.9	73.5	3.5	92.4	4.1	62.6	1	36.4	8.7	90.9	0.3	
Total %	0.5	0.1	1.4	1.5	38.8	1.7	3.5	0.1	2.1	4.4	45.9	0.2	
Cars	8	1	24	26	667	29	61	1	36	76	791	3	1723
% Cars	100	100	96	100	98.2	96.7	98.4	100	100	98.7	98.5	100	98.4
Trucks	0	0	1	0	12	1	1	0	0	1	12	0	28
% Trucks	0	0	4	0	1.8	3.3	1.6	0	0	1.3	1.5	0	1.6

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	1	0	3	4	2	73	8	83	10	0	6	16	15	118	0	133	236
08:00 AM	1	0	4	5	1	89	2	92	6	0	10	16	10	97	0	107	220
08:15 AM	2	0	6	8	3	82	3	88	13	0	3	16	11	108	0	119	231
08:30 AM	1	0	5	6	1	99	3	103	12	1	4	17	6	94	0	100	226
Total Volume	5	0	18	23	7	343	16	366	41	1	23	65	42	417	0	459	913
% App. Total	21.7	0	78.3		1.9	93.7	4.4		63.1	1.5	35.4		9.2	90.8	0		
PHF	.625	.000	.750	.719	.583	.866	.500	.888	.788	.250	.575	.956	.700	.883	.000	.863	.967
Cars	5	0	17	22	7	335	15	357	41	1	23	65	41	411	0	452	896
% Cars	100	0	94.4	95.7	100	97.7	93.8	97.5	100	100	100	100	97.6	98.6	0	98.5	98.1
Trucks	0	0	1	1	0	8	1	9	0	0	0	0	1	6	0	7	17
% Trucks	0	0	5.6	4.3	0	2.3	6.3	2.5	0	0	0	0	2.4	1.4	0	1.5	1.9

Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

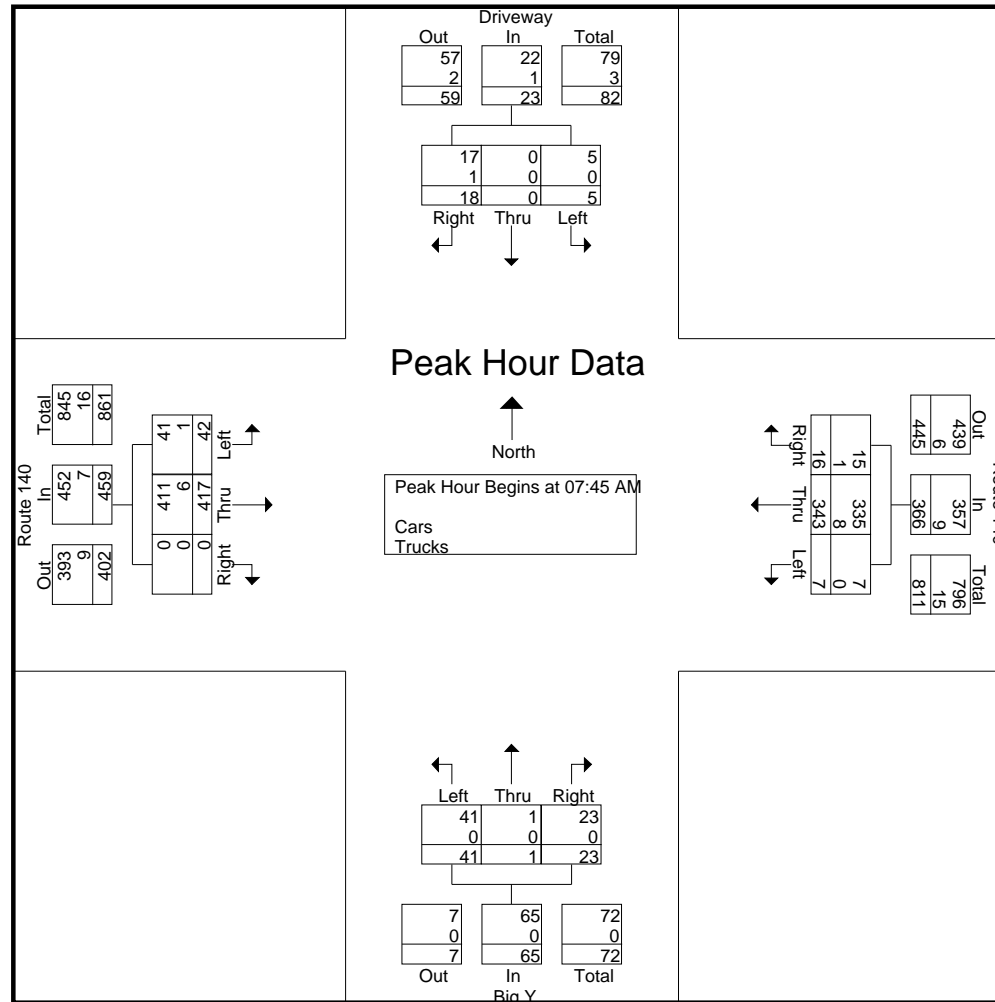
Page No : 2

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



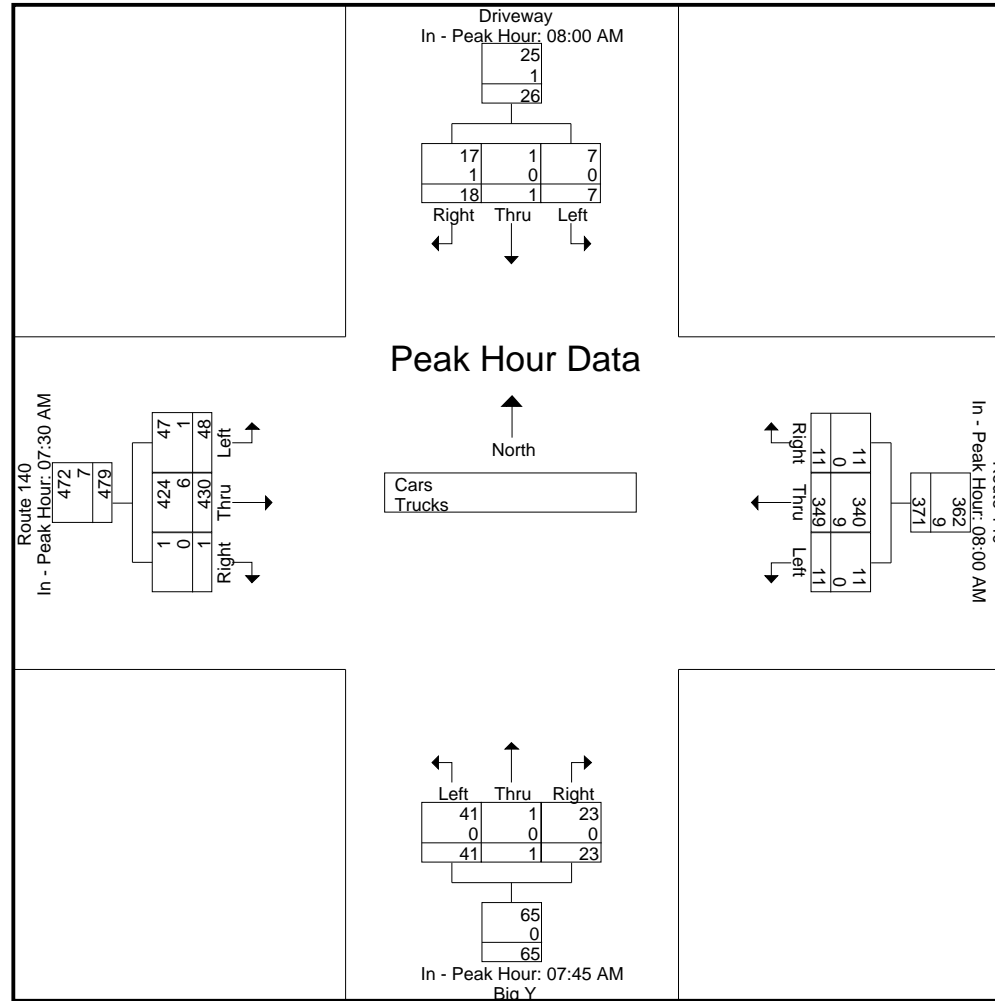
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:45 AM				07:30 AM			
+0 mins.	1	0	4	5	1	89	2	92	10	0	6	16	12	107	1	120
+15 mins.	2	0	6	8	3	82	3	88	6	0	10	16	15	118	0	133
+30 mins.	1	0	5	6	1	99	3	103	13	0	3	16	10	97	0	107
+45 mins.	3	1	3	7	6	79	3	88	12	1	4	17	11	108	0	119
Total Volume	7	1	18	26	11	349	11	371	41	1	23	65	48	430	1	479
% App. Total	26.9	3.8	69.2		3	94.1	3		63.1	1.5	35.4		10	89.8	0.2	
PHF	.583	.250	.750	.813	.458	.881	.917	.900	.788	.250	.575	.956	.800	.911	.250	.900
Cars	7	1	17	25	11	340	11	362	41	1	23	65	47	424	1	472
% Cars	100	100	94.4	96.2	100	97.4	100	97.6	100	100	100	100	97.9	98.6	100	98.5
Trucks	0	0	1	1	0	9	0	9	0	0	0	0	1	6	0	7

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410004
Site Code : 66410004
Start Date : 3/12/2020
Page No : 4

Groups Printed- Cars

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	3	87	4	2	0	1	1	87	0	185
07:15 AM	0	0	1	3	93	1	3	0	2	8	92	2	205
07:30 AM	0	0	3	7	75	6	8	0	4	12	105	1	221
07:45 AM	1	0	3	2	72	7	10	0	6	15	116	0	232
Total	1	0	7	15	327	18	23	0	13	36	400	3	843
08:00 AM	1	0	3	1	85	2	6	0	10	10	96	0	214
08:15 AM	2	0	6	3	81	3	13	0	3	10	107	0	228
08:30 AM	1	0	5	1	97	3	12	1	4	6	92	0	222
08:45 AM	3	1	3	6	77	3	7	0	6	14	96	0	216
Total	7	1	17	11	340	11	38	1	23	40	391	0	880
Grand Total	8	1	24	26	667	29	61	1	36	76	791	3	1723
Apprch %	24.2	3	72.7	3.6	92.4	4	62.2	1	36.7	8.7	90.9	0.3	
Total %	0.5	0.1	1.4	1.5	38.7	1.7	3.5	0.1	2.1	4.4	45.9	0.2	

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	1	0	3	4	2	72	7	81	10	0	6	16	15	116	0	131	232
08:00 AM	1	0	3	4	1	85	2	88	6	0	10	16	10	96	0	106	214
08:15 AM	2	0	6	8	3	81	3	87	13	0	3	16	10	107	0	117	228
08:30 AM	1	0	5	6	1	97	3	101	12	1	4	17	6	92	0	98	222
Total Volume	5	0	17	22	7	335	15	357	41	1	23	65	41	411	0	452	896
% App. Total	22.7	0	77.3		2	93.8	4.2		63.1	1.5	35.4		9.1	90.9	0		
PHF	.625	.000	.708	.688	.583	.863	.536	.884	.788	.250	.575	.956	.683	.886	.000	.863	.966

Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

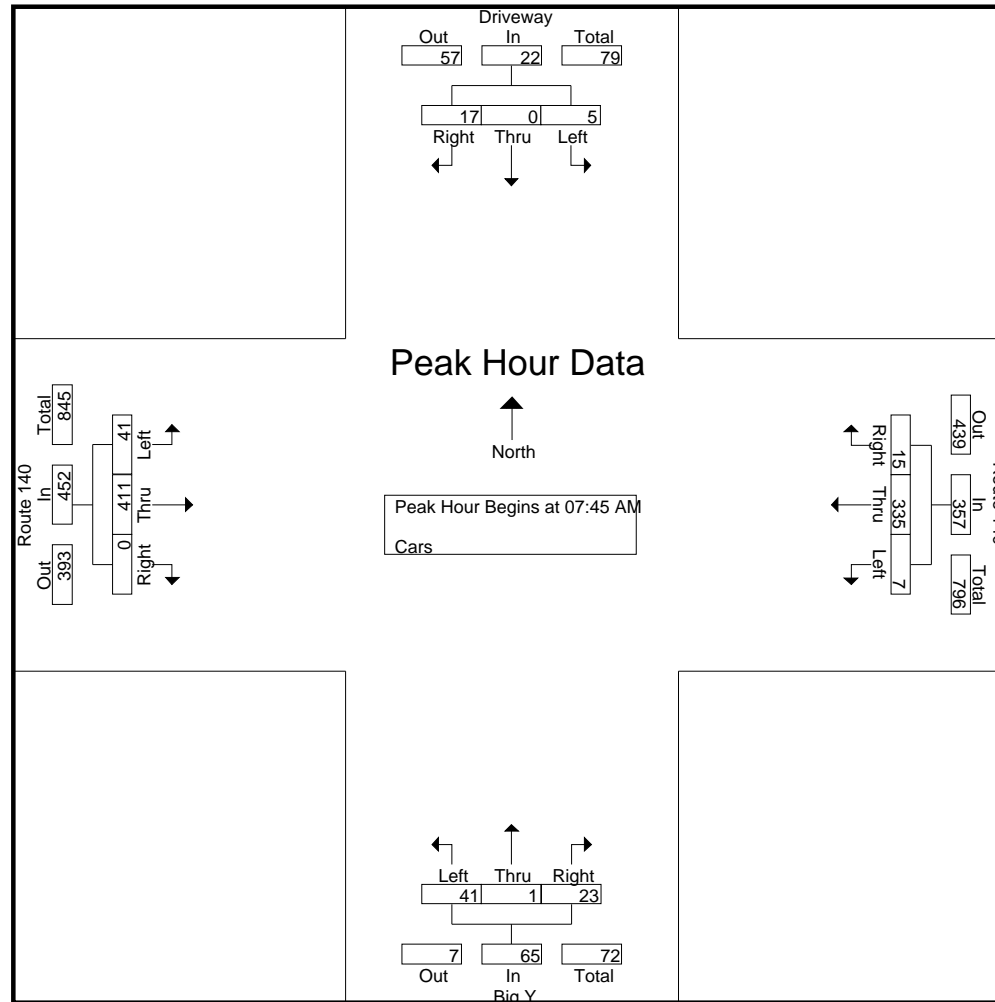
Page No : 5

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

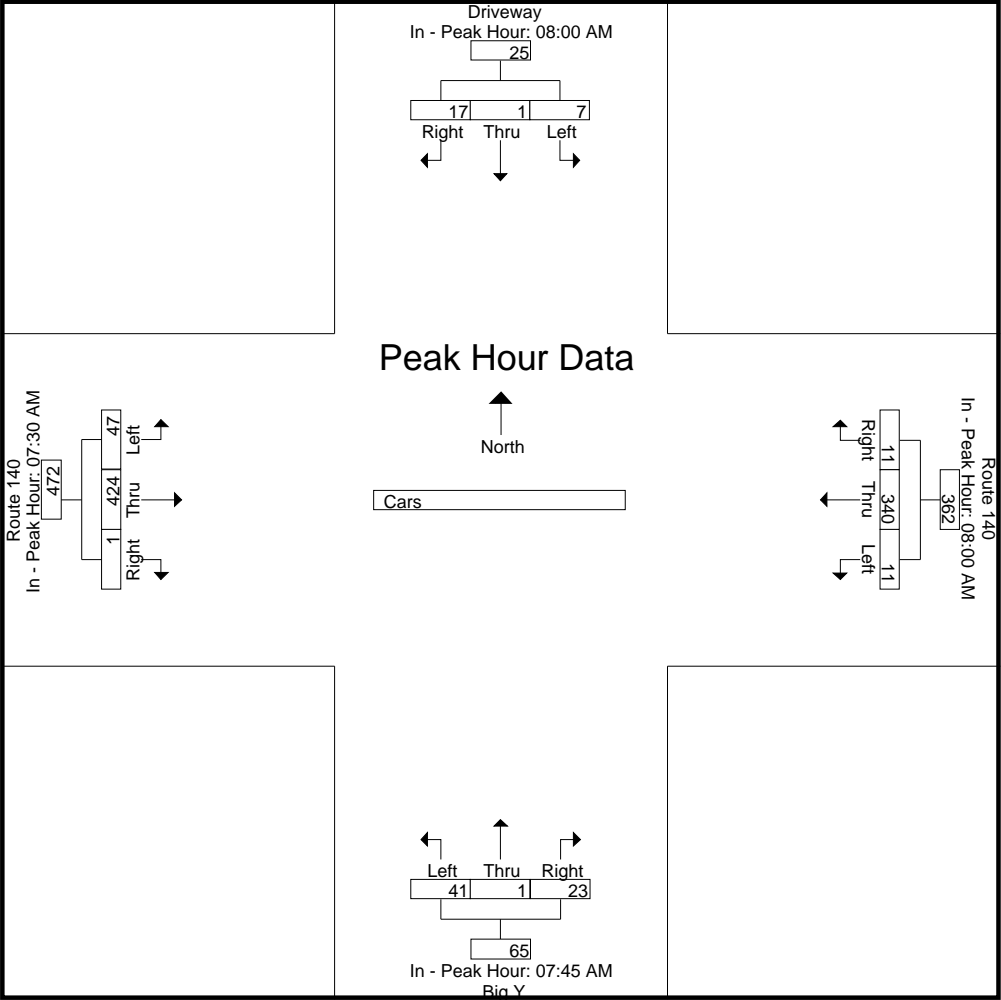
Peak Hour for Each Approach Begins at:

	08:00 AM				08:00 AM				07:45 AM				07:30 AM			
+0 mins.	1	0	3	4	1	85	2	88	10	0	6	16	12	105	1	118
+15 mins.	2	0	6	8	3	81	3	87	6	0	10	16	15	116	0	131
+30 mins.	1	0	5	6	1	97	3	101	13	0	3	16	10	96	0	106
+45 mins.	3	1	3	7	6	77	3	86	12	1	4	17	10	107	0	117
Total Volume	7	1	17	25	11	340	11	362	41	1	23	65	47	424	1	472
% App. Total	28	4	68		3	93.9	3		63.1	1.5	35.4		10	89.8	0.2	
PHF	.583	.250	.708	.781	.458	.876	.917	.896	.788	.250	.575	.956	.783	.914	.250	.901

Accurate Counts
978-664-2565

File Name : 66410004
Site Code : 66410004
Start Date : 3/12/2020
Page No : 6

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410004
Site Code : 66410004
Start Date : 3/12/2020
Page No : 7

Groups Printed- Trucks

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
07:00 AM	0	0	0	0	1	0	1	0	0	0	0	0	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	2	0	2
07:30 AM	0	0	0	0	1	0	0	0	0	0	2	0	3
07:45 AM	0	0	0	0	1	1	0	0	0	0	2	0	4
Total	0	0	0	0	3	1	1	0	0	0	6	0	11
08:00 AM	0	0	1	0	4	0	0	0	0	0	1	0	6
08:15 AM	0	0	0	0	1	0	0	0	0	1	1	0	3
08:30 AM	0	0	0	0	2	0	0	0	0	0	2	0	4
08:45 AM	0	0	0	0	2	0	0	0	0	0	2	0	4
Total	0	0	1	0	9	0	0	0	0	1	6	0	17
Grand Total	0	0	1	0	12	1	1	0	0	1	12	0	28
Apprch %	0	0	100	0	92.3	7.7	100	0	0	7.7	92.3	0	
Total %	0	0	3.6	0	42.9	3.6	3.6	0	0	3.6	42.9	0	

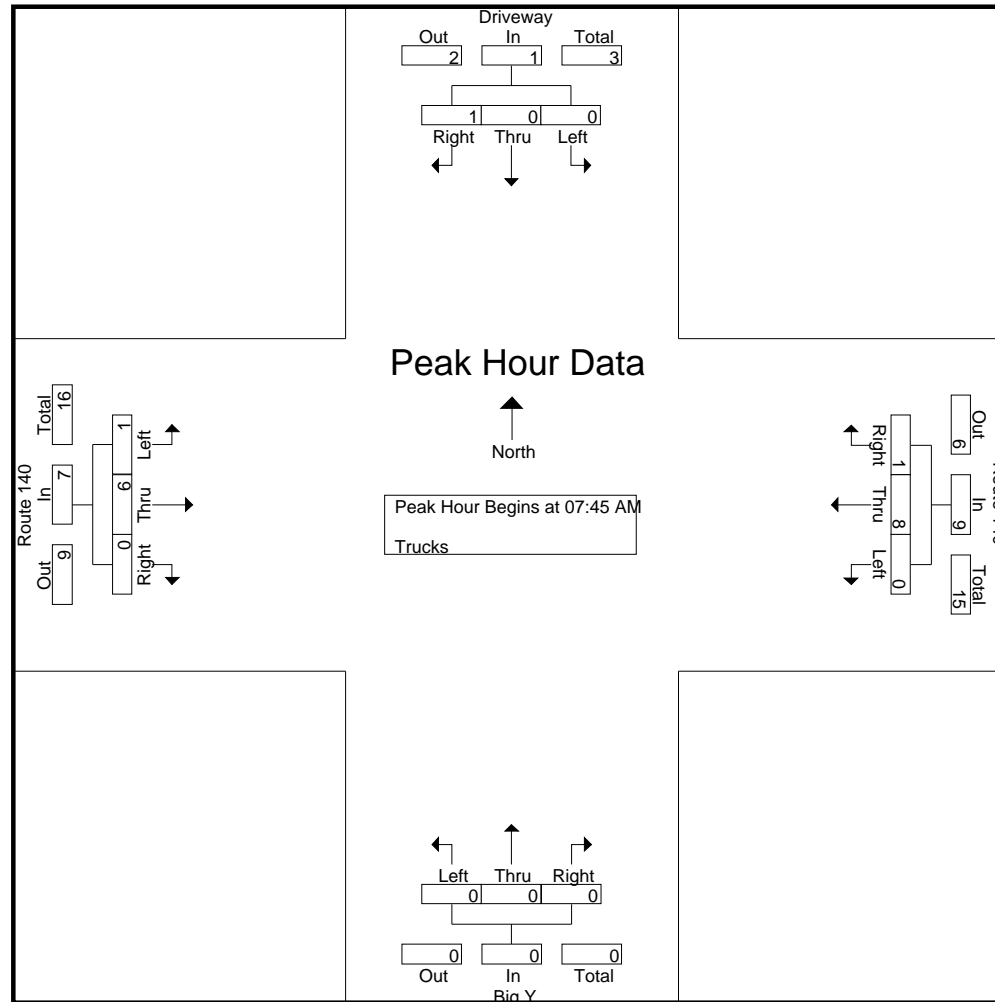
	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	1	1	2	0	0	0	0	0	2	0	2	4
08:00 AM	0	0	1	1	0	4	0	4	0	0	0	0	0	1	0	1	6
08:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	1	0	2	3
08:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
Total Volume	0	0	1	1	0	8	1	9	0	0	0	0	1	6	0	7	17
% App. Total	0	0	100		0	88.9	11.1		0	0	0		14.3	85.7	0		
PHF	.000	.000	.250	.250	.000	.500	.250	.563	.000	.000	.000	.000	.250	.750	.000	.875	.708

Accurate Counts

978-664-2565

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410004
Site Code : 66410004
Start Date : 3/12/2020
Page No : 8



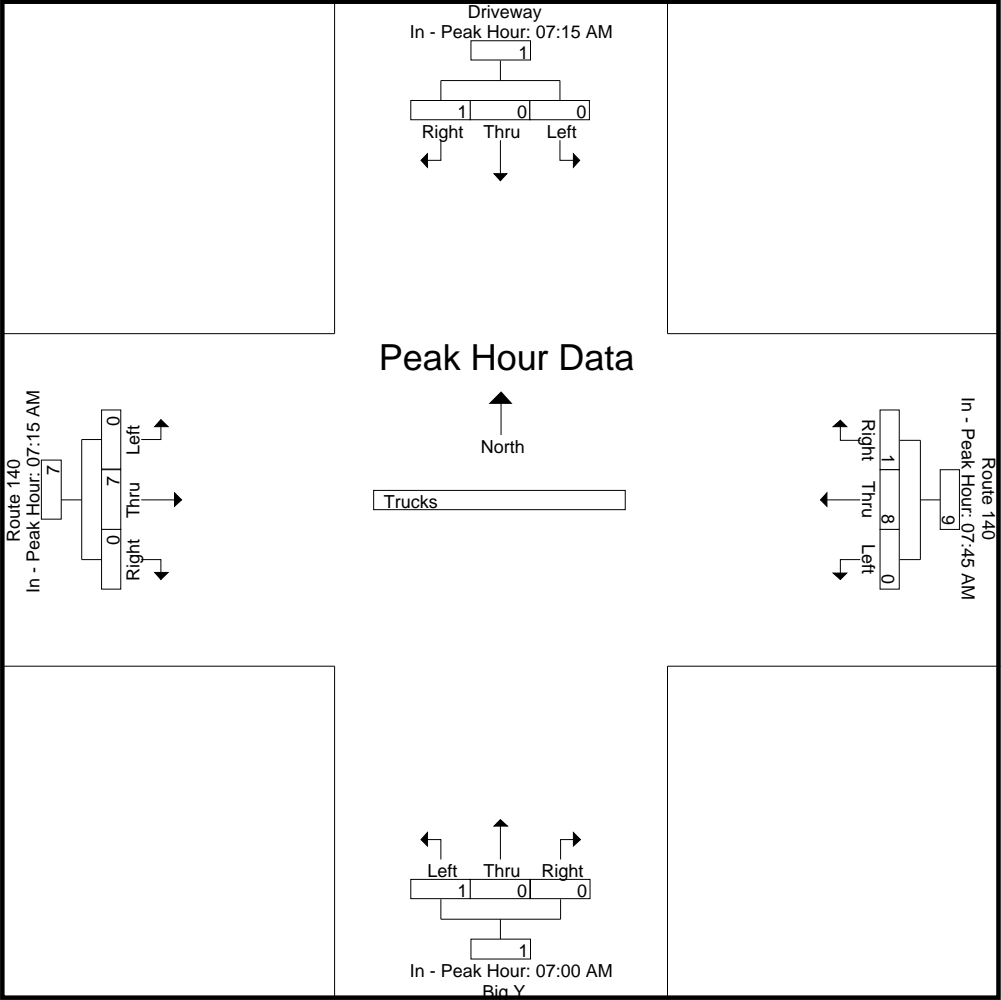
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:45 AM				07:00 AM				07:15 AM			
+0 mins.	0	0	0	0	0	1	1	2	1	0	0	1	0	2	0	2
+15 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	2	0	2
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
+45 mins.	0	0	1	1	0	2	0	2	0	0	0	0	0	1	0	1
Total Volume	0	0	1	1	0	8	1	9	1	0	0	1	0	7	0	7
% App. Total	0	0	100		0	88.9	11.1		100	0	0		0	100	0	
PHF	.000	.000	.250	.250	.000	.500	.250	.563	.250	.000	.000	.250	.000	.875	.000	.875

Accurate Counts
978-664-2565

File Name : 66410004
Site Code : 66410004
Start Date : 3/12/2020
Page No : 9

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

Page No : 10

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Bikes Peds

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0	1	2	3
08:00 AM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	3	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	1	3	0	3
Grand Total	0	0	0	2	0	1	0	0	0	0	0	1	0	1	0	1	4	2	6
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0				
Total %	0	0	0		0	50	0		0	0	0		0	50	0		66.7	33.3	

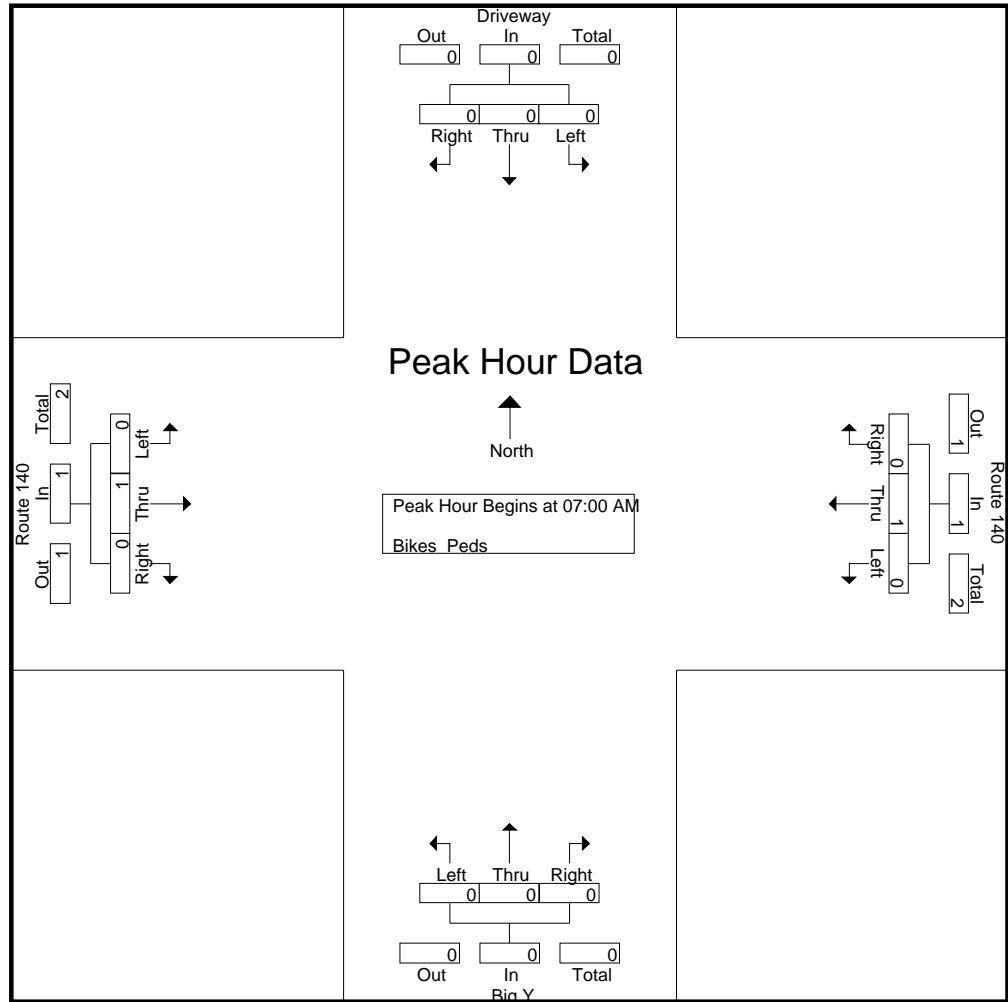
	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West						
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 07:00 AM																			
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1			2
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1			2
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0				
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250			.250

Accurate Counts

978-664-2565

File Name : 66410004
 Site Code : 66410004
 Start Date : 3/12/2020
 Page No : 11

N/S Street : Driveway / Big Y
 E/W Street : Route 140
 City/State : Franklin, MA
 Weather : Clear



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

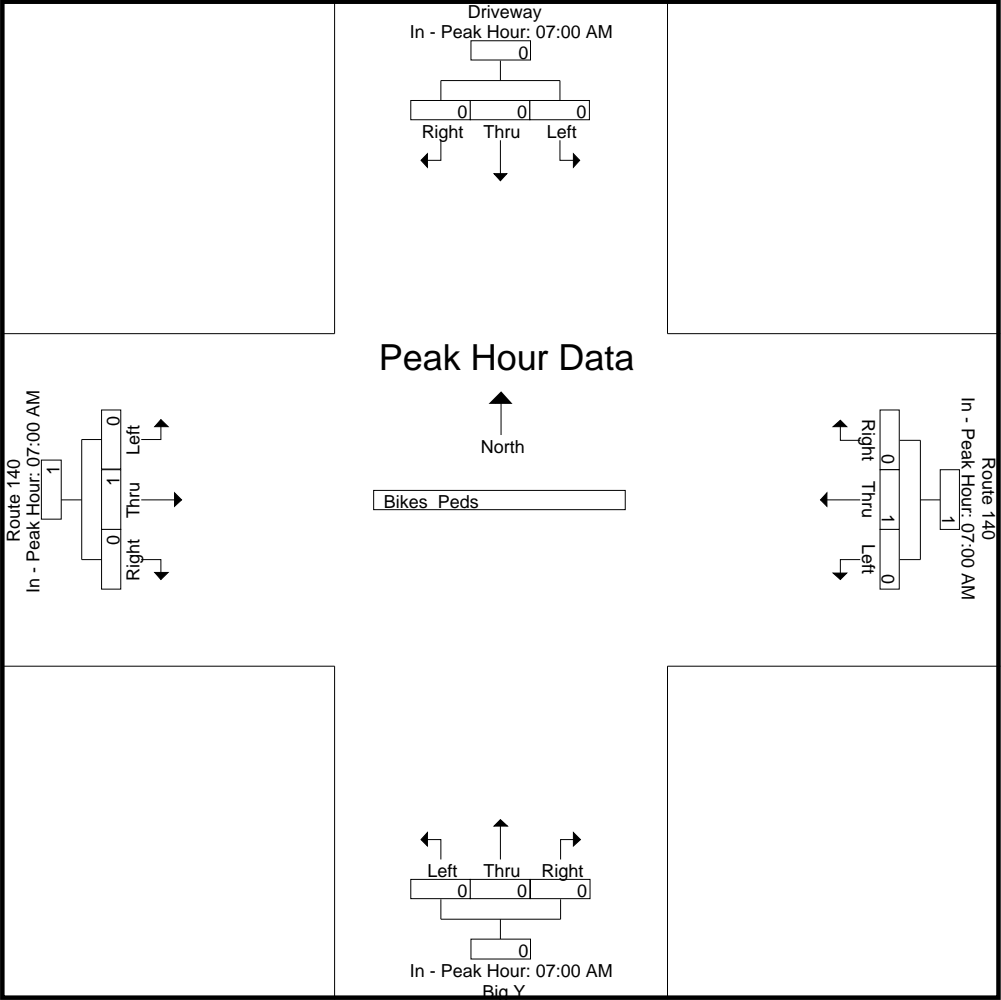
	07:00 AM				07:00 AM				07:00 AM				07:00 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
% App. Total	0	0	0	0	0	100	0	0	0	0	0	0	0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

Accurate Counts

978-664-2565

File Name : 66410004
 Site Code : 66410004
 Start Date : 3/12/2020
 Page No : 12

N/S Street : Driveway / Big Y
 E/W Street : Route 140
 City/State : Franklin, MA
 Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

Page No : 1

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	1	42	18	127	3	24	0	31	9	131	0	391
04:15 PM	4	0	9	10	153	1	30	0	16	10	94	1	328
04:30 PM	2	1	7	13	142	2	35	1	25	9	106	3	346
04:45 PM	2	0	7	17	119	3	30	0	23	9	95	1	306
Total	13	2	65	58	541	9	119	1	95	37	426	5	1371
05:00 PM	1	0	10	20	141	0	44	0	22	14	101	2	355
05:15 PM	4	2	6	14	116	2	34	0	19	8	91	2	298
05:30 PM	1	0	8	16	104	0	37	0	16	4	85	1	272
05:45 PM	3	0	10	8	113	2	39	0	11	9	97	4	296
Total	9	2	34	58	474	4	154	0	68	35	374	9	1221
Grand Total	22	4	99	116	1015	13	273	1	163	72	800	14	2592
Apprch %	17.6	3.2	79.2	10.1	88.7	1.1	62.5	0.2	37.3	8.1	90.3	1.6	
Total %	0.8	0.2	3.8	4.5	39.2	0.5	10.5	0	6.3	2.8	30.9	0.5	
Cars	22	4	99	116	1008	13	273	1	163	72	795	14	2580
% Cars	100	100	100	100	99.3	100	100	100	100	100	99.4	100	99.5
Trucks	0	0	0	0	7	0	0	0	0	0	5	0	12
% Trucks	0	0	0	0	0.7	0	0	0	0	0	0.6	0	0.5

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	5	1	42	48	18	127	3	148	24	0	31	55	9	131	0	140	391
04:15 PM	4	0	9	13	10	153	1	164	30	0	16	46	10	94	1	105	328
04:30 PM	2	1	7	10	13	142	2	157	35	1	25	61	9	106	3	118	346
04:45 PM	2	0	7	9	17	119	3	139	30	0	23	53	9	95	1	105	306
Total Volume	13	2	65	80	58	541	9	608	119	1	95	215	37	426	5	468	1371
% App. Total	16.2	2.5	81.2		9.5	89	1.5		55.3	0.5	44.2		7.9	91	1.1		
PHF	.650	.500	.387	.417	.806	.884	.750	.927	.850	.250	.766	.881	.925	.813	.417	.836	.877
Cars	13	2	65	80	58	536	9	603	119	1	95	215	37	423	5	465	1363
% Cars	100	100	100	100	100	99.1	100	99.2	100	100	100	100	100	99.3	100	99.4	99.4
Trucks	0	0	0	0	0	5	0	5	0	0	0	0	0	3	0	3	8
% Trucks	0	0	0	0	0	0.9	0	0.8	0	0	0	0	0	0.7	0	0.6	0.6

Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

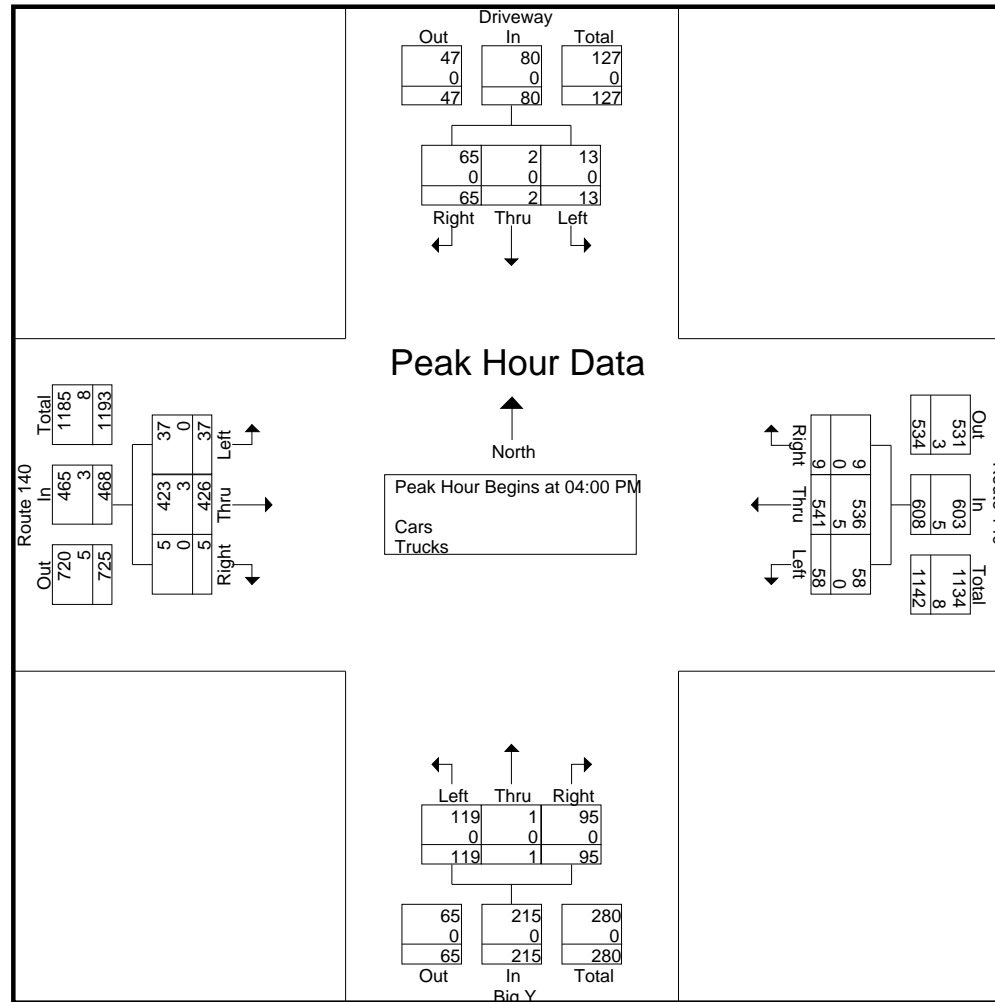
Page No : 2

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



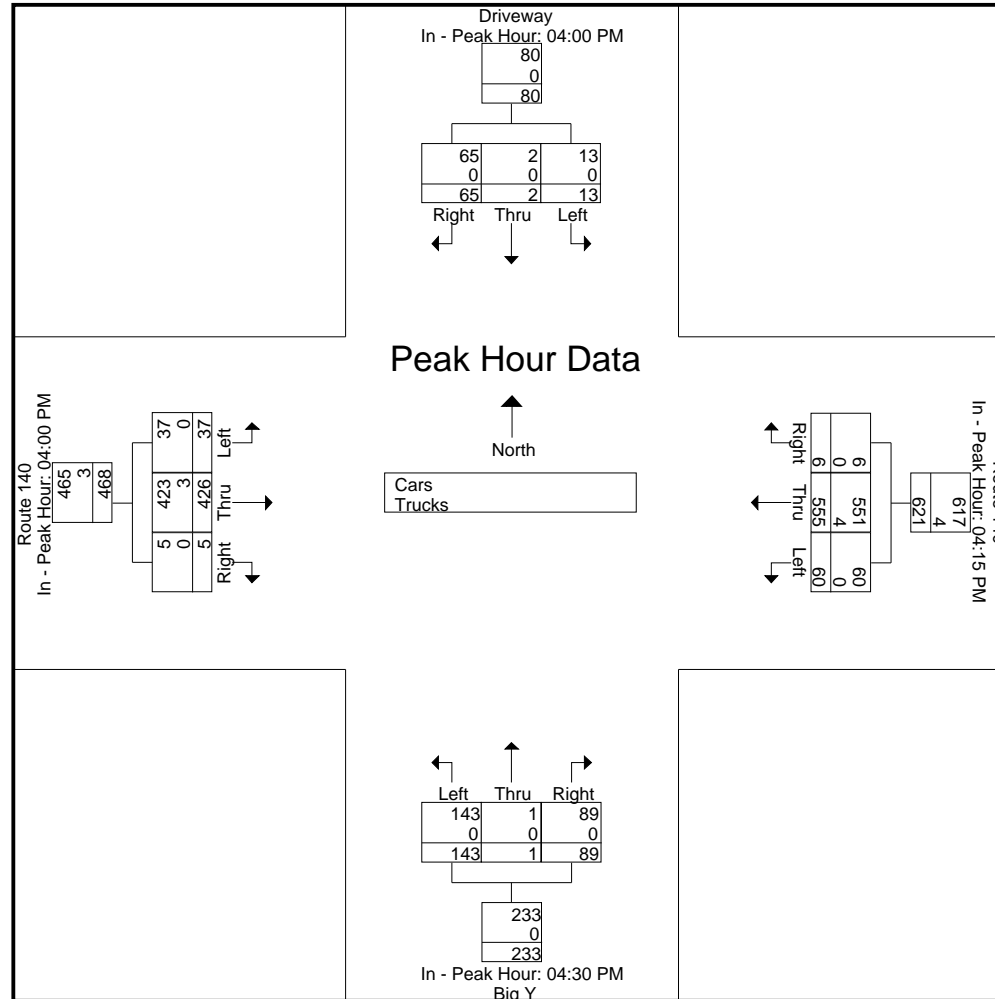
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:30 PM				04:00 PM			
+0 mins.	5	1	42	48	10	153	1	164	35	1	25	61	9	131	0	140
+15 mins.	4	0	9	13	13	142	2	157	30	0	23	53	10	94	1	105
+30 mins.	2	1	7	10	17	119	3	139	44	0	22	66	9	106	3	118
+45 mins.	2	0	7	9	20	141	0	161	34	0	19	53	9	95	1	105
Total Volume	13	2	65	80	60	555	6	621	143	1	89	233	37	426	5	468
% App. Total	16.2	2.5	81.2		9.7	89.4	1		61.4	0.4	38.2		7.9	91	1.1	
PHF	.650	.500	.387	.417	.750	.907	.500	.947	.813	.250	.890	.883	.925	.813	.417	.836
Cars	13	2	65	80	60	551	6	617	143	1	89	233	37	423	5	465
% Cars	100	100	100	100	100	99.3	100	99.4	100	100	100	100	100	99.3	100	99.4
Trucks	0	0	0	0	0	4	0	4	0	0	0	0	0	3	0	3

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

Page No : 4

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	5	1	42	18	125	3	24	0	31	9	131	0	389
04:15 PM	4	0	9	10	151	1	30	0	16	10	92	1	324
04:30 PM	2	1	7	13	142	2	35	1	25	9	105	3	345
04:45 PM	2	0	7	17	118	3	30	0	23	9	95	1	305
Total	13	2	65	58	536	9	119	1	95	37	423	5	1363
05:00 PM	1	0	10	20	140	0	44	0	22	14	101	2	354
05:15 PM	4	2	6	14	115	2	34	0	19	8	89	2	295
05:30 PM	1	0	8	16	104	0	37	0	16	4	85	1	272
05:45 PM	3	0	10	8	113	2	39	0	11	9	97	4	296
Total	9	2	34	58	472	4	154	0	68	35	372	9	1217
Grand Total	22	4	99	116	1008	13	273	1	163	72	795	14	2580
Apprch %	17.6	3.2	79.2	10.2	88.7	1.1	62.5	0.2	37.3	8.2	90.2	1.6	
Total %	0.9	0.2	3.8	4.5	39.1	0.5	10.6	0	6.3	2.8	30.8	0.5	

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	5	1	42	48	18	125	3	146	24	0	31	55	9	131	0	140	389
04:15 PM	4	0	9	13	10	151	1	162	30	0	16	46	10	92	1	103	324
04:30 PM	2	1	7	10	13	142	2	157	35	1	25	61	9	105	3	117	345
04:45 PM	2	0	7	9	17	118	3	138	30	0	23	53	9	95	1	105	305
Total Volume	13	2	65	80	58	536	9	603	119	1	95	215	37	423	5	465	1363
% App. Total	16.2	2.5	81.2		9.6	88.9	1.5		55.3	0.5	44.2		8	91	1.1		
PHF	.650	.500	.387	.417	.806	.887	.750	.931	.850	.250	.766	.881	.925	.807	.417	.830	.876

Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

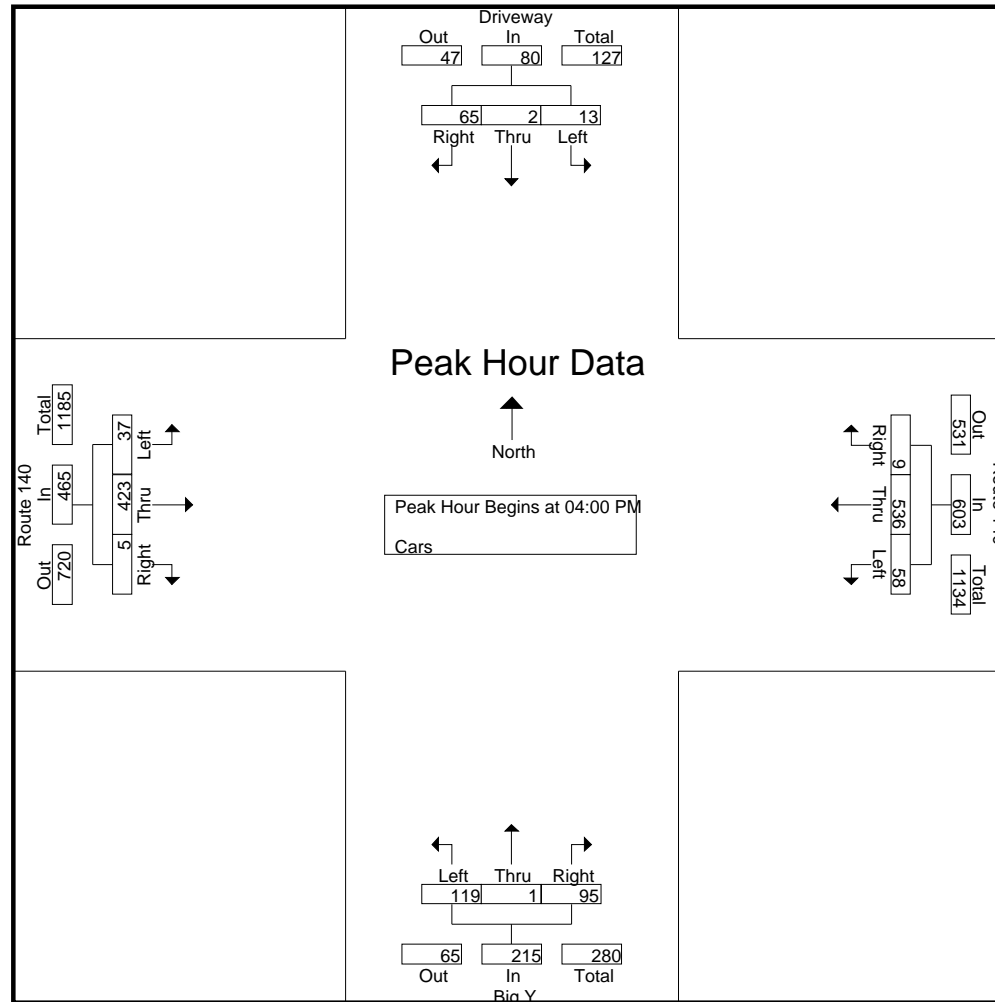
Page No : 5

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

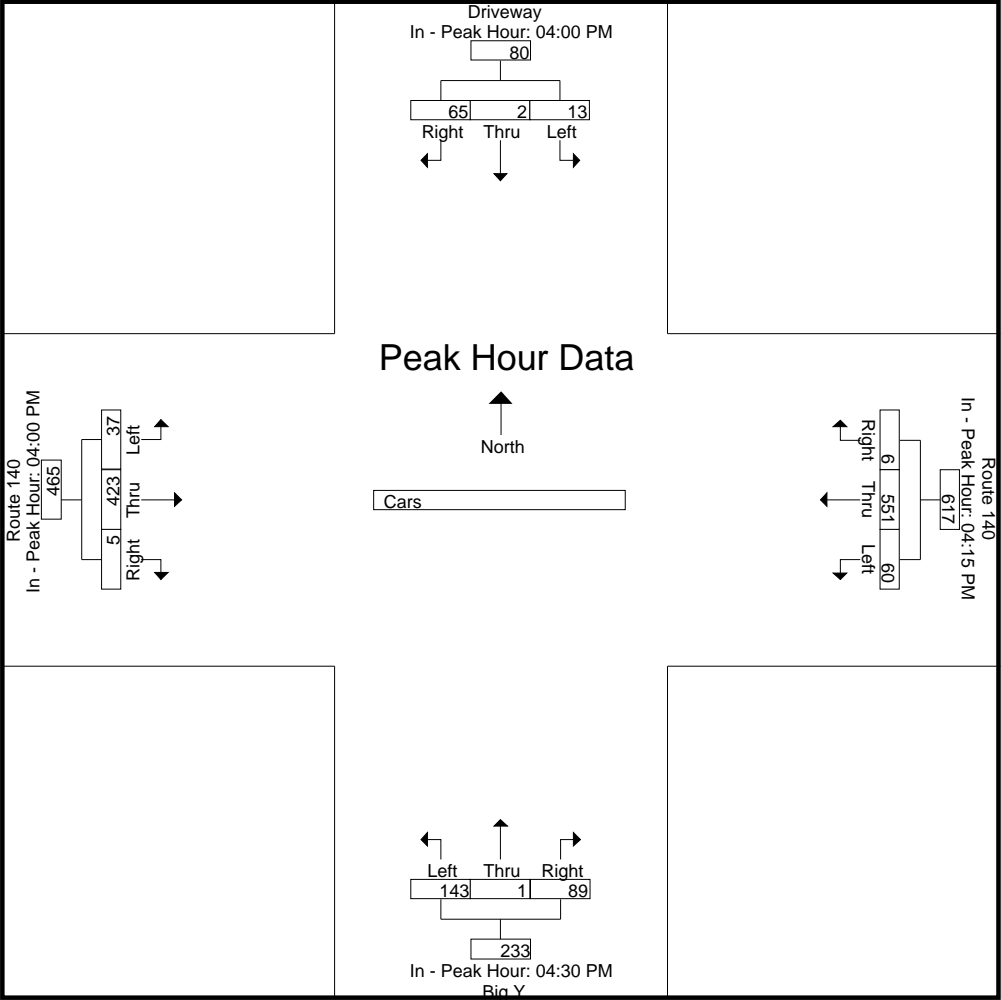
Peak Hour for Each Approach Begins at:

	04:00 PM				04:15 PM				04:30 PM				04:00 PM			
+0 mins.	5	1	42	48	10	151	1	162	35	1	25	61	9	131	0	140
+15 mins.	4	0	9	13	13	142	2	157	30	0	23	53	10	92	1	103
+30 mins.	2	1	7	10	17	118	3	138	44	0	22	66	9	105	3	117
+45 mins.	2	0	7	9	20	140	0	160	34	0	19	53	9	95	1	105
Total Volume	13	2	65	80	60	551	6	617	143	1	89	233	37	423	5	465
% App. Total	16.2	2.5	81.2		9.7	89.3	1		61.4	0.4	38.2		8	91	1.1	
PHF	.650	.500	.387	.417	.750	.912	.500	.952	.813	.250	.890	.883	.925	.807	.417	.830

Accurate Counts
978-664-2565

File Name : 66410004
Site Code : 66410004
Start Date : 3/12/2020
Page No : 6

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 66410004
Site Code : 66410004
Start Date : 3/12/2020
Page No : 7

Groups Printed- Trucks

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
04:00 PM	0	0	0	0	2	0	0	0	0	0	0	0	2
04:15 PM	0	0	0	0	2	0	0	0	0	0	2	0	4
04:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
04:45 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	0	0	0	0	5	0	0	0	0	0	3	0	8
05:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	1	0	0	0	0	0	2	0	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	2	0	0	0	0	0	2	0	4
Grand Total	0	0	0	0	7	0	0	0	0	0	5	0	12
Apprch %	0	0	0	0	100	0	0	0	0	0	100	0	
Total %	0	0	0	0	58.3	0	0	0	0	0	41.7	0	

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
04:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	5	0	5	0	0	0	0	0	3	0	3	8
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.625	.000	.625	.000	.000	.000	.000	.000	.375	.000	.375	.500

Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

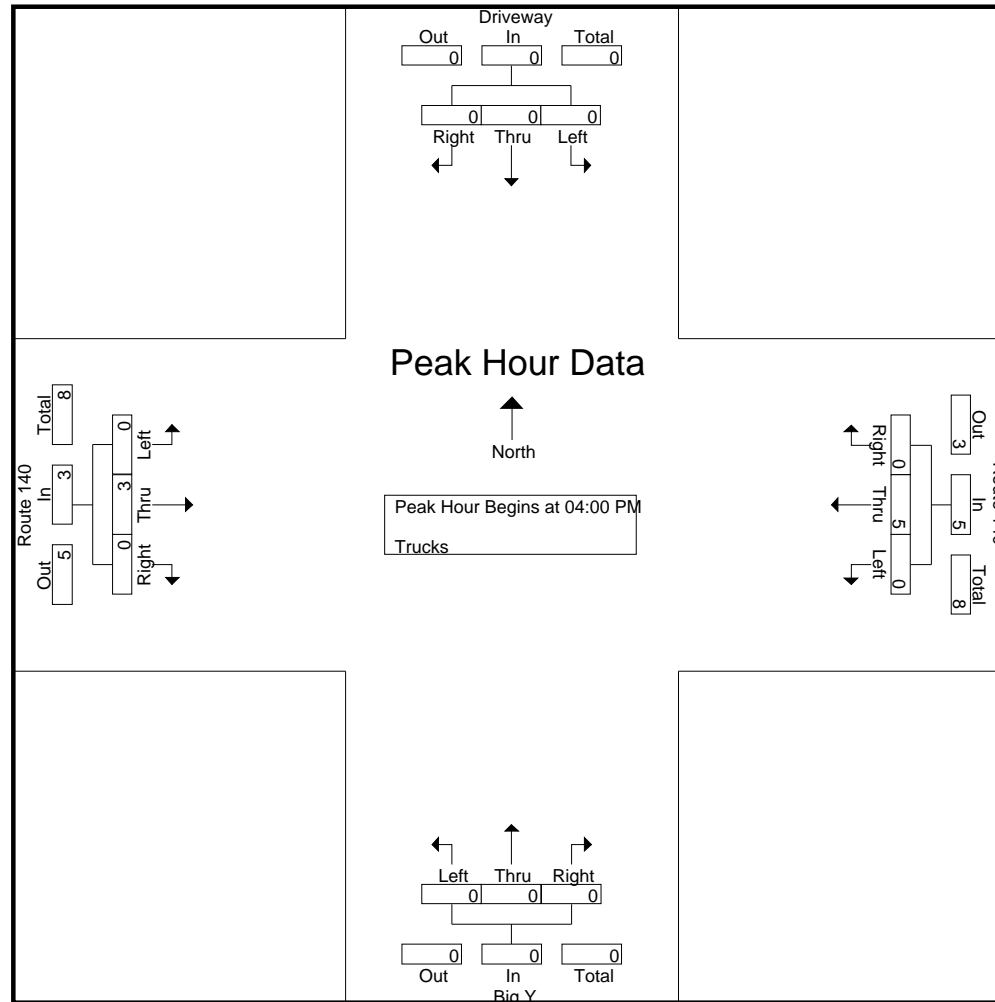
Page No : 8

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

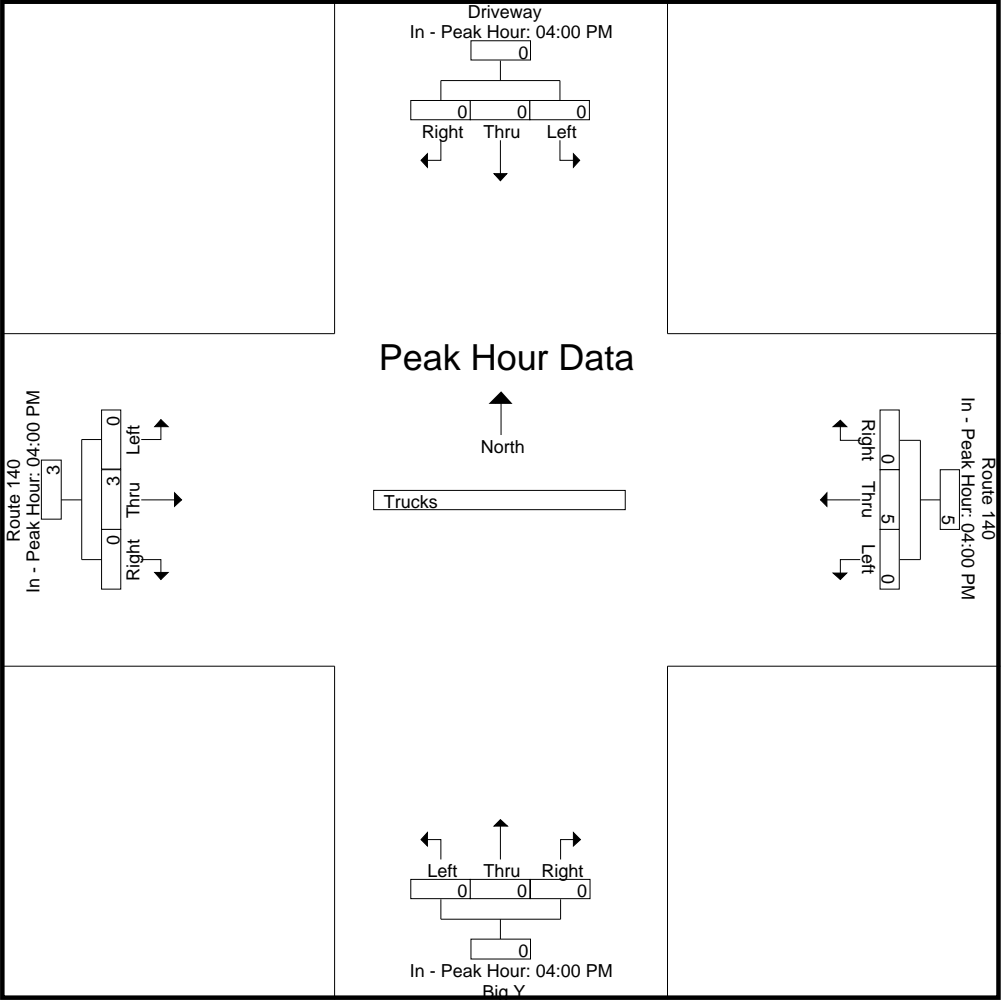
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	5	0	5	0	0	0	0	0	3	0	3
% App. Total	0	0	0	0	0	100	0		0	0	0	0	0	100	0	
PHF	.000	.000	.000	.000	.000	.625	.000	.625	.000	.000	.000	.000	.000	.375	.000	.375

Accurate Counts
978-664-2565

File Name : 66410004
Site Code : 66410004
Start Date : 3/12/2020
Page No : 9

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

Page No : 10

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Bikes Peds

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1
04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	1	2	3
05:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1
05:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
05:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	2	0	1	0	0	0	0	0	0	0	1	0	0	2	2	4
Grand Total	0	0	0	2	0	2	0	0	1	0	0	1	0	1	0	0	3	4	7
Apprch %	0	0	0		0	100	0		100	0	0		0	100	0				
Total %	0	0	0		0	50	0		25	0	0		0	25	0		42.9	57.1	

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West						
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:00 PM																			
04:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0			1
04:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0			1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0
Total Volume	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0			2
% App. Total	0	0	0		0	100	0		100	0	0		0	0	0				
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.250	.000	.000	.250	.000	.000	.000	.000			.500

Accurate Counts

978-664-2565

File Name : 66410004

Site Code : 66410004

Start Date : 3/12/2020

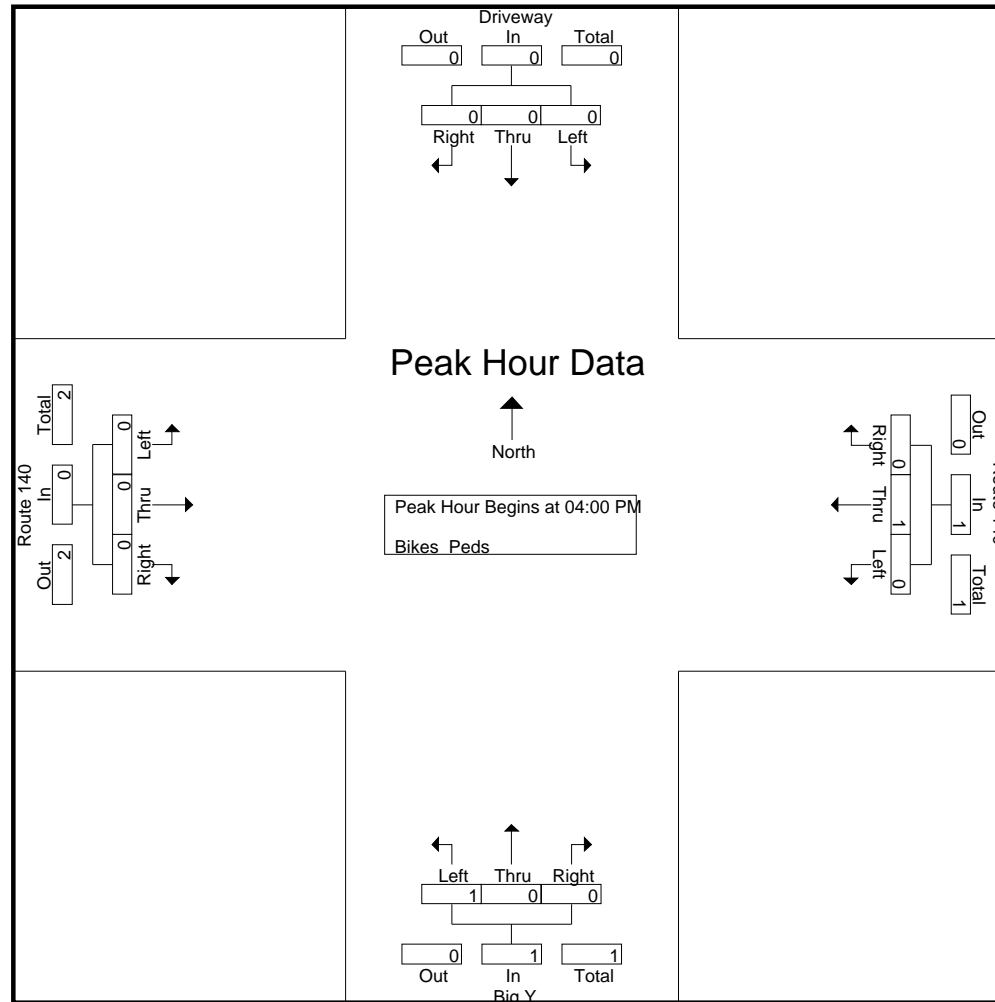
Page No : 11

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



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

Peak Hour for Each Approach Begins at:

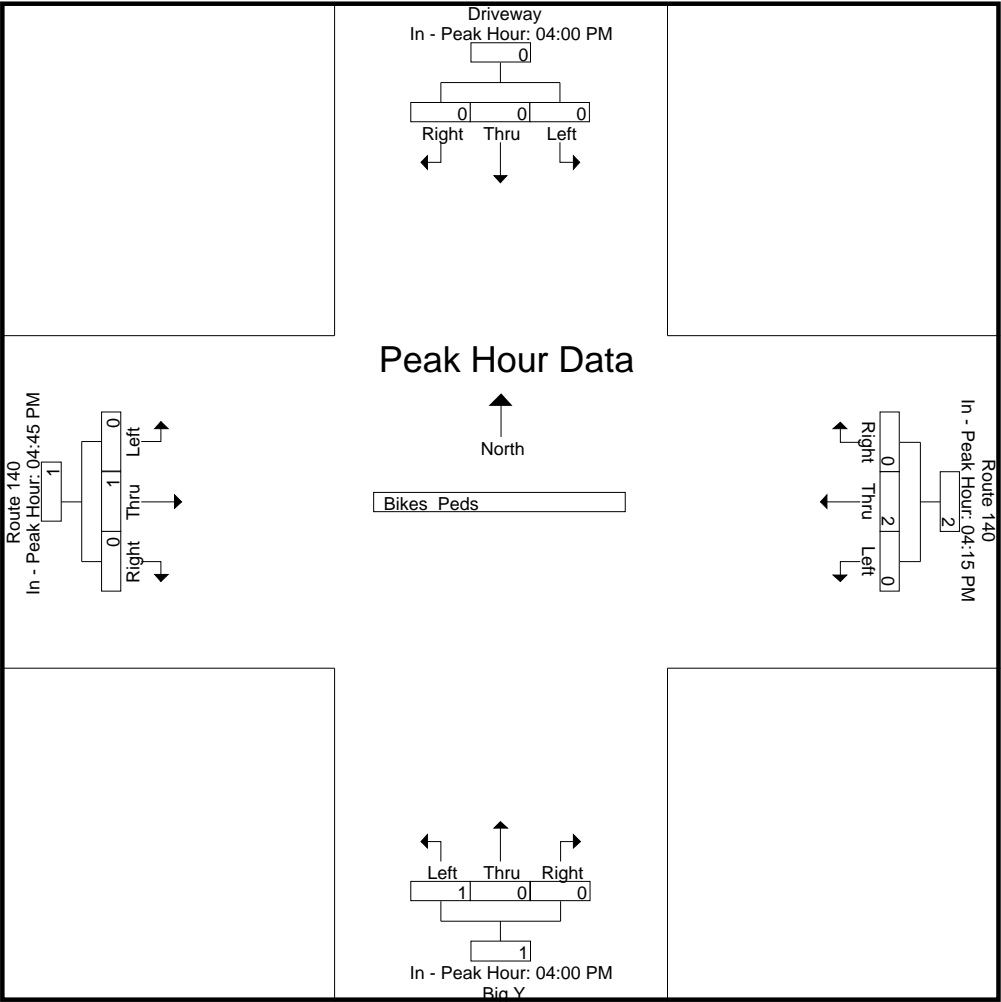
	04:00 PM				04:15 PM				04:00 PM				04:45 PM			
+0 mins.	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	0	2	0	2	1	0	0	1	0	1	0	1
% App. Total	0	0	0	0	0	100	0	2	100	0	0	1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

Accurate Counts

978-664-2565

File Name : 66410004
 Site Code : 66410004
 Start Date : 3/12/2020
 Page No : 12

N/S Street : Driveway / Big Y
 E/W Street : Route 140
 City/State : Franklin, MA
 Weather : Clear



Accurate Counts

978-664-2565

File Name : 664100S4

Site Code : 66410004

Start Date : 3/14/2020

Page No : 1

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars - Trucks

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	1	0	13	12	99	2	36	0	18	9	98	1	289
11:15 AM	1	0	11	16	113	1	43	0	20	7	100	0	312
11:30 AM	3	1	11	14	132	4	33	1	8	9	97	2	315
11:45 AM	1	0	12	16	114	5	42	1	16	8	117	6	338
Total	6	1	47	58	458	12	154	2	62	33	412	9	1254
12:00 PM	1	3	10	13	97	2	40	0	20	6	127	1	320
12:15 PM	3	0	13	9	118	1	52	1	14	7	88	4	310
12:30 PM	1	0	3	9	99	3	40	1	10	9	102	2	279
12:45 PM	0	0	11	19	76	2	30	0	23	11	104	2	278
Total	5	3	37	50	390	8	162	2	67	33	421	9	1187
01:00 PM	2	0	4	10	103	1	39	0	14	9	96	4	282
01:15 PM	1	1	7	16	104	5	28	0	16	9	69	8	264
01:30 PM	2	1	5	7	96	6	33	0	9	10	94	1	264
01:45 PM	0	0	9	12	95	1	26	0	20	8	107	6	284
Total	5	2	25	45	398	13	126	0	59	36	366	19	1094
Grand Total	16	6	109	153	1246	33	442	4	188	102	1199	37	3535
Apprch %	12.2	4.6	83.2	10.7	87	2.3	69.7	0.6	29.7	7.6	89.6	2.8	
Total %	0.5	0.2	3.1	4.3	35.2	0.9	12.5	0.1	5.3	2.9	33.9	1	
Cars	16	6	109	153	1246	33	441	4	188	102	1196	37	3531
% Cars	100	100	100	100	100	100	99.8	100	100	100	99.7	100	99.9
Trucks	0	0	0	0	0	0	1	0	0	0	3	0	4
% Trucks	0	0	0	0	0	0	0.2	0	0	0	0.3	0	0.1

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	1	0	11	12	16	113	1	130	43	0	20	63	7	100	0	107	312
11:30 AM	3	1	11	15	14	132	4	150	33	1	8	42	9	97	2	108	315
11:45 AM	1	0	12	13	16	114	5	135	42	1	16	59	8	117	6	131	338
12:00 PM	1	3	10	14	13	97	2	112	40	0	20	60	6	127	1	134	320
Total Volume	6	4	44	54	59	456	12	527	158	2	64	224	30	441	9	480	1285
% App. Total	11.1	7.4	81.5		11.2	86.5	2.3		70.5	0.9	28.6		6.2	91.9	1.9		
PHF	.500	.333	.917	.900	.922	.864	.600	.878	.919	.500	.800	.889	.833	.868	.375	.896	.950
Cars	6	4	44	54	59	456	12	527	158	2	64	224	30	440	9	479	1284
% Cars	100	100	100	100	100	100	100	100	100	100	100	100	100	99.8	100	99.8	99.9
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0.2	0.1

978-664-2565

File Name : 664100S4

Site Code : 66410004

Start Date : 3/14/2020

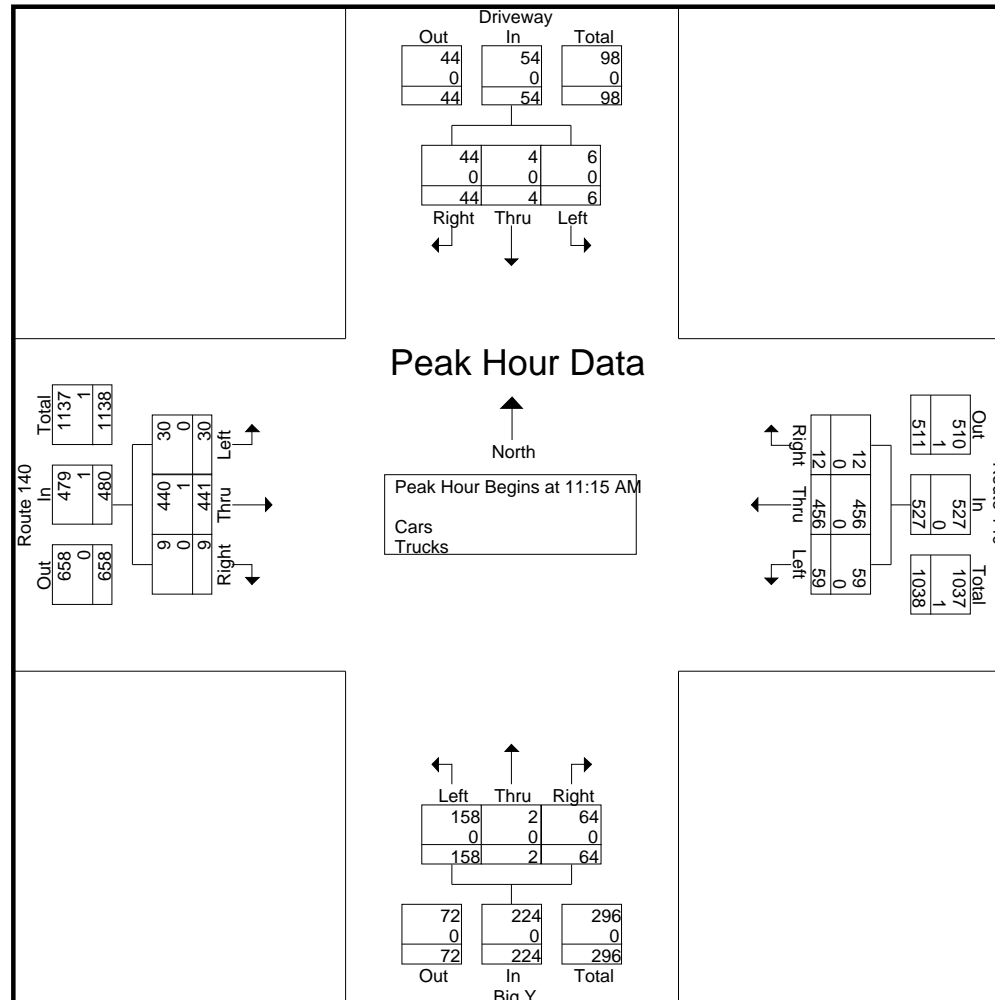
Page No : 2

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



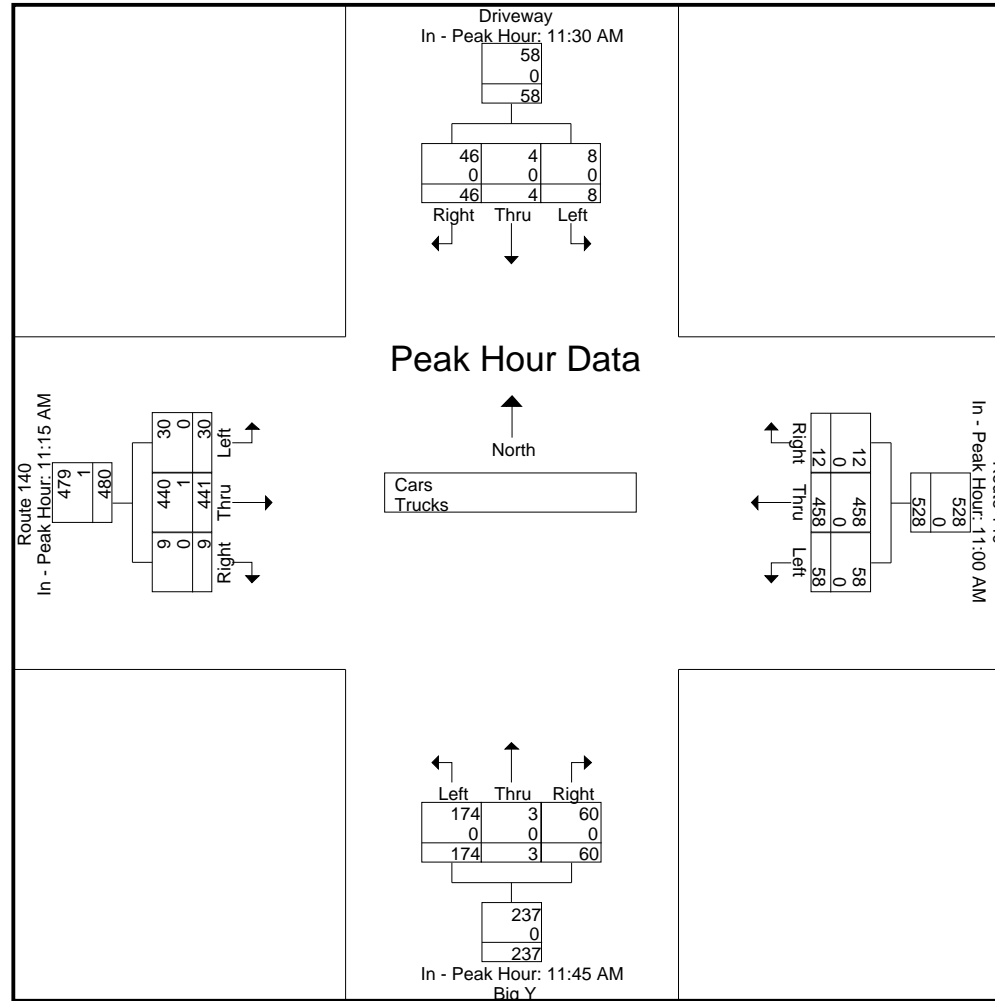
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

Peak Hour for Each Application Begins at:																
	11:30 AM				11:00 AM				11:45 AM				11:15 AM			
+0 mins.	3	1	11	15	12	99	2	113	42	1	16	59	7	100	0	107
+15 mins.	1	0	12	13	16	113	1	130	40	0	20	60	9	97	2	108
+30 mins.	1	3	10	14	14	132	4	150	52	1	14	67	8	117	6	131
+45 mins.	3	0	13	16	16	114	5	135	40	1	10	51	6	127	1	134
Total Volume	8	4	46	58	58	458	12	528	174	3	60	237	30	441	9	480
% App. Total	13.8	6.9	79.3		11	86.7	2.3		73.4	1.3	25.3		6.2	91.9	1.9	
PHF	.667	.333	.885	.906	.906	.867	.600	.880	.837	.750	.750	.884	.833	.868	.375	.896
Cars	8	4	46	58	58	458	12	528	174	3	60	237	30	440	9	479
% Cars	100	100	100	100	100	100	100	100	100	100	100	100	100	99.8	100	99.8
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1

Accurate Counts

978-664-2565



Accurate Counts

978-664-2565

File Name : 664100S4

Site Code : 66410004

Start Date : 3/14/2020

Page No : 4

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Cars

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	1	0	13	12	99	2	36	0	18	9	98	1	289
11:15 AM	1	0	11	16	113	1	43	0	20	7	100	0	312
11:30 AM	3	1	11	14	132	4	33	1	8	9	97	2	315
11:45 AM	1	0	12	16	114	5	42	1	16	8	117	6	338
Total	6	1	47	58	458	12	154	2	62	33	412	9	1254
12:00 PM	1	3	10	13	97	2	40	0	20	6	126	1	319
12:15 PM	3	0	13	9	118	1	52	1	14	7	87	4	309
12:30 PM	1	0	3	9	99	3	40	1	10	9	102	2	279
12:45 PM	0	0	11	19	76	2	29	0	23	11	103	2	276
Total	5	3	37	50	390	8	161	2	67	33	418	9	1183
01:00 PM	2	0	4	10	103	1	39	0	14	9	96	4	282
01:15 PM	1	1	7	16	104	5	28	0	16	9	69	8	264
01:30 PM	2	1	5	7	96	6	33	0	9	10	94	1	264
01:45 PM	0	0	9	12	95	1	26	0	20	8	107	6	284
Total	5	2	25	45	398	13	126	0	59	36	366	19	1094
Grand Total	16	6	109	153	1246	33	441	4	188	102	1196	37	3531
Apprch %	12.2	4.6	83.2	10.7	87	2.3	69.7	0.6	29.7	7.6	89.6	2.8	
Total %	0.5	0.2	3.1	4.3	35.3	0.9	12.5	0.1	5.3	2.9	33.9	1	

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:15 AM																	
11:15 AM	1	0	11	12	16	113	1	130	43	0	20	63	7	100	0	107	312
11:30 AM	3	1	11	15	14	132	4	150	33	1	8	42	9	97	2	108	315
11:45 AM	1	0	12	13	16	114	5	135	42	1	16	59	8	117	6	131	338
12:00 PM	1	3	10	14	13	97	2	112	40	0	20	60	6	126	1	133	319
Total Volume	6	4	44	54	59	456	12	527	158	2	64	224	30	440	9	479	1284
% App. Total	11.1	7.4	81.5		11.2	86.5	2.3		70.5	0.9	28.6		6.3	91.9	1.9		
PHF	.500	.333	.917	.900	.922	.864	.600	.878	.919	.500	.800	.889	.833	.873	.375	.900	.950

Accurate Counts

978-664-2565

File Name : 664100S4

Site Code : 66410004

Start Date : 3/14/2020

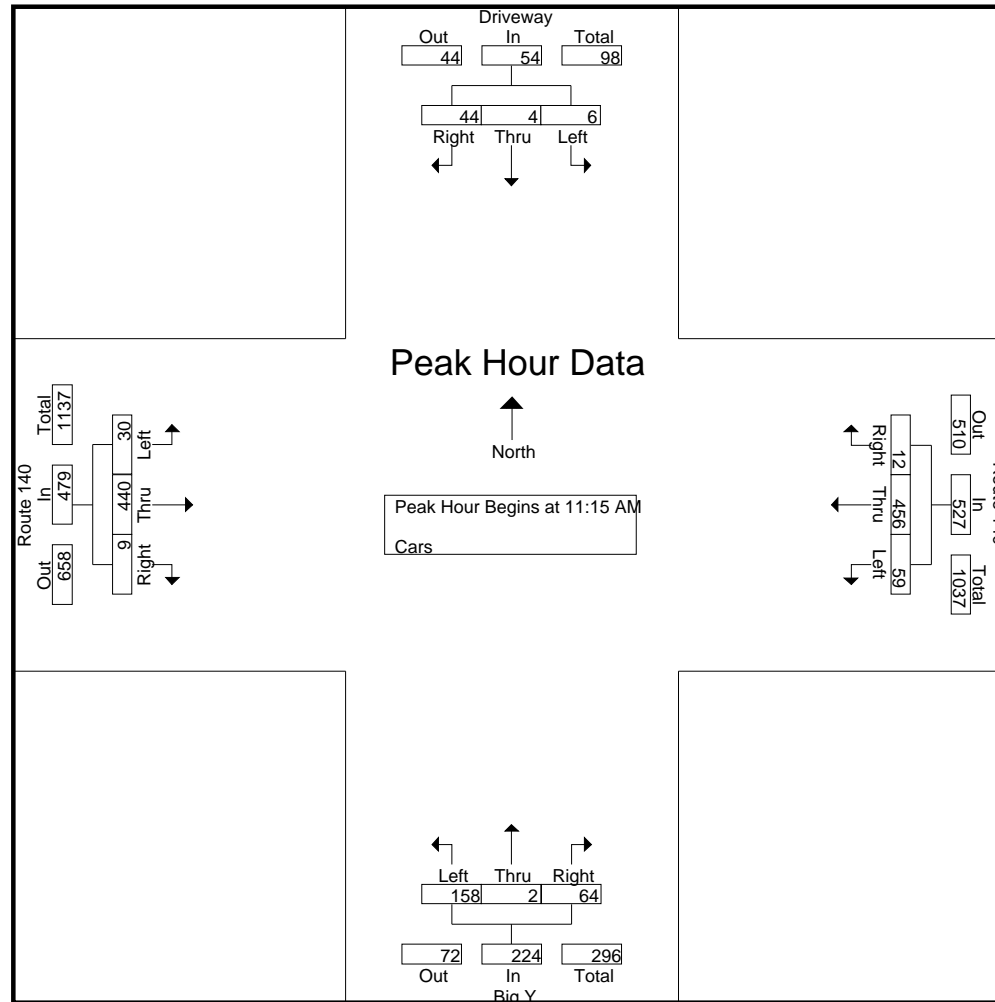
Page No : 5

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

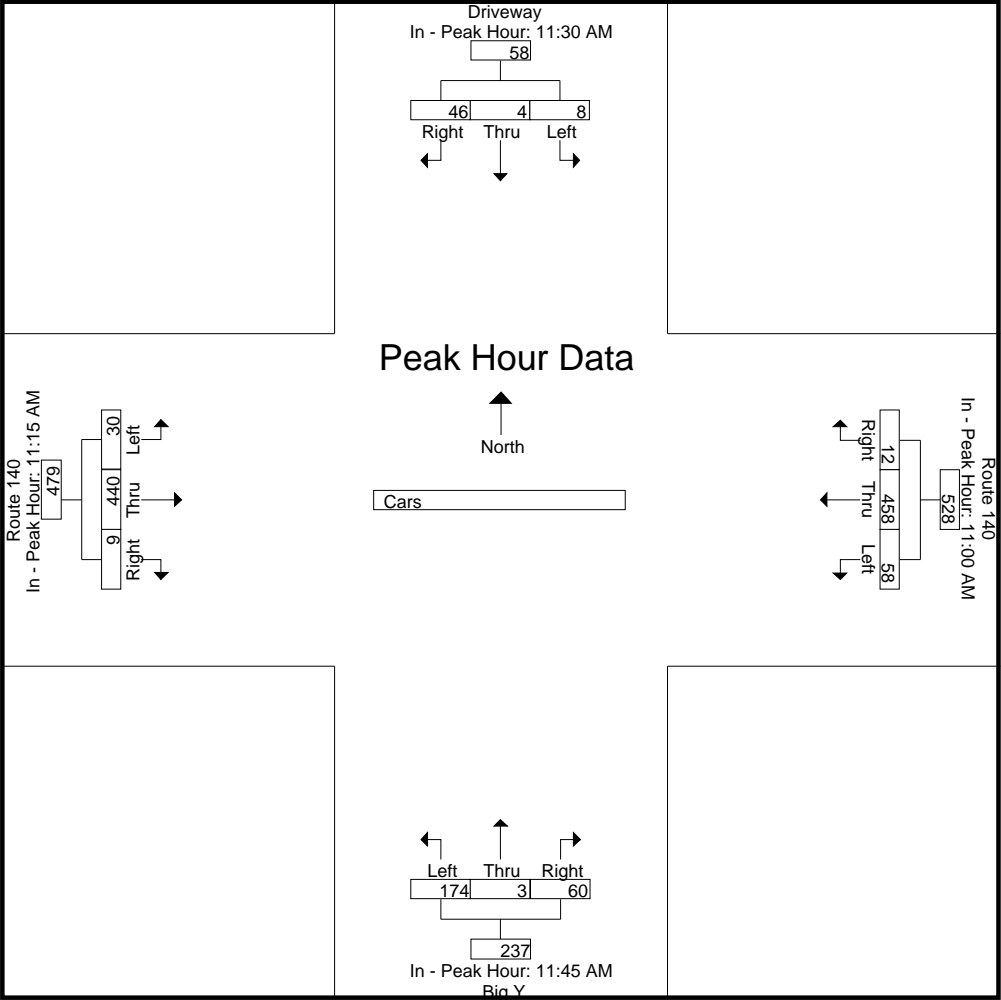
Peak Hour for Each Approach Begins at:

	11:30 AM				11:00 AM				11:45 AM				11:15 AM			
+0 mins.	3	1	11	15	12	99	2	113	42	1	16	59	7	100	0	107
+15 mins.	1	0	12	13	16	113	1	130	40	0	20	60	9	97	2	108
+30 mins.	1	3	10	14	14	132	4	150	52	1	14	67	8	117	6	131
+45 mins.	3	0	13	16	16	114	5	135	40	1	10	51	6	126	1	133
Total Volume	8	4	46	58	58	458	12	528	174	3	60	237	30	440	9	479
% App. Total	13.8	6.9	79.3		11	86.7	2.3		73.4	1.3	25.3		6.3	91.9	1.9	
PHF	.667	.333	.885	.906	.906	.867	.600	.880	.837	.750	.750	.884	.833	.873	.375	.900

Accurate Counts
978-664-2565

File Name : 664100S4
Site Code : 66410004
Start Date : 3/14/2020
Page No : 6

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



Accurate Counts

978-664-2565

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear

File Name : 664100S4
Site Code : 66410004
Start Date : 3/14/2020
Page No : 7

Groups Printed- Trucks

	Driveway From North			Route 140 From East			Big Y From South			Route 140 From West			
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Int. Total
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	1	0	0	0	1	0	2
Total	0	0	0	0	0	0	1	0	0	0	3	0	4
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	1	0	0	0	3	0	4
Apprch %	0	0	0	0	0	0	100	0	0	0	100	0	
Total %	0	0	0	0	0	0	25	0	0	0	75	0	

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
12:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
Total Volume	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3	4
% App. Total	0	0	0		0	0	0		100	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.750	.000	.750	.500

Accurate Counts

978-664-2565

File Name : 664100S4

Site Code : 66410004

Start Date : 3/14/2020

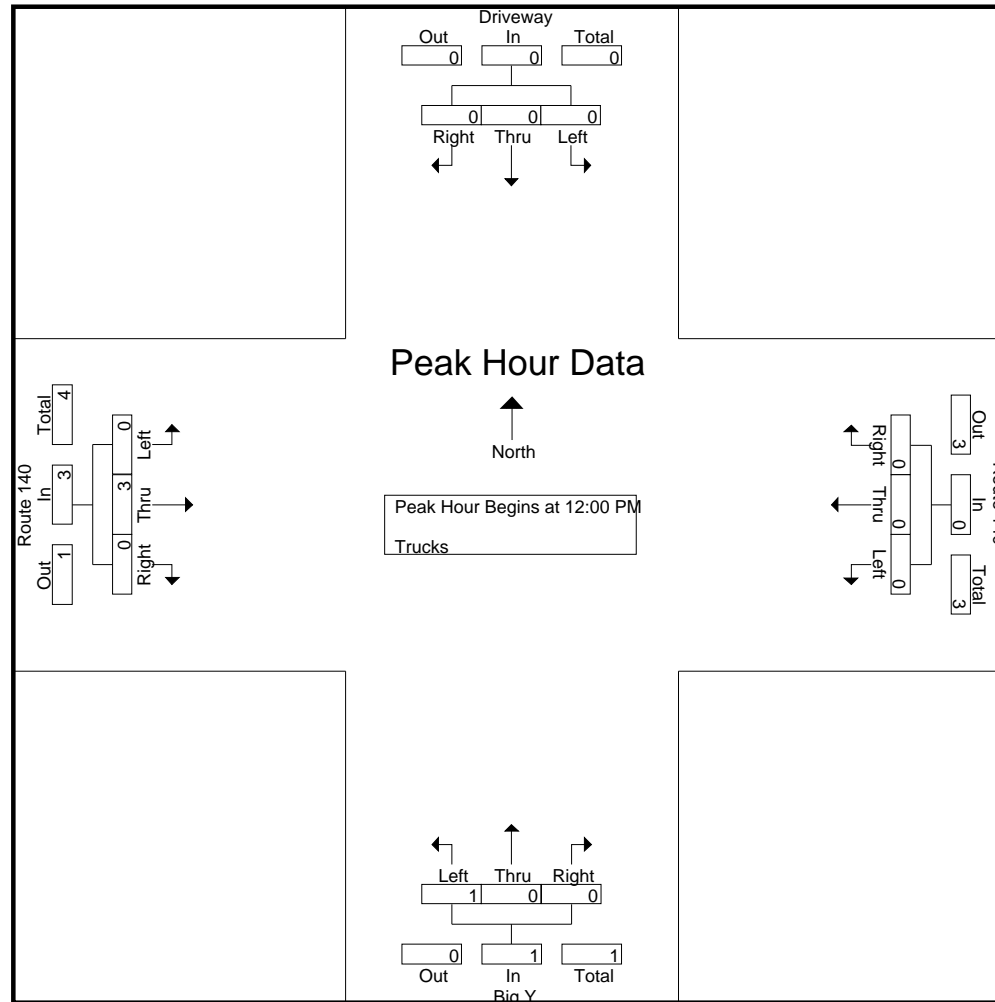
Page No : 8

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

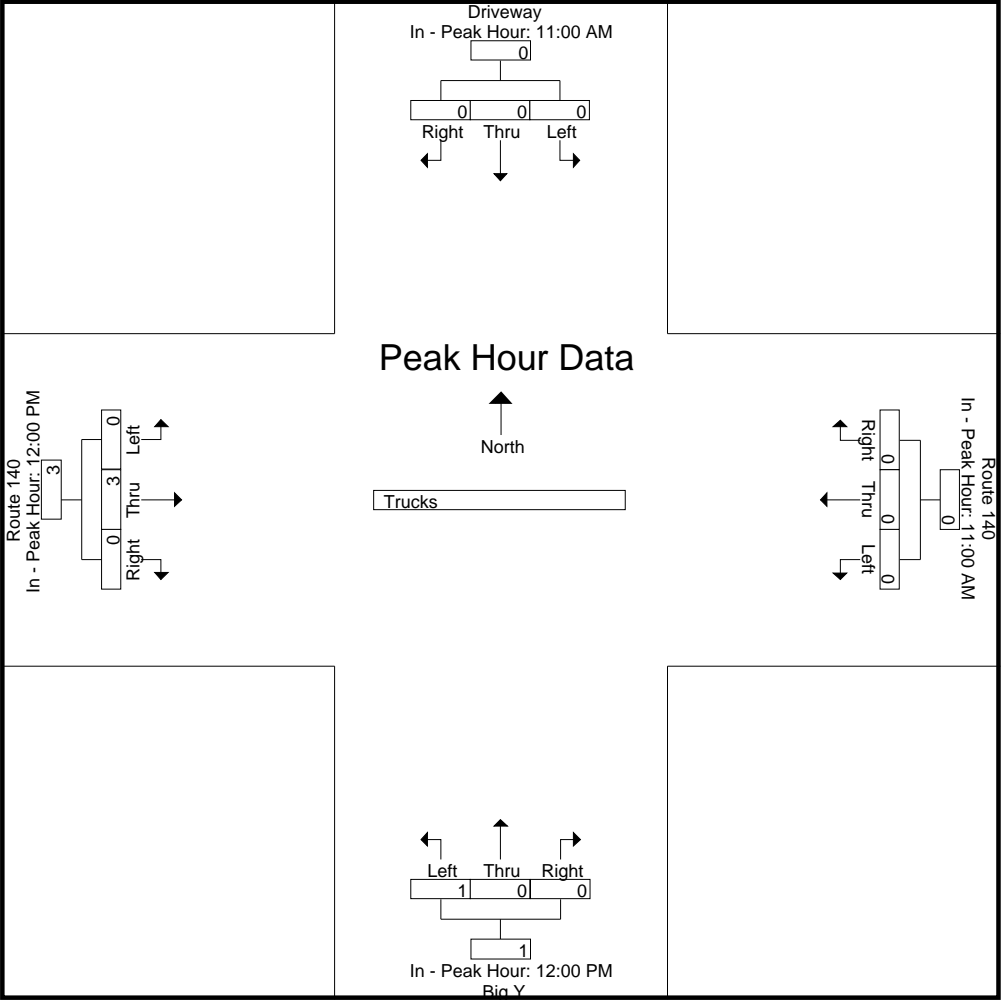
	11:00 AM				11:00 AM				12:00 PM				12:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1
Total Volume	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3
% App. Total	0	0	0	0	0	0	0	0	100	0	0	100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

Accurate Counts

978-664-2565

File Name : 664100S4
 Site Code : 66410004
 Start Date : 3/14/2020
 Page No : 9

N/S Street : Driveway / Big Y
 E/W Street : Route 140
 City/State : Franklin, MA
 Weather : Clear



Accurate Counts

978-664-2565

File Name : 664100S4

Site Code : 66410004

Start Date : 3/14/2020

Page No : 10

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear

Groups Printed- Bikes Peds

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
11:00 AM	0	0	0	2	0	0	0	1	0	0	0	0	0	1	0	2	5	1	6
11:15 AM	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	2	0	2
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	4	0	0	0	0	0	0	0	2	0	1	0	0	6	1	7
Total	0	0	0	7	0	0	0	2	0	0	0	2	0	2	0	2	13	2	15
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1	6	0	6
12:30 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1	1	2
12:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	0	0	7	0	1	0	0	0	0	0	0	0	0	0	1	8	1	9
01:00 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	1	0	1	5	1	6
01:15 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4
01:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	2	2
01:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	3	0	3
Total	0	0	0	8	0	1	0	0	0	0	0	1	0	2	0	3	12	3	15
Grand Total	0	0	0	22	0	2	0	2	0	0	0	3	0	4	0	6	33	6	39
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0				
Total %	0	0	0		0	33.3	0		0	0	0		0	66.7	0		84.6	15.4	

	Driveway From North				Route 140 From East				Big Y From South				Route 140 From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 12:45 PM																	
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
01:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.500	.000	.500	.375

Accurate Counts

978-664-2565

File Name : 664100S4

Site Code : 66410004

Start Date : 3/14/2020

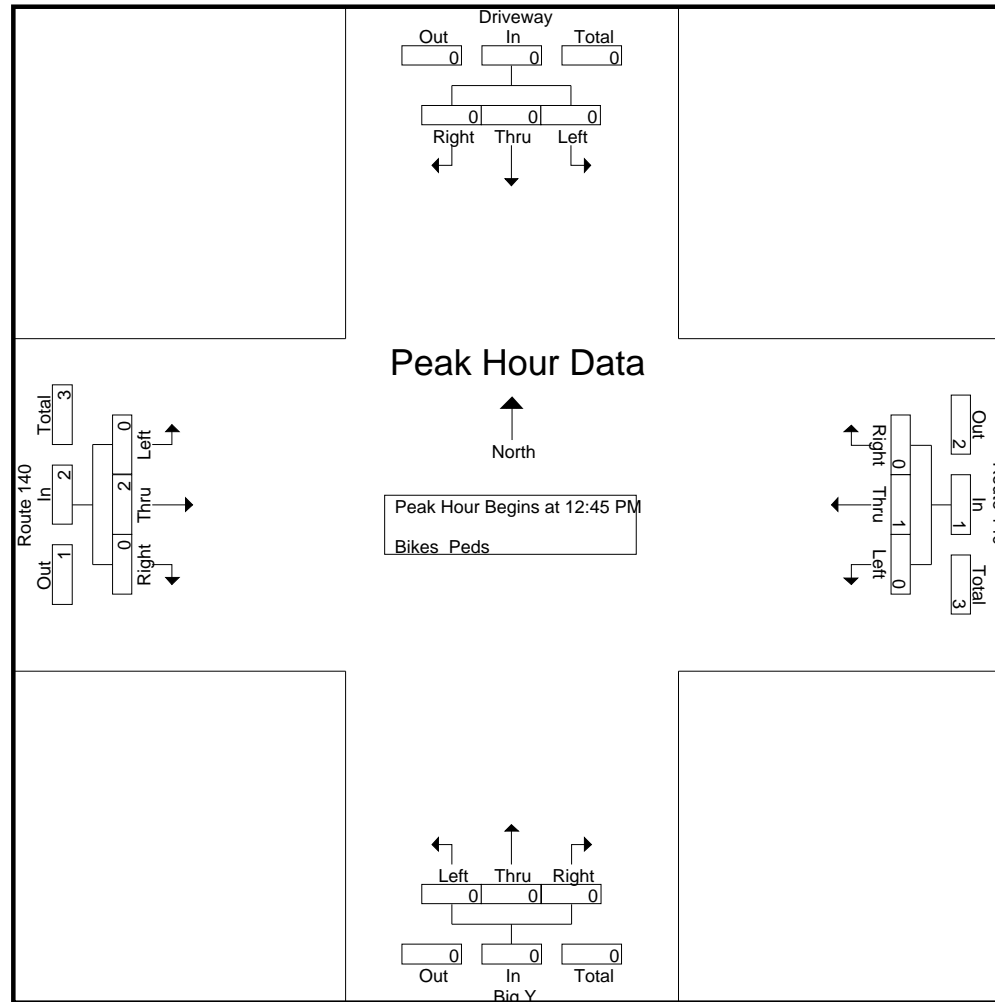
Page No : 11

N/S Street : Driveway / Big Y

E/W Street : Route 140

City/State : Franklin, MA

Weather : Clear



Peak Hour Analysis From 11:00 AM to 01:45 PM - Peak 1 of 1

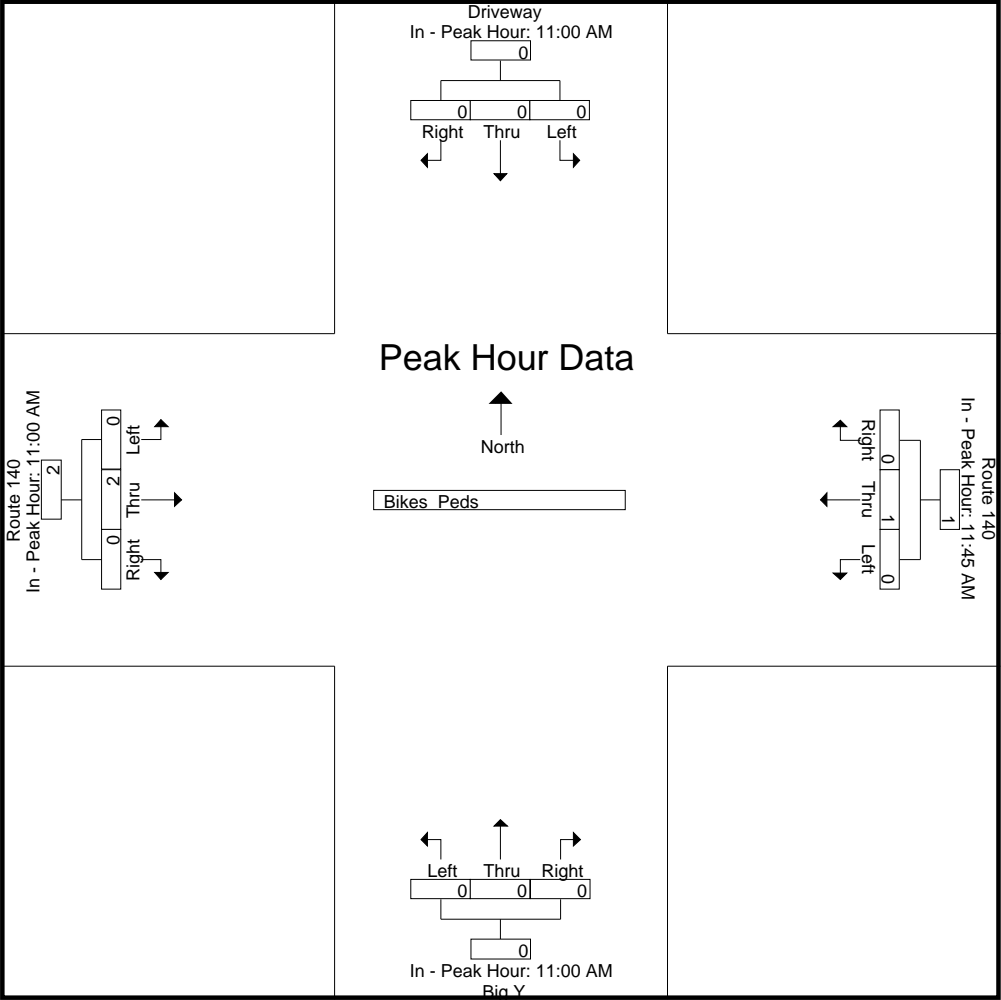
Peak Hour for Each Approach Begins at:

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

Accurate Counts
978-664-2565

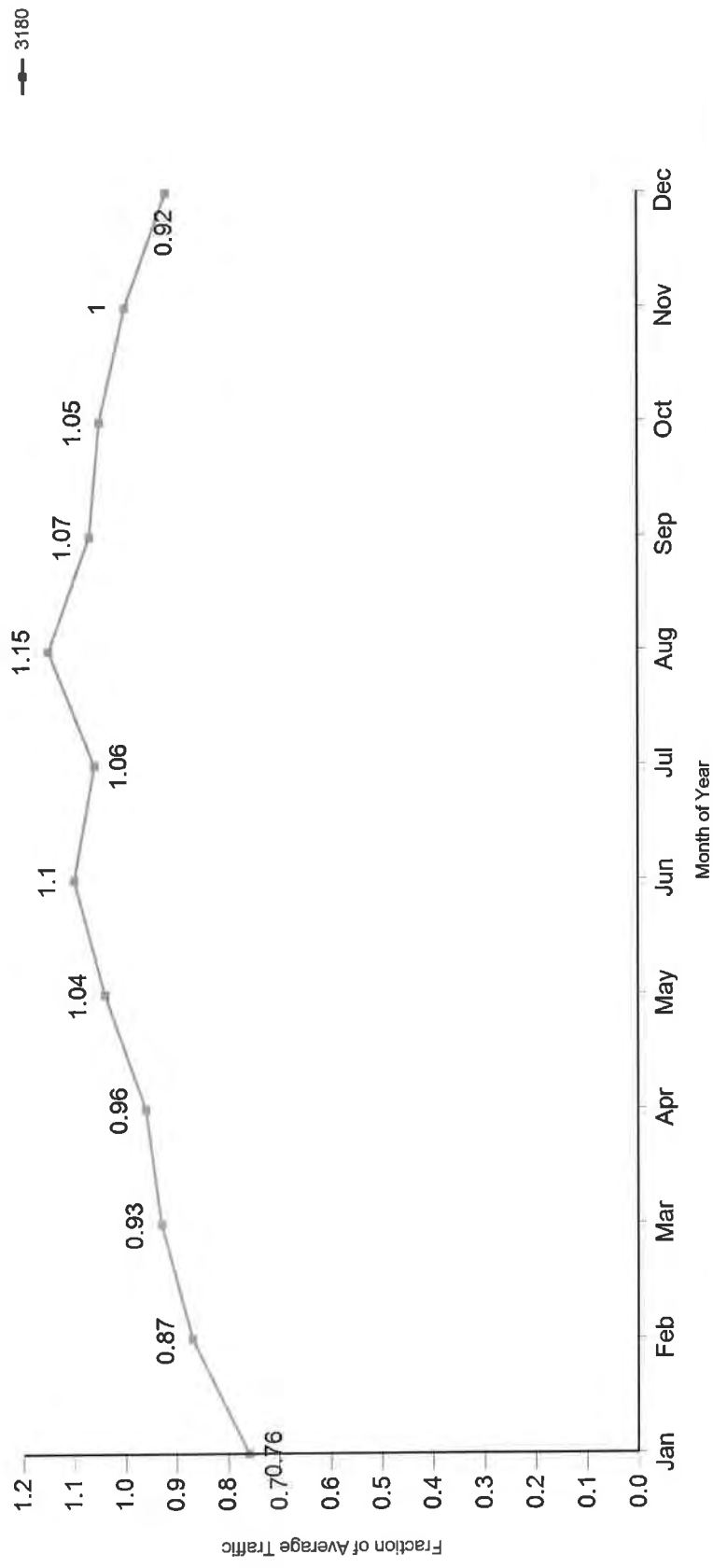
File Name : 664100S4
Site Code : 66410004
Start Date : 3/14/2020
Page No : 12

N/S Street : Driveway / Big Y
E/W Street : Route 140
City/State : Franklin, MA
Weather : Clear



SEASONAL ADJUSTMENT DATA

Traffic Pattern by Month for 1/1/2017 - 12/31/2017



Massachusetts Highway Department

Traffic Pattern by Month for 1/1/2017 - 12/31/2017

Factor Group	Station	Weight	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
U1-Boston	3180	0	0.756	0.867	0.927	0.962	1.042	1.097	1.062	1.149	1.073	1.048	1.000	0.918
Average of Weighted Factors			0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

PUBLIC TRANSPORTATION SCHEDULES

Today's Date: May 19, 2020

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Franklin Area Bus

FARE INFORMATION

Cash Fares

Regular	\$1.50
Seniors/Disabled/Medicare	\$.75
Students (thru HS only, ID required)	\$.75
Children (6 & under, with adult)	FREE

10 Ride Pass

Regular	\$13.00
Seniors/Disabled/Medicare	\$6.50
Students (thru HS only, ID required)	\$6.50

**Monthly Pass – Available at Central Park Terrace,
Council on Aging, and Municipal Building**

Regular	\$40.00
Seniors/Disabled/Medicare	\$20.00

Franklin Area Bus

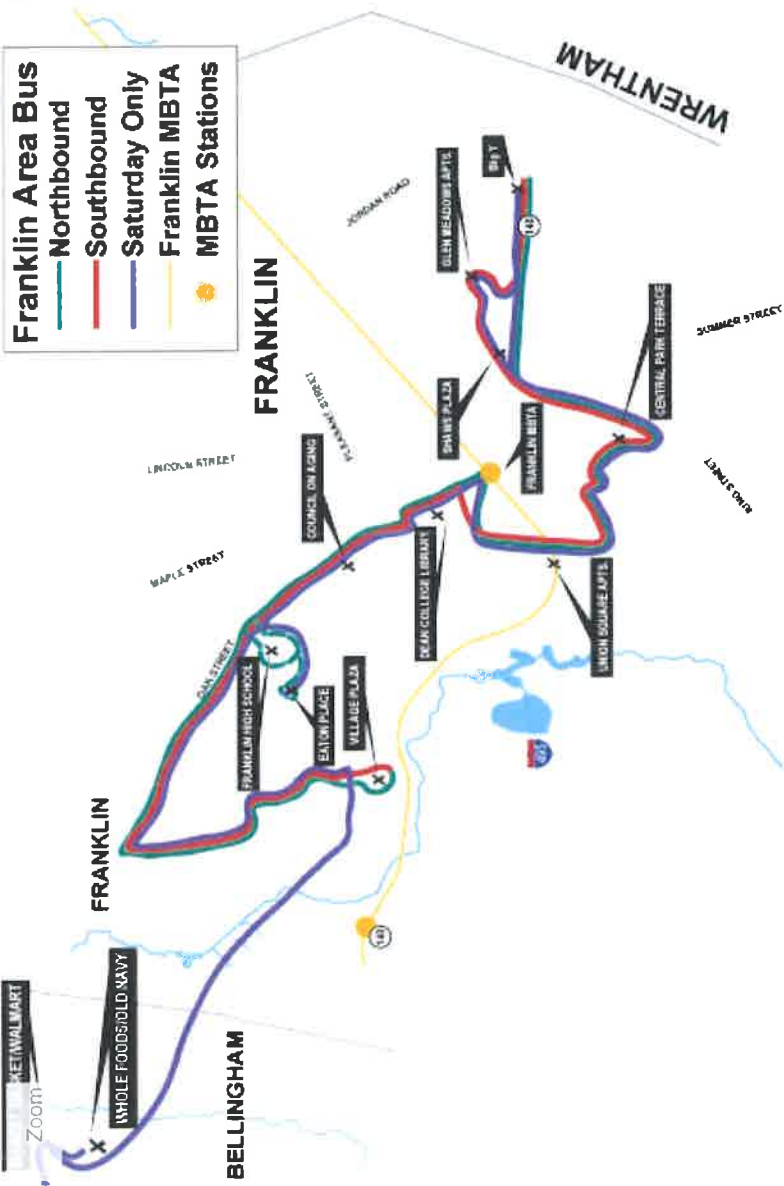
Northbound

Southbound

Saturday Only

Franklin MBTA

MBTA Stations



Move your mouse over image or click to enlarge

[Download the Schedule Here](#)

WEEKDAY SCHEDULE

NORTHBOUND

	The Big Y	Shaws Plaza	Central Park Terrace	Union Square Apts.	MBTA	Dean College & Library	Council on Aging	Franklin High School	Eaton Place	Village Plaza
6:40 AM		6:41	6:45	6:47	6:49	6:50	—	6:59	—	7:07
7:36		7:37	7:41	7:43	7:47	7:48	—	7:57	—	8:05
8:40		8:41	8:46	8:48	8:52	8:53	8:56	—	9:01	9:06
9:41		9:42	9:47	9:49	9:53	9:54	9:57	—	10:02	10:07
10:32		10:33	10:38	10:40	10:44	10:45	10:48	—	10:53	10:58
11:33		11:34	11:39	11:41	11:45	11:46	11:49	—	11:54	11:59
12:34 PM		12:35	12:40	12:42	12:46	12:47	12:50	—	—	12:57

1:35	1:36	1:41	1:43	1:47	1:48	1:51	—	—	1:58
2:36	2:37	2:42	2:44	2:48	2:49	2:52	—	—	2:59
3:37	3:38	3:43	3:45	3:49	3:50	3:53	3:54	—	4:00
4:38	4:39	4:44	4:46	4:50	4:51	—	—	—	5:01

SOUTHBOUND

Village Plaza	Eaton Place	Franklin High School	Council on Aging	Dean College & Library	Union Square Apts.	Central Park Terrace	Glen Meadow Apts.	The Big Y
7:07 AM	—	7:15	—	7:20	7:23	7:26	—	7:34
8:15	—	—	—	8:25	8:28	8:31	8:36	8:40
9:16	—	—	9:23	9:26	9:29	9:32	9:37	9:41
10:07	—	—	10:14	10:17	10:20	10:23	10:28	10:32
11:08	—	—	11:15	11:18	11:21	11:24	11:29	11:33
12:09 PM	—	—	12:16	12:19	12:22	12:25	12:30	12:34
1:07	1:12	—	1:17	1:20	1:23	1:26	1:31	1:35
2:08	2:13	—	2:18	2:21	2:24	2:27	2:32	2:36
3:09	3:14	3:18	3:19	3:22	3:25	3:28	3:33	3:37
4:10	4:15	—	—	4:23	4:26	4:29	4:34	4:38
5:11	—	—	—	5:21	5:24	5:27	5:32	5:36

SATURDAY SCHEDULE

Shaws Plaza	Central Park Terrace	Union Square Apts.	MBTA	Dean college & Library	Eaton Place	Village Plaza	Whole Foods/ Old Navy
8:20 AM	8:25	8:27	8:31	8:32	—	8:42	8:55
9:40	9:45	9:47	9:50	9:52	9:57	10:02	10:15
11:00	11:05	11:07	11:10	11:12	11:17	11:22	11:35
12:30 PM	12:35	12:37	12:40	12:42	12:47	12:52	1:05
1:50	1:55	1:57	2:00	2:02	—	2:12	2:25
3:10	3:15	3:17	3:20	3:22	—	3:32	3:45
4:30	4:35	4:37	4:40	4:42	—	4:52	5:05

SOUTHBOUND

Market Basket	Village Plaza	Eaton Place	Dean College & Library	Union Square Apts.	Central Park Terrace	Glen Meadows Apartments	The Big Y
8:58 AM	9:15	—	9:25	9:28	9:31	9:35	9:36
10:18	10:35	—	10:45	10:48	10:51	10:55	10:56
11:38	11:55	—	12:05	12:08	12:11	12:15	12:16
1:08 PM	1:25	1:30	1:35	1:38	1:41	1:45	1:46
2:28	2:45	2:50	2:55	2:58	3:01	3:05	3:06
3:48	4:05	4:10	4:15	4:18	4:21	4:25	4:26
5:08	5:25	5:30	5:35	5:38	5:41	5:45	5:46

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Site by KC Graphics

This website is best viewed in the latest version of IE or Firefox , please update your browser for best viewing.



2020 REDUCED SERVICE SCHEDULE

*** Reduced service schedule** in effect when declared in advance by the MBTA. In most cases, announcement made late in the afternoon on the prior day. Should an event occur requiring a more immediate service change, please check departure times prior to travel, and stay connected to MBTA.com for up-to-the minute information.

FRANKLIN LINE with Foxboro Pilot

Monday to Friday

Inbound to Boston

AM

Monday to Friday

Outbound from Boston

PM

ZONE	STATION	TRAIN #	7700	7740	1702	7742	1704	1706	1708	1710	1712	1714	1716	1718	ZONE	STATION	TRAIN #	1703	1705	1707	1709	1711	7741	1713	7743	1715	1717	1719	
6	Forge Park/495	6	5:35	-	6:40	-	8:40	10:40	12:40	2:40	4:40	6:40	8:40	10:40	1A	SOUTH STATION	6	7:20	9:20	11:20	1:20	3:20	4:20	5:20	7:20	9:20	11:20		
6	Franklin/Dean College	5:42	-	6:47	-	8:47	10:47	12:47	2:47	4:47	6:47	8:47	10:47	1A	Back Bay	6	7:25	9:25	11:25	1:25	3:25	4:25	5:25	VIA	7:25	9:25	11:25		
5	Norfolk	6	5:49	-	6:54	-	8:54	10:54	12:54	2:54	4:54	6:54	8:54	10:54	1A	Ruggles	6	7:28	9:28	11:28	1:28	3:28	4:28	5:28	FAIR-	7:28	9:28	11:28	
4	Foxboro	6	-	6:15	-	7:35	-	-	-	-	-	-	-	-	2	Readville	6	7:38	9:38	11:38	1:38	3:38	4:38	5:38	MOUNT	7:38	9:38	11:38	
4	Walpole	5:56	-	7:01	-	9:01	11:01	1:01	3:01	5:01	7:01	9:01	11:01	2	Endicott	6	7:41	9:41	11:41	1:41	3:41	4:41	5:01	5:41	5:58	7:41	9:41	11:41	
4	Windsor Gardens	6:00	6:28	7:06	7:48	9:06	11:06	1:06	3:06	5:06	7:06	9:06	11:06	2	Dedham Corp. Center	6	7:45	9:45	11:45	1:45	3:45	4:45	5:05	5:45	6:02	7:45	9:45	11:45	
3	Norwood Central	6	6:05	6:32	7:10	7:52	9:10	11:10	1:10	3:10	5:10	7:10	9:10	11:09	3	Islington	6	7:47	9:47	11:47	1:47	3:47	4:47	5:07	5:47	6:04	7:47	9:47	11:47
3	Norwood Depot	6	6:07	6:34	7:12	7:54	9:12	11:12	1:12	3:12	5:12	7:12	9:12	11:11	3	Norwood Depot	6	7:50	9:50	11:50	1:50	3:50	4:50	5:10	5:50	6:07	7:50	9:50	11:50
3	Islington	6:10	6:38	7:16	7:58	9:16	11:16	1:16	3:16	5:16	7:16	9:16	11:14	3	Norwood Central	6	7:53	9:53	11:53	1:53	3:53	4:53	5:13	5:53	6:10	7:53	9:53	11:53	
2	Dedham Corp. Center	6	6:12	6:41	7:19	8:01	9:19	11:19	1:19	3:19	5:19	7:19	9:19	11:17	4	Windsor Gardens	6	7:57	9:57	11:57	1:57	3:57	4:57	5:17	5:57	6:14	7:57	9:57	11:57
2	Endicott	6:15	6:43	7:21	8:03	9:21	11:21	1:21	3:21	5:21	7:21	9:21	11:19	4	Walpole	6	8:03	10:03	12:03	2:03	4:03	-	5:23	6:03	-	8:03	10:03	12:03	
2	Readville	6	6:18	VIA	7:24	8:06	9:24	11:24	1:24	3:24	5:24	7:24	9:24	11:21	4	Foxboro	6	-	-	-	-	-	-	5:11	-	6:28	-	-	-
1A	Ruggles	6	6:28	FAIR-	7:34	8:16	9:34	11:34	1:34	3:34	5:34	7:34	9:34	11:31	5	Norfolk	6	8:10	10:10	12:10	2:10	4:10	-	5:30	6:10	-	8:10	10:10	12:10
1A	Back Bay	6	6:33	MOUNT	7:38	8:20	9:38	11:38	1:38	3:38	5:38	7:38	9:38	11:35	6	Franklin/Dean College	6	8:17	10:17	12:17	2:17	4:17	-	5:37	6:17	-	8:17	10:17	12:17
1A	SOUTH STATION	6	6:38	7:18	7:43	8:25	9:43	11:43	1:43	3:43	5:43	7:43	9:43	11:40	6	Forge Park/495	6	8:24	10:24	12:24	2:24	4:24	-	5:44	6:24	-	8:24	10:24	12:24

* please note that this is reduced schedule as a result of Covid-19 Pandemic.

Reduced schedule advisory system

The MBTA and Keolis closely monitor events to determine if changes to the Commuter Rail schedule are needed. During these times, the symbols to the right will communicate service level and impact on passengers.



REGULAR SCHEDULE

Trains will operate on a normal schedule.



REDUCED SCHEDULE

Major changes to the regular schedule. Schedules also available on MBTA.com and in Boston stations.



NO SERVICE

No passenger service on Commuter Rail.



Massachusetts Bay Transportation Authority

KEOLIS



Visit MBTA.com



Customer Service 617-222-3200



Download the Commuter Rail App



Follow @MBTA_CR

Back Bay to South Station

Monday to Friday **Note: All inbound trains at Back Bay may depart ahead of scheduled time**

Depart	Bikes	Train #	Originating Station
6:08		800	Providence
6:14	🚲	500	Worcester/Union Station
6:17		700	Forge Park/495
6:29		502	Worcester/Union Station
6:34		802	Wickford Junction
6:45		600	Needham Heights
6:47		900	Stoughton
6:52		582	Framingham
6:59		804	Providence
7:04		504	Worcester/Union Station
7:05		702	Forge Park/495
7:17		902	Stoughton
7:20		602	Needham Heights
7:27		584	Framingham
7:30		806	Wickford Junction
7:39		506	Worcester/Union Station
7:39		704	Forge Park/495
8:00		842	Attleboro
8:01		706	Forge Park/495
8:05		586	Framingham
8:10		808	Wickford Junction
8:12		604	Needham Heights
8:15		508	Worcester/Union Station
8:18		742	Foxboro
8:26		904	Stoughton
8:31		810	Providence
8:40		588	Framingham
8:41		606	Needham Heights
8:50		510	Worcester/Union Station
8:51		812	Providence
8:52		708	Forge Park/495
9:00		552	Worcester/Union Station
9:02		906	Stoughton

Depart	Bikes	Train #	Originating Station
9:08		744	Foxboro
9:25		608	Needham Heights
9:33		590	Ashland
9:33		814	Wickford Junction
9:43		908	Stoughton
10:19	🚲	512	Worcester/Union Station
10:20	🚲	710	Forge Park/495
10:40	🚲	610	Needham Heights
10:54	🚲	816	Wickford Junction
11:17	🚲	910	Stoughton
11:40	🚲	612	Needham Heights
11:49	🚲	712	Forge Park/495
12:03	🚲	514	Worcester/Union Station
12:23	🚲	818	Providence
1:14	🚲	714	Forge Park/495
1:25	🚲	614	Needham Heights
1:33	🚲	516	Worcester/Union Station
2:18	🚲	820	Providence
2:30	🚲	716	Forge Park/495
2:44	🚲	912	Stoughton
2:57	🚲	822	Wickford Junction
3:17	🚲	518	Worcester/Union Station
3:24	🚲	616	Needham Heights
4:00	🚲	718	Forge Park/495
4:18	🚲	824	Providence
4:25	🚲	618	Needham Heights
4:56	🚲	720	Forge Park/495
5:04	🚲	914	Stoughton
5:15	🚲	520	Worcester/Union Station
5:18	🚲	826	Providence
5:42	🚲	620	Needham Heights
5:50	🚲	916	Stoughton
5:58	🚲	722	Forge Park/495

Trains in purple box indicate peak period trains.

Saturday

Depart	Bikes	Train #	Originating Station
6:11	🚲	752	Foxboro
6:17	🚲	622	Needham Heights
6:17	🚲	828	Providence
6:23	🚲	592	Framingham
6:34	🚲	522	Worcester/Union Station
6:47	🚲	918	Stoughton
6:57	🚲	830	Wickford Junction
7:03	🚲	624	Needham Heights
7:05	🚲	594	Framingham
7:19	🚲	524	Worcester/Union Station
7:51	🚲	920	Stoughton
7:52	🚲	596	Framingham
8:12	🚲	922	Stoughton
8:20	🚲	756	Foxboro
8:27	🚲	626	Needham Heights
8:31	🚲	832	Wickford Junction
8:39	🚲	724	Forge Park/495
8:42	🚲	526	Worcester/Union Station
9:03	🚲	924	Stoughton
9:12	🚲	628	Needham Heights
9:19	🚲	834	Wickford Junction
9:52	🚲	528	Worcester/Union Station
10:06	🚲	728	Forge Park/495
10:22	🚲	530	Worcester/Union Station
10:36	🚲	836	Wickford Junction
10:42	🚲	630	Needham Heights
10:57	🚲	532	Worcester/Union Station
11:05	🚲	926	Stoughton
11:24	🚲	730	Forge Park/495
11:34	🚲	838	Providence
12:05	🚲	928	Stoughton
12:43	🚲	732	Forge Park/495
12:48	🚲	534	Worcester/Union Station
1:46	🚲	536	Worcester/Union Station

Sunday

Depart	Bikes	Train #	Originating Station
8:25	🚲	2500	Worcester/Union Station
10:15	🚲	2502	Worcester/Union Station
11:38	🚲	2706	Forge Park/495
12:15	🚲	2504	Worcester/Union Station
12:28	🚲	2806	Providence
1:38	🚲	2708	Forge Park/495
1:58	🚲	2808	Providence
2:15	🚲	2506	Worcester/Union Station
3:38	🚲	2710	Forge Park/495
3:55	🚲	2508	Worcester/Union Station
4:05	🚲	2810	Providence
5:38	🚲	2712	Forge Park/495
5:55	🚲	2510	Worcester/Union Station
5:58	🚲	2812	Providence
7:38	🚲	2714	Forge Park/495
7:55	🚲	2512	Worcester/Union Station
8:12	🚲	2814	Providence
9:38	🚲	2716	Forge Park/495
9:55	🚲	2514	Worcester/Union Station
10:00	🚲	2816	Providence
11:07	🚲	2718	Forge Park/495
11:35	🚲	2516	Worcester/Union Station
12:25	🚲		

Keep in Mind:

This schedule will be effective from December 16, 2019 and will replace the schedule of October 21, 2019.

Presidents' Day and 4th of July operate on a **Saturday service schedule**.

New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, and Christmas Day operate on a **Sunday service schedule**.

For all other holiday schedules, please check MBTA.com or call 617-222-3200.

For additional service to Ruggles Station, refer to the Needham and Franklin Line schedules for particular trains.

Bikes: Bicycles are allowed on trains with the bicycle symbol shown below the train number.

High level platform and bridge plate available.
Visit mbta.com/accessibility for more information.



REGULAR SCHEDULE

Trains will operate on a normal schedule.



STORM SCHEDULE

Major changes to the regular schedule. Schedules will be available on mbta.com, and in Boston stations.



NO SERVICE

No passenger service on Commuter Rail.

Schedules may change in the event of severe weather

The MBTA and Keolis closely monitor weather forecasts to determine if conditions necessitate changes to the Commuter Rail schedule.

During weather events, the symbols below will communicate service level and impact on passengers. Service level for the following day will be announced mid-afternoon on the prior day.

South Station to Back Bay

Monday to Friday

Depart	Bikes	Train #	Final Destination	Depart	Bikes	Train #	Final Destination
4:40	66	501	Worcester/Union Station	1:35	66	711	Forge Park/495
5:30	66	583	Framingham	1:43	66	813	Providence
5:30	66	801	Providence	1:52	66	611	Needham Heights
5:55	66	503	Worcester/Union Station	1:55	66	515	Worcester/Union Station
6:10	66	505	Worcester/Union Station	2:30	66	815	Providence
6:31	66	803	Providence	2:40	66	613	Forge Park/495
6:48	66	587	Framingham	3:00	66	713	Needham Heights
6:57	66	903	Stoughton	3:25	66	817	Wickford Junction
7:05	66	601	Needham Heights	3:30	66	517	Worcester/Union Station
7:20	66	507	Worcester/Union Station	3:30	66	913	Stoughton
7:25	66	805	Wickford Junction	3:40	66	715	Forge Park/495
7:30	66	589	Ashland	3:55	66	819	Providence
7:35	66	905	Stoughton	4:05	66	615	Needham Heights
7:52	66	603	Needham Heights	4:15	66	751	Foxboro
8:04	66	703	Forge Park/495	4:20	66	519	Worcester/Union Station
8:23	66	907	Stoughton	4:20	66	915	Stoughton
8:35	66	509	Worcester/Union Station	4:30	66	591	Framingham
8:50	66	745	Foxboro	4:30	66	821	Wickford Junction
9:05	66	605	Needham Heights	4:40	66	717	Forge Park/495
9:35	66	807	Providence	4:47	66	617	Needham Heights
9:40	66	705	Forge Park/495	4:53	66	823	Providence
9:45	66	909	Stoughton	5:00	66	521	Worcester/Union Station
9:53	66	607	Needham Heights	5:03	66	753	Foxboro
10:15	66	511	Worcester/Union Station	5:10	66	593	Framingham
10:25	66	809	Providence	5:12	66	917	Stoughton
11:00	66	707	Forge Park/495	5:20	66	719	Forge Park/495
11:25	66	811	Wickford Junction	5:26	66	619	Needham Heights
11:50	66	609	Needham Heights	5:40	66	523	Worcester/Union Station
11:55	66	513	Worcester/Union Station	5:40	66	825	Wickford Junction
12:20	66	709	Forge Park/495	5:45	66	721	Forge Park/495
1:20	66	911	Stoughton	5:50	66	595	Framingham

Trains in purple box indicate peak period trains

Saturday

Depart	Bikes	Train #	Final Destination	Depart	Bikes	Train #	Final Destination
6:40	66	1501	Worcester/Union Station	6:40	66	1501	Worcester/Union Station
6:40	66	1801	Providence	7:10	66	1601	Needham Heights
7:10	66	1601	Needham Heights	7:20	66	1703	Forge Park/495
7:20	66	1703	Forge Park/495	8:40	66	1503	Worcester/Union Station
8:40	66	1503	Worcester/Union Station	9:10	66	1603	Needham Heights
9:10	66	1603	Needham Heights	9:20	66	1705	Forge Park/495
9:20	66	1705	Forge Park/495	9:50	66	1803	Providence
9:50	66	1803	Providence	10:40	66	1505	Worcester/Union Station
10:40	66	1505	Worcester/Union Station	11:00	66	1805	Providence
11:00	66	1805	Providence	11:10	66	1605	Needham Heights
11:10	66	1605	Needham Heights	11:20	66	1707	Forge Park/495
11:20	66	1707	Forge Park/495	12:40	66	1507	Worcester/Union Station
12:40	66	1507	Worcester/Union Station	1:05	66	1807	Providence
1:05	66	1807	Providence	1:10	66	1607	Needham Heights
1:10	66	1607	Needham Heights	1:20	66	1709	Forge Park/495
1:20	66	1709	Forge Park/495	2:20	66	1509	Worcester/Union Station
2:20	66	1509	Worcester/Union Station	2:20	66	1809	Providence
2:20	66	1809	Providence	3:10	66	1609	Needham Heights
3:10	66	1609	Needham Heights	3:20	66	1711	Forge Park/495
3:20	66	1711	Forge Park/495	4:20	66	1511	Worcester/Union Station
4:20	66	1511	Worcester/Union Station	4:35	66	1811	Providence
4:35	66	1811	Providence	5:10	66	1611	Needham Heights
5:10	66	1611	Needham Heights	5:20	66	1713	Forge Park/495
5:20	66	1713	Forge Park/495	6:20	66	1513	Worcester/Union Station
6:20	66	1513	Worcester/Union Station	6:45	66	1813	Providence
6:45	66	1813	Providence	7:10	66	1613	Needham Heights
7:10	66	1613	Needham Heights	7:15	66	1715	Forge Park/495
7:15	66	1715	Forge Park/495	8:20	66	1515	Worcester/Union Station
8:20	66	1515	Worcester/Union Station	8:30	66	1815	Providence
8:30	66	1815	Providence	9:10	66	1615	Needham Heights
9:10	66	1615	Needham Heights	9:20	66	1717	Forge Park/495
9:20	66	1717	Forge Park/495	10:40	66	1517	Worcester/Union Station
10:40	66	1517	Worcester/Union Station	10:45	66	1617	Needham Heights
10:45	66	1617	Needham Heights	11:10	66	1817	Providence
11:10	66	1817	Providence	11:20	66	1719	Forge Park/495

Sunday

Depart	Bikes	Train #	Final Destination	Depart	Bikes	Train #	Final Destination
6:40	66	2501	Worcester/Union Station	6:40	66	2501	Worcester/Union Station
8:40	66	2503	Worcester/Union Station	8:40	66	2503	Worcester/Union Station
10:40	66	2505	Worcester/Union Station	10:40	66	2505	Worcester/Union Station
11:05	66	2805	Providence	11:05	66	2805	Providence
11:20	66	2707	Forge Park/495	11:20	66	2707	Forge Park/495
12:40	66	2507	Worcester/Union Station	12:40	66	2507	Worcester/Union Station
1:05	66	2807	Providence	1:05	66	2807	Providence
1:20	66	2709	Forge Park/495	1:20	66	2709	Forge Park/495
2:20	66	2509	Worcester/Union Station	2:20	66	2509	Worcester/Union Station
2:25	66	2809	Providence	2:25	66	2809	Providence
3:20	66	2711	Forge Park/495	3:20	66	2711	Forge Park/495
4:20	66	2511	Worcester/Union Station	4:20	66	2511	Worcester/Union Station
4:30	66	2811	Providence	4:30	66	2811	Providence
5:20	66	2713	Forge Park/495	5:20	66	2713	Forge Park/495
6:20	66	2513	Worcester/Union Station	6:20	66	2513	Worcester/Union Station
6:45	66	2813	Providence	6:45	66	2813	Providence
7:20	66	2715	Forge Park/495	7:20	66	2715	Forge Park/495
8:20	66	2515	Worcester/Union Station	8:20	66	2515	Worcester/Union Station
8:40	66	2815	Providence	8:40	66	2815	Providence
9:20	66	2717	Forge Park/495	9:20	66	2717	Forge Park/495
10:40	66	2517	Worcester/Union Station	10:40	66	2517	Worcester/Union Station
11:10	66	2817	Providence	11:10	66	2817	Providence
11:20	66	2719	Forge Park/495	11:20	66	2719	Forge Park/495

Keep in Mind:

This schedule will be effective from December 16, 2019 and will replace the schedule of October 21, 2019.

Presidents' Day and 4th of July operate on a **Saturday service schedule**.

New Year's Day, Memorial Day, Labor Day, Thanksgiving Day, and Christmas Day operate on a **Sunday service schedule**.

For all other holiday schedules, please check MBTA.com or call 617-222-3200.

For additional service to Ruggles Station, refer to the Needham and Franklin Line schedules for particular trains.

Bikes: Bicycles are allowed on trains with the bicycle symbol shown below the train number.

High level platform and bridge plate available. Visit mbta.com/accessibility for more information.

Schedules may change in the event of severe weather

The MBTA and Keolis closely monitor weather forecasts to determine if conditions necessitate changes to the Commuter Rail schedule.

During weather events, the symbols below will communicate service level and impact on passengers. Service level for the following day will be announced mid-afternoon on the prior day.



REGULAR SCHEDULE
Trains will operate on a normal schedule.



STORM SCHEDULE
Major changes to the regular schedule. Schedules will be available on mbta.com, and in Boston stations.



NO SERVICE
No passenger service on Commuter Rail.

VEHICLE TRAVEL SPEED DATA

Accurate Counts
978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPDI

WB

Start Time	15	16	20	21	26	31	36	41	46	51	56	61	66	71	76	Total
03/05/20	0	2	8	15	3	3	1	0	0	0	0	0	0	0	0	29
01:00	0	2	3	2	2	2	0	1	0	0	0	0	0	0	0	10
02:00	0	0	0	1	1	3	0	1	0	0	0	0	0	0	0	5
03:00	0	1	1	2	3	3	0	0	0	0	0	0	0	0	0	7
04:00	0	1	1	9	4	4	4	0	0	0	0	0	0	0	0	19
05:00	0	4	10	26	23	23	6	0	0	0	0	0	0	0	0	69
06:00	0	9	50	66	75	75	19	1	0	0	0	0	0	0	0	220
07:00	3	26	79	173	115	115	17	2	0	0	0	0	0	0	0	415
08:00	5	22	135	211	74	12	12	1	0	0	0	0	0	0	0	460
09:00	6	23	160	195	52	5	5	0	0	0	0	0	0	0	0	441
10:00	8	37	211	195	48	4	4	0	0	0	0	0	0	0	0	503
11:00	12	51	197	193	45	2	2	0	0	0	0	0	0	0	0	500
12 PM	50	101	265	172	39	39	4	0	0	0	0	0	0	0	0	631
13:00	17	60	243	181	36	36	3	0	0	0	0	0	0	0	0	538
14:00	33	75	249	204	24	24	5	0	0	0	0	0	0	0	0	588
15:00	32	106	249	214	39	39	1	0	0	0	0	0	0	0	0	645
16:00	67	129	257	183	36	36	1	0	0	0	0	0	0	0	0	673
17:00	46	93	280	204	32	32	1	0	0	0	0	0	0	0	0	656
18:00	6	49	193	178	38	38	4	0	0	0	0	0	0	0	0	468
19:00	3	20	110	152	46	46	10	1	0	0	0	0	0	0	0	342
20:00	2	23	77	120	48	48	7	0	0	0	0	0	0	0	0	277
21:00	0	4	30	59	31	31	1	2	0	0	0	0	0	0	0	127
22:00	1	5	22	42	11	11	3	0	0	0	0	0	0	0	0	84
23:00	1	3	16	27	12	12	4	0	0	0	0	0	0	0	0	63
Total	292	846	2846	2824	839	114	9	0	0	0	0	0	0	0	0	7770

Daily	15th Percentile	20 MPH
	50th Percentile	24 MPH
	85th Percentile	29 MPH
	95th Percentile	33 MPH
	Mean Speed(Average)	25 MPH
	10 MPH Pace Speed	21-30 MPH
	Number in Pace	5670
	Percent in Pace	73.0%
	Number of Vehicles > 25 MPH	3786
	Percent of Vehicles > 25 MPH	48.7%

Accurate Counts
978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPDI

WB

Start Time	15	16	20	21	25	26	30	31	36	41	46	51	56	61	66	71	76	Total
03:06/20	0	1	7	13	8	3	40	3	1	0	0	0	0	0	0	0	0	33
01:00	0	0	2	9	3	2	0	3	0	0	0	0	0	0	0	0	0	14
02:00	0	1	0	0	3	1	1	0	0	0	0	0	0	0	0	0	0	5
03:00	0	1	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	7
04:00	0	3	0	5	10	5	8	17	1	2	0	0	0	0	0	0	0	24
05:00	1	4	13	21	17	8	17	60	2	2	0	0	0	0	0	0	0	66
06:00	0	9	41	76	60	17	15	87	1	1	0	0	0	0	0	0	0	205
07:00	1	20	121	185	87	15	23	97	2	1	0	0	0	0	0	0	0	430
08:00	6	32	116	231	68	2	3	46	3	0	0	0	0	0	0	0	0	443
09:00	5	31	152	204	46	3	3	31	3	0	0	0	0	0	0	0	0	490
10:00	16	33	185	244	40	3	7	40	2	0	0	0	0	0	0	0	0	596
11:00	48	72	263	162	31	3	9	53	2	0	0	0	0	0	0	0	0	647
12 PM	77	111	249	175	40	7	2	32	4	0	0	0	0	0	0	0	0	605
13:00	56	96	289	190	39	2	4	32	2	0	0	0	0	0	0	0	0	625
14:00	34	92	250	173	32	4	0	16	0	0	0	0	0	0	0	0	0	648
15:00	64	101	280	116	49	9	2	49	0	0	0	0	0	0	0	0	0	676
16:00	59	130	192	139	25	2	5	29	0	0	0	0	0	0	0	0	0	613
17:00	143	114	62	88	30	6	3	30	1	0	0	0	0	0	0	0	0	496
18:00	8	41	51	81	17	45	3	17	0	0	0	0	0	0	0	0	0	345
19:00	4	47	32	45	3	3	2	3	0	0	0	0	0	0	0	0	0	204
20:00	2	18	7	32	1	1	1	1	0	0	0	0	0	0	0	0	0	178
21:00	1	8	26	30	24	2	11	1	0	0	0	0	0	0	0	0	0	105
22:00	1	7	26	30	24	2	11	1	0	0	0	0	0	0	0	0	0	90
23:00	0	7	26	30	24	2	11	1	0	0	0	0	0	0	0	0	0	8032
Total	526	979	2910	2670	825	111	11	11	0	0	0	0	0	0	0	0	0	0

Daily	15th Percentile	18 MPH
	50th Percentile	24 MPH
	85th Percentile	29 MPH
	95th Percentile	33 MPH
Mean Speed(Average)		24 MPH
10 MPH Pace Speed		21-30 MPH
Number in Pace		5580
Percent in Pace		69.5%
Number of Vehicles > 25 MPH		3617
Percent of Vehicles > 25 MPH		45.0%

Accurate Counts 978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPDI

WB

Start Time	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total
03/07/20	0	2	3	26	10	33	11	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67
01:00	0	0	0	3	3	11	3	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28
02:00	0	0	0	3	3	11	3	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
03:00	0	0	0	3	3	11	3	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
04:00	0	0	0	3	3	11	3	2	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
05:00	1	0	0	7	1	11	5	3	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30
06:00	0	0	0	7	20	43	29	8	3	10	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	110
07:00	0	0	0	36	11	89	69	76	17	11	11	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	214
08:00	1	6	61	61	197	150	197	76	17	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	311
09:00	18	45	186	186	267	201	201	46	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	596
10:00	17	60	267	267	307	214	214	37	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	511
11:00	50	100	286	286	307	214	214	37	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	643
12 PM	91	105	258	258	307	214	214	37	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	661
13:00	35	82	307	307	307	214	214	37	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	678
14:00	57	74	240	240	240	174	174	41	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	588
15:00	21	50	223	223	223	203	203	43	4	4	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	545
16:00	35	55	220	220	220	212	212	38	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	563
17:00	5	37	218	218	218	167	167	37	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	467
18:00	18	52	146	146	146	155	155	27	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	401
19:00	4	19	95	95	95	118	118	40	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	282
20:00	1	15	75	75	75	85	85	30	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	211
21:00	0	8	41	41	41	76	76	40	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	171
22:00	1	4	24	24	24	51	51	22	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	104
23:00	0	5	25	25	25	25	25	15	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81
Total	355	740	2778	2778	2778	2569	2569	743	111	111	111	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	7299

Daily

15th Percentile : 19 MPH
50th Percentile : 24 MPH
85th Percentile : 29 MPH
95th Percentile : 33 MPH

Mean Speed(Average)
10 MPH Pace Speed : 25 MPH
Number in Pace : 21-30 MPH
Percent in Pace : 5347
73.3%

Number of Vehicles > 25 MPH : 3426
Percent of Vehicles > 25 MPH : 46.9%

Grand Total 1173 2565 8534 8063 2407 336 22 1 0 0 0 0 0 0 0 23101

Overall

15th Percentile : 19 MPH
50th Percentile : 24 MPH
85th Percentile : 29 MPH
95th Percentile : 33 MPH

Mean Speed(Average)
10 MPH Pace Speed : 25 MPH
Number in Pace : 21-30 MPH
Percent in Pace : 16597
71.8%

Number of Vehicles > 25 MPH : 10829
Percent of Vehicles > 25 MPH : 46.9%

Accurate Counts 978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPD1

EB

Start Time	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total
03/05/20	0	0	0	2	6	10	31	35	10	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23
01:00	0	0	0	0	1	1	1	3	1	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	0	0	1	0	3	3	3	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
03:00	0	0	0	0	2	3	3	3	2	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
04:00	0	0	0	0	1	5	5	5	8	35	70	11	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	20
05:00	0	0	0	2	13	37	37	37	37	35	70	11	11	1	1	0	0	0	0	0	0	0	0	0	0	0	0	99
06:00	6	5	5	10	50	111	111	111	111	70	70	17	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	269
07:00	9	37	56	56	169	163	163	163	163	66	66	12	12	1	1	0	0	0	0	0	0	0	0	0	0	0	0	513
08:00	2	8	74	74	235	177	177	177	177	40	40	7	7	0	0	0	0	0	0	0	3	0	0	0	0	0	0	546
09:00	5	14	41	41	206	165	165	165	165	40	40	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	479
10:00	0	2	45	45	194	173	173	173	173	40	40	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	457
11:00	1	11	73	73	282	139	139	139	139	35	35	3	3	2	2	2	2	0	0	0	0	0	0	0	0	0	0	548
12 PM	8	28	120	120	287	151	151	151	151	23	23	4	4	0	0	1	1	0	0	0	0	0	0	0	0	0	0	622
13:00	0	12	92	92	255	170	170	170	170	32	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	562
14:00	10	28	103	103	239	165	165	165	165	33	33	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	653
15:00	9	42	155	155	239	169	169	169	169	33	33	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	601
16:00	5	15	129	129	268	152	152	152	152	29	29	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	594
17:00	1	14	146	146	247	157	157	157	157	23	23	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	471
18:00	0	26	70	70	215	135	135	135	135	20	20	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	329
19:00	2	1	37	37	120	129	129	129	129	32	32	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	250
20:00	3	6	31	31	87	98	98	98	98	23	23	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	161
21:00	0	1	13	13	51	36	36	36	36	17	17	6	6	1	1	1	1	0	0	0	0	0	0	0	0	0	0	87
22:00	2	4	7	7	21	14	14	14	14	14	14	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42
23:00	0	2	2	2	13	15	15	15	15	9	9	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42
Total	63	256	1209	1209	3201	2435	2435	2435	2435	630	630	120	120	8	8	5	5	1	1	3	3	0	0	0	0	0	0	7931

Daily

15th Percentile : 23 MPH
50th Percentile : 28 MPH
85th Percentile : 34 MPH
95th Percentile : 37 MPH

Mean Speed(Average) : 29 MPH

10 MPH Pace Speed : 26-35 MPH

Number in Pace : 5636

Percent in Pace : 71.1%

Number of Vehicles > 25 MPH : 6403

Percent of Vehicles > 25 MPH : 80.7%

Accurate Counts 978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPD1

EB

Start Time	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total
03/06/20	0	0	0	2	2	2	2	6	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
01:00	0	0	0	3	3	0	0	1	1	5	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
02:00	0	0	1	0	0	1	1	3	3	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	8
03:00	0	0	0	0	0	1	1	5	5	2	2	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
04:00	0	0	0	3	3	0	0	4	4	9	9	2	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	19
05:00	0	0	1	3	3	15	15	24	24	41	41	8	8	3	3	0	0	0	0	0	0	0	0	0	0	0	0	95
06:00	1	5	19	19	19	57	57	119	119	68	68	16	16	1	1	0	0	1	1	1	0	0	1	0	0	0	0	288
07:00	11	28	80	80	80	214	214	142	142	35	35	6	6	4	4	1	1	0	0	0	0	0	0	0	0	0	0	522
08:00	0	7	72	72	72	226	226	178	178	59	59	6	6	0	0	1	1	0	0	0	0	0	0	0	0	0	0	549
09:00	0	6	78	78	78	220	220	168	168	39	39	7	7	2	2	0	0	0	0	0	0	0	0	0	0	0	0	520
10:00	9	9	80	80	80	205	205	172	172	25	25	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	505
11:00	2	7	108	108	108	234	234	152	152	30	30	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	537
12 PM	2	17	127	127	127	302	302	147	147	29	29	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	637
13:00	1	16	167	167	167	236	236	147	147	27	27	6	6	1	1	1	2	0	0	0	0	0	0	0	0	0	0	597
14:00	8	33	113	113	113	231	231	143	143	27	27	6	6	1	1	2	2	0	0	0	0	0	0	0	0	0	0	564
15:00	16	21	182	182	182	247	247	148	148	28	28	5	5	0	0	0	4	2	2	0	0	0	0	0	0	0	0	653
16:00	6	19	111	111	111	240	240	152	152	27	27	2	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	560
17:00	14	39	189	189	189	245	245	130	130	27	27	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	648
18:00	2	15	112	112	112	192	192	136	136	20	20	2	2	0	0	0	0	1	1	0	0	1	0	0	0	0	0	481
19:00	4	22	79	79	79	153	153	69	69	14	14	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	344
20:00	0	8	41	41	41	91	91	60	60	14	14	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	216
21:00	0	3	15	15	15	59	59	67	67	20	20	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	167
22:00	0	0	9	9	9	34	34	58	58	19	19	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	124
23:00	0	0	7	7	7	19	19	31	31	7	7	3	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	68
Total	76	257	1600	1600	1600	3224	3224	2262	2262	589	589	91	91	22	22	12	12	5	5	0	0	0	2	2	0	0	0	8140

Daily

15th Percentile : 22 MPH
50th Percentile : 28 MPH
85th Percentile : 33 MPH
95th Percentile : 37 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 26-35 MPH
Number in Pace : 5486
Percent in Pace : 67.4%
Number of Vehicles > 25 MPH : 6207
Percent of Vehicles > 25 MPH : 76.3%

Accurate Counts 978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPD1

EB

Start Time	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total
03:07:20	0	1	8	7	14	31	35	36	40	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
01:00	0	2	0	4	2	2	4	6	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14
02:00	0	0	0	1	3	3	1	5	3	5	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
03:00	1	0	3	1	3	3	1	3	3	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12
04:00	0	0	2	2	6	6	2	4	4	4	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
05:00	0	0	3	2	17	17	2	17	17	17	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42
06:00	0	0	3	22	54	37	8	54	37	37	8	8	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	125
07:00	0	2	4	74	122	58	74	122	58	58	8	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	269
08:00	0	1	26	90	148	64	90	148	64	64	7	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	336
09:00	0	5	52	212	185	31	212	185	31	31	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	489
10:00	1	13	115	296	171	34	296	171	34	34	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	636
11:00	4	8	93	319	176	40	319	176	40	40	8	8	8	1	1	0	0	0	0	0	0	0	0	0	0	0	0	649
12 PM	10	42	171	296	155	31	296	155	31	31	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	708
13:00	3	14	152	310	166	24	310	166	24	24	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	673
14:00	4	25	118	273	158	44	273	158	44	44	2	2	2	0	0	1	1	0	0	0	0	0	0	0	0	0	0	625
15:00	1	12	104	246	147	26	246	147	26	26	5	5	5	0	0	1	1	0	0	0	0	0	0	0	0	0	0	542
16:00	3	28	86	199	178	29	199	178	29	29	4	4	4	0	0	1	1	1	1	0	0	0	0	0	0	0	0	529
17:00	1	7	39	209	127	24	209	127	24	24	6	6	6	1	1	0	0	0	0	0	0	0	0	0	0	0	0	414
18:00	1	19	78	173	101	16	173	101	16	16	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	389
19:00	2	10	36	97	108	31	97	108	31	31	2	2	2	0	0	0	0	1	1	0	0	0	0	0	0	0	0	287
20:00	0	1	37	87	51	14	87	51	14	14	2	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	193
21:00	0	3	19	54	63	28	54	63	28	28	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	171
22:00	0	0	14	40	46	19	40	46	19	19	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	120
23:00	0	1	4	18	24	8	18	24	8	8	7	7	7	0	0	0	0	1	1	1	1	0	0	0	0	0	0	64
Total	31	194	1167	3032	2225	598	3032	2225	598	1817	293	41	24	9	4	2	0	3	1	1	1	0	0	0	0	0	0	7351

Daily

15th Percentile : 23 MPH
50th Percentile : 28 MPH
85th Percentile : 34 MPH
95th Percentile : 37 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 26-35 MPH
Number in Pace : 5257
Percent in Pace : 71.5%
Number of Vehicles > 25 MPH : 5959
Percent of Vehicles > 25 MPH : 81.1%

Grand Total 170 707 3976 9457 6922 1817 293 41 24 9 4 2 0 0 23422

Overall

15th Percentile : 23 MPH
50th Percentile : 28 MPH
85th Percentile : 34 MPH
95th Percentile : 37 MPH

Mean Speed(Average) : 29 MPH
10 MPH Pace Speed : 26-35 MPH
Number in Pace : 16379
Percent in Pace : 69.9%
Number of Vehicles > 25 MPH : 18569
Percent of Vehicles > 25 MPH : 79.3%

Accurate Counts 978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPD1

WB, EB

Start Time		1	15	16	20	21	25	26	30	31	35	36	40	41	45	46	50	51	55	56	60	61	65	66	70	71	75	76	999	Total	
03/05/20		0	2	10	13	21	3	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	52	
01:00		0	2	3	3	1	1	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	
02:00		0	0	1	6	1	1	1	2	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	
03:00		0	1	1	6	1	4	1	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	
04:00		0	1	1	6	1	10	9	12	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	
05:00		0	4	12	60	41	39	60	41	11	1	1	1	11	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	188	
06:00		6	14	60	186	89	18	186	89	18	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	489	
07:00		12	63	135	278	83	342	278	83	14	1	1	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	928	
08:00		7	30	209	401	217	446	401	217	45	8	0	0	8	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1006	
09:00		11	37	201	389	221	440	389	221	45	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	920	
10:00		8	39	256	389	221	440	389	221	45	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	960	
11:00		13	62	270	475	270	475	270	475	184	37	3	3	3	3	2	2	2	2	0	0	0	0	0	0	0	0	0	0	1048	
12 PM		58	129	385	459	190	27	436	190	206	33	4	4	4	4	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1253	
13:00		17	72	335	436	33	335	436	33	206	33	3	3	3	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1100	
14:00		43	103	352	443	189	352	443	189	189	36	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1175	
15:00		41	148	404	453	208	404	453	208	208	38	6	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1298	
16:00		72	144	386	451	188	386	451	188	188	30	2	30	2	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1274	
17:00		47	107	426	451	189	426	451	189	24	24	6	24	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1250	
18:00		6	75	263	393	173	263	393	173	173	24	5	24	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	939	
19:00		5	21	147	272	175	147	272	175	175	42	9	42	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	671	
20:00		5	29	108	207	146	108	207	146	146	30	2	30	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	527	
21:00		0	5	43	102	110	43	110	102	102	18	8	18	8	8	1	1	1	1	0	0	0	0	0	0	0	0	0	0	288	
22:00		3	9	29	47	63	29	63	47	47	17	3	17	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	171	
23:00		1	5	18	27	40	18	40	27	27	13	1	13	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	105	
Total		355	1102	4055	3274	6025	6025	6025	6025	3274	744	129	744	129	8	8	5	5	5	1	3	3	3	3	3	3	3	3	3	0	15701

Daily

15th Percentile : 21 MPH
50th Percentile : 26 MPH
85th Percentile : 32 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 27 MPH
10 MPH Pace Speed : 21-30 MPH
Number in Pace : 10080
Percent in Pace : 64.2%
Number of Vehicles > 25 MPH : 10189
Percent of Vehicles > 25 MPH : 64.9%

Accurate Counts
978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPDI

WB, EB

Start Time	15	16	21	26	31	36	41	46	51	56	61	66	71	76	Total
Time	15	20	25	30	35	40	45	50	55	60	65	70	75	999	Total
03/06/20	0	1	9	15	14	9	1	0	0	0	0	0	0	0	49
01:00	0	0	5	9	4	5	1	0	0	0	0	0	0	0	24
02:00	0	2	0	1	6	2	1	1	0	0	0	0	0	0	13
03:00	0	1	3	3	6	2	4	0	0	0	0	0	0	0	19
04:00	0	3	3	5	14	14	3	0	1	0	0	0	0	0	43
05:00	1	5	16	36	41	49	10	3	0	0	0	0	0	0	161
06:00	1	14	60	133	179	85	18	1	0	1	0	1	0	0	493
07:00	12	48	201	399	229	50	7	4	1	1	0	0	0	0	952
08:00	6	39	188	408	275	68	7	0	1	0	0	0	0	0	992
09:00	5	37	230	451	236	41	8	2	0	0	0	0	0	0	1010
10:00	25	42	265	409	218	28	1	2	2	0	0	0	0	0	992
11:00	50	79	352	423	192	33	2	2	0	0	0	0	0	0	1133
12 PM	79	128	390	464	178	40	5	0	0	0	0	0	0	0	1284
13:00	57	112	416	393	187	36	0	1	0	0	0	0	0	0	1202
14:00	42	125	382	406	196	29	6	1	2	0	0	0	0	0	1189
15:00	80	122	432	437	187	32	5	0	0	2	0	0	0	0	1301
16:00	65	149	391	413	184	29	2	2	1	0	0	0	0	0	1236
17:00	157	153	413	361	146	27	4	0	0	0	0	0	0	0	1261
18:00	10	56	304	389	185	29	2	0	0	1	0	1	0	0	977
19:00	8	69	207	292	94	16	3	0	0	0	0	0	0	0	689
20:00	2	26	103	179	89	19	2	0	0	0	0	0	0	0	420
21:00	1	11	86	140	97	26	4	0	0	0	0	0	0	0	345
22:00	1	7	41	79	75	22	2	2	0	0	0	0	0	0	229
23:00	0	7	33	49	55	9	4	1	0	0	0	0	0	0	158
Total	602	1236	4510	5894	3087	700	102	22	12	5	0	2	0	0	16172

Daily

15th Percentile	20 MPH
50th Percentile	26 MPH
85th Percentile	32 MPH
95th Percentile	35 MPH
Mean Speed(Average)	27 MPH
10 MPH Pace Speed	21-30 MPH
Number in Pace	10404
Percent in Pace	64.3%
Number of Vehicles > 25 MPH	9824
Percent of Vehicles > 25 MPH	60.7%

Accurate Counts
978-664-2565

Location : E. Central St (Route 140)
Location : West of Glenn Meadow Road
City/State: Franklin, MA

6641SPDI

WB, EB

Start Time	15	16	20	21	26	31	36	41	46	51	56	61	66	71	76	Total
03/07/20	0	3	34	20	40	20	5	0	0	0	0	0	0	0	0	102
01:00	0	5	10	4	15	4	8	0	0	0	0	0	0	0	0	42
02:00	0	0	3	7	4	3	6	3	0	0	0	0	0	0	0	23
03:00	1	2	6	7	4	7	3	1	0	0	0	0	0	0	0	24
04:00	0	1	3	9	7	8	8	3	0	0	0	0	0	0	0	31
05:00	1	0	10	25	13	25	20	3	0	0	0	0	0	0	0	72
06:00	0	7	23	83	65	83	47	8	2	0	0	0	0	0	0	235
07:00	0	10	40	191	163	191	69	10	0	0	0	0	0	0	0	483
08:00	1	7	87	224	240	224	81	7	0	0	0	0	0	0	0	647
09:00	18	50	238	409	38	243	38	3	1	0	0	0	0	0	0	1000
10:00	18	73	382	217	497	217	39	2	2	2	0	0	0	0	0	1232
11:00	54	108	379	205	496	205	41	8	1	0	0	0	0	0	0	1292
12 PM	101	147	429	194	462	194	33	1	1	1	0	0	0	0	0	1369
13:00	38	96	13	203	524	203	27	2	2	0	0	0	0	0	0	1351
14:00	61	99	358	199	447	199	46	2	0	1	0	0	0	0	0	1213
15:00	22	62	327	190	449	190	30	6	0	1	0	0	0	0	0	1087
16:00	38	83	306	216	411	216	32	4	0	0	1	0	0	0	0	1092
17:00	6	44	257	164	376	164	27	6	1	0	0	0	0	0	0	881
18:00	19	71	224	128	328	128	19	0	0	0	0	0	0	0	0	790
19:00	6	29	131	148	215	148	37	2	0	1	1	0	0	0	0	969
20:00	1	16	112	81	172	81	19	2	1	0	0	0	0	0	0	404
21:00	0	11	60	103	130	103	34	4	0	0	0	0	0	0	0	342
22:00	1	4	38	68	91	68	21	0	1	0	0	0	0	0	0	224
23:00	0	6	29	39	43	39	19	7	0	0	1	1	0	0	0	145
Total	386	934	3945	2968	5601	2968	709	84	12	7	3	1	2	0	0	14650

Daily

15th Percentile : 21 MPH
50th Percentile : 26 MPH
85th Percentile : 32 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 27 MPH
10 MPH Pace Speed : 21-30 MPH
Number in Pace : 9546
Percent in Pace : 65.2%
Number of Vehicles > 25 MPH : 9385
Percent of Vehicles > 25 MPH : 64.1%

Grand Total	1343	3272	12510	17520	2153	9329	42	24	9	4	2	0	0	0	0	46523
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Overall

15th Percentile : 20 MPH
50th Percentile : 26 MPH
85th Percentile : 32 MPH
95th Percentile : 35 MPH

Mean Speed(Average) : 27 MPH
10 MPH Pace Speed : 21-30 MPH
Number in Pace : 30030
Percent in Pace : 64.5%
Number of Vehicles > 25 MPH : 29398
Percent of Vehicles > 25 MPH : 63.2%

MOTOR VEHICLE CRASH DATA

[illegible]

MASSDOT CRASH RATE WORKSHEETS

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Franklin COUNT DATE : 2020

DISTRICT : 3 UNSIGNALIZED : ☐ SIGNALIZED : ☒

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Route 140

MINOR STREET(S) : King Street/Chestnut Street

ST #

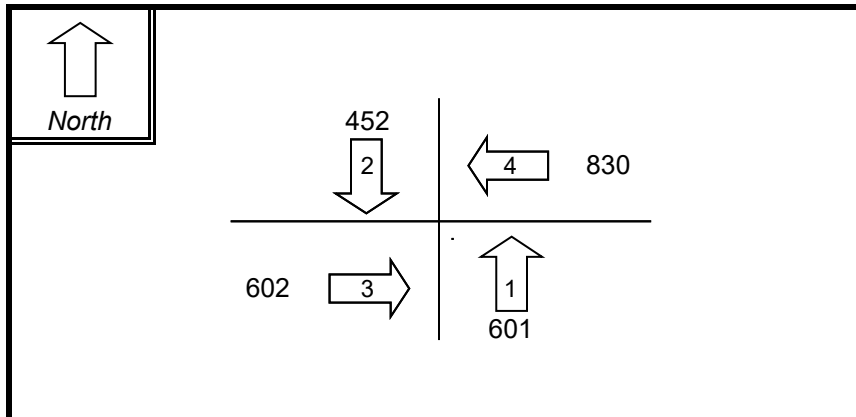
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM
(Label Approaches)**



INTERSECTION

REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	601	452	602	830		2,485

" K " FACTOR : **0.086** APPROACH ADT : **28,895** ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : **36** # OF YEARS : **5** AVERAGE # OF ACCIDENTS (A) : **7.20**

CRASH RATE CALCULATION : **0.68** RATE = $\frac{(A * 1,000,000)}{(ADT * 365)}$

Comments : Accident Rate for District 3 signalized intersections = 0.89

Accident Rate for District 3 unsignalized intersections = 0.61

Statewide Accident Rate for Signalized Inteserction = 0.78 and Unsignalized/Inteserction = 0.57

S:\Jobs\6641\2020\8-Crash\Crash Rates Worksheet

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Franklin COUNT DATE : 2020

DISTRICT : 3 UNSIGNALIZED : ☐ SIGNALIZED : ☒

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Route 140

MINOR STREET(S) : CVS Pharmacy/Chestnut Street

ST #

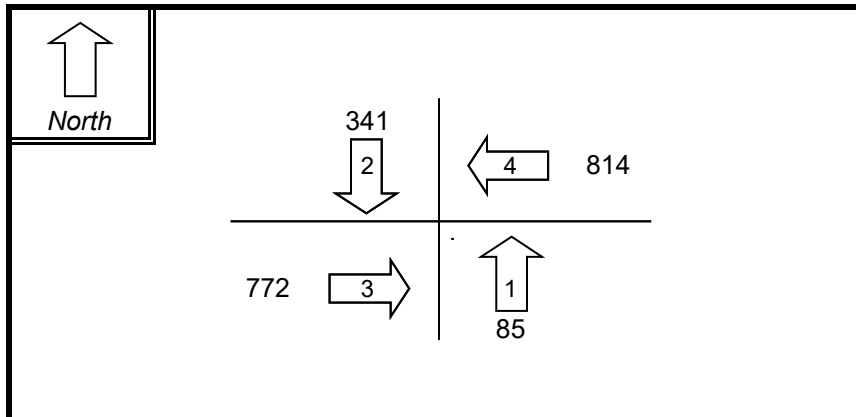
ST #

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ST #

**INTERSECTION
DIAGRAM
(Label Approaches)**



INTERSECTION
REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	85	341	772	814		2,012

" K " FACTOR : **0.086** APPROACH ADT : **23,395** ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : **13** # OF YEARS : **5** AVERAGE # OF ACCIDENTS (A) : **2.60**

CRASH RATE CALCULATION : **0.30** RATE = $\frac{(A * 1,000,000)}{(ADT * 365)}$

Comments : Accident Rate for District 3 signalized intersections = 0.89

Accident Rate for District 3 unsignalized intersections = 0.61

Statewide Accident Rate for Signalized Inteserction = 0.78 and Unsignalized/Inteserction = 0.57

S:\Jobs\6641\2020\8-Crash\Crash Rates Worksheet

MassHighway

CRASH RATE WORKSHEET

CITY/TOWN : Franklin COUNT DATE : 2020

DISTRICT : 3 UNSIGNALIZED : ☐ x ☐ SIGNALIZED : ☐

MHD USE ONLY

Source #

~ INTERSECTION DATA ~

MAJOR STREET : Route 140

ST #

MINOR STREET(S) : Glen Meadow Road

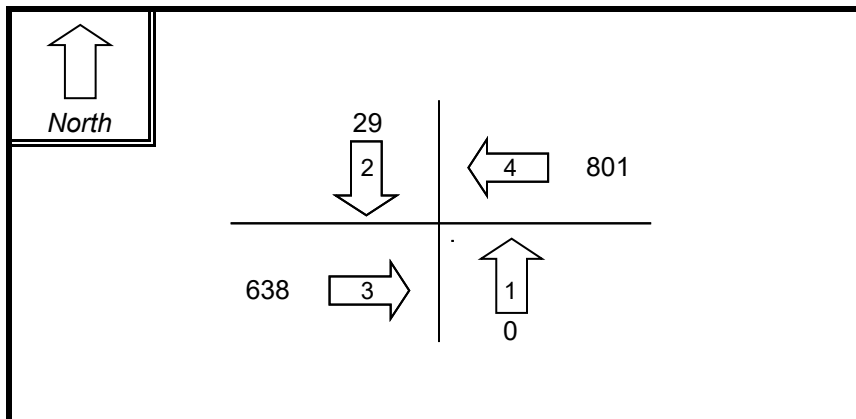
ST #

ST #

ST #

ST #

**INTERSECTION
DIAGRAM
(Label Approaches)**



INTERSECTION
REF #

Peak Hour Volumes

APPROACH :	1	2	3	4	5	Total Entering Vehicles
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	0	29	638	801		1,468

" K " FACTOR : 0.086 APPROACH ADT : 17,070 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF
ACCIDENTS : 14 # OF
YEARS : 5 AVERAGE # OF
ACCIDENTS (A) : 2.80

CRASH RATE CALCULATION : 0.45 RATE = $\frac{(A * 1,000,000)}{(ADT * 365)}$

Comments : Accident Rate for District 3 signalized intersections = 0.89

Accident Rate for District 3 unsignalized intersections = 0.61

Statewide Accident Rate for Signalized Inteserction = 0.78 and Unsignalized/Inteserction = 0.57

S:\Jobs\6641\2020\8-Crash\Crash Rates Worksheet

GENERAL BACKGROUND TRAFFIC GROWTH

Proposed Mixed-Use Commercial Building
Franklin, MA

General Background Traffic Growth - Daily Traffic Volumes

Station Number	ROUTE/STREET	LOCATION	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Average Annual Growth Rate
6126	INTERSTATE 495 SOUTH OF RAMP-RT 495 NB TO RT 140	Norfolk	59,730	72,318	72,712		80,371	77,245	83,722	88,584	87,263	87,001	83,551	-3%
3180	INTERSTATE 495 AT MEDWAY TOWN LINE	Norfolk	77,792	69,544	79,369	80,561	80,541	80,320	78,312	91,135	89,066	87,454	89,053	2%
6128	INTERSTATE 495 NORTH OF RTE. 1	Norfolk	71,440		80,636	81,142	79,108	83,266	84,690	96,920	92,707	91,874	94,546	2.7%

0.42%

Adjusted Rate: 1.0%

TRIP-GENERATION CALCULATIONS

Land Use: 221

Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have between three and 10 levels (floors). Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), off-campus student apartment (Land Use 225), and mid-rise residential with 1st-floor commercial (Land Use 231) are related land uses.

Additional Data

In prior editions of *Trip Generation Manual*, the mid-rise multifamily housing sites were further divided into rental and condominium categories. An investigation of vehicle trip data found no clear differences in trip making patterns between the rental and condominium sites within the ITE database. As more data are compiled for future editions, this land use classification can be reinvestigated.

For the six sites for which both the number of residents and the number of occupied dwelling units were available, there were an average of 2.46 residents per occupied dwelling unit.

For the five sites for which the numbers of both total dwelling units and occupied dwelling units were available, an average of 95.7 percent of the total dwelling units were occupied.

Time-of-day distribution data for this land use are presented in Appendix A. For the eight general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:00 and 8:00 a.m. and 4:45 and 5:45 p.m., respectively.

For the four dense multi-use urban sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 7:15 and 8:15 a.m. and 4:15 and 5:15 p.m., respectively. For the three center city core sites with 24-hour count data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 6:45 and 7:45 a.m. and 5:00 and 6:00 p.m., respectively.

For the six sites for which data were provided for both occupied dwelling units and residents, there was an average of 2.46 residents per occupied dwelling unit.

For the five sites for which data were provided for both occupied dwelling units and total dwelling units, an average of 95.7 percent of the units were occupied.

The average numbers of person trips per vehicle trip at the five center city core sites at which both person trip and vehicle trip data were collected were as follows:

- 1.84 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.94 during Weekday, AM Peak Hour of Generator
- 2.07 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.59 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 32 dense multi-use urban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.90 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.90 during Weekday, AM Peak Hour of Generator
- 2.00 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.08 during Weekday, PM Peak Hour of Generator

The average numbers of person trips per vehicle trip at the 13 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.56 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 7 and 9 a.m.
- 1.88 during Weekday, AM Peak Hour of Generator
- 1.70 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 2.07 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Delaware, District of Columbia, Florida, Georgia, Illinois, Maryland, Massachusetts, Minnesota, New Hampshire, New Jersey, Ontario, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Utah, Virginia, and Wisconsin.

Source Numbers

168, 188, 204, 305, 306, 321, 357, 390, 436, 525, 530, 579, 638, 818, 857, 866, 901, 904, 910, 912, 918, 934, 936, 939, 944, 947, 948, 949, 959, 963, 964, 966, 967, 969, 970

Multifamily Housing (Mid-Rise) (221)

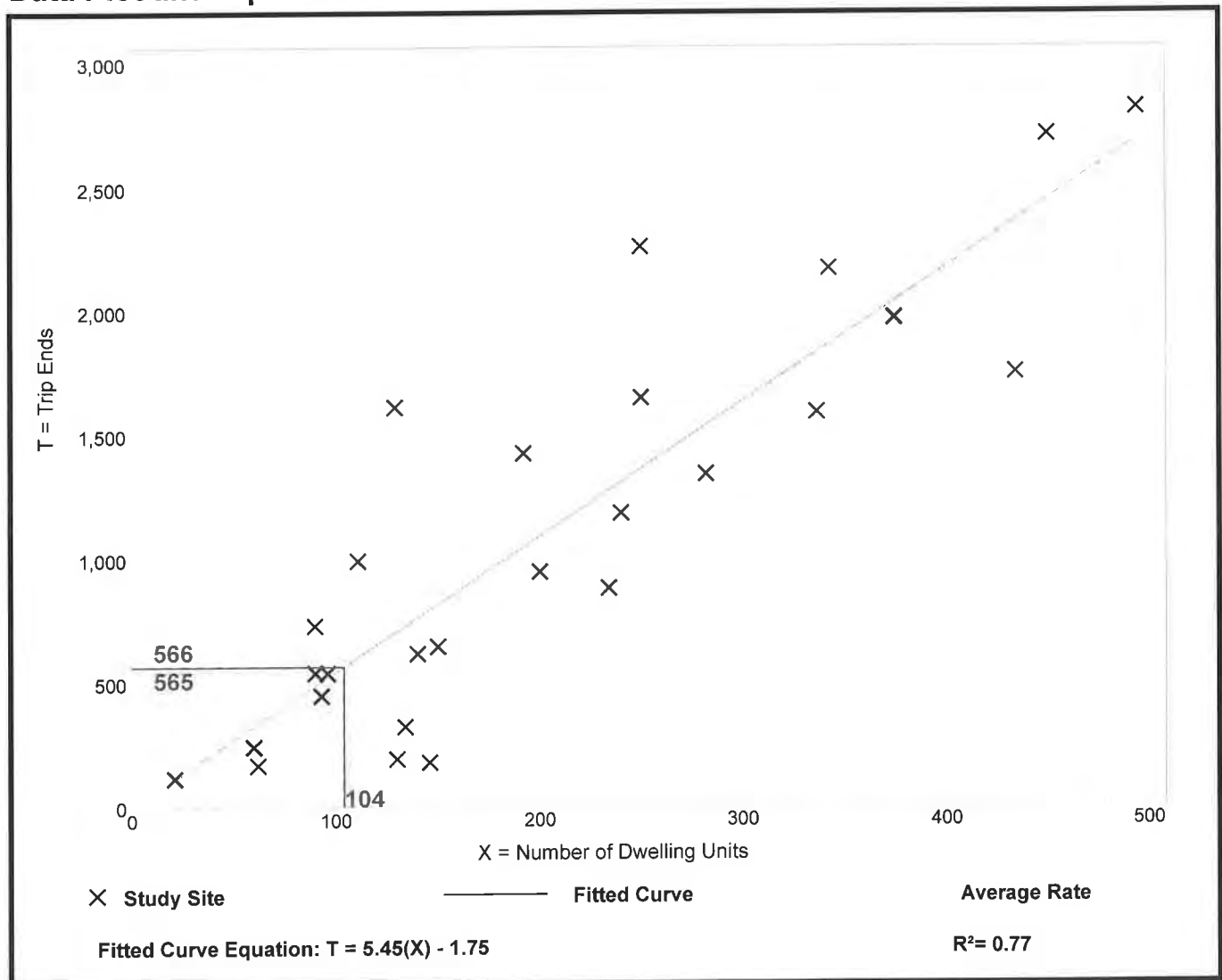
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 27
Avg. Num. of Dwelling Units: 205
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
5.44	1.27 - 12.50	2.03

Data Plot and Equation



Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units

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

Setting/Location: General Urban/Suburban

Number of Studies: 53

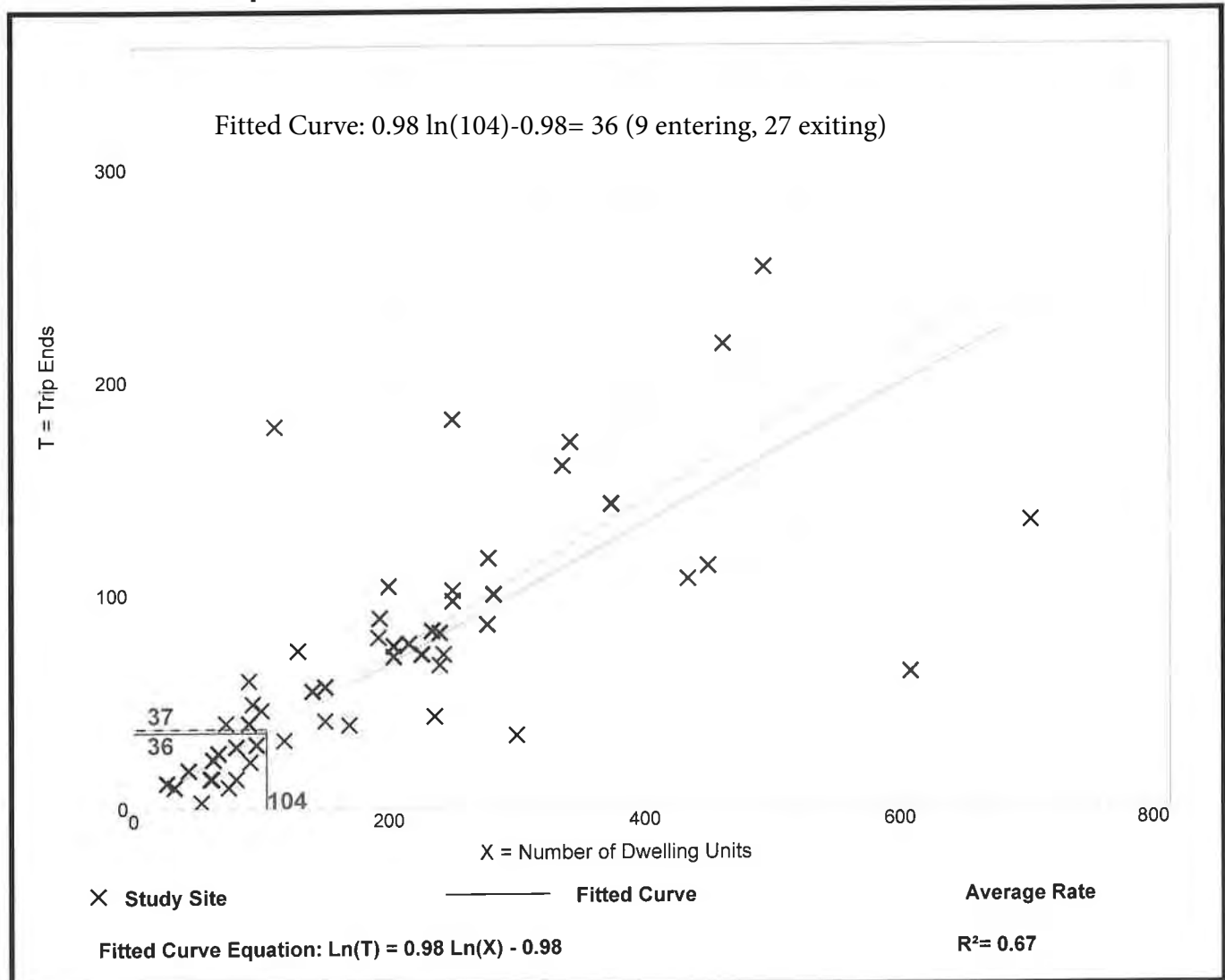
Avg. Num. of Dwelling Units: 207

Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.06 - 1.61	0.19

Data Plot and Equation



Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

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

Setting/Location: General Urban/Suburban

Number of Studies: 60

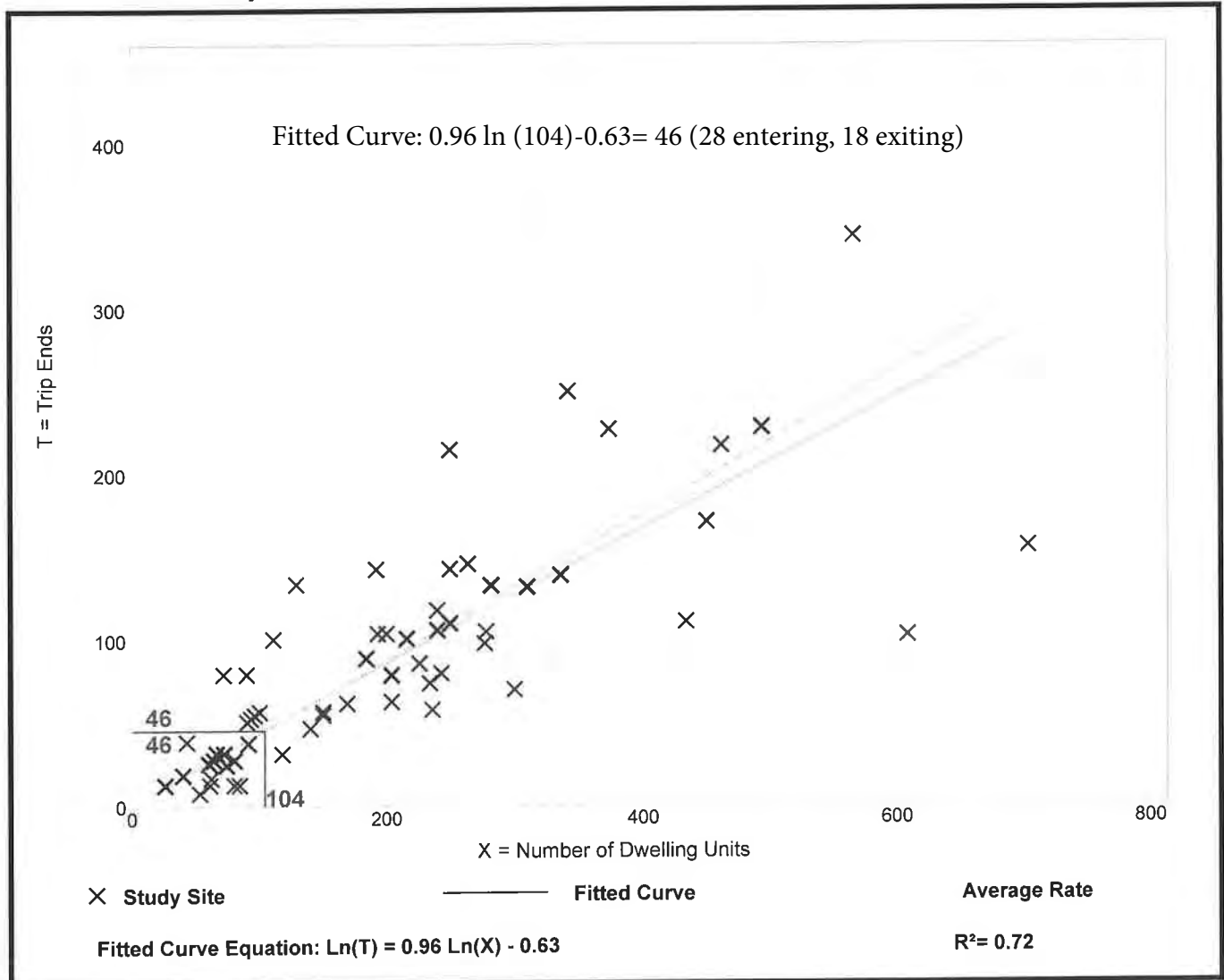
Avg. Num. of Dwelling Units: 208

Directional Distribution: 61% entering, 39% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.15 - 1.11	0.19

Data Plot and Equation



Multifamily Housing (Mid-Rise) (221)

Vehicle Trip Ends vs: Dwelling Units

On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban

Number of Studies: 8

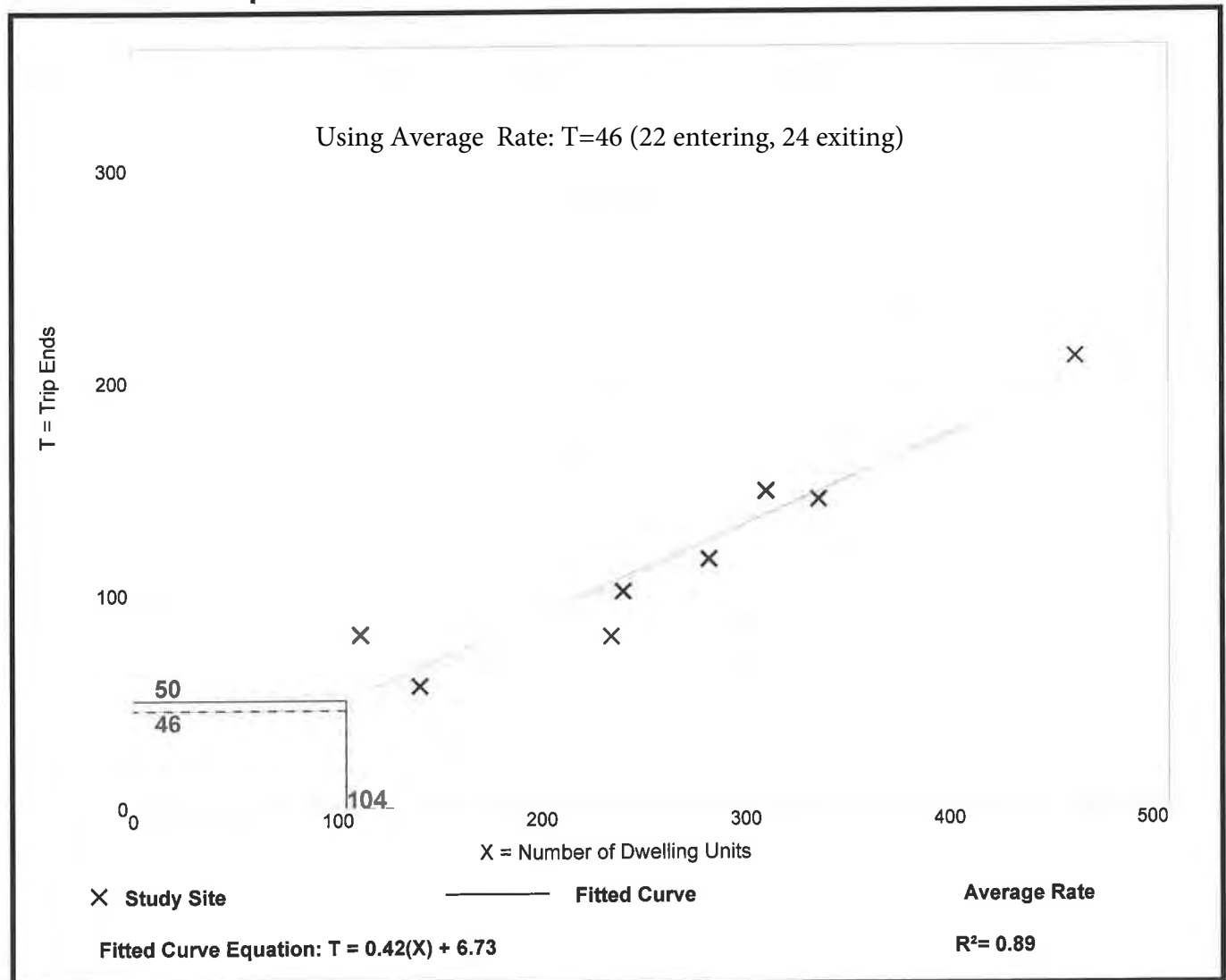
Avg. Num. of Dwelling Units: 264

Directional Distribution: 49% entering, 51% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.44	0.34 - 0.73	0.08

Data Plot and Equation



Land Use: 820

Shopping Center

Description

A shopping center is an integrated group of commercial establishments that is planned, developed, owned, and managed as a unit. A shopping center's composition is related to its market area in terms of size, location, and type of store. A shopping center also provides on-site parking facilities sufficient to serve its own parking demands. Factory outlet center (Land Use 823) is a related use.

Additional Data

Shopping centers, including neighborhood centers, community centers, regional centers, and super regional centers, were surveyed for this land use. Some of these centers contained non-merchandising facilities, such as office buildings, movie theaters, restaurants, post offices, banks, health clubs, and recreational facilities (for example, ice skating rinks or indoor miniature golf courses).

Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points). These buildings are typically drive-in banks, retail stores, restaurants, or small offices. Although the data herein do not indicate which of the centers studied included peripheral buildings, it can be assumed that some of the data show their effect.

The vehicle trips generated at a shopping center are based upon the total GLA of the center. In cases of smaller centers without an enclosed mall or peripheral buildings, the GLA could be the same as the gross floor area of the building.

Time-of-day distribution data for this land use are presented in Appendix A. For the 10 general urban/suburban sites with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:15 and 1:15 p.m., respectively.

The average numbers of person trips per vehicle trip at the 27 general urban/suburban sites at which both person trip and vehicle trip data were collected were as follows:

- 1.31 during Weekday, AM Peak Hour of Generator
- 1.43 during Weekday, Peak Hour of Adjacent Street Traffic, one hour between 4 and 6 p.m.
- 1.46 during Weekday, PM Peak Hour of Generator

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Alberta (CAN), British Columbia (CAN), California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Source Numbers

105, 110, 154, 156, 159, 186, 190, 198, 199, 202, 204, 211, 213, 239, 251, 259, 260, 269, 294, 295, 299, 300, 301, 304, 305, 307, 308, 309, 310, 311, 314, 315, 316, 317, 319, 358, 365, 376, 385, 390, 400, 404, 414, 420, 423, 428, 437, 440, 442, 444, 446, 507, 562, 580, 598, 629, 658, 702, 715, 728, 868, 870, 871, 880, 899, 908, 912, 915, 926, 936, 944, 946, 960, 961, 962, 973, 974, 978

Shopping Center (820)

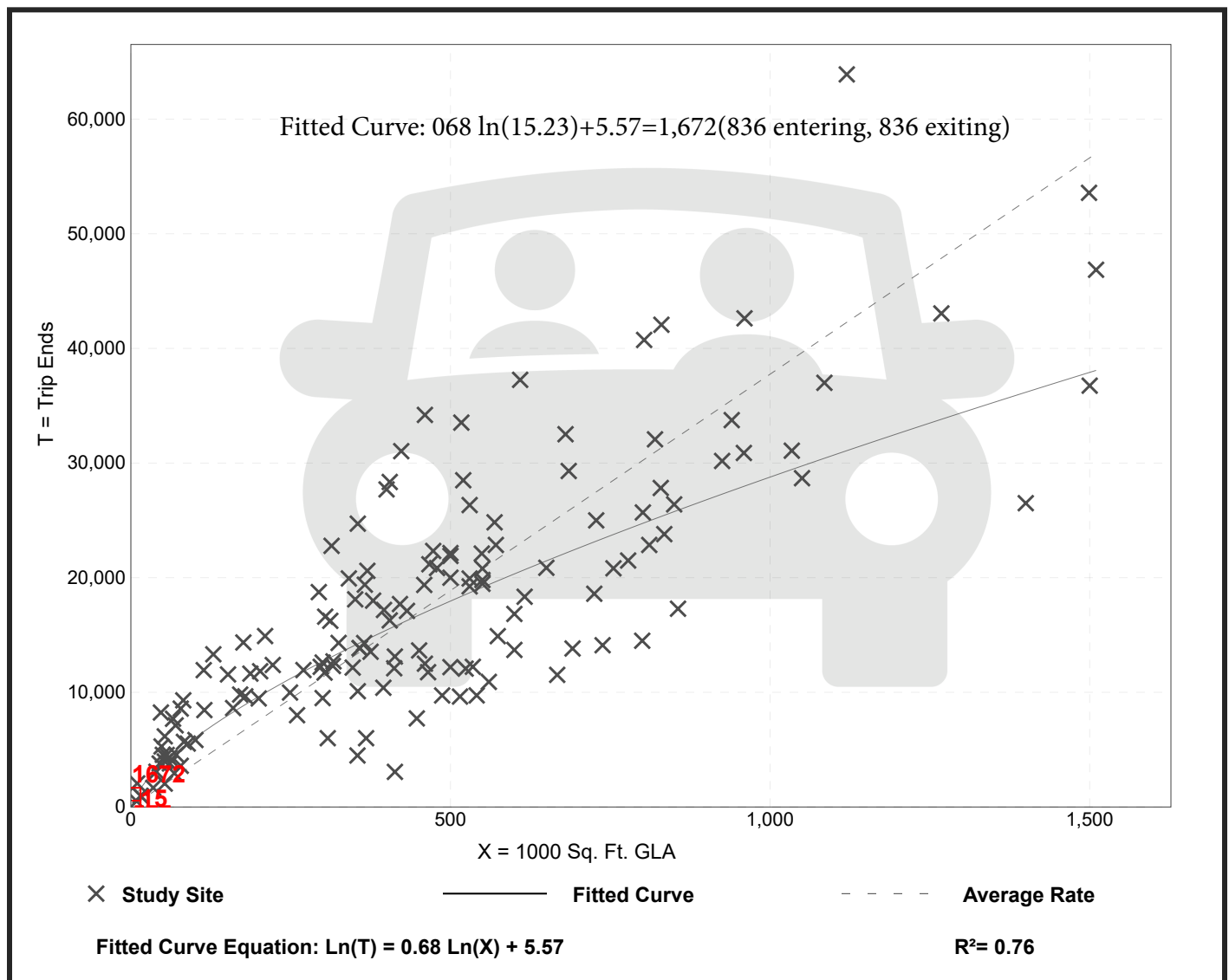
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 147
Avg. 1000 Sq. Ft. GLA: 453
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
37.75	7.42 - 207.98	16.41

Data Plot and Equation



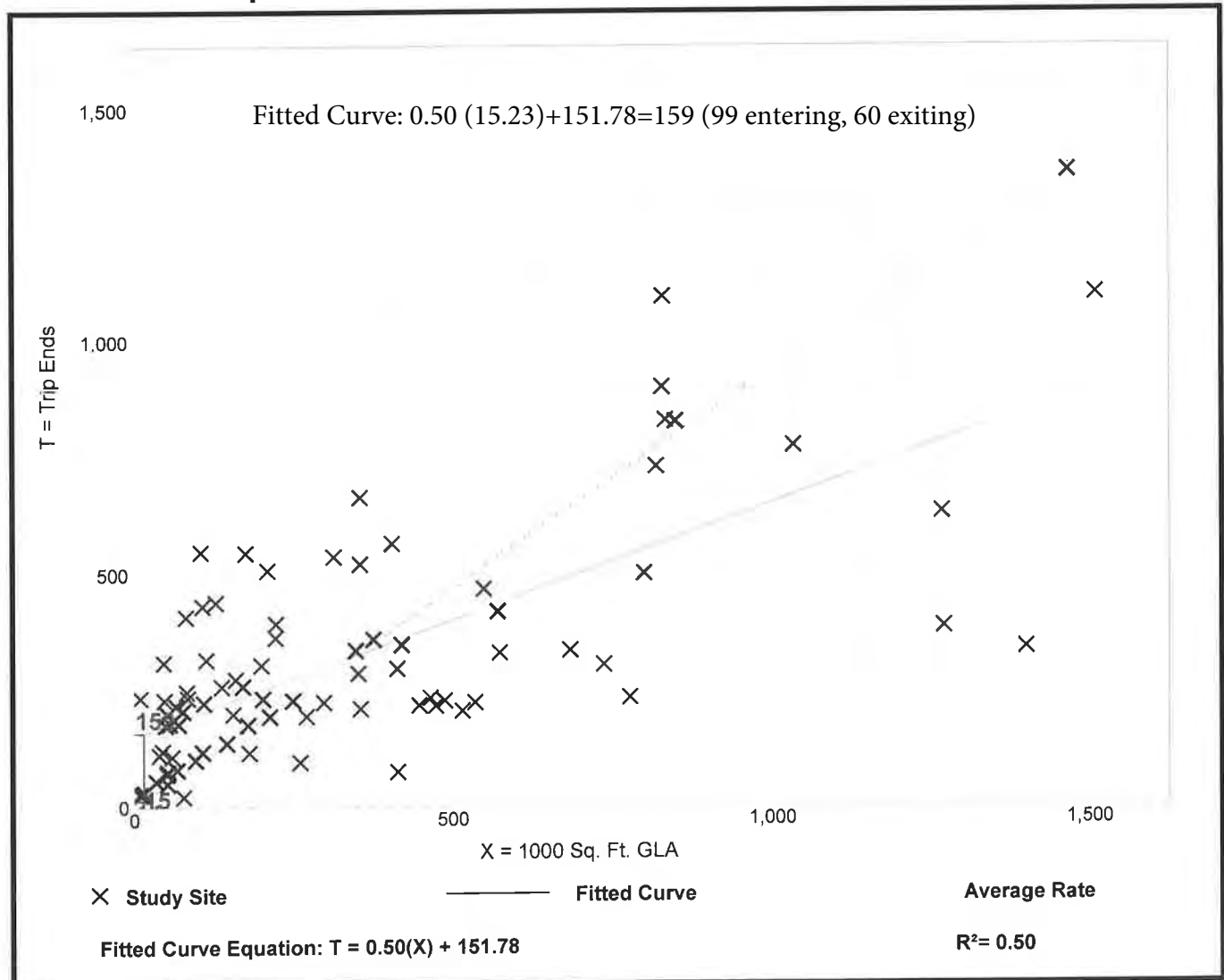
Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 84
 Avg. 1000 Sq. Ft. GLA: 351
 Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
0.94	0.18 - 23.74	0.87

Data Plot and Equation



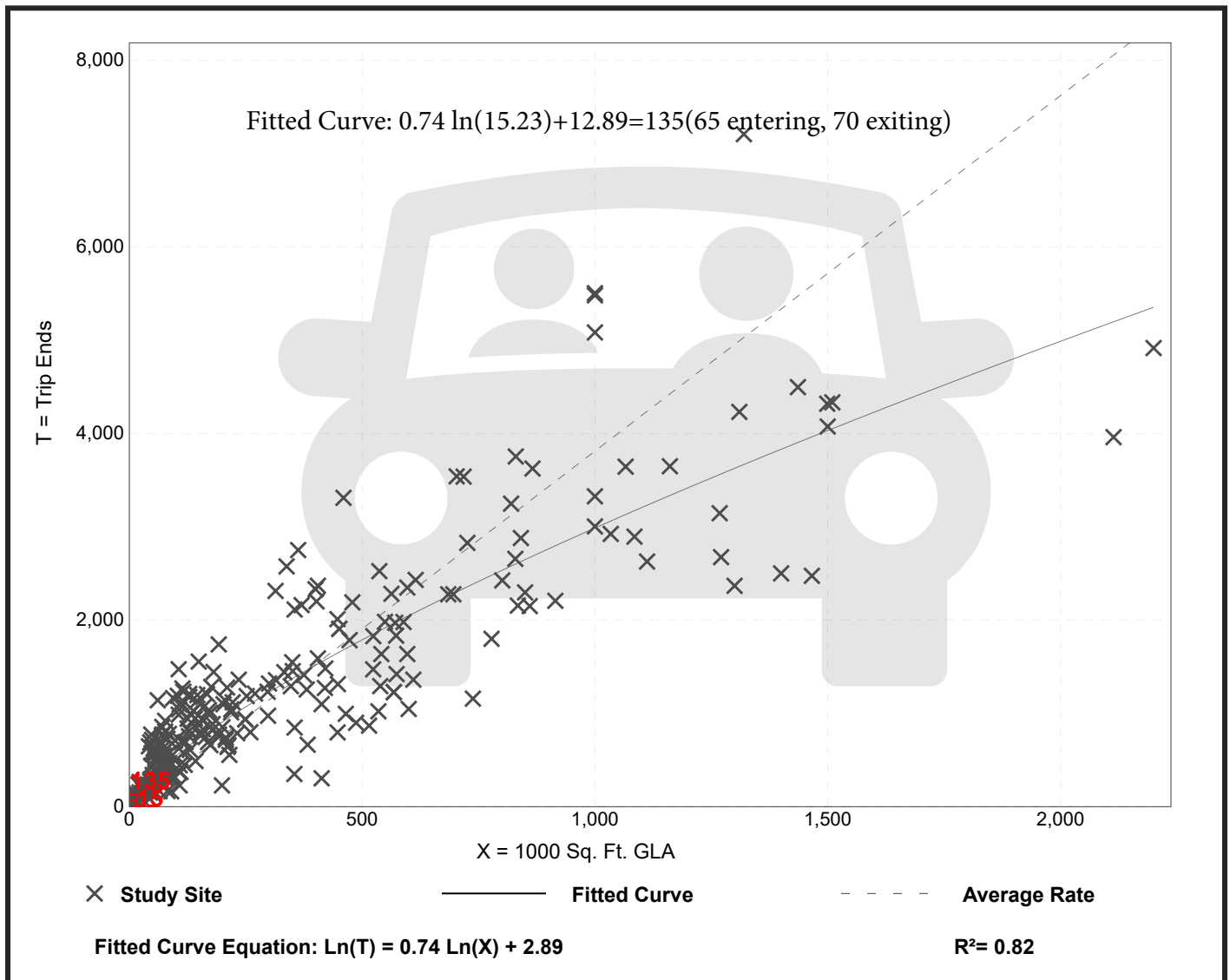
Shopping Center (820)

Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 4 and 6 p.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 261
 Avg. 1000 Sq. Ft. GLA: 327
 Directional Distribution: 48% entering, 52% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
3.81	0.74 - 18.69	2.04

Data Plot and Equation



Shopping Center (820)

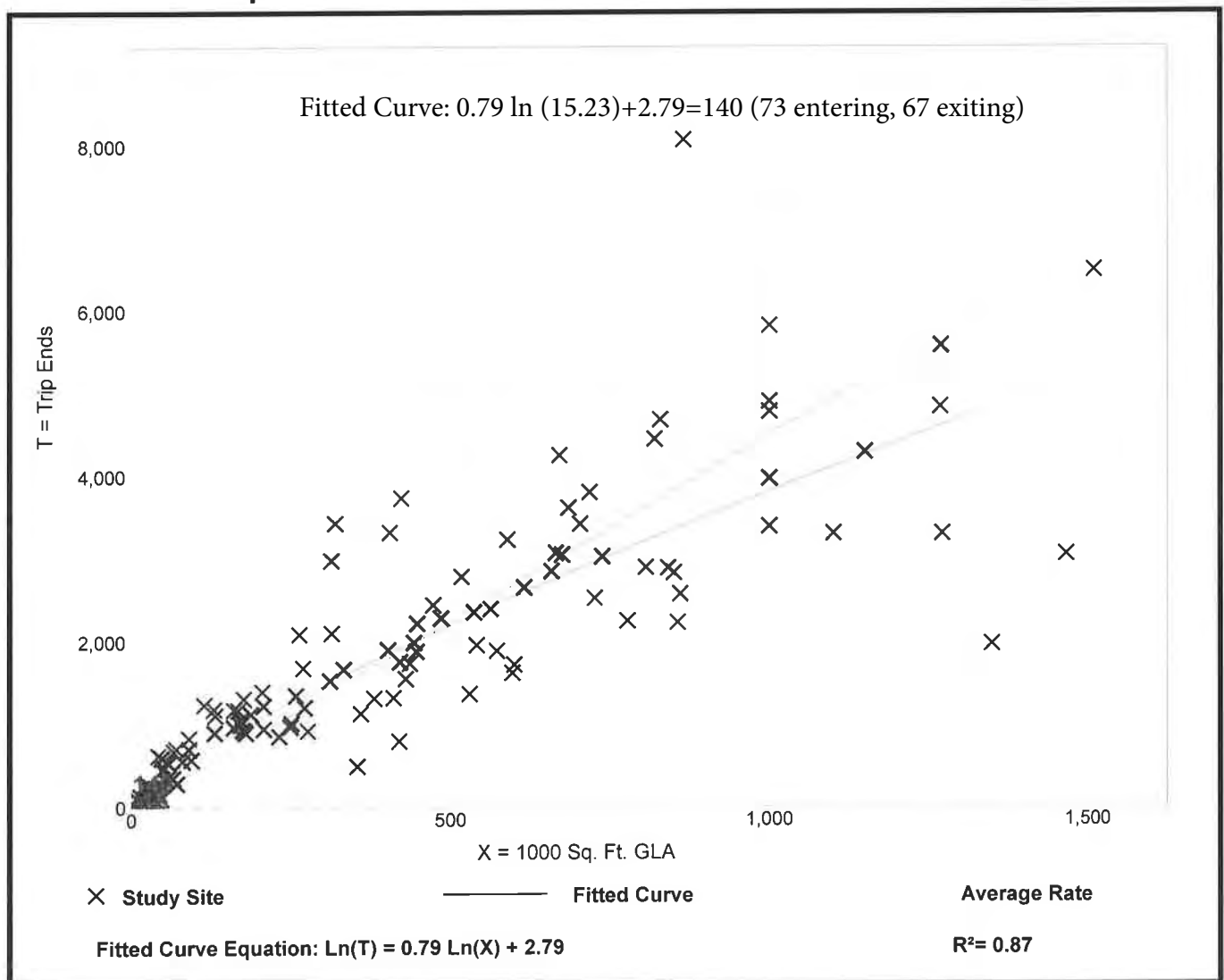
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 119
Avg. 1000 Sq. Ft. GLA: 416
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
4.50	1.42 - 15.10	1.88

Data Plot and Equation



Land Use: 937

Coffee/Donut Shop with Drive-Through Window

Description

This land use includes single-tenant coffee and donut restaurants with drive-through windows. Freshly brewed coffee and a variety of coffee-related accessories are the primary retail products sold at these sites. They may also sell other refreshment items, such as donuts, bagels, muffins, cakes, sandwiches, wraps, salads, and other hot and cold beverages. Some sites may also sell newspapers, music, CDs, and books. The coffee and donut shops contained in this land use typically hold long store hours (more than 15 hours) with an early morning opening. Also, limited indoor seating is generally provided for patrons; however, table service is not provided. Coffee/donut shop without drive-through window (Land Use 936), coffee/donut shop with drive-through window and no indoor seating (Land Use 938), bread/donut/bagel shop without drive-through window (Land Use 939), and bread/donut/bagel shop with drive-through window (Land Use 940) are related uses.

Additional Data

The sites were surveyed in the 1990s, the 2000s, and the 2010s in California, Colorado, Connecticut, Illinois, Massachusetts, Minnesota, Nevada, New Hampshire, New Jersey, New York, Ontario (CAN), Pennsylvania, Quebec (CAN), Tennessee, Vermont, Washington, and Wisconsin.

Specialized Land Use Data

One study provided data for a coffee/donut shop with a drive-through window that also sells donuts and ice cream (source 617). The trip generating characteristics of this site differed from the sites included in this land use; therefore, trip generation information for this site is presented here and was excluded from the data plots. The site had a gross floor area of 3,300 square feet. It generated 425 vehicle trips during the weekday AM peak hour of adjacent street traffic, and 236 vehicle trips during the weekday PM peak hour of adjacent street traffic.

Source Numbers

594, 599, 615, 617, 618, 621, 622, 635, 639, 712, 714, 725, 726, 728, 853, 854, 892, 903, 928, 959, 979, 982

Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

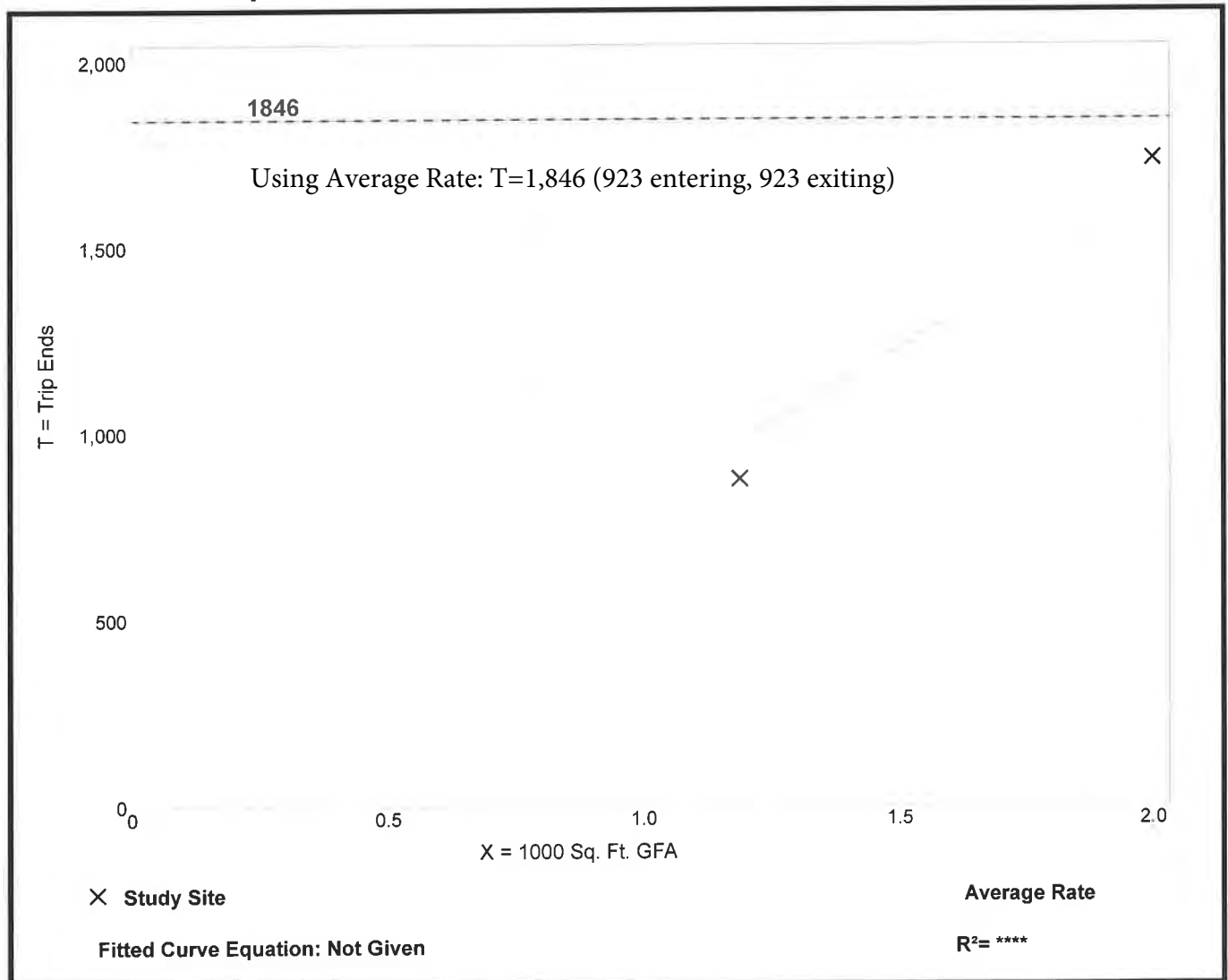
Setting/Location: General Urban/Suburban
Number of Studies: 2
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
820.38	738.66 - 869.00	*

Data Plot and Equation

Caution – Small Sample Size



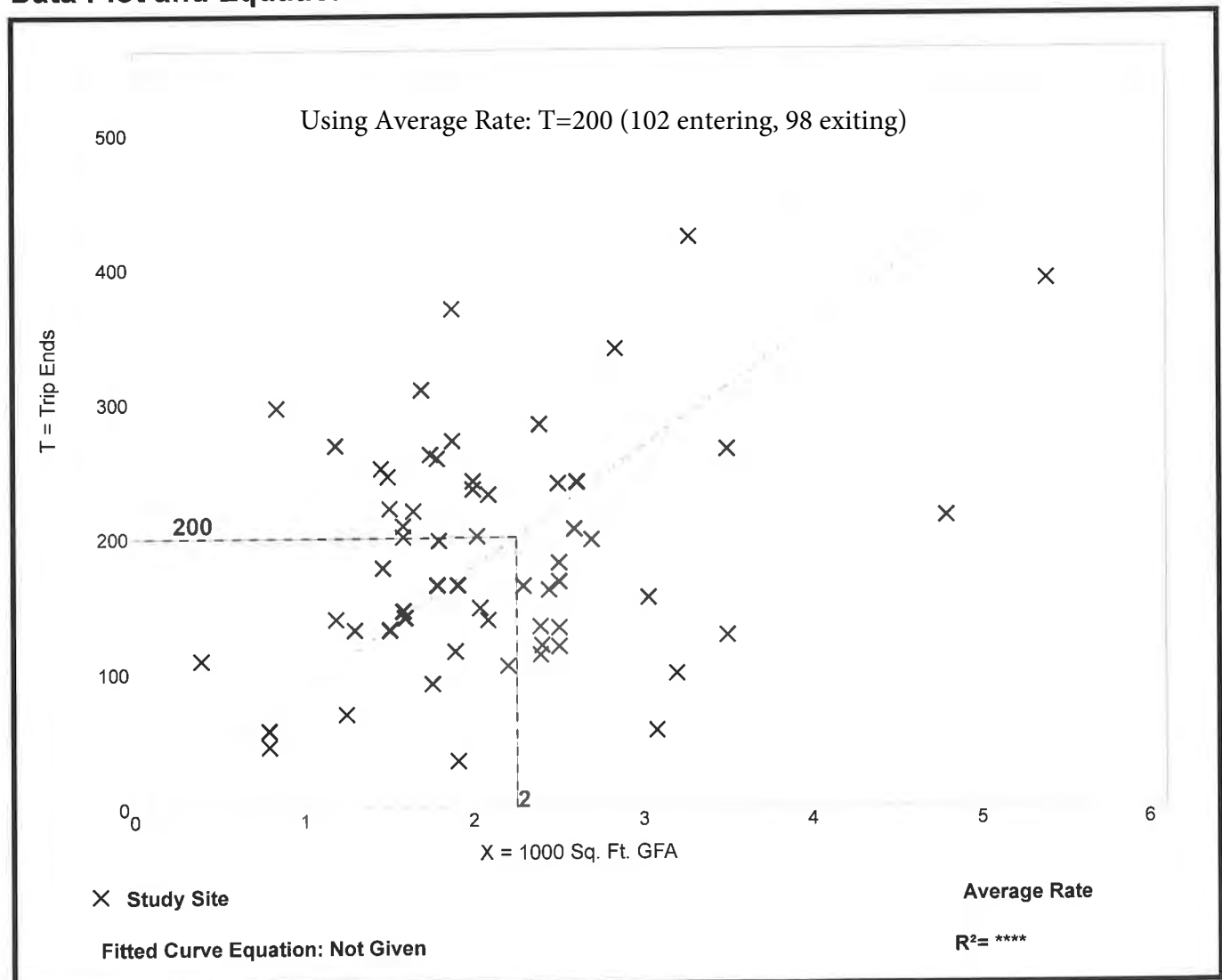
Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.
 Setting/Location: General Urban/Suburban
 Number of Studies: 61
 Avg. 1000 Sq. Ft. GFA: 2
 Directional Distribution: 51% entering, 49% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
88.99	18.32 - 353.57	48.19

Data Plot and Equation



Coffee/Donut Shop with Drive-Through Window (937)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

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

Setting/Location: General Urban/Suburban

Number of Studies: 26

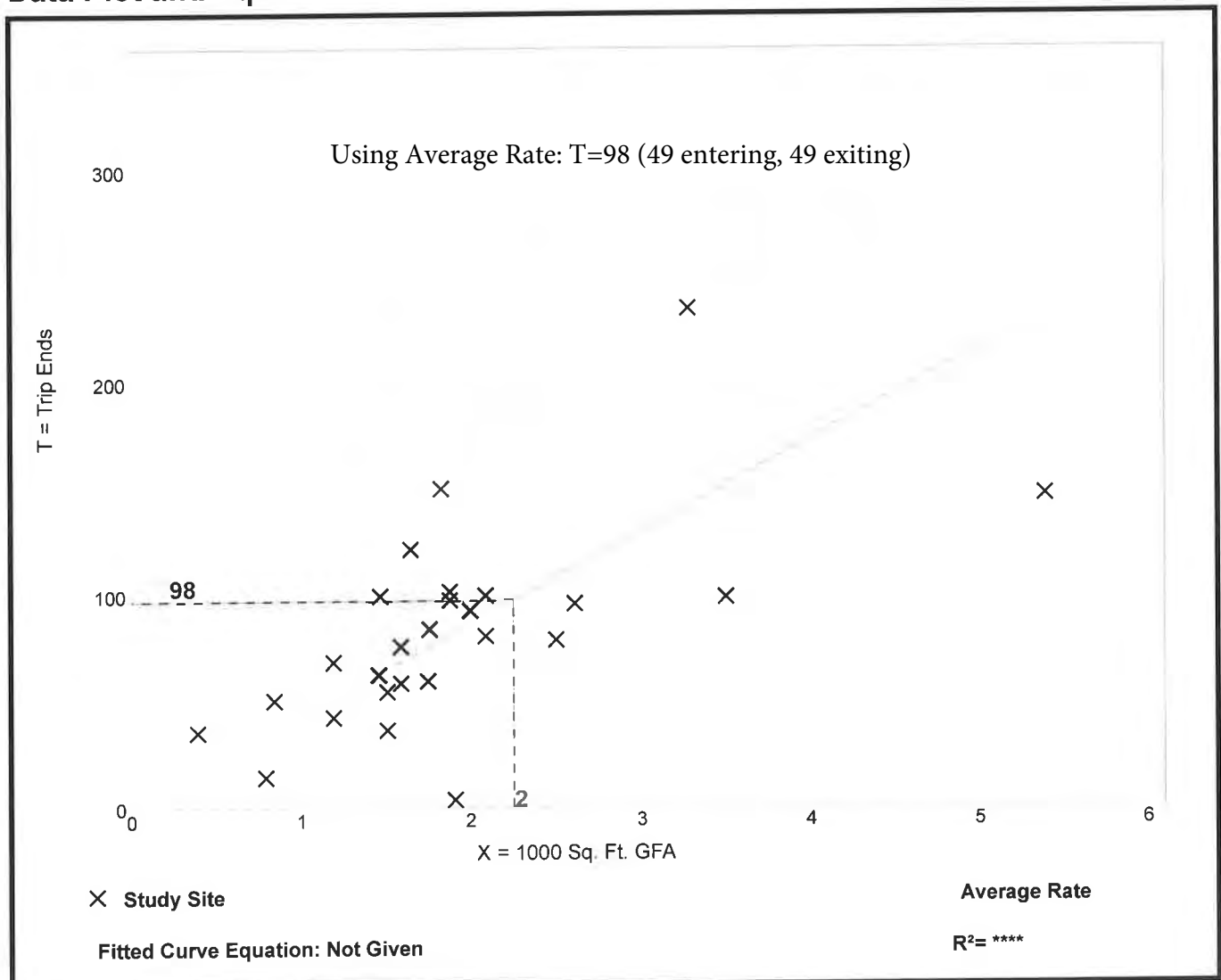
Avg. 1000 Sq. Ft. GFA: 2

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
43.38	2.09 - 92.31	18.88

Data Plot and Equation



Coffee/Donut Shop with Drive-Through Window (937)

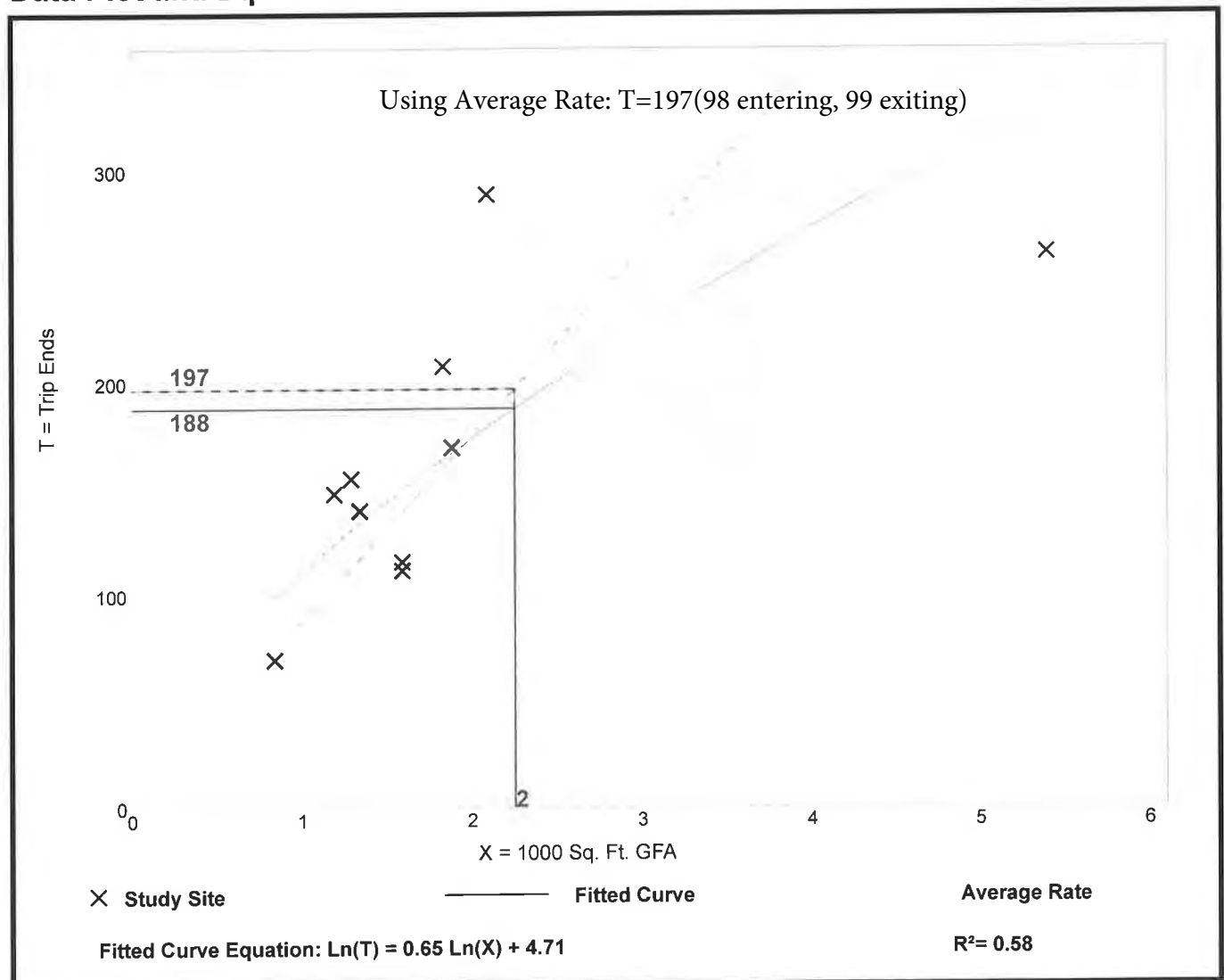
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 10
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
87.70	48.42 - 138.28	33.38

Data Plot and Equation



TRIP-DISTRIBUTION CALCULATIONS

CAPACITY ANALYSIS WORKSHEETS

East Central Street (Route 140) at King Street and Chestnut Street

East Central Street (Route 140) at Horace Mann Plaza Driveway/CVS Pharmacy Driveway

East Central Street (Route 140) at the Big Y Market Drive and the Franklin Municipal Building Drive

East Central Street (Route 140) at Glen Meadow Road and the Project Full-Access Driveway





















East Central Street (Route 140) at the Project Site Entrance Only Driveway

East Central Street (Route 140) at King Street and Chestnut Street

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140













2020 Existing Weekday Morning Peak Hour

04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	77	316	32	208	263	54	25	335	295	18	248	97
Future Volume (vph)	77	316	32	208	263	54	25	335	295	18	248	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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		0.986			0.974				0.850		0.964	
Flt Protected	0.950			0.950				0.997			0.998	
Satd. Flow (prot)	1703	1779	0	1728	1760	0	0	1798	1546	0	2017	0
Flt Permitted	0.465			0.221				0.960			0.971	
Satd. Flow (perm)	833	1779	0	402	1760	0	0	1731	1546	0	1962	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			9				188		15	
Link Speed (mph)		30			30				30		30	
Link Distance (ft)		639			1214				457		724	
Travel Time (s)		14.5			27.6				10.4		16.5	
Peak Hour Factor	0.92	0.92	0.92	0.99	0.99	0.99	0.89	0.89	0.89	0.90	0.90	0.90
Heavy Vehicles (%)	6%	2%	0%	1%	2%	0%	0%	2%	1%	11%	2%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	84	378	0	210	321	0	0	404	331	0	404	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	32.8	23.6		39.1	29.2			32.1	48.4		32.1	
Actuated g/C Ratio	0.39	0.28		0.47	0.35			0.39	0.58		0.39	
v/c Ratio	0.20	0.75		0.55	0.52			0.61	0.34		0.53	
Control Delay	14.1	37.6		19.2	26.3			29.4	6.7		25.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2020 Existing Weekday Morning Peak Hour
04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	14.1	37.6		19.2	26.3			29.4	6.7		25.9	
LOS	B	D		B	C			C	A		C	
Approach Delay		33.4			23.5			19.2			25.9	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	20	160		55	122			149	27		138	
Queue Length 95th (ft)	62	354		141	277			#454	136		385	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	563	799		456	804			667	1049		765	
Starvation Cap Reductn	0	0		0	0			0	0		0	
Spillback Cap Reductn	0	0		0	0			0	0		0	
Storage Cap Reductn	0	0		0	0			0	0		0	
Reduced v/c Ratio	0.15	0.47		0.46	0.40			0.61	0.32		0.53	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 83.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 24.6

Intersection Capacity Utilization 74.3%

Analysis Period (min) 15








Intersection LOS: C

ICU Level of Service D

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

Queue shown is maximum after two cycles.





















Splits and Phases: 1: King St/Chestnut St & Route 140

 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis

1: King St/Chestnut St & Route 140

2020 Existing Weekday Morning Peak Hour
04/30/2020




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	77	316	32	208	263	54	25	335	295	18	248	97
Future Volume (vph)	77	316	32	208	263	54	25	335	295	18	248	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flt	1.00	0.99		1.00	0.97			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1703	1779		1728	1760			1797	1546		2016	
Flt Permitted	0.46	1.00		0.22	1.00			0.96	1.00		0.97	
Satd. Flow (perm)	833	1779		402	1760			1731	1546		1962	
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.99	0.99	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	84	343	35	210	266	55	28	376	331	20	276	108
RTOR Reduction (vph)	0	4	0	0	6	0	0	0	94	0	10	0
Lane Group Flow (vph)	84	374	0	210	315	0	0	404	237	0	394	0
Heavy Vehicles (%)	6%	2%	0%	1%	2%	0%	0%	2%	1%	11%	2%	3%
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		
Actuated Green, G (s)	30.4	23.7		39.2	28.1			31.1	42.2		31.1	
Effective Green, g (s)	32.4	24.7		40.8	29.1			32.1	44.2		32.1	
Actuated g/C Ratio	0.37	0.28		0.46	0.33			0.36	0.50		0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	381	498		367	580			629	844		714	
v/s Ratio Prot	0.02	c0.21		c0.08	0.18				0.04			
v/s Ratio Perm	0.06			0.19				c0.23	0.11		0.20	
v/c Ratio	0.22	0.75		0.57	0.54			0.64	0.28		0.55	
Uniform Delay, d1	18.7	29.0		16.6	24.1			23.3	12.8		22.3	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.3	6.3		2.2	1.0			2.2	0.2		0.9	
Delay (s)	19.0	35.3		18.7	25.2			25.5	13.0		23.3	
Level of Service	B	D		B	C			C	B		C	
Approach Delay (s)		32.3			22.6			19.9			23.3	
Approach LOS		C			C			B			C	

Intersection Summary

HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	88.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			













Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2020 Existing Weekday Evening Peak Hour
04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	149	412	41	358	428	46	30	276	295	27	307	118
Future Volume (vph)	149	412	41	358	428	46	30	276	295	27	307	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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		0.986			0.986				0.850		0.965	
Flt Protected	0.950			0.950				0.995			0.997	
Satd. Flow (prot)	1805	1811	0	1745	1811	0	0	1804	1546	0	2058	0
Flt Permitted	0.236			0.138				0.844			0.912	
Satd. Flow (perm)	448	1811	0	253	1811	0	0	1530	1546	0	1882	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5				221		15	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		639			1214			457			724	
Travel Time (s)		14.5			27.6			10.4			16.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	4%	1%	1%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	487	0	385	509	0	0	336	324	0	558	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	41.9	30.7		50.4	35.8			31.5	51.7		31.5	
Actuated g/C Ratio	0.45	0.33		0.54	0.38			0.34	0.55		0.34	
v/c Ratio	0.44	0.82		0.98	0.74			0.66	0.34		0.87	
Control Delay	16.5	42.2		66.0	34.0			36.8	6.2		46.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2020 Existing Weekday Evening Peak Hour
04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	16.5	42.2		66.0	34.0			36.8	6.2		46.8	
LOS	B	D		E	C			D	A		D	
Approach Delay		35.8			47.8			21.7			46.8	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	40	243		156	232			163	27		292	
Queue Length 95th (ft)	108	#525		#486	#562			#388	112		#570	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	458	705		393	729			511	950		639	
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	0.35	0.69		0.98	0.70			0.66	0.34		0.87	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 94

Natural Cycle: 140

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 38.6

Intersection LOS: D

Intersection Capacity Utilization 98.4%








ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.




















Splits and Phases: 1: King St/Chestnut St & Route 140

 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis





















1: King St/Chestnut St & Route 140

2020 Existing Weekday Evening Peak Hour
04/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	149	412	41	358	428	46	30	276	295	27	307	118
Future Volume (vph)	149	412	41	358	428	46	30	276	295	27	307	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.99			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1805	1812		1745	1810			1804	1546		2057	
Flt Permitted	0.24	1.00		0.14	1.00			0.84	1.00		0.91	
Satd. Flow (perm)	449	1812		253	1810			1531	1546		1883	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Adj. Flow (vph)	160	443	44	385	460	49	33	303	324	33	379	146
RTOR Reduction (vph)	0	3	0	0	3	0	0	0	114	0	10	0
Lane Group Flow (vph)	160	484	0	385	506	0	0	336	210	0	548	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	4%	1%	1%	0%	1%	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		
Actuated Green, G (s)	40.0	29.8		50.0	34.8			30.4	45.6		30.4	
Effective Green, g (s)	42.0	30.8		51.0	35.8			31.4	47.6		31.4	
Actuated g/C Ratio	0.43	0.31		0.52	0.37			0.32	0.49		0.32	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	347	569		378	661			490	814		603	
v/s Ratio Prot	0.05	0.27		c0.17	0.28				0.04			
v/s Ratio Perm	0.14			c0.36				0.22	0.09		c0.29	
v/c Ratio	0.46	0.85		1.02	0.77			0.69	0.26		0.91	
Uniform Delay, d1	19.0	31.5		26.6	27.4			29.0	14.8		31.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.0	11.7		51.1	5.3			4.0	0.2		17.5	
Delay (s)	20.0	43.2		77.7	32.7			33.0	15.0		49.4	
Level of Service	C	D		E	C			C	B		D	
Approach Delay (s)		37.4			52.1			24.1			49.4	
Approach LOS		D			D			C			D	
Intersection Summary												
HCM 2000 Control Delay			41.4			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			98.0			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			98.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												













Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2020 Existing Saturday Midday Peak Hour
04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	134	502	48	318	456	61	33	165	259	21	202	105
Future Volume (vph)	134	502	48	318	456	61	33	165	259	21	202	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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			0.982				0.850		0.957	
Flt Protected	0.950			0.950				0.992			0.997	
Satd. Flow (prot)	1805	1813	0	1745	1804	0	0	1807	1546	0	2055	0
Flt Permitted	0.298			0.142				0.742			0.970	
Satd. Flow (perm)	566	1813	0	261	1804	0	0	1352	1546	0	1999	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			6				291		20	
Link Speed (mph)		30			30				30		30	
Link Distance (ft)		639			1214				457		724	
Travel Time (s)		14.5			27.6				10.4		16.5	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.89	0.89	0.89	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	592	0	346	562	0	0	222	291	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effect Green (s)	46.8	36.7		56.5	42.9			20.5	40.9		20.5	
Actuated g/C Ratio	0.53	0.41		0.63	0.48			0.23	0.46		0.23	
v/c Ratio	0.33	0.79		0.79	0.64			0.71	0.34		0.73	
Control Delay	11.9	34.3		32.6	25.5			45.9	3.2		39.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2020 Existing Saturday Midday Peak Hour
04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	11.9	34.3		32.6	25.5			45.9	3.2		39.9	
LOS	B	C		C	C			D	A		D	
Approach Delay		29.9			28.2			21.7			39.9	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)	24	253		94	196			107	0		158	
Queue Length 95th (ft)	98	#705		#410	#653			230	47		316	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	564	750		437	873			480	867		722	
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	0.26	0.79		0.79	0.64			0.46	0.34		0.48	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 89

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.0

Intersection LOS: C

Intersection Capacity Utilization 89.0%








ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: King St/Chestnut St & Route 140





















 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis

1: King St/Chestnut St & Route 140

2020 Existing Saturday Midday Peak Hour

04/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	134	502	48	318	456	61	33	165	259	21	202	105
Future Volume (vph)	134	502	48	318	456	61	33	165	259	21	202	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.98			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1805	1812		1745	1804			1806	1546		2054	
Flt Permitted	0.30	1.00		0.14	1.00			0.74	1.00		0.97	
Satd. Flow (perm)	567	1812		261	1804			1351	1546		1998	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	144	540	52	346	496	66	37	185	291	22	213	111
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	176	0	16	0
Lane Group Flow (vph)	144	590	0	346	559	0	0	222	115	0	330	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	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		
Actuated Green, G (s)	44.8	35.7		56.0	41.9			19.5	34.8		19.5	
Effective Green, g (s)	46.8	36.7		57.0	42.9			20.5	36.8		20.5	
Actuated g/C Ratio	0.50	0.39		0.61	0.46			0.22	0.40		0.22	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	419	715		420	832			297	678		440	
v/s Ratio Prot	0.04	0.33		c0.14	0.31				0.03			
v/s Ratio Perm	0.14			c0.36				0.16	0.04		c0.17	
v/c Ratio	0.34	0.82		0.82	0.67			0.75	0.17		0.75	
Uniform Delay, d1	13.5	25.3		20.4	19.6			33.8	18.2		33.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.5	7.7		12.3	2.1			9.8	0.1		7.1	
Delay (s)	14.0	32.9		32.7	21.7			43.7	18.3		40.9	
Level of Service	B	C		C	C			D	B		D	
Approach Delay (s)		29.2			25.9			29.3			40.9	
Approach LOS		C			C			C			D	





















Intersection Summary

HCM 2000 Control Delay	29.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 No Build Weekday Morning Peak Hour













05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	83	339	34	223	282	58	27	359	316	19	266	104
Future Volume (vph)	83	339	34	223	282	58	27	359	316	19	266	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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		0.986			0.974				0.850		0.964	
Flt Protected	0.950			0.950				0.997			0.998	
Satd. Flow (prot)	1703	1779	0	1728	1760	0	0	1798	1546	0	2017	0
Flt Permitted	0.438			0.202				0.954			0.945	
Satd. Flow (perm)	785	1779	0	367	1760	0	0	1720	1546	0	1910	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			9				188		15	
Link Speed (mph)		30			30				30		30	
Link Distance (ft)		639			1214				457		724	
Travel Time (s)		14.5			27.6				10.4		16.5	
Peak Hour Factor	0.92	0.92	0.92	0.99	0.99	0.99	0.89	0.89	0.89	0.90	0.90	0.90
Heavy Vehicles (%)	6%	2%	0%	1%	2%	0%	0%	2%	1%	11%	2%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	405	0	225	344	0	0	433	355	0	433	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	34.3	24.9		40.8	30.7			32.0	48.6		32.0	
Actuated g/C Ratio	0.40	0.29		0.48	0.36			0.38	0.57		0.38	
v/c Ratio	0.21	0.77		0.60	0.54			0.67	0.37		0.59	
Control Delay	14.1	39.1		20.4	26.6			32.0	7.5		28.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 No Build Weekday Morning Peak Hour

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	14.1	39.1		20.4	26.6			32.0	7.5		28.3	
LOS	B	D		C	C			C	A		C	
Approach Delay		34.5			24.1			21.0			28.3	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	22	178		59	133			172	35		160	
Queue Length 95th (ft)	66	385		151	301			#506	155		#461	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	553	781		444	787			649	1031		730	
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	0.16	0.52		0.51	0.44			0.67	0.34		0.59	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 84.8

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 26.1

Intersection LOS: C

Intersection Capacity Utilization 78.7%








ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.




















Splits and Phases: 1: King St/Chestnut St & Route 140

 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis 2027 No Build Weekday Morning Peak Hour

1: King St/Chestnut St & Route 140

05/01/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	83	339	34	223	282	58	27	359	316	19	266	104
Future Volume (vph)	83	339	34	223	282	58	27	359	316	19	266	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.97			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1703	1779		1728	1760			1797	1546		2016	
Flt Permitted	0.44	1.00		0.20	1.00			0.95	1.00		0.95	
Satd. Flow (perm)	785	1779		367	1760			1720	1546		1910	
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.99	0.99	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	90	368	37	225	285	59	30	403	355	21	296	116
RTOR Reduction (vph)	0	3	0	0	6	0	0	0	95	0	10	0
Lane Group Flow (vph)	90	402	0	225	338	0	0	433	260	0	423	0
Heavy Vehicles (%)	6%	2%	0%	1%	2%	0%	0%	2%	1%	11%	2%	3%
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		
Actuated Green, G (s)	32.0	25.1		41.0	29.6			31.0	42.4		31.0	
Effective Green, g (s)	34.0	26.1		42.5	30.6			32.0	44.4		32.0	
Actuated g/C Ratio	0.38	0.29		0.47	0.34			0.36	0.49		0.36	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	377	517		361	599			612	833		680	
v/s Ratio Prot	0.02	c0.23		c0.09	0.19				0.04			
v/s Ratio Perm	0.07			0.21				c0.25	0.13		0.22	
v/c Ratio	0.24	0.78		0.62	0.56			0.71	0.31		0.62	
Uniform Delay, d1	18.5	29.2		16.8	24.2			24.9	13.6		23.9	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.3	7.3		3.3	1.2			3.7	0.2		1.8	
Delay (s)	18.8	36.4		20.1	25.4			28.6	13.8		25.7	
Level of Service	B	D		C	C			C	B		C	
Approach Delay (s)		33.2			23.3			21.9			25.7	
Approach LOS		C			C			C			C	





















Intersection Summary

HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	78.7%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 No Build Weekday Evening Peak Hour













05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	160	442	44	382	459	49	32	296	316	29	329	127
Future Volume (vph)	160	442	44	382	459	49	32	296	316	29	329	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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		0.986			0.985				0.850		0.965	
Flt Protected	0.950			0.950				0.995			0.997	
Satd. Flow (prot)	1805	1811	0	1745	1809	0	0	1804	1546	0	2058	0
Flt Permitted	0.206			0.125				0.802			0.822	
Satd. Flow (perm)	391	1811	0	230	1809	0	0	1454	1546	0	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5				221		15	
Link Speed (mph)		30			30				30		30	
Link Distance (ft)		639			1214				457		724	
Travel Time (s)		14.5			27.6				10.4		16.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	4%	1%	1%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	522	0	411	547	0	0	360	347	0	599	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	44.8	33.4		52.8	38.1			31.3	51.5		31.3	
Actuated g/C Ratio	0.46	0.35		0.55	0.39			0.32	0.53		0.32	
v/c Ratio	0.49	0.83		1.08	0.76			0.76	0.37		1.07	
Control Delay	17.4	42.5		96.9	35.1			43.5	7.0		90.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 No Build Weekday Evening Peak Hour

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	17.4	42.5		96.9	35.1			43.5	7.0		90.9	
LOS	B	D		F	D			D	A		F	
Approach Delay		36.3			61.6			25.6			90.9	
Approach LOS		D			E			C			F	
Queue Length 50th (ft)	44	268		~209	258			193	36		~395	
Queue Length 95th (ft)	116	#585		#542	#627			#446	131		#673	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	437	684		379	726			471	928		560	
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	0.39	0.76		1.08	0.75			0.76	0.37		1.07	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 96.5

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.08

Intersection Signal Delay: 53.0

Intersection LOS: D

Intersection Capacity Utilization 104.4%

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 St/Chestnut St & Route 140

 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis 2027 No Build Weekday Evening Peak Hour





















1: King St/Chestnut St & Route 140 05/01/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	160	442	44	382	459	49	32	296	316	29	329	127
Future Volume (vph)	160	442	44	382	459	49	32	296	316	29	329	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flt	1.00	0.99		1.00	0.99			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1805	1812		1745	1810			1804	1546		2057	
Flt Permitted	0.21	1.00		0.13	1.00			0.80	1.00		0.82	
Satd. Flow (perm)	391	1812		230	1810			1454	1546		1696	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Adj. Flow (vph)	172	475	47	411	494	53	35	325	347	36	406	157
RTOR Reduction (vph)	0	3	0	0	3	0	0	0	117	0	10	0
Lane Group Flow (vph)	172	519	0	411	544	0	0	360	230	0	589	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	4%	1%	1%	0%	1%	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		
Actuated Green, G (s)	42.8	32.4		52.4	37.2			30.3	45.5		30.3	
Effective Green, g (s)	44.8	33.4		53.6	38.2			31.3	47.5		31.3	
Actuated g/C Ratio	0.45	0.33		0.53	0.38			0.31	0.47		0.31	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	334	601		366	687			452	791		527	
v/s Ratio Prot	0.06	0.29		c0.18	0.30				0.05			
v/s Ratio Perm	0.17			c0.42				0.25	0.10		c0.35	
v/c Ratio	0.51	0.86		1.12	0.79			0.80	0.29		1.12	
Uniform Delay, d1	19.2	31.5		28.2	27.7			31.7	16.2		34.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.3	12.3		84.7	6.2			9.4	0.2		75.4	
Delay (s)	20.6	43.8		112.8	33.9			41.1	16.5		110.1	
Level of Service	C	D		F	C			D	B		F	
Approach Delay (s)		38.0			67.8			29.0			110.1	
Approach LOS		D			E			C			F	
Intersection Summary												
HCM 2000 Control Delay		60.1					HCM 2000 Level of Service		E			
HCM 2000 Volume to Capacity ratio		1.12										
Actuated Cycle Length (s)		100.6					Sum of lost time (s)		17.0			
Intersection Capacity Utilization		104.4%					ICU Level of Service		G			
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 No Build Saturday Midday Peak Hour













05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	144	538	51	341	489	65	35	177	278	23	217	113
Future Volume (vph)	144	538	51	341	489	65	35	177	278	23	217	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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			0.982				0.850		0.957	
Flt Protected	0.950			0.950				0.992			0.997	
Satd. Flow (prot)	1805	1813	0	1745	1804	0	0	1807	1546	0	2055	0
Flt Permitted	0.246			0.100				0.729			0.957	
Satd. Flow (perm)	467	1813	0	184	1804	0	0	1328	1546	0	1972	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			6				300		20	
Link Speed (mph)		30			30						30	
Link Distance (ft)		639			1214				457		724	
Travel Time (s)		14.5			27.6				10.4		16.5	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.89	0.89	0.89	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	633	0	371	603	0	0	238	312	0	371	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	47.2	36.7		56.5	42.5			21.5	41.9		21.5	
Actuated g/C Ratio	0.52	0.41		0.63	0.47			0.24	0.47		0.24	
v/c Ratio	0.39	0.85		0.93	0.70			0.75	0.35		0.76	
Control Delay	12.9	39.3		57.1	28.0			48.2	3.6		41.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 No Build Saturday Midday Peak Hour

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	12.9	39.3		57.1	28.0			48.2	3.6		41.8	
LOS	B	D		E	C			D	A		D	
Approach Delay		34.1			39.1			22.9			41.8	
Approach LOS		C			D			C			D	
Queue Length 50th (ft)	27	289		141	228			117	3		173	
Queue Length 95th (ft)	105	#774		#495	#722			248	54		345	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	517	741		398	856			466	879		705	
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	0.30	0.85		0.93	0.70			0.51	0.35		0.53	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 90

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.93

Intersection Signal Delay: 34.7

Intersection LOS: C

Intersection Capacity Utilization 94.5%








ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.





















Splits and Phases: 1: King St/Chestnut St & Route 140

 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis

1: King St/Chestnut St & Route 140

2027 No Build Saturday Midday Peak Hour
05/01/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	144	538	51	341	489	65	35	177	278	23	217	113
Future Volume (vph)	144	538	51	341	489	65	35	177	278	23	217	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.98			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1805	1813		1745	1804			1807	1546		2053	
Flt Permitted	0.25	1.00		0.10	1.00			0.73	1.00		0.96	
Satd. Flow (perm)	468	1813		184	1804			1328	1546		1971	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	155	578	55	371	532	71	39	199	312	24	228	119
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	179	0	15	0
Lane Group Flow (vph)	155	631	0	371	600	0	0	238	133	0	356	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	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		
Actuated Green, G (s)	45.1	35.7		56.0	41.6			20.5	35.8		20.5	
Effective Green, g (s)	47.1	36.7		57.0	42.6			21.5	37.8		21.5	
Actuated g/C Ratio	0.50	0.39		0.61	0.45			0.23	0.40		0.23	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	382	707		382	817			303	687		450	
v/s Ratio Prot	0.04	0.35		c0.17	0.33				0.03			
v/s Ratio Perm	0.16			c0.42				0.18	0.05		c0.18	
v/c Ratio	0.41	0.89		0.97	0.73			0.79	0.19		0.79	
Uniform Delay, d1	14.5	26.8		27.9	21.1			34.1	18.2		34.1	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.7	13.5		38.3	3.4			12.6	0.1		9.1	
Delay (s)	15.2	40.3		66.1	24.5			46.6	18.4		43.3	
Level of Service	B	D		E	C			D	B		D	
Approach Delay (s)		35.4			40.4			30.6			43.3	
Approach LOS		D			D			C			D	





















Intersection Summary

HCM 2000 Control Delay	37.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	94.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	94.5%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 Build Weekday Morning Peak Hour













05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	83	366	34	238	303	61	27	359	335	24	266	104
Future Volume (vph)	83	366	34	238	303	61	27	359	335	24	266	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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			0.975				0.850		0.964	
Flt Protected	0.950			0.950				0.997			0.997	
Satd. Flow (prot)	1703	1780	0	1728	1761	0	0	1798	1546	0	2013	0
Flt Permitted	0.427			0.186				0.948			0.852	
Satd. Flow (perm)	765	1780	0	338	1761	0	0	1709	1546	0	1720	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			9				199		15	
Link Speed (mph)		30			30						30	
Link Distance (ft)		639			1214				457		724	
Travel Time (s)		14.5			27.6				10.4		16.5	
Peak Hour Factor	0.92	0.92	0.92	0.99	0.99	0.99	0.89	0.89	0.89	0.90	0.90	0.90
Heavy Vehicles (%)	6%	2%	0%	1%	2%	0%	0%	2%	1%	11%	2%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	435	0	240	368	0	0	433	376	0	439	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	36.4	27.1		43.9	33.5			31.9	49.0		31.9	
Actuated g/C Ratio	0.42	0.31		0.50	0.38			0.36	0.56		0.36	
v/c Ratio	0.22	0.79		0.64	0.54			0.70	0.39		0.69	
Control Delay	13.9	39.6		21.8	26.2			34.5	8.0		33.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 Build Weekday Morning Peak Hour

05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	13.9	39.6		21.8	26.2			34.5	8.0		33.2	
LOS	B	D		C	C			C	A		C	
Approach Delay		35.2			24.5			22.2			33.2	
Approach LOS		D			C			C			C	
Queue Length 50th (ft)	22	197		64	145			185	41		181	
Queue Length 95th (ft)	66	#429		165	326			#508	165		#512	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	550	755		431	767			622	1006		636	
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	0.16	0.58		0.56	0.48			0.70	0.37		0.69	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 87.5

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 27.7

Intersection LOS: C

Intersection Capacity Utilization 85.3%








ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: King St/Chestnut St & Route 140





















 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis

1: King St/Chestnut St & Route 140

2027 Build Weekday Morning Peak Hour

05/02/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	83	366	34	238	303	61	27	359	335	24	266	104
Future Volume (vph)	83	366	34	238	303	61	27	359	335	24	266	104
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flt	1.00	0.99		1.00	0.97			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1703	1781		1728	1761			1797	1546		2013	
Flt Permitted	0.43	1.00		0.19	1.00			0.95	1.00		0.85	
Satd. Flow (perm)	766	1781		339	1761			1710	1546		1720	
Peak-hour factor, PHF	0.92	0.92	0.92	0.99	0.99	0.99	0.89	0.89	0.89	0.90	0.90	0.90
Adj. Flow (vph)	90	398	37	240	306	62	30	403	376	27	296	116
RTOR Reduction (vph)	0	3	0	0	6	0	0	0	103	0	10	0
Lane Group Flow (vph)	90	432	0	240	362	0	0	433	273	0	429	0
Heavy Vehicles (%)	6%	2%	0%	1%	2%	0%	0%	2%	1%	11%	2%	3%
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		
Actuated Green, G (s)	34.1	27.3		44.3	32.5			30.9	42.9		30.9	
Effective Green, g (s)	36.1	28.3		45.3	33.5			31.9	44.9		31.9	
Actuated g/C Ratio	0.39	0.31		0.49	0.36			0.34	0.48		0.34	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	377	544		360	637			589	816		592	
v/s Ratio Prot	0.02	c0.24		c0.09	0.21				0.05			
v/s Ratio Perm	0.07			0.23				c0.25	0.13		0.25	
v/c Ratio	0.24	0.79		0.67	0.57			0.74	0.34		0.72	
Uniform Delay, d1	18.4	29.5		17.1	23.7			26.6	14.7		26.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.3	7.9		4.6	1.2			4.7	0.2		4.4	
Delay (s)	18.7	37.3		21.7	24.9			31.4	14.9		30.9	
Level of Service	B	D		C	C			C	B		C	
Approach Delay (s)		34.1			23.6			23.7			30.9	
Approach LOS		C			C			C			C	





















Intersection Summary

HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	92.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	85.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 Build Weekday Evening Peak Hour













05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	160	460	44	392	475	53	32	296	329	32	329	127
Future Volume (vph)	160	460	44	392	475	53	32	296	329	32	329	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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)	1805	1813	0	1745	1809	0	0	1804	1546	0	2058	0
Flt Permitted	0.194			0.121				0.792			0.779	
Satd. Flow (perm)	369	1813	0	222	1809	0	0	1436	1546	0	1608	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5				230		15	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		639			1214			457			724	
Travel Time (s)		14.5			27.6			10.4			16.5	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	4%	1%	1%	0%	1%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	172	542	0	422	568	0	0	360	362	0	603	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	46.4	35.1		54.4	39.8			31.3	51.4		31.3	
Actuated g/C Ratio	0.47	0.36		0.55	0.41			0.32	0.52		0.32	
v/c Ratio	0.50	0.83		1.13	0.77			0.79	0.39		1.16	
Control Delay	17.7	42.4		113.7	35.3			46.0	7.2		121.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 Build Weekday Evening Peak Hour

05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	17.7	42.4		113.7	35.3			46.0	7.2		121.8	
LOS	B	D		F	D			D	A		F	
Approach Delay		36.5			68.7			26.5			121.8	
Approach LOS		D			E			C			F	
Queue Length 50th (ft)	44	282		~228	272			194	38		~420	
Queue Length 95th (ft)	116	#619		#565	#662			#450	136		#699	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	428	673		373	736			457	919		522	
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	0.40	0.81		1.13	0.77			0.79	0.39		1.16	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 98.1

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 61.6

Intersection LOS: E

Intersection Capacity Utilization 106.1%

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 St/Chestnut St & Route 140





















 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis

1: King St/Chestnut St & Route 140

2027 Build Weekday Evening Peak Hour





















05/02/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	160	460	44	392	475	53	32	296	329	32	329	127
Future Volume (vph)	160	460	44	392	475	53	32	296	329	32	329	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.98			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	
Satd. Flow (prot)	1805	1813		1745	1809			1804	1546		2057	
Flt Permitted	0.19	1.00		0.12	1.00			0.79	1.00		0.78	
Satd. Flow (perm)	368	1813		222	1809			1437	1546		1607	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.91	0.91	0.91	0.81	0.81	0.81
Adj. Flow (vph)	172	495	47	422	511	57	35	325	362	40	406	157
RTOR Reduction (vph)	0	3	0	0	3	0	0	0	123	0	10	0
Lane Group Flow (vph)	172	539	0	422	565	0	0	360	239	0	593	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	4%	1%	1%	0%	1%	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		
Actuated Green, G (s)	44.5	34.1		53.9	38.8			30.2	45.3		30.2	
Effective Green, g (s)	46.5	35.1		55.2	39.8			31.2	47.3		31.2	
Actuated g/C Ratio	0.46	0.34		0.54	0.39			0.31	0.46		0.31	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	328	623		360	705			439	776		491	
v/s Ratio Prot	0.06	0.30		c0.18	0.31				0.05			
v/s Ratio Perm	0.18			c0.45				0.25	0.11		c0.37	
v/c Ratio	0.52	0.87		1.17	0.80			0.82	0.31		1.21	
Uniform Delay, d1	19.2	31.3		28.8	27.6			32.8	17.1		35.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.5	12.1		103.1	6.5			11.6	0.2		111.0	
Delay (s)	20.7	43.4		131.9	34.2			44.5	17.4		146.5	
Level of Service	C	D		F	C			D	B		F	
Approach Delay (s)		37.9			75.8			30.9			146.5	
Approach LOS		D			E			C			F	
Intersection Summary												
HCM 2000 Control Delay			70.2			HCM 2000 Level of Service			E			
HCM 2000 Volume to Capacity ratio			1.18									
Actuated Cycle Length (s)			102.1			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			106.1%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 Build Saturday Midday Peak Hour













05/15/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	144	559	51	355	510	69	35	177	292	28	217	113
Future Volume (vph)	144	559	51	355	510	69	35	177	292	28	217	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	11	11	11	11	11	16	16	16
Storage Length (ft)	100		50	165		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
Friction		0.987			0.982				0.850		0.957	
Flt Protected	0.950			0.950				0.992			0.996	
Satd. Flow (prot)	1805	1813	0	1745	1804	0	0	1807	1546	0	2052	0
Flt Permitted	0.216			0.099				0.735			0.919	
Satd. Flow (perm)	410	1813	0	182	1804	0	0	1339	1546	0	1894	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			6				316		19	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		639			1214			457			724	
Travel Time (s)		14.5			27.6			10.4			16.5	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.89	0.89	0.89	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	656	0	386	629	0	0	238	328	0	376	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	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	11.0	21.0		11.0	21.0		21.0	21.0	11.0	21.0	21.0	
Total Split (s)	20.0	40.0		20.0	40.0		35.0	35.0	20.0	35.0	35.0	
Total Split (%)	17.1%	34.2%		17.1%	34.2%		29.9%	29.9%	17.1%	29.9%	29.9%	
Maximum Green (s)	15.0	35.0		15.0	35.0		30.0	30.0	15.0	30.0	30.0	
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)	-1.0	-1.0		-1.0	-1.0			-1.0	-1.0		-1.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag	Lead	Lag		Lead	Lag				Lead			
Lead-Lag Optimize?	Yes	Yes		Yes	Yes				Yes			
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	47.2	36.7		56.4	42.5			21.9	42.2		21.9	
Actuated g/C Ratio	0.52	0.41		0.62	0.47			0.24	0.47		0.24	
v/c Ratio	0.41	0.89		0.98	0.74			0.74	0.37		0.79	
Control Delay	13.6	42.9		67.0	29.5			46.8	3.6		44.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
1: King St/Chestnut St & Route 140

2027 Build Saturday Midday Peak Hour

05/15/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Total Delay	13.6	42.9		67.0	29.5			46.8	3.6		44.4	
LOS	B	D		E	C			D	A		D	
Approach Delay		37.3			43.7			21.8			44.4	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	28	308		154	247			117	3		178	
Queue Length 95th (ft)	105	#812		#521	#767			247	55		357	
Internal Link Dist (ft)		559			1134			377			644	
Turn Bay Length (ft)	100			165					80			
Base Capacity (vph)	492	738		395	851			468	891		674	
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	0.32	0.89		0.98	0.74			0.51	0.37		0.56	

Intersection Summary

Area Type: Other

Cycle Length: 117

Actuated Cycle Length: 90.3

Natural Cycle: 130

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 37.4

Intersection LOS: D

Intersection Capacity Utilization 96.6%








ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: King St/Chestnut St & Route 140





















 Ø4	 Ø1	 Ø2	 Ø9
35 s	20 s	40 s	22 s
 Ø8	 Ø5	 Ø6	
35 s	20 s	40 s	

HCM Signalized Intersection Capacity Analysis

1: King St/Chestnut St & Route 140

2027 Build Saturday Midday Peak Hour

05/15/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	144	559	51	355	510	69	35	177	292	28	217	113
Future Volume (vph)	144	559	51	355	510	69	35	177	292	28	217	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	11	11	11	11	11	11	11	16	16	16
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	0.99		1.00	0.98			1.00	0.85		0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99	1.00		1.00	
Satd. Flow (prot)	1805	1814		1745	1804			1807	1546		2053	
Flt Permitted	0.22	1.00		0.10	1.00			0.74	1.00		0.92	
Satd. Flow (perm)	411	1814		181	1804			1340	1546		1895	
Peak-hour factor, PHF	0.93	0.93	0.93	0.92	0.92	0.92	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	155	601	55	386	554	75	39	199	328	29	228	119
RTOR Reduction (vph)	0	2	0	0	3	0	0	0	188	0	15	0
Lane Group Flow (vph)	155	654	0	386	626	0	0	238	140	0	361	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	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		
Actuated Green, G (s)	45.1	35.6		55.9	41.4			20.8	36.1		20.8	
Effective Green, g (s)	47.1	36.6		56.9	42.4			21.8	38.1		21.8	
Actuated g/C Ratio	0.50	0.39		0.60	0.45			0.23	0.40		0.23	
Clearance Time (s)	5.0	5.0		5.0	5.0			5.0	5.0		5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	360	704		379	811			310	690		438	
v/s Ratio Prot	0.05	0.36		c0.18	0.35				0.04			
v/s Ratio Perm	0.17			c0.44				0.18	0.06		c0.19	
v/c Ratio	0.43	0.93		1.02	0.77			0.77	0.20		0.83	
Uniform Delay, d1	15.0	27.5		28.8	21.8			33.8	18.2		34.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.8	18.4		51.0	4.6			10.9	0.1		12.0	
Delay (s)	15.8	45.9		79.8	26.4			44.7	18.3		46.4	
Level of Service	B	D		E	C			D	B		D	
Approach Delay (s)		40.2			46.7			29.4			46.4	
Approach LOS		D			D			C			D	

Intersection Summary

HCM 2000 Control Delay	41.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	94.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	96.6%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			























East Central Street (Route 140) at Horace Mann Plaza Driveway/CVS Pharmacy Driveway

Lanes, Volumes, Timings

2020 Existing Weekday Morning Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

04/30/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	519	19	7	439	54	19	4	12	70	5	60
Future Volume (vph)	89	519	19	7	439	54	19	4	12	70	5	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.961			0.955	
Satd. Flow (prot)	1685	1801	1561	1745	1837	1561	0	1765	1561	0	1875	1615
Flt Permitted	0.278			0.375				0.718			0.720	
Satd. Flow (perm)	493	1801	1561	689	1837	1561	0	1319	1561	0	1414	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			119			71
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			619			320			157	
Travel Time (s)		27.6			14.1			7.3			3.6	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.82	0.82	0.82	0.85	0.85	0.85
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	102	597	22	8	516	64	0	28	15	0	88	71
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	34.6	36.2	36.2	29.5	27.6	27.6		10.3	10.3		10.3	18.7
Actuated g/C Ratio	0.66	0.69	0.69	0.56	0.53	0.53		0.20	0.20		0.20	0.36
v/c Ratio	0.18	0.48	0.02	0.01	0.53	0.07		0.11	0.04		0.32	0.11
Control Delay	6.7	11.2	0.1	7.0	17.6	1.1		28.3	0.2		30.1	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2020 Existing Weekday Morning Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	6.7	11.2	0.1	7.0	17.6	1.1		28.3	0.2		30.1	4.5
LOS	A	B	A	A	B	A		C	A		C	A
Approach Delay		10.2			15.7			18.5			18.7	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	8	64	0	1	113	0		7	0		23	0
Queue Length 95th (ft)	52	413	0	8	356	5		38	0		94	19
Internal Link Dist (ft)		1134			539			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	863	1417	1251	944	1426	1236		644	823		690	978
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.12	0.42	0.02	0.01	0.36	0.05		0.04	0.02		0.13	0.07

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 52.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 13.4








Intersection LOS: B

Intersection Capacity Utilization 52.3%























ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

 Ø1	 Ø2	 Ø4	 Ø9
20 s	44 s	24 s	22 s
 Ø5	 Ø6	 Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis 2020 Existing Weekday Morning Peak Hour 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140 04/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	519	19	7	439	54	19	4	12	70	5	60
Future Volume (vph)	89	519	19	7	439	54	19	4	12	70	5	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	1.00
Satd. Flow (prot)	1685	1801	1561	1745	1837	1561		1764	1561		1876	1615
Flt Permitted	0.28	1.00	1.00	0.37	1.00	1.00		0.72	1.00		0.72	1.00
Satd. Flow (perm)	493	1801	1561	688	1837	1561		1318	1561		1414	1615
Peak-hour factor, PHF	0.87	0.87	0.87	0.85	0.85	0.85	0.82	0.82	0.82	0.85	0.85	0.85
Adj. Flow (vph)	102	597	22	8	516	64	23	5	15	82	6	71
RTOR Reduction (vph)	0	0	10	0	0	35	0	0	13	0	0	56
Lane Group Flow (vph)	102	597	12	8	516	29	0	28	2	0	88	15
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	37.6	32.1	32.1	27.2	26.7	26.7		6.9	6.9		6.9	12.8
Effective Green, g (s)	38.6	33.1	33.1	29.2	27.7	27.7		6.9	6.9		6.9	12.8
Actuated g/C Ratio	0.64	0.55	0.55	0.49	0.46	0.46		0.11	0.11		0.11	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	452	990	858	360	845	718		151	178		162	343
v/s Ratio Prot	c0.03	c0.33	0.01	0.00	0.28	0.02					c0.06	0.00
v/s Ratio Perm	0.12			0.01				0.02	0.00			0.01
v/c Ratio	0.23	0.60	0.01	0.02	0.61	0.04		0.19	0.01		0.54	0.04
Uniform Delay, d1	5.7	9.1	6.1	8.2	12.2	8.9		24.1	23.6		25.2	18.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.7	0.0	0.0	0.9	0.0		0.2	0.0		2.0	0.0
Delay (s)	5.8	9.8	6.1	8.2	13.1	9.0		24.3	23.6		27.2	18.9
Level of Service	A	A	A	A	B	A		C	C		C	B
Approach Delay (s)		9.2			12.6			24.1			23.4	
Approach LOS		A			B			C			C	

Intersection Summary























HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2020 Existing Weekday Evening Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

04/30/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	538	46	19	661	134	34	18	33	124	16	201
Future Volume (vph)	188	538	46	19	661	134	34	18	33	124	16	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.968			0.958	
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561	0	1778	1561	0	1881	1615
Flt Permitted	0.146			0.425				0.691			0.712	
Satd. Flow (perm)	259	1818	1561	781	1837	1561	0	1269	1561	0	1398	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			119			209
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			619			320			157	
Travel Time (s)		27.6			14.1			7.3			3.6	
Peak Hour Factor	0.94	0.94	0.94	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	200	572	49	21	726	147	0	55	35	0	146	209
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	58.0	54.4	54.4	47.4	41.1	41.1		12.6	12.6		12.6	27.8
Actuated g/C Ratio	0.71	0.66	0.66	0.58	0.50	0.50		0.15	0.15		0.15	0.34
v/c Ratio	0.49	0.47	0.05	0.04	0.79	0.18		0.28	0.10		0.68	0.31
Control Delay	12.1	12.8	0.1	7.9	28.1	6.5		36.8	0.6		51.1	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2020 Existing Weekday Evening Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	12.1	12.8	0.1	7.9	28.1	6.5		36.8	0.6		51.1	3.5
LOS	B	B	A	A	C	A		D	A		D	A
Approach Delay		11.9			24.1			22.7			23.1	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	23	84	0	2	267	9		24	0		68	0
Queue Length 95th (ft)	125	445	0	18	#797	61		71	0		162	33
Internal Link Dist (ft)		1134			539			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	468	1205	1071	732	919	836		317	480		350	746
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.43	0.47	0.05	0.03	0.79	0.18		0.17	0.07		0.42	0.28

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 82

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 69.6%








ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140























			
Ø1	Ø2	Ø4	Ø9
20 s	44 s	24 s	22 s
			
Ø5	Ø6	Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

2020 Existing Weekday Evening Peak Hour

04/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	538	46	19	661	134	34	18	33	124	16	201
Future Volume (vph)	188	538	46	19	661	134	34	18	33	124	16	201
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561		1778	1561		1880	1615
Flt Permitted	0.15	1.00	1.00	0.43	1.00	1.00		0.69	1.00		0.71	1.00
Satd. Flow (perm)	258	1818	1561	781	1837	1561		1269	1561		1397	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96
Adj. Flow (vph)	200	572	49	21	726	147	36	19	35	129	17	209
RTOR Reduction (vph)	0	0	19	0	0	55	0	0	30	0	0	152
Lane Group Flow (vph)	200	572	30	21	726	92	0	55	5	0	146	57
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	60.2	53.3	53.3	45.3	43.4	43.4		12.6	12.6		12.6	24.4
Effective Green, g (s)	61.2	54.3	54.3	47.3	44.4	44.4		12.6	12.6		12.6	24.4
Actuated g/C Ratio	0.69	0.61	0.61	0.53	0.50	0.50		0.14	0.14		0.14	0.27
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	381	1106	950	445	914	777		179	220		197	441
v/s Ratio Prot	c0.08	0.31	0.02	0.00	c0.40	0.06					c0.10	0.02
v/s Ratio Perm	0.28			0.02				0.04	0.00			0.02
v/c Ratio	0.52	0.52	0.03	0.05	0.79	0.12		0.31	0.02		0.74	0.13
Uniform Delay, d1	12.2	10.0	7.0	10.0	18.6	12.0		34.4	33.0		36.7	24.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.6	0.2	0.0	0.0	4.5	0.0		0.4	0.0		12.3	0.0
Delay (s)	12.8	10.1	7.0	10.0	23.1	12.0		34.7	33.0		49.0	24.5
Level of Service	B	B	A	B	C	B		C	C		D	C
Approach Delay (s)		10.6			21.0			34.1			34.6	
Approach LOS		B			C			C			C	

Intersection Summary























HCM 2000 Control Delay	19.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	89.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2020 Existing Saturday Midday Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

04/30/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	583	45	25	555	202	54	21	29	165	31	243
Future Volume (vph)	193	583	45	25	555	202	54	21	29	165	31	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.965			0.960	
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561	0	1772	1561	0	1885	1615
Flt Permitted	0.160			0.293				0.550			0.694	
Satd. Flow (perm)	284	1818	1561	538	1837	1561	0	1010	1561	0	1363	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			131			119			264
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			619			320			157	
Travel Time (s)		27.6			14.1			7.3			3.6	
Peak Hour Factor	0.86	0.86	0.86	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	224	678	52	28	617	224	0	96	37	0	213	264
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	52.4	48.7	48.7	41.6	35.1	35.1		18.8	18.8		18.8	34.3
Actuated g/C Ratio	0.63	0.59	0.59	0.50	0.42	0.42		0.23	0.23		0.23	0.41
v/c Ratio	0.56	0.63	0.05	0.08	0.79	0.30		0.42	0.08		0.69	0.32
Control Delay	15.0	18.1	0.1	9.0	31.6	9.4		38.8	0.4		46.0	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2020 Existing Saturday Midday Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	15.0	18.1	0.1	9.0	31.6	9.4		38.8	0.4		46.0	3.1
LOS	B	B	A	A	C	A		D	A		D	A
Approach Delay		16.4			25.1			28.1			22.3	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	39	166	0	4	259	28		43	0		102	0
Queue Length 95th (ft)	126	534	0	22	#627	103		99	0		#279	36
Internal Link Dist (ft)		1134			539			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	462	1088	978	572	926	851		254	482		343	882
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.48	0.62	0.05	0.05	0.67	0.26		0.38	0.08		0.62	0.30

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 82.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 21.3

Intersection LOS: C

Intersection Capacity Utilization 67.3%








ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140























			
Ø1	Ø2	Ø4	Ø9
20 s	44 s	24 s	22 s
			
Ø5	Ø6	Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

2020 Existing Saturday Midday Peak Hour

04/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	193	583	45	25	555	202	54	21	29	165	31	243
Future Volume (vph)	193	583	45	25	555	202	54	21	29	165	31	243
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561		1773	1561		1884	1615
Flt Permitted	0.16	1.00	1.00	0.29	1.00	1.00		0.55	1.00		0.69	1.00
Satd. Flow (perm)	284	1818	1561	539	1837	1561		1009	1561		1363	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	224	678	52	28	617	224	69	27	37	179	34	264
RTOR Reduction (vph)	0	0	24	0	0	75	0	0	29	0	0	173
Lane Group Flow (vph)	224	678	28	28	617	149	0	96	8	0	213	91
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	54.7	47.7	47.7	39.6	37.6	37.6		18.8	18.8		18.8	30.9
Effective Green, g (s)	55.7	48.7	48.7	41.6	38.6	38.6		18.8	18.8		18.8	30.9
Actuated g/C Ratio	0.62	0.54	0.54	0.46	0.43	0.43		0.21	0.21		0.21	0.34
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	380	984	845	289	788	670		211	326		285	555
v/s Ratio Prot	c0.09	c0.37	0.02	0.00	c0.34	0.10					c0.16	0.02
v/s Ratio Perm	0.28			0.04				0.10	0.00			0.03
v/c Ratio	0.59	0.69	0.03	0.10	0.78	0.22		0.45	0.02		0.75	0.16
Uniform Delay, d1	13.1	15.1	9.6	13.9	22.0	16.2		31.1	28.3		33.3	20.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	1.5	1.6	0.0	0.1	4.7	0.1		0.6	0.0		9.0	0.1
Delay (s)	14.6	16.7	9.6	13.9	26.8	16.2		31.6	28.3		42.3	20.6
Level of Service	B	B	A	B	C	B		C	C		D	C
Approach Delay (s)		15.8			23.6			30.7			30.3	
Approach LOS		B			C			C			C	

Intersection Summary























HCM 2000 Control Delay	22.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2027 No Build Weekday Morning Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/01/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	556	20	8	471	58	20	4	13	75	5	64
Future Volume (vph)	95	556	20	8	471	58	20	4	13	75	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.960			0.955	
Satd. Flow (prot)	1685	1801	1561	1745	1837	1561	0	1763	1561	0	1875	1615
Flt Permitted	0.265			0.344				0.718			0.718	
Satd. Flow (perm)	470	1801	1561	632	1837	1561	0	1319	1561	0	1410	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			119			75
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			619			320			157	
Travel Time (s)		27.6			14.1			7.3			3.6	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.82	0.82	0.82	0.85	0.85	0.85
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	639	23	9	554	68	0	29	16	0	94	75
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	38.2	39.1	39.1	33.0	30.3	30.3		9.9	9.9		10.0	18.5
Actuated g/C Ratio	0.68	0.70	0.70	0.59	0.54	0.54		0.18	0.18		0.18	0.33
v/c Ratio	0.20	0.51	0.02	0.02	0.56	0.08		0.12	0.04		0.37	0.13
Control Delay	6.9	11.9	0.1	7.2	18.2	1.4		29.1	0.2		32.2	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2027 No Build Weekday Morning Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	6.9	11.9	0.1	7.2	18.2	1.4		29.1	0.2		32.2	4.5
LOS	A	B	A	A	B	A		C	A		C	A
Approach Delay		10.8			16.3			18.9			19.9	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	9	75	0	1	130	0		8	0		26	0
Queue Length 95th (ft)	56	464	0	9	399	7		39	0		99	19
Internal Link Dist (ft)		1134			539			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	757	1369	1213	831	1366	1189		593	767		634	867
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.14	0.47	0.02	0.01	0.41	0.06		0.05	0.02		0.15	0.09

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 56.1

Natural Cycle: 75

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 14.1








Intersection LOS: B

Intersection Capacity Utilization 54.5%























ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

 Ø1	 Ø2	 Ø4	 Ø9
20 s	44 s	24 s	22 s
 Ø5	 Ø6	 Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis 2027 No Build Weekday Morning Peak Hour 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140 05/01/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	556	20	8	471	58	20	4	13	75	5	64
Future Volume (vph)	95	556	20	8	471	58	20	4	13	75	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	1.00
Satd. Flow (prot)	1685	1801	1561	1745	1837	1561		1764	1561		1876	1615
Flt Permitted	0.27	1.00	1.00	0.34	1.00	1.00		0.72	1.00		0.72	1.00
Satd. Flow (perm)	470	1801	1561	632	1837	1561		1318	1561		1411	1615
Peak-hour factor, PHF	0.87	0.87	0.87	0.85	0.85	0.85	0.82	0.82	0.82	0.85	0.85	0.85
Adj. Flow (vph)	109	639	23	9	554	68	24	5	16	88	6	75
RTOR Reduction (vph)	0	0	10	0	0	35	0	0	14	0	0	59
Lane Group Flow (vph)	109	639	13	9	554	33	0	29	2	0	94	16
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	41.4	35.8	35.8	30.9	30.3	30.3		7.4	7.4		7.4	13.5
Effective Green, g (s)	42.4	36.8	36.8	32.9	31.3	31.3		7.4	7.4		7.4	13.5
Actuated g/C Ratio	0.66	0.57	0.57	0.51	0.48	0.48		0.11	0.11		0.11	0.21
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	442	1025	889	349	890	756		150	178		161	337
v/s Ratio Prot	c0.03	c0.35	0.01	0.00	0.30	0.02					c0.07	0.00
v/s Ratio Perm	0.13			0.01				0.02	0.00			0.01
v/c Ratio	0.25	0.62	0.01	0.03	0.62	0.04		0.19	0.01		0.58	0.05
Uniform Delay, d1	6.0	9.3	6.0	8.1	12.3	8.8		25.9	25.4		27.1	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	0.9	0.0	0.0	1.0	0.0		0.2	0.0		3.5	0.0
Delay (s)	6.1	10.1	6.0	8.1	13.3	8.8		26.1	25.4		30.6	20.4
Level of Service	A	B	A	A	B	A		C	C		C	C
Approach Delay (s)		9.4			12.7			25.9			26.1	
Approach LOS		A			B			C			C	

Intersection Summary























HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	64.6	Sum of lost time (s)	18.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2027 No Build Weekday Evening Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/01/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	577	49	20	709	144	36	19	35	133	17	215
Future Volume (vph)	202	577	49	20	709	144	36	19	35	133	17	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.968			0.958	
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561	0	1778	1561	0	1881	1615
Flt Permitted	0.101			0.394				0.660			0.709	
Satd. Flow (perm)	179	1818	1561	724	1837	1561	0	1212	1561	0	1392	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			119			224
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			619			320			157	
Travel Time (s)		27.6			14.1			7.3			3.6	
Peak Hour Factor	0.94	0.94	0.94	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	614	52	22	779	158	0	58	37	0	157	224
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	58.5	54.8	54.8	47.3	41.0	41.0		13.2	13.2		13.2	29.0
Actuated g/C Ratio	0.70	0.66	0.66	0.57	0.49	0.49		0.16	0.16		0.16	0.35
v/c Ratio	0.58	0.51	0.05	0.04	0.86	0.19		0.30	0.11		0.71	0.32
Control Delay	20.9	13.7	0.1	8.2	33.2	7.1		37.4	0.6		52.9	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2027 No Build Weekday Evening Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	20.9	13.7	0.1	8.2	33.2	7.1		37.4	0.6		52.9	3.4
LOS	C	B	A	A	C	A		D	A		D	A
Approach Delay		14.6			28.4			23.1			23.8	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	39	99	0	2	318	12		26	0		74	0
Queue Length 95th (ft)	170	494	0	18	#878	68		75	0		174	34
Internal Link Dist (ft)		1134			539			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	423	1199	1066	695	905	824		298	474		343	758
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.51	0.51	0.05	0.03	0.86	0.19		0.19	0.08		0.46	0.30

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 83.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 22.2

Intersection LOS: C

Intersection Capacity Utilization 73.4%








ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.























Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

 Ø1	 Ø2	 Ø4	 Ø9
20 s	44 s	24 s	22 s
 Ø5	 Ø6	 Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis 2027 No Build Weekday Evening Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/01/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	577	49	20	709	144	36	19	35	133	17	215
Future Volume (vph)	202	577	49	20	709	144	36	19	35	133	17	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Fr _t	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561		1778	1561		1880	1615
Flt Permitted	0.10	1.00	1.00	0.39	1.00	1.00		0.66	1.00		0.71	1.00
Satd. Flow (perm)	180	1818	1561	724	1837	1561		1212	1561		1392	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96
Adj. Flow (vph)	215	614	52	22	779	158	38	20	37	139	18	224
RTOR Reduction (vph)	0	0	20	0	0	56	0	0	32	0	0	160
Lane Group Flow (vph)	215	614	32	22	779	102	0	58	5	0	157	64
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	60.7	53.8	53.8	45.2	43.3	43.3		13.2	13.2		13.2	25.6
Effective Green, g (s)	61.7	54.8	54.8	47.2	44.3	44.3		13.2	13.2		13.2	25.6
Actuated g/C Ratio	0.68	0.61	0.61	0.52	0.49	0.49		0.15	0.15		0.15	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	346	1103	947	411	901	765		177	228		203	457
v/s Ratio Prot	c0.09	0.34	0.02	0.00	c0.42	0.07						0.02
v/s Ratio Perm	0.33			0.03				0.05	0.00		c0.11	0.02
v/c Ratio	0.62	0.56	0.03	0.05	0.86	0.13		0.33	0.02		0.77	0.14
Uniform Delay, d1	18.1	10.5	7.1	10.5	20.3	12.5		34.6	33.0		37.1	24.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	2.5	0.3	0.0	0.0	8.4	0.0		0.4	0.0		15.3	0.1
Delay (s)	20.6	10.9	7.1	10.5	28.7	12.6		35.0	33.0		52.4	24.2
Level of Service	C	B	A	B	C	B		C	C		D	C
Approach Delay (s)		13.0			25.7			34.2			35.8	
Approach LOS		B			C			C			D	

Intersection Summary

























HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	90.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2027 No Build Saturday Midday Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/01/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	625	48	27	595	217	58	23	31	177	33	261
Future Volume (vph)	207	625	48	27	595	217	58	23	31	177	33	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.965			0.960	
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561	0	1772	1561	0	1885	1615
Flt Permitted	0.131			0.237				0.503			0.671	
Satd. Flow (perm)	232	1818	1561	435	1837	1561	0	924	1561	0	1317	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			131			119			284
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			619			320			157	
Travel Time (s)		27.6			14.1			7.3			3.6	
Peak Hour Factor	0.86	0.86	0.86	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	241	727	56	30	661	241	0	103	40	0	228	284
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	57.2	51.2	51.2	45.8	39.4	39.4		20.3	20.3		20.3	36.2
Actuated g/C Ratio	0.64	0.58	0.58	0.51	0.44	0.44		0.23	0.23		0.23	0.41
v/c Ratio	0.65	0.70	0.06	0.09	0.81	0.32		0.49	0.09		0.76	0.34
Control Delay	21.7	21.0	0.2	9.2	32.9	9.8		42.6	0.4		52.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2027 No Build Saturday Midday Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	21.7	21.0	0.2	9.2	32.9	9.8		42.6	0.4		52.4	3.1
LOS	C	C	A	A	C	A		D	A		D	A
Approach Delay		20.1			26.2			30.8			25.1	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	46	269	0	5	289	33		49	0		116	0
Queue Length 95th (ft)	163	#643	0	23	#696	116		107	0		#311	37
Internal Link Dist (ft)		1134			539			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	413	1045	944	508	836	782		210	447		300	862
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.58	0.70	0.06	0.06	0.79	0.31		0.49	0.09		0.76	0.33

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 89

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 23.8

Intersection LOS: C

Intersection Capacity Utilization 71.0%








ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.























Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

			
Ø1	Ø2	Ø4	Ø9
20 s	44 s	24 s	22 s
			
Ø5	Ø6	Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

2027 No Build Saturday Midday Peak Hour

05/01/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	625	48	27	595	217	58	23	31	177	33	261
Future Volume (vph)	207	625	48	27	595	217	58	23	31	177	33	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561		1773	1561		1884	1615
Flt Permitted	0.13	1.00	1.00	0.24	1.00	1.00		0.50	1.00		0.67	1.00
Satd. Flow (perm)	233	1818	1561	436	1837	1561		923	1561		1317	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	241	727	56	30	661	241	74	29	40	192	36	284
RTOR Reduction (vph)	0	0	26	0	0	74	0	0	31	0	0	186
Lane Group Flow (vph)	241	727	30	30	661	167	0	103	9	0	228	98
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	58.3	50.2	50.2	43.7	40.6	40.6		20.3	20.3		20.3	33.0
Effective Green, g (s)	59.3	51.2	51.2	45.7	41.6	41.6		20.3	20.3		20.3	33.0
Actuated g/C Ratio	0.62	0.54	0.54	0.48	0.44	0.44		0.21	0.21		0.21	0.35
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	354	977	839	265	802	682		196	332		280	559
v/s Ratio Prot	c0.10	0.40	0.02	0.00	c0.36	0.11						0.02
v/s Ratio Perm	0.33			0.05				0.11	0.01		c0.17	0.04
v/c Ratio	0.68	0.74	0.04	0.11	0.82	0.25		0.53	0.03		0.81	0.18
Uniform Delay, d1	16.1	17.0	10.4	14.5	23.6	16.9		33.2	29.6		35.7	21.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.3	2.7	0.0	0.1	6.6	0.1		1.2	0.0		15.6	0.1
Delay (s)	20.4	19.7	10.4	14.6	30.1	17.0		34.4	29.6		51.3	21.7
Level of Service	C	B	B	B	C	B		C	C		D	C
Approach Delay (s)		19.3			26.2			33.0			34.9	
Approach LOS		B			C			C			C	























Intersection Summary

HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	95.2	Sum of lost time (s)	18.0
Intersection Capacity Utilization	71.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

2027 Build Weekday Morning Peak Hour

05/02/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	607	20	8	510	58	20	4	13	75	5	64
Future Volume (vph)	95	607	20	8	510	58	20	4	13	75	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.960			0.955	
Satd. Flow (prot)	1685	1801	1561	1745	1837	1561	0	1763	1561	0	1875	1615
Flt Permitted	0.261			0.309				0.723			0.718	
Satd. Flow (perm)	463	1801	1561	568	1837	1561	0	1328	1561	0	1410	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			119			75
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			407			320			157	
Travel Time (s)		27.6			9.3			7.3			3.6	
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.82	0.82	0.82	0.85	0.85	0.85
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	698	23	9	600	68	0	29	16	0	94	75
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	45.2	45.1	45.1	39.9	36.2	36.2		9.4	9.4		9.4	18.1
Actuated g/C Ratio	0.71	0.71	0.71	0.63	0.57	0.57		0.15	0.15		0.15	0.29
v/c Ratio	0.22	0.54	0.02	0.02	0.57	0.07		0.15	0.05		0.45	0.15
Control Delay	6.9	12.5	0.1	7.1	18.3	1.4		30.6	0.3		36.1	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2027 Build Weekday Morning Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	6.9	12.5	0.1	7.1	18.3	1.4		30.6	0.3		36.1	4.7
LOS	A	B	A	A	B	A		C	A		D	A
Approach Delay		11.4			16.4			19.8			22.2	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	9	87	0	1	144	0		9	0		29	0
Queue Length 95th (ft)	56	#552	0	9	449	7		39	0		100	19
Internal Link Dist (ft)		1134			327			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	665	1314	1168	727	1290	1129		454	612		482	726
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.16	0.53	0.02	0.01	0.47	0.06		0.06	0.03		0.20	0.10

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 63.3

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 14.6

Intersection LOS: B

Intersection Capacity Utilization 57.2%








ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.























Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

			
Ø1	Ø2	Ø4	Ø9
20 s	44 s	24 s	22 s
			
Ø5	Ø6	Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis
2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

2027 Build Weekday Morning Peak Hour

05/02/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	607	20	8	510	58	20	4	13	75	5	64
Future Volume (vph)	95	607	20	8	510	58	20	4	13	75	5	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		0.96	1.00
Satd. Flow (prot)	1685	1801	1561	1745	1837	1561		1764	1561		1876	1615
Flt Permitted	0.26	1.00	1.00	0.31	1.00	1.00		0.72	1.00		0.72	1.00
Satd. Flow (perm)	462	1801	1561	568	1837	1561		1328	1561		1411	1615
Peak-hour factor, PHF	0.87	0.87	0.87	0.85	0.85	0.85	0.82	0.82	0.82	0.85	0.85	0.85
Adj. Flow (vph)	109	698	23	9	600	68	24	5	16	88	6	75
RTOR Reduction (vph)	0	0	9	0	0	32	0	0	14	0	0	60
Lane Group Flow (vph)	109	698	14	9	600	36	0	29	2	0	94	15
Heavy Vehicles (%)	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	48.5	42.8	42.8	38.0	37.3	37.3		8.0	8.0		8.0	14.2
Effective Green, g (s)	49.5	43.8	43.8	40.0	38.3	38.3		8.0	8.0		8.0	14.2
Actuated g/C Ratio	0.68	0.60	0.60	0.55	0.53	0.53		0.11	0.11		0.11	0.20
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	436	1088	943	340	970	824		146	172		155	316
v/s Ratio Prot	c0.02	c0.39	0.01	0.00	0.33	0.02						0.00
v/s Ratio Perm	0.15			0.01				0.02	0.00		c0.07	0.01
v/c Ratio	0.25	0.64	0.01	0.03	0.62	0.04		0.20	0.01		0.61	0.05
Uniform Delay, d1	6.2	9.3	5.7	7.8	12.0	8.3		29.3	28.7		30.7	23.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	0.1	1.0	0.0	0.0	0.8	0.0		0.2	0.0		4.5	0.0
Delay (s)	6.4	10.3	5.7	7.9	12.8	8.3		29.6	28.7		35.3	23.7
Level of Service	A	B	A	A	B	A		C	C		D	C
Approach Delay (s)		9.6			12.3			29.3			30.1	
Approach LOS		A			B			C			C	

Intersection Summary























HCM 2000 Control Delay	13.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	72.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2027 Build Weekday Evening Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/02/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	611	49	20	739	144	36	19	35	133	17	215
Future Volume (vph)	202	611	49	20	739	144	36	19	35	133	17	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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
Friction			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.968			0.958	
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561	0	1778	1561	0	1881	1615
Flt Permitted	0.083			0.361				0.664			0.709	
Satd. Flow (perm)	147	1818	1561	663	1837	1561	0	1220	1561	0	1392	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			109			119			224
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			397			320			157	
Travel Time (s)		27.6			9.0			7.3			3.6	
Peak Hour Factor	0.94	0.94	0.94	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	650	52	22	812	158	0	58	37	0	157	224
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	58.1	54.4	54.4	47.4	41.0	41.0		13.2	13.2		13.2	28.5
Actuated g/C Ratio	0.70	0.66	0.66	0.57	0.50	0.50		0.16	0.16		0.16	0.34
v/c Ratio	0.63	0.54	0.05	0.05	0.89	0.19		0.30	0.11		0.71	0.32
Control Delay	26.0	14.4	0.1	8.2	35.8	7.1		37.1	0.6		52.4	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2027 Build Weekday Evening Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	26.0	14.4	0.1	8.2	35.8	7.1		37.1	0.6		52.4	3.5
LOS	C	B	A	A	D	A		D	A		D	A
Approach Delay		16.3			30.7			22.9			23.6	
Approach LOS		B			C			C			C	
Queue Length 50th (ft)	50	108	0	2	338	12		25	0		74	0
Queue Length 95th (ft)	#197	539	0	18	#928	68		75	0		174	34
Internal Link Dist (ft)		1134			317			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	408	1195	1064	667	911	829		302	476		345	761
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.53	0.54	0.05	0.03	0.89	0.19		0.19	0.08		0.46	0.29

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 82.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 23.7

Intersection LOS: C

Intersection Capacity Utilization 75.0%








ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140























 Ø1	 Ø2	 Ø4	 Ø9
20 s	44 s	24 s	22 s
 Ø5	 Ø6	 Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

2027 Build Weekday Evening Peak Hour

05/02/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	611	49	20	739	144	36	19	35	133	17	215
Future Volume (vph)	202	611	49	20	739	144	36	19	35	133	17	215
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561		1778	1561		1880	1615
Flt Permitted	0.08	1.00	1.00	0.36	1.00	1.00		0.66	1.00		0.71	1.00
Satd. Flow (perm)	147	1818	1561	662	1837	1561		1219	1561		1392	1615
Peak-hour factor, PHF	0.94	0.94	0.94	0.91	0.91	0.91	0.95	0.95	0.95	0.96	0.96	0.96
Adj. Flow (vph)	215	650	52	22	812	158	38	20	37	139	18	224
RTOR Reduction (vph)	0	0	21	0	0	55	0	0	32	0	0	161
Lane Group Flow (vph)	215	650	31	22	812	103	0	58	5	0	157	63
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	60.2	53.3	53.3	45.2	43.3	43.3		13.2	13.2		13.2	25.1
Effective Green, g (s)	61.2	54.3	54.3	47.2	44.3	44.3		13.2	13.2		13.2	25.1
Actuated g/C Ratio	0.68	0.60	0.60	0.53	0.49	0.49		0.15	0.15		0.15	0.28
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	321	1099	943	382	906	770		179	229		204	451
v/s Ratio Prot	c0.10	0.36	0.02	0.00	c0.44	0.07						0.02
v/s Ratio Perm	0.36			0.03				0.05	0.00		c0.11	0.02
v/c Ratio	0.67	0.59	0.03	0.06	0.90	0.13		0.32	0.02		0.77	0.14
Uniform Delay, d1	22.0	10.9	7.2	10.4	20.7	12.3		34.3	32.8		36.8	24.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	4.1	0.6	0.0	0.0	11.1	0.0		0.4	0.0		14.5	0.1
Delay (s)	26.1	11.5	7.2	10.5	31.8	12.4		34.7	32.8		51.3	24.3
Level of Service	C	B	A	B	C	B		C	C		D	C
Approach Delay (s)		14.7			28.2			34.0			35.4	
Approach LOS		B			C			C			D	

Intersection Summary























HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	89.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2027 Build Saturday Midday Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/15/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	665	48	27	634	217	58	23	31	177	33	261
Future Volume (vph)	207	665	48	27	634	217	58	23	31	177	33	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	11	11	11	11	11	11	11	13	13	12
Storage Length (ft)	160		50	100		150	0		26	50		0
Storage Lanes	1		1	1		1	0		1	0		1
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			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950				0.965			0.960	
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561	0	1772	1561	0	1885	1615
Flt Permitted	0.104			0.201				0.494			0.669	
Satd. Flow (perm)	184	1818	1561	369	1837	1561	0	907	1561	0	1313	1615
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109			123			119			284
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		1214			418			320			157	
Travel Time (s)		27.6			9.5			7.3			3.6	
Peak Hour Factor	0.86	0.86	0.86	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	241	773	56	30	704	241	0	103	40	0	228	284
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	8	8	8	4	4	5
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	15.0	15.0	10.0	15.0	15.0	9.0	9.0	9.0	9.0	9.0	10.0
Total Split (s)	20.0	44.0	44.0	20.0	44.0	44.0	24.0	24.0	24.0	24.0	24.0	20.0
Total Split (%)	18.2%	40.0%	40.0%	18.2%	40.0%	40.0%	21.8%	21.8%	21.8%	21.8%	21.8%	18.2%
Maximum Green (s)	15.0	39.0	39.0	15.0	39.0	39.0	20.0	20.0	20.0	20.0	20.0	15.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0		0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						Lead
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	58.1	52.1	52.1	46.8	40.4	40.4		20.2	20.2		20.2	36.1
Actuated g/C Ratio	0.65	0.58	0.58	0.52	0.45	0.45		0.22	0.22		0.22	0.40
v/c Ratio	0.69	0.73	0.06	0.10	0.85	0.31		0.50	0.09		0.77	0.35
Control Delay	28.0	22.4	0.2	9.3	35.8	10.3		43.5	0.4		53.9	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0

Lanes, Volumes, Timings

2027 Build Saturday Midday Peak Hour

2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

05/15/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	28.0	22.4	0.2	9.3	35.8	10.3		43.5	0.4		53.9	3.1
LOS	C	C	A	A	D	B		D	A		D	A
Approach Delay		22.5			28.7			31.5			25.7	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	63	299	0	5	320	36		49	0		116	0
Queue Length 95th (ft)	#197	#710	0	23	#763	121		108	0		#312	37
Internal Link Dist (ft)		1134			338			240			77	
Turn Bay Length (ft)	160		50	100		150			26			
Base Capacity (vph)	388	1053	950	477	825	769		204	442		295	855
Starvation Cap Reductn	0	0	0	0	0	0		0	0		0	0
Spillback Cap Reductn	0	0	0	0	0	0		0	0		0	0
Storage Cap Reductn	0	0	0	0	0	0		0	0		0	0
Reduced v/c Ratio	0.62	0.73	0.06	0.06	0.85	0.31		0.50	0.09		0.77	0.33

Intersection Summary

Area Type: Other

Cycle Length: 110

Actuated Cycle Length: 89.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 25.8

Intersection LOS: C

Intersection Capacity Utilization 73.0%








ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.























Splits and Phases: 2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

 Ø1	 Ø2	 Ø4	 Ø9
20 s	44 s	24 s	22 s
 Ø5	 Ø6	 Ø8	
20 s	44 s	24 s	

HCM Signalized Intersection Capacity Analysis
2: CVS Dwy/Horace Mann Plaza Dwy & Route 140

2027 Build Saturday Midday Peak Hour

05/15/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	207	665	48	27	634	217	58	23	31	177	33	261
Future Volume (vph)	207	665	48	27	634	217	58	23	31	177	33	261
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	11	11	11	11	11	11	11	11	13	13	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	5.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.97	1.00		0.96	1.00
Satd. Flow (prot)	1685	1818	1561	1745	1837	1561		1773	1561		1884	1615
Flt Permitted	0.10	1.00	1.00	0.20	1.00	1.00		0.49	1.00		0.67	1.00
Satd. Flow (perm)	185	1818	1561	369	1837	1561		907	1561		1313	1615
Peak-hour factor, PHF	0.86	0.86	0.86	0.90	0.90	0.90	0.78	0.78	0.78	0.92	0.92	0.92
Adj. Flow (vph)	241	773	56	30	704	241	74	29	40	192	36	284
RTOR Reduction (vph)	0	0	26	0	0	68	0	0	32	0	0	187
Lane Group Flow (vph)	241	773	30	30	704	173	0	103	8	0	228	97
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	pm+pt	NA	custom	pm+pt	NA	custom	Perm	NA	Perm	Perm	NA	pm+ov
Protected Phases	5	2	2	1	6	6		8			4	5
Permitted Phases	2		2	6		6	8		8	4		4
Actuated Green, G (s)	59.3	51.1	51.1	44.8	41.6	41.6		20.2	20.2		20.2	32.9
Effective Green, g (s)	60.3	52.1	52.1	46.8	42.6	42.6		20.2	20.2		20.2	32.9
Actuated g/C Ratio	0.63	0.54	0.54	0.49	0.44	0.44		0.21	0.21		0.21	0.34
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0	5.0		4.0	4.0		4.0	5.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0		2.0	2.0
Lane Grp Cap (vph)	329	985	846	239	814	691		190	328		275	552
v/s Ratio Prot	c0.10	0.43	0.02	0.01	c0.38	0.11						0.02
v/s Ratio Perm	0.35			0.06				0.11	0.01		c0.17	0.04
v/c Ratio	0.73	0.78	0.04	0.13	0.86	0.25		0.54	0.03		0.83	0.18
Uniform Delay, d1	21.6	17.5	10.3	15.0	24.2	16.7		33.8	30.1		36.3	22.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	7.1	3.8	0.0	0.1	9.2	0.1		1.7	0.0		17.5	0.1
Delay (s)	28.7	21.4	10.3	15.0	33.3	16.8		35.5	30.1		53.8	22.2
Level of Service	C	C	B	B	C	B		D	C		D	C
Approach Delay (s)		22.4			28.7			34.0			36.3	
Approach LOS		C			C			C			D	

Intersection Summary

HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	96.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

East Central Street (Route 140) at the Project Site Entrance Only Driveway

HCM 2010 TWSC
3: Right in Driveway & Route 140

2027 Build Weekday Morning Peak Hour

05/02/2020

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↑
Traffic Vol, veh/h	672	5	0	611	0	0
Future Vol, veh/h	672	5	0	611	0	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	2	2	2	2	2
Mvmt Flow	730	5	0	664	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- - - 733
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - - 6.22
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - - 3.318
Pot Cap-1 Maneuver	-	0	0 421
Stage 1	-	0	0 -
Stage 2	-	0	0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- - 421
Mov Cap-2 Maneuver	-	-	- -
Stage 1	-	-	- -
Stage 2	-	-	- -

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

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

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑		↑
Traffic Vol, veh/h	708	10	0	895	0	0
Future Vol, veh/h	708	10	0	895	0	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	2	2	2	2	2
Mvmt Flow	770	11	0	973	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 776
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	- 6.22
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	- 3.318
Pot Cap-1 Maneuver	-	0	0 397
Stage 1	-	0	0 -
Stage 2	-	0	0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 397
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

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

Intersection

Int Delay, s/veh 0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↗			↑		↖
Traffic Vol, veh/h	874	7	0	859	0	0
Future Vol, veh/h	874	7	0	859	0	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	2	2	2	2	2
Mvmt Flow	950	8	0	934	0	0

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	- 954
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	- 6.22
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	- 3.318
Pot Cap-1 Maneuver	-	0	0 314
Stage 1	-	0	0 -
Stage 2	-	0	0 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	- 314
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	0
HCM LOS			A

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

East Central Street (Route 140) at Glen Meadow Road and the Project Full-Access Driveway

HCM 2010 TWSC
5: Route 140 & Glen Meadow Rd

2020 Existing Weekday Morning Peak Hour
04/30/2020

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	12	572	470	3	5	27
Future Vol, veh/h	12	572	470	3	5	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	91	91	54	54
Heavy Vehicles, %	9	1	1	33	0	0
Mvmt Flow	13	609	516	3	9	50

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	519	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.19	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.281	-	-
Pot Cap-1 Maneuver	1012	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1012	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1012	-	-	-	216	562
HCM Lane V/C Ratio	0.013	-	-	-	0.043	0.089
HCM Control Delay (s)	8.6	0	-	-	22.4	12
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1	0.3

Intersection

Int Delay, s/veh 0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	15	623	784	17	5	24
Future Vol, veh/h	15	623	784	17	5	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	68	68
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	16	663	834	18	7	35

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	852	0	0 1538 843
Stage 1	-	-	- 843 -
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	795	-	- 129 367
Stage 1	-	-	- 426 -
Stage 2	-	-	- 499 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	795	-	- 125 367
Mov Cap-2 Maneuver	-	-	- 125 -
Stage 1	-	-	- 412 -
Stage 2	-	-	- 499 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	19.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	795	-	-	-	125	367
HCM Lane V/C Ratio	0.02	-	-	-	0.059	0.096
HCM Control Delay (s)	9.6	0	-	-	35.6	15.9
HCM Lane LOS	A	A	-	-	E	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.3

HCM 2010 TWSC
5: Route 140 & Glen Meadow Rd

2020 Existing Saturday Midday Peak Hour
04/30/2020

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	22	761	742	6	9	22
Future Vol, veh/h	22	761	742	6	9	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	95	95	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	793	781	6	11	27

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	787	0	0 1623 784
Stage 1	-	-	- 784 -
Stage 2	-	-	- 839 -
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	841	-	- 114 396
Stage 1	-	-	- 453 -
Stage 2	-	-	- 427 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	841	-	- 108 396
Mov Cap-2 Maneuver	-	-	- 108 -
Stage 1	-	-	- 431 -
Stage 2	-	-	- 427 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	22.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	841	-	-	-	108	396
HCM Lane V/C Ratio	0.027	-	-	-	0.103	0.069
HCM Control Delay (s)	9.4	0	-	-	42.1	14.8
HCM Lane LOS	A	A	-	-	E	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3	0.2

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↖	↗		↖	↗
Traffic Vol, veh/h	13	613	504	3	5	29
Future Vol, veh/h	13	613	504	3	5	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	91	91	54	54
Heavy Vehicles, %	9	1	1	33	0	0
Mvmt Flow	14	652	554	3	9	54

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	557	0	-	0	1236 556
Stage 1	-	-	-	-	556 -
Stage 2	-	-	-	-	680 -
Critical Hdwy	4.19	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.281	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	980	-	-	-	196 534
Stage 1	-	-	-	-	578 -
Stage 2	-	-	-	-	507 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	980	-	-	-	192 534
Mov Cap-2 Maneuver	-	-	-	-	192 -
Stage 1	-	-	-	-	565 -
Stage 2	-	-	-	-	507 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	980	-	-	-	192	534
HCM Lane V/C Ratio	0.014	-	-	-	0.048	0.101
HCM Control Delay (s)	8.7	0	-	-	24.7	12.5
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.3

Intersection

Int Delay, s/veh 0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	↕
Traffic Vol, veh/h	16	668	841	18	5	26
Future Vol, veh/h	16	668	841	18	5	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	68	68
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	17	711	895	19	7	38





Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	914	0	-	0	1650 905
Stage 1	-	-	-	-	905 -
Stage 2	-	-	-	-	745 -
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	754	-	-	-	110 338
Stage 1	-	-	-	-	398 -
Stage 2	-	-	-	-	473 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	754	-	-	-	106 338
Mov Cap-2 Maneuver	-	-	-	-	106 -
Stage 1	-	-	-	-	383 -
Stage 2	-	-	-	-	473 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	21
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	754	-	-	-	106	338
HCM Lane V/C Ratio	0.023	-	-	-	0.069	0.113
HCM Control Delay (s)	9.9	0	-	-	41.5	17
HCM Lane LOS	A	A	-	-	E	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2	0.4

Intersection

Int Delay, s/veh 0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	816	796	6	10	24
Future Vol, veh/h	24	816	796	6	10	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	96	96	95	95	81	81
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	25	850	838	6	12	30

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	844	0	0 1741 841
Stage 1	-	-	- 841 -
Stage 2	-	-	- 900 -
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	801	-	- 97 368
Stage 1	-	-	- 426 -
Stage 2	-	-	- 400 -
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	801	-	- 91 368
Mov Cap-2 Maneuver	-	-	- 91 -
Stage 1	-	-	- 401 -
Stage 2	-	-	- 400 -

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	25.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	801	-	-	-	91	368
HCM Lane V/C Ratio	0.031	-	-	-	0.136	0.081
HCM Control Delay (s)	9.6	0	-	-	50.7	15.6
HCM Lane LOS	A	A	-	-	F	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	0.3

Intersection

Int Delay, s/veh 14.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘			↖	↗
Traffic Vol, veh/h	13	555	104	88	458	3	88	0	87	5	3	26
Future Vol, veh/h	13	555	104	88	458	3	88	0	87	5	3	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	91	91	91	92	92	92	54	54	54
Heavy Vehicles, %	9	1	2	2	1	33	2	2	2	0	2	0
Mvmt Flow	14	590	111	97	503	3	96	0	95	9	6	48

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	506	0	0	701	0	0	1400	1374	646	1420	1428	505
Stage 1	-	-	-	-	-	-	674	674	-	699	699	-
Stage 2	-	-	-	-	-	-	726	700	-	721	729	-
Critical Hdwy	4.19	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.281	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.3
Pot Cap-1 Maneuver	1024	-	-	896	-	-	118	145	472	115	135	571
Stage 1	-	-	-	-	-	-	444	454	-	434	442	-
Stage 2	-	-	-	-	-	-	416	441	-	422	428	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1024	-	-	896	-	-	~ 90	120	472	80	112	571
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 90	120	-	80	112	-
Stage 1	-	-	-	-	-	-	434	444	-	424	375	-
Stage 2	-	-	-	-	-	-	319	374	-	330	418	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.5	106.9	21.5
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	90	472	1024	-	-	896	-	-	90	571
HCM Lane V/C Ratio	1.063	0.2	0.014	-	-	0.108	-	-	0.165	0.084
HCM Control Delay (s)	198.2	14.5	8.6	0	-	9.5	0	-	52.7	11.9
HCM Lane LOS	F	B	A	A	-	A	A	-	F	B
HCM 95th %tile Q(veh)	6.4	0.7	0	-	-	0.4	-	-	0.6	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 TWSC
5: Site Full Driveway/Glen Meadow Rd & Route 140

2027 Build Weekday Evening Peak Hour

05/02/2020

Intersection

Int Delay, s/veh 13.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕
Traffic Vol, veh/h	16	640	52	56	811	18	60	0	55	5	2	24
Future Vol, veh/h	16	640	52	56	811	18	60	0	55	5	2	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	92	92	92	68	68	68
Heavy Vehicles, %	0	0	2	2	0	0	2	2	2	0	2	0
Mvmt Flow	17	681	55	60	863	19	65	0	60	7	3	35

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	882	0	0	736	0	0	1755	1745	709	1766	1763	873
Stage 1	-	-	-	-	-	-	743	743	-	993	993	-
Stage 2	-	-	-	-	-	-	1012	1002	-	773	770	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.3
Pot Cap-1 Maneuver	775	-	-	870	-	-	67	86	434	66	84	352
Stage 1	-	-	-	-	-	-	407	422	-	298	323	-
Stage 2	-	-	-	-	-	-	288	320	-	395	410	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	775	-	-	870	-	-	~ 51	71	434	50	70	352
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 51	71	-	50	70	-
Stage 1	-	-	-	-	-	-	392	406	-	287	279	-
Stage 2	-	-	-	-	-	-	222	276	-	328	394	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	189.3	32.3
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	51	434	775	-	-	870	-	-	54	352
HCM Lane V/C Ratio	1.279	0.138	0.022	-	-	0.068	-	-	0.191	0.1
HCM Control Delay (s)	\$ 349.4	14.6	9.7	0	-	9.4	0	-	86.7	16.4
HCM Lane LOS	F	B	A	A	-	A	A	-	F	C
HCM 95th %tile Q(veh)	5.9	0.5	0.1	-	-	0.2	-	-	0.6	0.3

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection

Int Delay, s/veh 41.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	↕
Traffic Vol, veh/h	24	765	85	80	749	6	88	0	83	10	2	22
Future Vol, veh/h	24	765	85	80	749	6	88	0	83	10	2	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	92	92	92	81	81	81
Heavy Vehicles, %	0	0	2	2	0	0	2	2	2	0	2	0
Mvmt Flow	25	797	89	84	788	6	96	0	90	12	2	27

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	794	0	0	886	0	0	1866	1854	842	1896	1895	791
Stage 1	-	-	-	-	-	-	892	892	-	959	959	-
Stage 2	-	-	-	-	-	-	974	962	-	937	936	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.12	6.52	6.22	7.1	6.52	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.1	5.52	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.518	4.018	3.318	3.5	4.018	3.3
Pot Cap-1 Maneuver	836	-	-	764	-	-	~ 56	74	364	54	70	393
Stage 1	-	-	-	-	-	-	337	360	-	311	335	-
Stage 2	-	-	-	-	-	-	303	334	-	320	344	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	836	-	-	764	-	-	~ 41	56	364	33	53	393
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 41	56	-	33	53	-
Stage 1	-	-	-	-	-	-	317	338	-	292	269	-
Stage 2	-	-	-	-	-	-	224	268	-	226	323	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	1	\$ 430.5	69.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	41	364	836	-	-	764	-	-	35	393
HCM Lane V/C Ratio	2.333	0.248	0.03	-	-	0.11	-	-	0.423	0.069
HCM Control Delay (s)	\$ 819.5	18.1	9.4	0	-	10.3	0	-	169	14.8
HCM Lane LOS	F	C	A	A	-	B	A	-	F	B
HCM 95th %tile Q(veh)	10.3	1	0.1	-	-	0.4	-	-	1.4	0.2




















Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

East Central Street (Route 140) at the Big Y Market Drive and the Franklin Municipal Building Drive













Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2020 Existing Weekday Morning Peak Hour
04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	446	0	7	367	17	44	1	25	5	0	19
Future Volume (vph)	45	446	0	7	367	17	44	1	25	5	0	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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					0.993				0.850		0.894	
Flt Protected	0.950			0.950				0.953			0.990	
Satd. Flow (prot)	1711	1881	0	1745	1847	0	0	1750	1561	0	1766	0
Flt Permitted	0.463			0.385				0.989			0.914	
Satd. Flow (perm)	834	1881	0	707	1847	0	0	1816	1561	0	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3				88		88	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			578			277			198	
Travel Time (s)		9.3			13.1			6.3			4.5	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	519	0	8	431	0	0	47	26	0	33	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	23.3	23.3		23.3	23.3			9.8	9.8		9.6	
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.30	0.30		0.29	
v/c Ratio	0.09	0.39		0.02	0.33			0.09	0.05		0.06	
Control Delay	7.6	8.2		7.7	7.6			18.4	0.2		0.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2020 Existing Weekday Morning Peak Hour
04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	7.6	8.2		7.7	7.6			18.4	0.2		0.2	
LOS	A	A		A	A			B	A		A	
Approach Delay		8.1			7.6			11.9			0.2	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	3	44		1	34			6	0		0	
Queue Length 95th (ft)	32	245		9	205			49	0		0	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	746	1683		633	1653			1170	1037		1082	
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	0.07	0.31		0.01	0.26			0.04	0.03		0.03	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 33.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 7.9






Intersection LOS: A

Intersection Capacity Utilization 45.7%

ICU Level of Service A

Analysis Period (min) 15




















Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140

 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

HCM Signalized Intersection Capacity Analysis 6: Big Y Driveway/Town Driveway & Route 140

2020 Existing Weekday Morning Peak Hour

04/30/2020




















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	446	0	7	367	17	44	1	25	5	0	19
Future Volume (vph)	45	446	0	7	367	17	44	1	25	5	0	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	12	11	11	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flt	1.00	1.00		1.00	0.99			1.00	0.85		0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1711	1881		1745	1847			1751	1561		1765	
Flt Permitted	0.46	1.00		0.38	1.00			0.99	1.00		0.91	
Satd. Flow (perm)	833	1881		706	1847			1817	1561		1629	
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Adj. Flow (vph)	52	519	0	8	412	19	46	1	26	7	0	26
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	23	0	29	0
Lane Group Flow (vph)	52	519	0	8	430	0	0	47	3	0	4	0
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	17.7	17.7		17.7	17.7			4.0	4.0		4.0	
Effective Green, g (s)	18.7	18.7		18.7	18.7			4.0	4.0		4.0	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.11	0.11		0.11	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	419	948		355	930			195	168		175	
v/s Ratio Prot		c0.28			0.23				0.00			
v/s Ratio Perm	0.06			0.01				c0.03			0.00	
v/c Ratio	0.12	0.55		0.02	0.46			0.24	0.02		0.02	
Uniform Delay, d1	4.9	6.3		4.6	5.9			15.2	14.8		14.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.1	0.7		0.0	0.4			0.6	0.0		0.0	
Delay (s)	5.0	7.0		4.6	6.3			15.8	14.8		14.8	
Level of Service	A	A		A	A			B	B		B	
Approach Delay (s)		6.8			6.3			15.5			14.8	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay		7.4										
HCM 2000 Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		37.1							13.0			
Intersection Capacity Utilization		45.7%							A			
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings

2020 Existing Weekday Evening Peak Hour

6: Big Y Driveway/Town Driveway & Route 140

04/30/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	456	5	14	385	11	127	1	102	14	2	70
Future Volume (vph)	40	456	5	14	385	11	127	1	102	14	2	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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		0.998			0.996				0.850		0.890	
Flt Protected	0.950			0.950				0.953			0.992	
Satd. Flow (prot)	1745	1878	0	1745	1874	0	0	1750	1561	0	1845	0
Flt Permitted	0.366			0.236				0.608			0.942	
Satd. Flow (perm)	672	1878	0	433	1874	0	0	1117	1561	0	1752	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			2				116		167	
Link Speed (mph)		30			30				30		30	
Link Distance (ft)		411			578				277		198	
Travel Time (s)		9.3			13.1				6.3		4.5	
Peak Hour Factor	0.84	0.84	0.84	0.93	0.93	0.93	0.88	0.88	0.88	0.42	0.42	0.42
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	549	0	15	426	0	0	145	116	0	205	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	21.0	21.0		21.0	21.0			17.3	17.3		17.3	
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.35	0.35		0.35	
v/c Ratio	0.17	0.69		0.08	0.54			0.37	0.19		0.28	
Control Delay	11.7	17.4		11.3	14.0			22.3	6.2		7.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings

2020 Existing Weekday Evening Peak Hour

6: Big Y Driveway/Town Driveway & Route 140

04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	11.7	17.4		11.3	14.0			22.3	6.2		7.3	
LOS	B	B		B	B			C	A		A	
Approach Delay		17.0			13.9			15.2			7.3	
Approach LOS		B			B			B			A	
Queue Length 50th (ft)	7	97		2	68			24	0		6	
Queue Length 95th (ft)	33	286		16	231			#143	39		0	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	527	1475		340	1472			389	620		720	
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	0.09	0.37		0.04	0.29			0.37	0.19		0.28	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 49.5

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 14.4

Intersection LOS: B

Intersection Capacity Utilization 51.4%






ICU Level of Service A

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.




















Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140

 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

HCM Signalized Intersection Capacity Analysis 6: Big Y Driveway/Town Driveway & Route 140

2020 Existing Weekday Evening Peak Hour

04/30/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	40	456	5	14	385	11	127	1	102	14	2	70
Future Volume (vph)	40	456	5	14	385	11	127	1	102	14	2	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	12	11	11	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1745	1878		1745	1874			1750	1561		1845	
Flt Permitted	0.37	1.00		0.24	1.00			0.61	1.00		0.94	
Satd. Flow (perm)	672	1878		433	1874			1116	1561		1753	
Peak-hour factor, PHF	0.84	0.84	0.84	0.93	0.93	0.93	0.88	0.88	0.88	0.42	0.42	0.42
Adj. Flow (vph)	48	543	6	15	414	12	144	1	116	33	5	167
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	78	0	113	0
Lane Group Flow (vph)	48	548	0	15	425	0	0	145	38	0	92	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	19.9	19.9		19.9	19.9			17.3	17.3		17.3	
Effective Green, g (s)	20.9	20.9		20.9	20.9			17.3	17.3		17.3	
Actuated g/C Ratio	0.39	0.39		0.39	0.39			0.33	0.33		0.33	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	264	737		170	736			362	507		570	
v/s Ratio Prot		c0.29			0.23				0.02			
v/s Ratio Perm	0.07			0.03				c0.13			0.05	
v/c Ratio	0.18	0.74		0.09	0.58			0.40	0.07		0.16	
Uniform Delay, d1	10.6	13.9		10.2	12.7			13.9	12.4		12.8	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.3	4.1		0.2	1.1			0.7	0.1		0.1	
Delay (s)	10.9	17.9		10.4	13.8			14.7	12.5		12.9	
Level of Service	B	B		B	B			B	B		B	
Approach Delay (s)		17.4			13.7			13.7			12.9	
Approach LOS		B			B			B			B	

Intersection Summary





















HCM 2000 Control Delay	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	53.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2020 Existing Saturday Midday Peak Hour

6: Big Y Driveway/Town Driveway & Route 140













04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	472	10	63	488	13	169	2	68	6	4	47
Future Volume (vph)	32	472	10	63	488	13	169	2	68	6	4	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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		0.997			0.996				0.850		0.889	
Flt Protected	0.950			0.950				0.953			0.995	
Satd. Flow (prot)	1711	1876	0	1745	1853	0	0	1750	1561	0	1762	0
Flt Permitted	0.265			0.267				0.671			0.969	
Satd. Flow (perm)	477	1876	0	490	1853	0	0	1232	1561	0	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2				88		65	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			578			277			198	
Travel Time (s)		9.3			13.1			6.3			4.5	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	37	561	0	71	563	0	0	178	71	0	79	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	21.7	21.7		21.7	21.7			13.7	13.7		13.7	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.29	0.29		0.29	
v/c Ratio	0.17	0.65		0.31	0.66			0.50	0.14		0.14	
Control Delay	12.2	15.2		14.9	15.5			25.2	5.4		8.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2020 Existing Saturday Midday Peak Hour

04/30/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	12.2	15.2		14.9	15.5			25.2	5.4		8.8	
LOS	B	B		B	B			C	A		A	
Approach Delay		15.0			15.4			19.5			8.8	
Approach LOS		B			B			B			A	
Queue Length 50th (ft)	4	86		9	87			32	0		2	
Queue Length 95th (ft)	30	306		56	327			#182	25		26	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	388	1526		398	1507			477	658		704	
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	0.10	0.37		0.18	0.37			0.37	0.11		0.11	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 46.8

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 15.6

Intersection LOS: B

Intersection Capacity Utilization 55.9%






ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140

 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

04/30/2020





















HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	49.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	55.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2027 No Build Weekday Morning Peak Hour

6: Big Y Driveway/Town Driveway & Route 140

05/01/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	478	0	8	393	18	47	1	27	5	0	20
Future Volume (vph)	48	478	0	8	393	18	47	1	27	5	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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					0.994				0.850		0.892	
Flt Protected	0.950			0.950				0.953			0.990	
Satd. Flow (prot)	1711	1881	0	1745	1848	0	0	1750	1561	0	1761	0
Flt Permitted	0.437			0.358				0.943			0.917	
Satd. Flow (perm)	787	1881	0	658	1848	0	0	1732	1561	0	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3				88		88	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			578			277			198	
Travel Time (s)		9.3			13.1			6.3			4.5	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	556	0	9	462	0	0	50	28	0	35	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	24.3	24.3		24.3	24.3			9.6	9.6		9.4	
Actuated g/C Ratio	0.70	0.70		0.70	0.70			0.28	0.28		0.27	
v/c Ratio	0.10	0.42		0.02	0.35			0.10	0.06		0.07	
Control Delay	7.7	8.5		7.6	7.8			18.7	0.2		0.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings

2027 No Build Weekday Morning Peak Hour

6: Big Y Driveway/Town Driveway & Route 140

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	7.7	8.5		7.6	7.8			18.7	0.2		0.3	
LOS	A	A		A	A			B	A		A	
Approach Delay		8.4			7.8			12.0			0.3	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	4	50		1	38			6	0		0	
Queue Length 95th (ft)	34	270		10	224			51	0		0	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	704	1682		588	1653			1069	997		1041	
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	0.08	0.33		0.02	0.28			0.05	0.03		0.03	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 34.5

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 8.2






Intersection LOS: A

Intersection Capacity Utilization 47.8%

ICU Level of Service A

Analysis Period (min) 15




















Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140

 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

HCM Signalized Intersection Capacity Analysis 2027 No Build Weekday Morning Peak Hour

6: Big Y Driveway/Town Driveway & Route 140





















05/01/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	478	0	8	393	18	47	1	27	5	0	20
Future Volume (vph)	48	478	0	8	393	18	47	1	27	5	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	12	11	11	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	0.99			1.00	0.85		0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1711	1881		1745	1848			1751	1561		1761	
Flt Permitted	0.44	1.00		0.36	1.00			0.94	1.00		0.92	
Satd. Flow (perm)	788	1881		658	1848			1732	1561		1632	
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Adj. Flow (vph)	56	556	0	9	442	20	49	1	28	7	0	28
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	25	0	31	0
Lane Group Flow (vph)	56	556	0	9	461	0	0	50	3	0	4	0
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	19.1	19.1		19.1	19.1			4.2	4.2		4.2	
Effective Green, g (s)	20.1	20.1		20.1	20.1			4.2	4.2		4.2	
Actuated g/C Ratio	0.52	0.52		0.52	0.52			0.11	0.11		0.11	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	409	976		341	959			187	169		177	
v/s Ratio Prot		c0.30			0.25				0.00			
v/s Ratio Perm	0.07			0.01				c0.03			0.00	
v/c Ratio	0.14	0.57		0.03	0.48			0.27	0.02		0.02	
Uniform Delay, d1	4.8	6.3		4.5	6.0			15.8	15.4		15.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	0.8		0.0	0.4			0.8	0.0		0.0	
Delay (s)	5.0	7.1		4.6	6.3			16.6	15.5		15.5	
Level of Service	A	A		A	A			B	B		B	
Approach Delay (s)		6.9			6.3			16.2			15.5	
Approach LOS		A			A			B			B	
Intersection Summary												
HCM 2000 Control Delay		7.5				HCM 2000 Level of Service		A				
HCM 2000 Volume to Capacity ratio		0.49										
Actuated Cycle Length (s)		38.7				Sum of lost time (s)		13.0				
Intersection Capacity Utilization		47.8%				ICU Level of Service		A				
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2027 No Build Weekday Evening Peak Hour













05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	489	5	66	621	11	136	1	109	15	2	75
Future Volume (vph)	43	489	5	66	621	11	136	1	109	15	2	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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		0.998			0.997				0.850		0.890	
Flt Protected	0.950			0.950				0.953			0.992	
Satd. Flow (prot)	1745	1878	0	1745	1876	0	0	1750	1561	0	1845	0
Flt Permitted	0.175			0.254				0.535			0.935	
Satd. Flow (perm)	321	1878	0	467	1876	0	0	983	1561	0	1739	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1				124		179	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			578			277			198	
Travel Time (s)		9.3			13.1			6.3			4.5	
Peak Hour Factor	0.84	0.84	0.84	0.93	0.93	0.93	0.88	0.88	0.88	0.42	0.42	0.42
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	588	0	71	680	0	0	156	124	0	220	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	27.1	27.1		27.1	27.1			16.8	16.8		16.8	
Actuated g/C Ratio	0.49	0.49		0.49	0.49			0.30	0.30		0.30	
v/c Ratio	0.32	0.64		0.31	0.74			0.52	0.22		0.34	
Control Delay	17.5	15.3		14.8	18.6			30.2	6.6		8.0	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2027 No Build Weekday Evening Peak Hour

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	17.5	15.3		14.8	18.6			30.2	6.6		8.0	
LOS	B	B		B	B			C	A		A	
Approach Delay		15.5			18.2			19.7			8.0	
Approach LOS		B			B			B			A	
Queue Length 50th (ft)	8	107		10	133			37	0		8	
Queue Length 95th (ft)	44	314		58	#484			#172	40		0	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	219	1287		320	1286			299	561		654	
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	0.23	0.46		0.22	0.53			0.52	0.22		0.34	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 55.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 60.9%






ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.





















Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140

 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

HCM Signalized Intersection Capacity Analysis 6: Big Y Driveway/Town Driveway & Route 140

2027 No Build Weekday Evening Peak Hour

05/01/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	489	5	66	621	11	136	1	109	15	2	75
Future Volume (vph)	43	489	5	66	621	11	136	1	109	15	2	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	12	11	11	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1745	1878		1745	1877			1750	1561		1845	
Flt Permitted	0.18	1.00		0.25	1.00			0.54	1.00		0.94	
Satd. Flow (perm)	321	1878		467	1877			984	1561		1740	
Peak-hour factor, PHF	0.84	0.84	0.84	0.93	0.93	0.93	0.88	0.88	0.88	0.42	0.42	0.42
Adj. Flow (vph)	51	582	6	71	668	12	155	1	124	36	5	179
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	89	0	128	0
Lane Group Flow (vph)	51	587	0	71	679	0	0	156	35	0	92	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	26.1	26.1		26.1	26.1			16.8	16.8		16.8	
Effective Green, g (s)	27.1	27.1		27.1	27.1			16.8	16.8		16.8	
Actuated g/C Ratio	0.46	0.46		0.46	0.46			0.28	0.28		0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	147	861		214	860			279	443		494	
v/s Ratio Prot		0.31			c0.36				0.02			
v/s Ratio Perm	0.16			0.15				c0.16			0.05	
v/c Ratio	0.35	0.68		0.33	0.79			0.56	0.08		0.19	
Uniform Delay, d1	10.3	12.6		10.2	13.6			18.0	15.5		16.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.4	2.2		0.9	5.0			2.4	0.1		0.2	
Delay (s)	11.7	14.9		11.1	18.6			20.4	15.6		16.2	
Level of Service	B	B		B	B			C	B		B	
Approach Delay (s)		14.6			17.9			18.3			16.2	
Approach LOS		B			B			B			B	





















Intersection Summary

HCM 2000 Control Delay	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	59.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2027 No Build Saturday Midday Peak Hour













05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	506	11	68	523	14	181	2	73	6	4	50
Future Volume (vph)	34	506	11	68	523	14	181	2	73	6	4	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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		0.997			0.996				0.850		0.888	
Flt Protected	0.950			0.950				0.953			0.995	
Satd. Flow (prot)	1711	1876	0	1745	1853	0	0	1750	1561	0	1759	0
Flt Permitted	0.232			0.235				0.772			0.971	
Satd. Flow (perm)	418	1876	0	432	1853	0	0	1418	1561	0	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2				88		69	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			578			277			198	
Travel Time (s)		9.3			13.1			6.3			4.5	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	601	0	76	604	0	0	191	76	0	83	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	23.5	23.5		23.5	23.5			14.6	14.6		14.6	
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.29	0.29		0.29	
v/c Ratio	0.20	0.68		0.37	0.69			0.46	0.15		0.15	
Control Delay	13.2	16.1		17.2	16.4			23.7	6.0		8.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2027 No Build Saturday Midday Peak Hour

05/01/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	13.2	16.1		17.2	16.4			23.7	6.0		8.8	
LOS	B	B		B	B			C	A		A	
Approach Delay		15.9			16.5			18.6			8.8	
Approach LOS		B			B			B			A	
Queue Length 50th (ft)	5	108		11	109			38	0		2	
Queue Length 95th (ft)	33	336		64	362			#181	29		27	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	322	1447		333	1430			507	614		657	
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	0.12	0.42		0.23	0.42			0.38	0.12		0.13	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 49.5

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 16.2

Intersection LOS: B

Intersection Capacity Utilization 58.5%






ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140




















 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

HCM Signalized Intersection Capacity Analysis

6: Big Y Driveway/Town Driveway & Route 140

2027 No Build Saturday Midday Peak Hour

05/01/2020





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	506	11	68	523	14	181	2	73	6	4	50
Future Volume (vph)	34	506	11	68	523	14	181	2	73	6	4	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	12	11	11	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1711	1875		1745	1853			1750	1561		1759	
Flt Permitted	0.23	1.00		0.23	1.00			0.77	1.00		0.97	
Satd. Flow (perm)	418	1875		431	1853			1417	1561		1716	
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Adj. Flow (vph)	40	588	13	76	588	16	189	2	76	8	6	69
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	55	0	50	0
Lane Group Flow (vph)	40	600	0	76	603	0	0	191	21	0	33	0
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	22.4	22.4		22.4	22.4			14.6	14.6		14.6	
Effective Green, g (s)	23.4	23.4		23.4	23.4			14.6	14.6		14.6	
Actuated g/C Ratio	0.44	0.44		0.44	0.44			0.28	0.28		0.28	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	184	827		190	818			390	430		472	
v/s Ratio Prot		0.32			c0.33				0.01			
v/s Ratio Perm	0.10			0.18				c0.13			0.02	
v/c Ratio	0.22	0.73		0.40	0.74			0.49	0.05		0.07	
Uniform Delay, d1	9.1	12.2		10.0	12.3			16.1	14.1		14.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.6	3.2		1.4	3.5			1.0	0.0		0.1	
Delay (s)	9.7	15.3		11.4	15.7			17.1	14.1		14.2	
Level of Service	A	B		B	B			B	B		B	
Approach Delay (s)		15.0			15.3			16.2			14.2	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay		15.3			HCM 2000 Level of Service				B			
HCM 2000 Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		53.0			Sum of lost time (s)				13.0			
Intersection Capacity Utilization		58.5%			ICU Level of Service				B			
Analysis Period (min)		15										
c Critical Lane Group												

Lanes, Volumes, Timings

2027 Build Weekday Morning Peak Hour

6: Big Y Driveway/Town Driveway & Route 140













05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	507	0	8	435	18	47	1	27	5	0	20
Future Volume (vph)	48	507	0	8	435	18	47	1	27	5	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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
Friction					0.994				0.850		0.892	
Fit Protected	0.950			0.950				0.953			0.990	
Satd. Flow (prot)	1711	1881	0	1745	1849	0	0	1750	1561	0	1761	0
Fit Permitted	0.401			0.336				0.966			0.917	
Satd. Flow (perm)	722	1881	0	617	1849	0	0	1774	1561	0	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3				88		88	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			578			277			198	
Travel Time (s)		9.3			13.1			6.3			4.5	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	56	590	0	9	509	0	0	50	28	0	35	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	25.2	25.2		25.2	25.2			9.5	9.5		9.3	
Actuated g/C Ratio	0.71	0.71		0.71	0.71			0.27	0.27		0.26	
v/c Ratio	0.11	0.44		0.02	0.39			0.10	0.06		0.07	
Control Delay	7.8	8.7		7.6	8.1			19.0	0.2		0.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2027 Build Weekday Morning Peak Hour

05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	7.8	8.7		7.6	8.1			19.0	0.2		0.3	
LOS	A	A		A	A			B	A		A	
Approach Delay		8.6			8.1			12.3			0.3	
Approach LOS		A			A			B			A	
Queue Length 50th (ft)	4	55		1	44			7	0		0	
Queue Length 95th (ft)	35	293		10	254			51	0		0	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	644	1677		550	1649			1066	973		1015	
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	0.09	0.35		0.02	0.31			0.05	0.03		0.03	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 35.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.44

Intersection Signal Delay: 8.4






Intersection LOS: A

Intersection Capacity Utilization 49.3%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140




















 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

HCM Signalized Intersection Capacity Analysis

6: Big Y Driveway/Town Driveway & Route 140

2027 Build Weekday Morning Peak Hour

05/02/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	507	0	8	435	18	47	1	27	5	0	20
Future Volume (vph)	48	507	0	8	435	18	47	1	27	5	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	12	11	11	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Flt	1.00	1.00		1.00	0.99			1.00	0.85		0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1711	1881		1745	1849			1751	1561		1761	
Flt Permitted	0.40	1.00		0.34	1.00			0.97	1.00		0.92	
Satd. Flow (perm)	722	1881		617	1849			1774	1561		1632	
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Adj. Flow (vph)	56	590	0	9	489	20	49	1	28	7	0	28
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	25	0	31	0
Lane Group Flow (vph)	56	590	0	9	508	0	0	50	3	0	4	0
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	20.1	20.1		20.1	20.1			4.1	4.1		4.1	
Effective Green, g (s)	21.1	21.1		21.1	21.1			4.1	4.1		4.1	
Actuated g/C Ratio	0.53	0.53		0.53	0.53			0.10	0.10		0.10	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	383	999		327	982			183	161		168	
v/s Ratio Prot		c0.31			0.27				0.00			
v/s Ratio Perm	0.08			0.01				c0.03			0.00	
v/c Ratio	0.15	0.59		0.03	0.52			0.27	0.02		0.02	
Uniform Delay, d1	4.7	6.4		4.4	6.0			16.4	16.0		16.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.2	0.9		0.0	0.5			0.8	0.0		0.1	
Delay (s)	4.9	7.3		4.5	6.5			17.2	16.0		16.0	
Level of Service	A	A		A	A			B	B		B	
Approach Delay (s)		7.1			6.4			16.8			16.0	
Approach LOS		A			A			B			B	





















Intersection Summary

HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2027 Build Weekday Evening Peak Hour













05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	514	5	66	647	11	136	1	109	15	2	75
Future Volume (vph)	43	514	5	66	647	11	136	1	109	15	2	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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		0.999			0.997				0.850		0.890	
Flt Protected	0.950			0.950				0.953			0.992	
Satd. Flow (prot)	1745	1879	0	1745	1876	0	0	1750	1561	0	1845	0
Flt Permitted	0.171			0.245				0.522			0.934	
Satd. Flow (perm)	314	1879	0	450	1876	0	0	959	1561	0	1737	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			1				124		179	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			578			277			198	
Travel Time (s)		9.3			13.1			6.3			4.5	
Peak Hour Factor	0.84	0.84	0.84	0.93	0.93	0.93	0.88	0.88	0.88	0.42	0.42	0.42
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	618	0	71	708	0	0	156	124	0	220	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	29.6	29.6		29.6	29.6			16.7	16.7		16.7	
Actuated g/C Ratio	0.51	0.51		0.51	0.51			0.29	0.29		0.29	
v/c Ratio	0.32	0.64		0.31	0.73			0.56	0.23		0.35	
Control Delay	17.1	15.1		14.6	18.3			33.1	6.7		8.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings
6: Big Y Driveway/Town Driveway & Route 140

2027 Build Weekday Evening Peak Hour

05/02/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	17.1	15.1		14.6	18.3			33.1	6.7		8.3	
LOS	B	B		B	B			C	A		A	
Approach Delay		15.3			18.0			21.4			8.3	
Approach LOS		B			B			C			A	
Queue Length 50th (ft)	8	115		11	142			42	0		9	
Queue Length 95th (ft)	45	337		59	#518			#175	40		0	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	204	1223		293	1221			277	539		629	
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	0.25	0.51		0.24	0.58			0.56	0.23		0.35	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 57.6

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 16.5

Intersection LOS: B

Intersection Capacity Utilization 62.3%





ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.





















Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140

 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

HCM Signalized Intersection Capacity Analysis 6: Big Y Driveway/Town Driveway & Route 140

2027 Build Weekday Evening Peak Hour

05/02/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	514	5	66	647	11	136	1	109	15	2	75
Future Volume (vph)	43	514	5	66	647	11	136	1	109	15	2	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	12	11	11	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Frt	1.00	1.00		1.00	1.00			1.00	0.85		0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		0.99	
Satd. Flow (prot)	1745	1879		1745	1877			1750	1561		1845	
Flt Permitted	0.17	1.00		0.24	1.00			0.52	1.00		0.93	
Satd. Flow (perm)	314	1879		449	1877			958	1561		1739	
Peak-hour factor, PHF	0.84	0.84	0.84	0.93	0.93	0.93	0.88	0.88	0.88	0.42	0.42	0.42
Adj. Flow (vph)	51	612	6	71	696	12	155	1	124	36	5	179
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	90	0	130	0
Lane Group Flow (vph)	51	617	0	71	707	0	0	156	34	0	90	0
Heavy Vehicles (%)	0%	1%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Actuated Green, G (s)	28.5	28.5		28.5	28.5			16.7	16.7		16.7	
Effective Green, g (s)	29.5	29.5		29.5	29.5			16.7	16.7		16.7	
Actuated g/C Ratio	0.48	0.48		0.48	0.48			0.27	0.27		0.27	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	150	901		215	900			260	423		472	
v/s Ratio Prot		0.33			c0.38				0.02			
v/s Ratio Perm	0.16			0.16				c0.16			0.05	
v/c Ratio	0.34	0.69		0.33	0.79			0.60	0.08		0.19	
Uniform Delay, d1	9.9	12.4		9.9	13.4			19.5	16.7		17.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	1.4	2.2		0.9	4.6			3.7	0.1		0.2	
Delay (s)	11.3	14.6		10.8	17.9			23.2	16.8		17.4	
Level of Service	B	B		B	B			C	B		B	
Approach Delay (s)		14.3			17.3			20.3			17.4	
Approach LOS		B			B			C			B	

Intersection Summary





















HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lanes, Volumes, Timings

2027 Build Saturday Midday Peak Hour

6: Big Y Driveway/Town Driveway & Route 140

05/15/2020













												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	537	11	68	556	14	181	2	73	6	4	50
Future Volume (vph)	34	537	11	68	556	14	181	2	73	6	4	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	12	12	12	11	11	12	15	12
Storage Length (ft)	150		0	315		0	0		100	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		0.997			0.996				0.850		0.888	
Flt Protected	0.950			0.950				0.953			0.995	
Satd. Flow (prot)	1711	1876	0	1745	1853	0	0	1750	1561	0	1759	0
Flt Permitted	0.219			0.222				0.776			0.971	
Satd. Flow (perm)	394	1876	0	408	1853	0	0	1425	1561	0	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			2				88		69	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		411			578			277			198	
Travel Time (s)		9.3			13.1			6.3			4.5	
Peak Hour Factor	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	637	0	76	641	0	0	191	76	0	83	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2	2		6	
Permitted Phases	4			8			2		2	6		
Detector Phase	4	4		8	8		2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	21.0	21.0		21.0	21.0		15.0	15.0	15.0	15.0	15.0	
Total Split (s)	40.0	40.0		40.0	40.0		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	46.0%	46.0%		46.0%	46.0%		23.0%	23.0%	23.0%	23.0%	23.0%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0	16.0	16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	-1.0	-1.0		-1.0	-1.0			0.0	0.0		0.0	
Total Lost Time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None		None	None	None	None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Efect Green (s)	26.2	26.2		26.2	26.2			14.8	14.8		14.8	
Actuated g/C Ratio	0.50	0.50		0.50	0.50			0.28	0.28		0.28	
v/c Ratio	0.20	0.68		0.37	0.69			0.48	0.15		0.16	
Control Delay	13.1	16.1		17.3	16.6			25.5	6.2		9.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	

Lanes, Volumes, Timings

2027 Build Saturday Midday Peak Hour

6: Big Y Driveway/Town Driveway & Route 140

05/15/2020

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	13.1	16.1		17.3	16.6			25.5	6.2		9.3	
LOS	B	B		B	B			C	A		A	
Approach Delay		15.9			16.7			20.0			9.3	
Approach LOS		B			B			C			A	
Queue Length 50th (ft)	6	120		12	122			42	0		3	
Queue Length 95th (ft)	34	366		66	396			#180	29		27	
Internal Link Dist (ft)		331			498			197			118	
Turn Bay Length (ft)	150			315					100			
Base Capacity (vph)	288	1373		298	1356			475	579		619	
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	0.14	0.46		0.26	0.47			0.40	0.13		0.13	

Intersection Summary

Area Type: Other

Cycle Length: 87

Actuated Cycle Length: 52.5

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 60.2%






ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.





















Splits and Phases: 6: Big Y Driveway/Town Driveway & Route 140

 Ø2	 Ø4	 Ø9
20 s	40 s	27 s
 Ø6	 Ø8	
20 s	40 s	

HCM Signalized Intersection Capacity Analysis
6: Big Y Driveway/Town Driveway & Route 140

2027 Build Saturday Midday Peak Hour

05/15/2020

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	537	11	68	556	14	181	2	73	6	4	50
Future Volume (vph)	34	537	11	68	556	14	181	2	73	6	4	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	11	12	12	12	11	11	12	15	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0	4.0		4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Fr _t	1.00	1.00		1.00	1.00			1.00	0.85		0.89	
Flt Protected	0.95	1.00		0.95	1.00			0.95	1.00		1.00	
Satd. Flow (prot)	1711	1876		1745	1854			1750	1561		1759	
Flt Permitted	0.22	1.00		0.22	1.00			0.78	1.00		0.97	
Satd. Flow (perm)	394	1876		408	1854			1426	1561		1715	
Peak-hour factor, PHF	0.86	0.86	0.86	0.89	0.89	0.89	0.96	0.96	0.96	0.72	0.72	0.72
Adj. Flow (vph)	40	624	13	76	625	16	189	2	76	8	6	69
RTOR Reduction (vph)	0	1	0	0	1	0	0	0	56	0	51	0
Lane Group Flow (vph)	40	636	0	76	640	0	0	191	20	0	32	0
Heavy Vehicles (%)	2%	1%	0%	0%	2%	6%	0%	0%	0%	0%	0%	6%
Turn Type	Perm	NA		Perm	NA		Perm	NA	custom	Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2		2			
Actuated Green, G (s)	25.1	25.1		25.1	25.1			14.8	14.8		14.8	
Effective Green, g (s)	26.1	26.1		26.1	26.1			14.8	14.8		14.8	
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.26	0.26		0.26	
Clearance Time (s)	5.0	5.0		5.0	5.0			4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0	3.0		3.0	
Lane Grp Cap (vph)	183	874		190	864			376	412		453	
v/s Ratio Prot		0.34			c0.35				0.01			
v/s Ratio Perm	0.10			0.19				c0.13			0.02	
v/c Ratio	0.22	0.73		0.40	0.74			0.51	0.05		0.07	
Uniform Delay, d1	8.9	12.1		9.8	12.2			17.5	15.4		15.4	
Progression Factor	1.00	1.00		1.00	1.00			1.00	1.00		1.00	
Incremental Delay, d2	0.6	3.1		1.4	3.4			1.1	0.0		0.1	
Delay (s)	9.5	15.1		11.2	15.6			18.6	15.4		15.5	
Level of Service	A	B		B	B			B	B		B	
Approach Delay (s)		14.8			15.2			17.7			15.5	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM 2000 Control Delay		15.4			HCM 2000 Level of Service			B				
HCM 2000 Volume to Capacity ratio		0.62										
Actuated Cycle Length (s)		56.0			Sum of lost time (s)			13.0				
Intersection Capacity Utilization		60.2%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

Town of Franklin



**355 East Central Street
Franklin, MA 02038**

Zoning Board of Appeals

508-553-4858

FINDINGS AND DECISION

RE: Application of MARCUS PROPERTIES, LLC [and Owner: EPK PROPERTIES, LLC] for variance relief to allow: (1) Minimum rear yard setback of 26 feet where 30 feet is required (Schedule of Lot, Area, Frontage, Yard and Height Requirements, 185 Attachment 9); and (2) to allow for multi-family or apartment residential use in the Commercial II (CII) district which is otherwise prohibited (Use Regulations Schedule Part VI, 6.1, 185 Attachment 7), (the "Application").

DATE: January 9, 2020

Premises Affected: 340 East Central Street, Franklin, Massachusetts; Assessors Map 285, Lot 010-000-000 (the Subject Property)

Members participating: Bruce Hunchard (Chair), Philip Brunelli and Robert Acevedo
All members attended all sessions of the public hearing or complied with the Mullin Statute.

PROCEDURAL HISTORY

1. On December 9, 2019, MARCUS PROPERTIES, LLC [and Owner: EPK PROPERTIES, LLC] (collectively, the "Applicant"), 1 Newell Drive, Franklin, Massachusetts 02038, submitted the Application to the Zoning Board of Appeals (the "ZBA or "Board") in accordance with M.G.L., Chapter 40A, §10, and §185-45(D) of the Code of the Town of Franklin.
2. A notice of the public hearing on this application, a copy of which is on file in the Office of the Franklin Town Clerk, was:
 - a. Published in the Milford Daily News, a newspaper in general circulation in the Town of Franklin, on December 26, 2019 and January 2, 2020.
 - b. Posted in a conspicuous place in the Franklin Municipal Building on December 6, 2019 which was at least fourteen (14) days prior to the public hearing; and
 - c. Mailed postage paid, on December 8, 2019, which was at least fourteen (14) days prior to the public hearing, to the petitioners, abutters, owners of land directly opposite the property in question on any public or private street or way, abutters to abutters within three hundred (300) feet of the property and the planning boards of the abutting town. The notice was mailed to the names and addresses shown on the most recent tax list provided by the Franklin Assessor's office.
3. On January 9, 2020, the duly advertised public hearing was opened and the opportunity was given to all those interested to be heard in favor or opposition to the application.
4. On January 9, 2020, the ZBA closed the public hearing and granted this Application.
5. The following documents and exhibits were received during the public hearing and constitute the record for this decision.
 - a. ZBA Application Form, with Schedule I;
 - b. Certificate of Ownership;
 - c. Copy of Quitclaim Deed of Paul K. Keigan, et al., dated December 10, 2014 filed with the Norfolk District of the Land Court with Certificate No. 190576;
 - d. Plan entitled, "OVERALL CONCEPTUAL SITE PLAN" Proposed Central Square, 340 East Central Street, Franklin Massachusetts, prepared by Jones & Beach Engineers, Inc. 85 Portsmouth Avenue, Stratham, NH 03885.

FINDINGS

Based upon the evidence and testimony presented at the public hearing, the Board has made the following findings and determination:

1. The Applicant came before the Board requesting variance relief, in accordance with M.G.L., Chapter 40A, §10 and §185-45(D) of the Code of the Town of Franklin for variance relief as follows: (1) Minimum rear yard setback of 26 feet where 30 feet is required (Schedule of Lot, Area, Frontage, Yard and Height Requirements, 185 Attachment 9); and (2) to allow for multi-family or apartment residential use in the Commercial II (CII) district which is otherwise prohibited (Use Regulations Schedule Part VI, 6.1, 185 Attachment 7), which would otherwise not be permitted under the Code of the Town of Franklin.
2. Pursuant to §185-45D(2)(b) of the Franklin Town Code, variance relief may be authorized by this Board with respect to a particular parcel of land where the Board finds all of the following:
 - a. A literal enforcement of the provisions Chapter 185 of the Code of the Town of Franklin would involve a substantial hardship, financial or otherwise, to the applicant.
 - b. The hardship is owing to circumstances relating to the soil conditions, shape or topography of such land or structures and especially affecting such land or structures but not affecting generally the zoning district in which it is located.
 - c. Desirable relief may be granted without either:
 - i. Substantial detriment to the public good; or
 - ii. Nullifying or substantially derogating from the intent or purpose Chapter 185 of the Code of the Town of Franklin.
3. During the public hearing, the applicant provided testimony as to the physical characteristics of the property, with reference to the Plans submitted to the Board with the application. The Board determines that, based on the soil conditions, shape and topography of the Locus, a literal enforcement of the provisions of Chapter 185 of the Code of the Town of Franklin would involve a substantial hardship to the applicant. Although approximately 6.5 acres in size, more than half of the property is encumbered by significant wetland resource areas and soils evidencing wetland resource areas located in the southern portion of the property. These characteristics were found to be unique to the property and limiting factors in terms of the area on the property that could be used for building and development. The impact of the soil materials at the property has

compressed the area of the property available for development and is directly related to the variance request. Due to the soil conditions and shape of the property, as dictated by the presence of a wetland resource area in the southern portion coupled with the presence of an access and utility easement for the benefit of the Town of Franklin along the western boundary of the property, literal enforcement of the provisions of the Zoning Bylaw would involve a substantial hardship in the form of material development constraints and excess development costs. Further exacerbating such development constraints is that the property is wholly located within the Water Resource Overlay District. The developable area of the property and the additional engineering costs associated with the storm water treatment have created unique circumstances not otherwise found in the Commercial II zone. The mixed-use development containing both residential and commercial uses in symbiotic proximity are required in the proposed development in order to allow the applicant to build an economically viable development of the property and overcome the hardships presented on the property in the event zoning limitations were literally enforced.

4. The Board further determines that the requested variances may be granted without substantial detriment to the public good and without nullifying or substantially derogating from the purpose or intent of the Code. The property is bordered to the north by a 288 unit multi-family apartment development (Glen Meadows), within close proximity to two (2) residential/therapy centers (Franklin Health & Rehabilitation Center and Magnolia Heights). The property is also surrounded by single family homes of older construction, many of which are located on legal non-conforming lots along Route 140 and the immediately surrounding network of residential neighborhoods. The southern boundary of the property also serves as the zoning boundary line between the Commercial II and Rural Residential I zoning districts. The proposed use relief would be in character with the surrounding residential and mixed use properties, characterized by legal non-conforming single and multi-family residential homes and mixed use commercial/residential developments. The proposed dimensional relief being sought would be along the rear boundary of the property bordering property owned by the Town of Franklin for the location of one of the municipal water wells.

5. On motion made by Robert Acevedo and seconded by Phillip Brunelli, the Board voted on January 9, 2020 in accordance with M.G.L., Chapter 40A, §10 and §185-45(D) of the Code of the Town of Franklin, subject to the following condition, to grant a variance for a multifamily use which would otherwise not be permitted under the Code of the Town of Franklin. Also granting a second variance for the same multi-family building that is 26' from the rear setback where 30' is required, granting relief of 4'.

6. The granting of the variance relief as set forth herein is not valid until the recording of this Detailed Record and Decision with the Norfolk County Registry of Deeds. It is the applicant's responsibility to record this decision.

7. Any person aggrieved by a decision of the Board may file an appeal pursuant to Massachusetts General Laws, Chapter 40A, Section 17. Such appeal must be filed within

twenty (20) days after the filing of the notice of the Board's decision with the Franklin Town Clerk.

On this day, January 9, 2020, the following members of the Board voted as set forth above.

Bruce Hunchard votes to Grant _____

Robert Acevedo votes to Grant _____

Philip Brunelli votes to Grant _____

JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

May 6, 2020

Franklin Planning Board
Attn. Amy Love, Planner
355 East Central Street
Franklin, MA 02038

**RE: Site Plan & Special Permit Application
340 East Central Street, Franklin, MA
Tax Map 285, Lot 9
JBE Project No. 13153.2**

Dear Ms. Love,

On behalf of our client, 340 East Central Street, LLC., Jones & Beach Engineers, Inc., respectfully submits a Site Plan & Special Permit Application for the property referenced above. The intent of this project is to depict the conceptual redevelopment of the City of Franklin, MA Tax Map 285, Lot 9.

Special Permit Criteria – VSC Drive-Thru: See Attached Letter

Special Permit Criteria – 4-Story Apartment: See Attached Letter

The following is provided in support of this application:

1. One (1) Original and One (1) Copy Form P Site Plan Application and Checklist.
2. One (1) Original and One (1) Copy of Completed Special Permit Applications.
3. One (1) Original and One (1) Copy of the Certificate of Ownership Notarized.
4. Special Permit Memo from Attorney Richard Cornetta.
5. Waiver Request Letter.
6. Letter of Authorization.
7. Current Deed.
8. Abutters List with Three Sets of Mailing Labels.
9. Three (3) Drainage Analysis.
10. Four (4) Full-Size (24x36) Plan Sets (folded).
11. Twelve 11x17 Plan Sets (folded).
12. Fee Check in the Amount of \$1,140.00 to the Town of Franklin for Site Plan Application and a Fee Check in the Amount of \$50.00 for the Fire Department Review.
13. Two (2) Fee Checks in the Amount of \$750.00 to the Town of Franklin for the Special Permit Applications.

Thank you very much for your time. If you have any questions, or any additional information, please contact our office.

Very truly yours,

JONES & BEACH ENGINEERS, INC.



Wayne Morrill
President

cc: Jeff Gove, 340 East Central Street, LLC (application and plans via email)

Matthew Crowley, P.E, BETA Group, Inc (application and plans via U.S. Mail)

JONES & BEACH
ENGINEERS INC.

①

FORM P


APPLICATION FOR APPROVAL OF A SITE PLAN

To the Franklin Planning Board:

The undersigned, herewith, submits the accompanying Site Plan entitled
“Proposed Development Central Square” for approval under the provisions of the Zoning By-
Laws of the Town of Franklin covering Site Plans.

1. Name of Applicant: 340 East Central Street, LLC
Address of Applicant: 7 Swain Drive, Hampton Falls, NH 03844
Phone No.: 508-341-2263 Email: jeffreygove@yahoo.com
2. Name of Owner (if not the Applicant): EPK Properties, LLC
Address of Owner: 579 Avellino Isles U25202, Naples, FL 34119
Phone No.: _____ Email: _____
3. Name of Engineer: Wayne Morrill, Jones & Beach Engineers, Inc.
Address of Engineer: PO Box 219, Stratham, NH 03885
Phone No.: 603-772-4746 Email: wmorrell@jonesandbeach.com
4. Deed of Property recorded with Norfolk Registry of Deeds in
Book _____, Page _____, (or Certificate of Title No. _____)
190576
5. Location and Description of Property:
340 East Central Street

Bld "A" - Residential = 19,520 SF Bld "B" - Residential = 22,560 SF
Square Footage of Building(s) Bld "C" - Retail = 9,033 SF Bld "D" - Retail = 8,436 SF
Assessor's Map 285 Lot 009
6. Purpose of Site Plan: The intent of this project is to depict
the conceptual redevelopment of the City of Franklin, MA Tax
Map 285, Lot 9
7. List of Waivers Requested (if any): Attach Form R for each waiver


Signature of Applicant

Joseph Halligan
Print Name of Applicant

Signature of Owner

Print Name of Owner



9

CERTIFICATE OF OWNERSHIP

I the undersigned Applicant, do hereby certify to the Town of Franklin, through its Planning Board, that all parties of interest to the below-listed plan are identified in Section B: below,

SECTION A:

Title of Plan: Site Plan

Date of Plan: _____ Assessor's Information: 285/009 - 340 East Central Street

Prepared by: Jones & Beach Engineers, Inc.

Type of Plan: 81-P; Prelim.; Def.; Site Plan

SECTION B:

Name of Record Owner(s): EPK Properties, LLC

Address of Record Owner(s): 579 Avellino Isles U25202, Naples, FL 34119

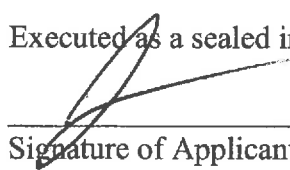
*If in the name of a Trust, Corporation or Partnership, list the names and addresses of all Trustee(s), Corporate Officer(s) or Partner(s):

*If in the name of a Trust or Corporation, list the Beneficiary(ies) of the Trust or the Shareholder(s) of the Corporation: _____

*If in the name of a Trust or Corporation, list the date, county, book and page of recording of the Trust Instrument, or the date and State of incorporation: _____

Executed as a sealed instrument this

day of 20


Signature of Applicant

Joseph Halligan
Print name of Applicant

Signature of Owner

Print name of Owner

COMMONWEALTH OF MASSACHUSETTS

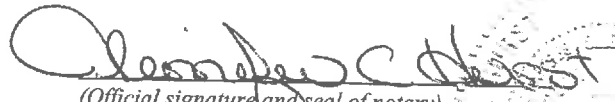


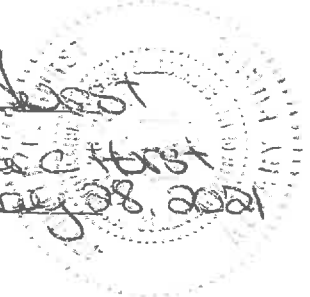
3

Norfolk ss.

2020

On this 6 day of May 2020 before me, the undersigned notary public, personally appeared Joseph F. Halligan (name of Applicant), proved to me through satisfactory evidence of identification, which were valid ma lic to be the person whose name is signed on the preceding document in my presence.


(Official signature and seal of notary)
Notary Public: Jennifer C. Horst
My Commission Expires: May 08, 2021





(A)

FORM P

APPLICATION FOR APPROVAL OF A SITE PLAN

To the Franklin Planning Board:

The undersigned, herewith, submits the accompanying Site Plan entitled "Proposed Development Central Square" for approval under the provisions of the Zoning By-Laws of the Town of Franklin covering Site Plans.

1. Name of Applicant: 340 East Central Street, LLC
Address of Applicant: 7 Swain Drive, Hampton Falls, NH 03844
Phone No.: 508-341-2263 Email: jeffreygove@yahoo.com
2. Name of Owner (if not the Applicant): EPK Properties, LLC
Address of Owner: 579 Avellino Isles U25202, Naples, FL 34119
Phone No.: 508-259-5773 Email: pk@epk.com
3. Name of Engineer: Wayne Morrill, Jones & Beach Engineers, Inc.
Address of Engineer: PO Box 219, Stratham, NH 03885
Phone No.: 603-772-4746 Email: wmorrill@jonesandbeach.com
4. Deed of Property recorded with Norfolk Registry of Deeds in Book 190576, Page 190576, (or Certificate of Title No.)
5. Location and Description of Property:
340 East Central Street
Bld "A" - Residential = 19,520 SF Bld "B" - Residential = 22,560 SF
Square Footage of Building(s) Bld "C" - Retail = 9,033 SF Bld "D" - Retail = 8,436 SF
Assessor's Map 285 Lot 009
6. Purpose of Site Plan: The intent of this project is to depict the conceptual redevelopment of the City of Franklin, MA Tax Map 285, Lot 9
7. List of Waivers Requested (if any): Attach Form R for each waiver

Signature of Applicant

Print Name of Applicant

X Paul K. Keigan
Signature of Owner

PAUL K. KEIGAN
Print Name of Owner

pk.

(B)

CERTIFICATE OF OWNERSHIP

I the undersigned Applicant, do hereby certify to the Town of Franklin, through its Planning Board, that all parties of interest to the below-listed plan are identified in Section B: below,

SECTION A:

Title of Plan: Site Plan

Date of Plan: _____ Assessor's Information: 285/009 - 340 East Central Street

Prepared by: Jones & Beach Engineers, Inc.

Type of Plan: 81-P; Prelim.; Def.; Site Plan

SECTION B:

Name of Record Owner(s): EPK Properties, LLC

Address of Record Owner(s): 579 Avellino Isles U25202, Naples, FL 34119

*If in the name of a Trust, Corporation or Partnership, list the names and addresses of all Trustee(s), Corporate Officer(s) or Partner(s):

*If in the name of a Trust or Corporation, list the Beneficiary(ies) of the Trust or the Shareholder(s) of the Corporation:

*If in the name of a Trust or Corporation, list the date, county, book and page of recording of the Trust Instrument, or the date and State of incorporation:

Executed as a sealed instrument this _____ day of _____ 20____

Signature of Applicant

X Paul K. Keigan
Signature of Owner

Print name of Applicant

Paul K. Keigan PAUL K. KEIGAN
Print name of Owner

P.V.

(C)

_____. SS.

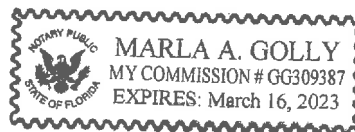
2020

On this 1 day of May 2020, before me, the undersigned notary public, personally appeared PAUL K. Keigan (name of Applicant), proved to me through satisfactory evidence of identification, which were Driver License to be the person whose name is signed on the preceding document in my presence.

Marla A. Golly
(Official signature and seal of notary)

Notary Public:

My Commission Expires: 3/16/2023



P.V.

APPLICATION FOR APPROVAL OF A SITE PLAN AND SPECIAL PERMIT(S)

To the Franklin Planning Board:

The undersigned, herewith, submits the accompanying Site Plan entitled
" Proposed Development Central Square " and Special
Permit(s) for VBC Drive-Thru and requests approval for
under the provisions of the Zoning By-Laws of the Town of Franklin covering Site Plans and
Special Permits.

1. Name of Applicant: 340 East Central Street, LLC
Address of Applicant: 7 Swain Drive, Hampton Falls, NH 03844
Phone No.: 508-341-2263 Email: jeffreygove@yahoo.com

2. Name of Owner (if not the Applicant): EPK Properties, LLC
Address of Owner: 579 Avellino Isles U25202, Naples, FL 34119
Phone No.: _____ Email: _____

3. Name of Engineer: Wayne Morrill, Jones & Beach Engineers, Inc.
Address of Engineer: PO Box 219, Stratham, NH 03885
Phone No.: 603-772-4746 Email: wmorrell@jonesandbeach.com

1. Deed of Property recorded with Norfolk Registry of Deeds in
Book _____, Page 190576, (or Certificate of Title No. _____)

2. Location and Description of Property:
340 East Central Street

Zoning District: Commercial II

Assessor's Map: 285 Lot: 009

Square Footage of Building(s): 9,033

Impervious Coverage of Existing Upland: _____

3. Purpose of Site Plan:
The intent of this project is to depict the conceptual redevelopment of
the City of Franklin, MA Tax Map 285, Lot 9.

4. Special Permit(s) Requested: _____

5. Special Permit Criteria: please provide on a separate document, written findings for special permit criteria a-g for each special permit being requested. Criteria are listed below. Applications will not be accepted until findings are submitted.

Chapter 185, Section 45.E

(3). Findings. Special permits shall be granted by the special permit granting authority only upon its written determination that 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. This determination shall be in addition to the following specific findings:

- (a) Proposed project addresses or is consistent with neighborhood or Town need.
- (b) Vehicular traffic flow, access and parking and pedestrian safety are properly addressed.
- (c) Public roadways, drainage, utilities and other infrastructure are adequate or will be upgraded to accommodate development.
- (d) Neighborhood character and social structure will not be negatively impacted.
- (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.
- (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.
- (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.

6. Other issues requiring Planning Board Consideration: _____

7. A certified list (by Office of the Assessors) of abutters within 300 feet of the site is also submitted with the application.

8. Certificate of Ownership.

Signature of Applicant

Print Name of Applicant

Signature of Owner

Print Name of Owner

[Handwritten Signature]
Joseph Halligan
X *Sam K. Keigh* *X* *Patricia K. Keigh*
N

19

APPLICATION FOR APPROVAL OF A SITE PLAN AND SPECIAL PERMIT(S)

To the Franklin Planning Board:

The undersigned, herewith, submits the accompanying Site Plan entitled "Proposed Development Central Square" and Special Permit(s) for a Four (4) Story Apartment and requests approval for under the provisions of the Zoning By-Laws of the Town of Franklin covering Site Plans and Special Permits.

1. Name of Applicant: 340 East Central Street, LLC
Address of Applicant: 7 Swain Drive, Hampton Falls, NH 03844
Phone No.: 508-341-2263 Email: jeffreygove@yahoo.com

2. Name of Owner (if not the Applicant): EPK Properties, LLC
Address of Owner: 579 Avellino Isles U25202, Naples, FL 34119
Phone No.: _____ Email: _____

3. Name of Engineer: Wayne Morrill, Jones & Beach Engineers, Inc.
Address of Engineer: PO Box 219, Stratham, NH 03885
Phone No.: 603-772-4746 Email: wmorill@jonesandbeach.com

1. Deed of Property recorded with Norfolk Registry of Deeds in Book _____, Page 190576, (or Certificate of Title No. _____)

2. Location and Description of Property:
340 East Central Street

Zoning District: Commercial II

Assessor's Map: 285 Lot: 009

Square Footage of Building(s): 19,250 & 22,560

Impervious Coverage of Existing Upland: _____

3. Purpose of Site Plan:

The intent of this project is to depict the conceptual redevelopment of the City of Franklin, MA Tax Map 285, Lot 9.

4. Special Permit(s) Requested:

5. Special Permit Criteria: please provide on a separate document, written findings for special permit criteria a-g for each special permit being requested. Criteria are listed below. Applications will not be accepted until findings are submitted.

Chapter 185, Section 45.E

(3). Findings. Special permits shall be granted by the special permit granting authority only upon its written determination that 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. This determination shall be in addition to the following specific findings:

- (a) Proposed project addresses or is consistent with neighborhood or Town need.
- (b) Vehicular traffic flow, access and parking and pedestrian safety are properly addressed.
- (c) Public roadways, drainage, utilities and other infrastructure are adequate or will be upgraded to accommodate development.
- (d) Neighborhood character and social structure will not be negatively impacted.
- (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.
- (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.
- (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.

6. Other issues requiring Planning Board Consideration: _____

7. A certified list (by Office of the Assessors) of abutters within 300 feet of the site is also submitted with the application.

8. Certificate of Ownership.

Signature of Applicant

Joseph Halligan
Print Name of Applicant

X Signature of Owner

X Paul K. Keigan
Print Name of Owner

COMMONWEALTH OF MASSACHUSETTS
TOWN OF FRANKLIN
PLANNING BOARD

NORFOLK, ss.

IN RE: Special Permit to Allow Building Height of up to Fifty (50.00') Feet within the Commercial II District
LOCUS: 340 East Central Street, Franklin, Massachusetts 02038

**MEMORANDUM IN SUPPORT OF APPLICATION FOR SPECIAL PERMITS TO
ALLOW BUILDING HEIGHT OF UP TO FIFTY (50.00') FEET AND TO ALLOW
ESTABLISHMENT OF A VEHICLE SERVICE ESTABLISHMENT
WITHIN THE COMMERCIAL II DISTRICT**

LOCUS HISTORY

1. **Relevant District.** The subject real property is located wholly within the Commercial II (CII) zoning district and within the Franklin DEP Approved Zone II.
2. **Location.** The Locus consists of a parcel of land located along the southern boundary of East Central Street in Franklin, Massachusetts, with a physical address of 340 East Central Street (Franklin Assessor's Map 285, Parcel 009) with an approximate area of $\pm 283,394$ square feet (referred to herein as the "Locus").
3. **Current Use.** The Locus is a developed parcel which consists of 6.5 acres containing an unoccupied one and one half story concrete block structure, approximately 16,475 square feet in size with a bituminous paved parking area. This building was constructed around 1960, and served as the former location of a motor vehicle dealership which has since ceased operation.
4. **Proposed Use/Construction.** The petitioner proposes the redevelopment of the Locus in the establishment of a mixed use development consisting of $\pm 42,080$ square feet of residential, $\pm 15,219$ of retail, and a $\pm 2,250$ square foot coffee shop with associated vehicle service establishment. Also included with the redevelopment would be the construction of new parking areas, motor vehicle travel aisles, two (2) new driveways that will intersect the south side of East Central Street/Route 140, new utility services, natural gas, telephone, electrical and data services. Also planned for the development would be the introduction of a contemporary sub-surface drainage system serving the Locus designed to attenuate peak flows that would

exceed the 100-year storm event which would include appropriate treatment of post construction storm water runoff and storm water recharge, along with associated contemporary landscaping and lighting all as shown on the site plan set entitled, “PROPOSED DEVELOPMENT CENTRAL SQUARE TAX MAP 285 AND LOT NUMBER 009 340 EAST CENTRAL STREET, FRANKLIN, MA”, prepared by Jones & Beach Engineers, Inc., (collectively referred to herein as the “Plan”) copies of which have been filed along herewith.

5. **Zoning Tabulation CBD District: Commercial II - Required/Proposed.**

OVERALL LOT INFORMATION	Required	Proposed
Required Lot Area (sq.ft.)	40,000 s.f.	+283,394 s.f.
Required Lot Frontage (feet)	175.00’	+448.00’
Max. Lot Coverage by Structures/Paving	80%	73.50%*
Max Building Height	4 stories/50’**	4 stories/<50’
Lot Width	157.50’	448.00’
Lot Depth	200.00’	631.00’
Front Setback	40.00’	40.00’
Side Setback	30.00’	31.07’
Rear Setback	30.00’	26.00’***
Parking (spaces)	301	268****

*Impervious coverage within the Water Resource District of up to 80% is allowed provided in a non-residential zone and an application for site plan approval have been filed pursuant to §185-36 and §185-40.

**Within the CII zone building height of four stories and up to 50 feet is allowed by special permit of the Franklin P.B. pursuant to §185-Attachment 9.

*** Variance Decision of Franklin Zoning Board of Appeals dated January 9, 2020 to allow the minimum rear yard setback of 26 feet where 30 feet is required (Schedule of Lot, Area, Frontage, Yard and Height Requirements, 185 Attachment 9).

****The number of required parking spaces may be reduced below that determined by the Bylaw by the Planning Board in the course of site plan review pursuant to §185-21A(4).

PRESENT PETITIONER/APPLICATION

6. **Petitioner/Owner.** The present petitioner 340 East Central Street, LLC, a Massachusetts limited liability company with a usual place of business at 7 Swain Drive, Hampton Falls, New Hampshire 03844. The present owner of the Locus is EPK Properties, LLC, a Massachusetts limited liability company with a usual place of business at 579 Avellino Isles U25202, Naples, Florida 34119.

7. **Requested Action.** The present application before the Board requests approval of the following:

a. SPECIAL PERMIT under Attachment 9, of §185 of the Code of the Town of Franklin to allow building height up to four (4) stories and fifty (50') feet within the Commercial II (CII) zoning district as shown on the Plan, as may be amended (hereinafter referred to as the "HEIGHT SP").

b. SPECIAL PERMIT under Attachment 3, Use Regulations Schedule, Part II, 2.16 of the §185 of Code of the Town of Franklin to allow the establishment of a Vehicle Service Establishment within the Commercial II (CII) zoning district as shown on the Plan, as may be amended (hereinafter referred to as the "VSE SP")

8. **Local Permits and Approvals.** In addition to the aforementioned SPECIAL PERMITS, the petitioner has also received, or is contemporaneously seeking the following permits and approvals in connection with the present development proposal of the Locus:

- (a) ACQUIRED on January 9, 2020 – Variance from the Town of Franklin Zoning Board of Appeals to allow the minimum rear yard setback of 26 feet where 30 feet is required (Schedule of Lot, Area, Frontage, Yard and Height Requirements, 185 Attachment 9).
- (b) ACQUIRED on January 9, 2020 – Variance from the Town of Franklin Zoning Board of Appeals to allow for multi-family or apartment residential use in the Commercial II (CII) district which is otherwise prohibited (Use Regulations Schedule Part VI, 6.1, 185 Attachment 7).
- (c) APPLIED FOR – Site Plan approval in conjunction with Special Permit applications set forth heretofore.
- (d) TO BE APPLIED FOR - Notice of Intent filed seeking an Order of Conditions from the Franklin Conservation Commission.

SPECIAL PERMIT APPROVAL

9. **Special Permit Approval Requirements under Section 185-45(E)(3).** Section 185 45(E)(3) of the Zoning By-Laws, states in part:

Findings. Special permits shall be granted by the special permit granting authority only upon its written determination that 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. The determination shall be in addition to the following: [Amended 3-25-1987 by Bylaw Amendment 87-91; 3-21-2012 by Bylaw Amendment 12-669]

- (a) *Proposed project addresses or is consistent with neighborhood or Town need.*
- (b) *Vehicle traffic flow, access and parking and pedestrian safety are properly addressed.*
- (c) *Public roadways, drainage, utilities and other infrastructure are adequate or will be upgraded to accommodate development.*
- (d) *Neighborhood character and social structure will not be negatively impacted.*
- (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.*
- (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.*
- (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.*

CONDITIONS FOR APPROVAL UNDER SECTION 185-45(E)(3)

10. Satisfaction of Condition for Approval 185-45(E)(3)(a).

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

The proposed redevelopment is located in a critical commercial area within the town and would be consistent with the commercial land that is predominant in this area. The proposed redevelopment will not be detrimental or otherwise offensive to the adjoining zoning districts and neighboring properties due to the effects of lighting, odors, smoke, noise, sewage, refuse materials, visual or other nuisances. The location of the commercial and retail uses at this Locus would provide such products and services to residents in the eastern part of the community and those individuals patronizing the existing commercial uses in this area thus alleviating the possible vehicular traffic into the town's commercial centers located in the western part of the community. The introduction of additional commercial and retail uses into the community will provide the residents with consumer options and convenience while promoting competition in the marketplace which generally results in benefits to the consumer in the form of decreased prices and increased services.

HEIGHT SP: The proposed redevelopment would not result in abutting properties being deprived of light or fresh air circulation or subject to excessive shading due to the additional height of the proposed structures. Further, that abutting properties will not be exposed to flooding or subjected to excessive noise, odor, light, vibrations or airborne particulates. Additionally, the height of the building proposed by the petitioner would be consistent with the 2018 decision of the Franklin Town Council to amend the Zoning Bylaw of the property to allow for increase in building height up to four (4) stories and fifty (50') feet by special permit of the Planning Board for properties being developed within the Commercial II Zoning District (See

11. Satisfaction of Condition for Approval 185-45(E)(3)(b).

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

The Locus is located along the commercial/business corridor of East Central Street where there are numerous curb cuts that provide access for the predominantly commercial land use in this area of the town. The proposed redevelopment includes the construction of new parking areas, motor vehicle travel aisles, including a new pedestrian sidewalk and crosswalk connecting the storefront with the sidewalk from East Central Street, along with a design to encourage alternative means of transportation. Proposed motor vehicle access to the proposed redevelopment is to be provided by way of two (2) reconstructed driveways that will intersect the south side of East Central Street/Route 140 consisting of a full access driveway and a right-in only driveway that will accommodate traffic to the residential properties. There is also a planned interconnecting access drive to the neighboring shopping center (Big Y Supermarket) located to the east. According to the Transportation Impact Assessment completed by Vanasse & Associates, Inc., May 2020 (hereinafter referred to as the “May 2020 TIA”), the sight distances at each driveway exceed the minimum and desirable requirements for safe operation of the proposed driveways and the intersections adjacent to the Locus. Two-way traffic flow within the Locus shall be accommodated by paved travel corridors of varied widths. The May 2020 TIA concludes that the proposed project, in conjunction with the ancillary improvements as detailed in the May 2020 TIA, will provide safe and efficient access to the Locus and the proposed redevelopment can be accommodated within the confines of the existing and improved transportation system.

VSE SP: There planned access drive for the Vehicle Service Establishment (hereinafter referred to as “VSE”) is twenty (20’) feet in width which includes a separate ten (10’) foot bypass lane, along the north, east and west sides of building which promotes one way travel servicing the VSE. According to the May 2020 TIA, the allowable queuing area for up to fourteen (14) vehicles as shown on the Plan exceeds the maximum expected queuing demand for the VSE during peak hours of inclement weather conditions, and will not impede access to the VSE lane, or other parking and travel aisles within the site.

12. Satisfaction of Condition for Approval 185-45(E)(3)(c).

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

The layout of the driveways within the Locus have been designed to accommodate all emergency and service vehicles. The full access driveway entering the Locus would be a minimum of forty-four (44.00') feet in width and the internal travel aisle widths would range from of twenty (20.00') feet to forty-four (44.00') feet. The layout of the pavement and the access driveways around the proposed project would allow vehicle access to all sides of the buildings (excepting the southern facade of retail Building D). The Locus has access to the public water service and sewer service, natural gas and telephone. New water and sewer services being proposed shall be constructed according to current standards thereby reducing the chance of infiltration and contamination. The proposed drainage serving the proposed redevelopment has been designed to attenuate peak flows for up to the 100-year storm event and infiltrate, at a minimum, the 1-inch water quality volume after appropriate water quality pre-treatment, and shall handle the post construction storm water runoff and storm water recharge. See Drainage Analysis, Sediment and Erosion Control Plan prepared by Jones & Beach Engineers, Inc., filed along herewith.

13. Satisfaction of Condition for Approval 185-45(E)(3)(d).

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

The redevelopment of the Locus as proposed by the applicants will not have any detrimental effect to the neighborhood character or social structure. The proposed redevelopment would be consistent with the commercial land that is predominant in this area. The proposed redevelopment will not be detrimental or otherwise offensive to the adjoining zoning districts and neighboring properties due to the effects of lighting, odors, smoke, noise, sewage, refuse materials, visual or other nuisances. The proposed redevelopment would not result in abutting properties being deprived of light or fresh air circulation. The planned improvements to the Locus, including removal of existing structures along with the construction of new structures at the Locus. The proposed redevelopment of the Locus for apartment style residential development as proposed would foster a symbiotic relationship between the newly established residences and the available goods, services and amenities offered within the immediate adjacent commercial uses.

14. Satisfaction of Condition for Approval 185-45(E)(3)(e).

(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.

The redevelopment of the Locus as proposed by the applicant will not have an adverse effect on the quality of the natural environment. The Applicant has proposed the redevelopment of the Locus located in a critical commercial area within the Town of Franklin. The buildings will be served by municipal sewer to minimize the degradation of the groundwater by nitrates and phosphates. According to Drainage Analysis, Sediment and Erosion Control Plan prepared by Jones & Beach Engineers, Inc., the project will result in an increase in the amount of impervious coverage on Locus. The present paved areas at the location and surrounding property have become somewhat dilapidated. Aside from a new connection to the municipal sewer system to minimize the degradation of the groundwater by nitrates and phosphates, the redevelopment project would improve water quality by (a) including the construction of a closed drainage system, which will include deep sump hooded catch basins, water quality inlets and a new stormwater infiltration basin; and (b) improving the water quality that discharges to the existing Wetland Resource Areas or buffers by collecting and directing the runoff from the parking areas, and roofs through a stormwater treatment train meeting the requirements of full stormwater treatment as described by the State of Massachusetts DEP Stormwater Standards. The applicant shall incorporate Best Management Practices (BMP's) into this project to meet the Department of Environmental Protection Stormwater Management runoff quality requirements. The proposed landscaping improvements both within and surrounding the parking field shall be a significant improvement to the existing condition of the Locus, and further enhance the natural environment. The stormwater management system has been designed to meet or exceed the requirements established in the Massachusetts Stormwater Handbook and by the Town of Franklin.

15. Satisfaction of Condition for Approval 185-45(E)(3)(f).

(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.

The Applicants submit that the redevelopment will not result in abutting properties being deprived of light or fresh air circulation. Further, that abutting properties will not be exposed to flooding or subjected to excessive noise, odor, light, vibrations or airborne particulates. The applicants have incorporated Best Management Practices (BMP's) into this project to meet the Department of Environmental Protection Stormwater Management runoff quality requirements. The proposed drainage serving the proposed redevelopment has been designed to attenuate peak flows for up to the 100-year storm event and infiltrate, at a

minimum, the 1-inch water quality volume after appropriate water quality pre-treatment, and shall handle the post construction storm water runoff and storm water recharge. See Drainage Analysis, Sediment and Erosion Control Plan prepared by Jones & Beach Engineers, Inc. All exterior lighting for the proposed Locus has been designed so as to comply with all regulations restricting the projection of light off of the premises. As the planned use of the Locus is for general commercial retail and residential use, there are no anticipated odors or airborne particulates that would be ancillary to such expected uses. As all mechanical equipment servicing the building are to be located on the roof of the building, with the use of proper shielding and insulating materials so as to minimize, or in some cases, eliminate any visual appearance or associated sound from the use of such equipment.

VSE SP: The proposed location, enclosure and use of 'Automatic Volume Control' (used to reduce outbound sound pressure based upon ambient noise level) shall contribute to the reasonable reduction of the sound levels generated by the VSE so as to minimize any impacts to the adjacent properties.

16. Satisfaction of Condition for Approval 185-45(E)(3)(g).

(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.

The town of Franklin water system pumps 3-4 million gallons of water each day. The estimated peak usage for a 59,549 SF mixed use retail and commercial redevelopment which is planned would be 93,915 GPD. According to information and belief, the water demand for this proposed Locus would be less than .0235% of the pumping capacity to the Town's water system, and thus this proposed water flow would not adversely affect the Town's water supply.

WHEREFORE, the Petitioner respectfully requests that the Board grant (1) SPECIAL PERMIT to allow building height up to four (4) stories and fifty (50') feet and (2) SPECIAL PERMIT to allow establishment of a Vehicle Service Establishment within the Commercial II (CII) zoning district as shown on the Plan, as may be amended.

Dated: May 11, 2020

Respectfully submitted,
340 East Central Street, LLC
By its Attorneys,

Richard R. Cornetta, Jr.

Richard R. Cornetta, Jr., Esquire
Cornetta, Ficco & Simmler, PC
Four West Street
Franklin, MA 02038
Tel: (508)528-5300
Fax: (508)528-5555
Email: richard@cornettalaw.com

JONES & BEACH ENGINEERS INC.

85 Portsmouth Avenue, PO Box 219, Stratham, NH 03885
603.772.4746 - JonesandBeach.com

May 6, 2020

Franklin Planning Board
Attn. Amy Love, Planner
355 East Central Street
Franklin, MA 02038

RE: Waiver Request Letter
340 East Central Street, Franklin, MA
Tax Map 285, Lot 9
JBE Project No. 13153.2

Dear Ms. Love,

On behalf of project applicant, 340 East Central Street LLC, Jones & Beach Engineers, Inc. respectfully requests a waiver from the following requirements from the Franklin By Laws:

Chapter 300 - Subdivision of Land, Section 11 - Stormwater Management (B) Construction
(2) Piping (a) "... 42" minimum cover over drain pipe.

Reason the waiver is requested:

RESPONSE: We request a waiver to allow minimum cover of 1.5' over drainage pipe, rather than the required minimum of 42". Given the flat nature of the site it is difficult to maintain the required cover and still discharge the proposed drainage system. Per the American Concrete Pipe Association recommendations, a minimum of 12" of cover is acceptable for Class 5 RCP. The site observes a minimum cover of 1.5'.

Alternatives to granting the waiver:

RESPONSE: In order to provide the required cover additional fill would be required over the majority of the site.

Impact of the waiver denial on the project:

RESPONSE: A regarding and design of the drainage would need to take place. This would require an increase in elevation of the site, and would cause a large increase of fill needed for the site.

Reason this waiver is in the best interests of the town and consistence with the intent and purpose of the subdivision control law:

RESPONSE: Per ACPA standards, sufficient cover is being provided so to not adversely affect the lifespan or safety of the drainage system.

Chapter 185, Section 21 (B)... Parking Schedule

Reason the waiver is requested:

RESPONSE: We request a waiver to allow for 268 parking spaces when a minimum of 301 spaces are required. The site has multiple uses which have varying peak traffic times which will allow for shared parking. In addition, it is our opinion a residential requirement of 1.5 spaces per unit will be adequate for an apartment complex of this size. This requirement is used within two other zones in town (Downtown Commercial Zoning District and Commercial I Zoning District), and it is reasonable to assume that this parking density would also be sufficient for this site. This modification to the parking requirement would lower the total spaces required to 249 spaces.

Alternatives to granting the waiver:

RESPONSE: Reduce the parking need on site by either reducing retail space or the number of residential units.

Impact of the waiver denial on the project:

RESPONSE: The lose of retail space or residential units on site would jeopardize the financial viability of the project.

Reason this waiver is in the best interests of the town and consistence with the intent and purpose of the subdivision control law:

RESPONSE: It is our opinion the proposed development will be a benefit to the community, and the parking on site is sufficient to adequately service the site.

Thank you very much for your time. If you have any questions, or any additional information, please contact our office.

Very truly yours,

JONES & BEACH ENGINEERS, INC.



Erik Poulin
Project Engineer

cc: Jeff Gove, 340 East Central Street, LLC (application and plans via email)
Matthew Crowley, P.E, BETA Group, Inc (application and plans via U.S. Mail)

JONES & BEACH |
ENGINEERS INC. |

Form R:
Franklin Planning Board
Subdivision Waiver Request

Prepared by: Erik Poulin Project Engineer
Jones and Beach Engineers

Signed: *Erik Poulin*

Subdivision: NA
Project Title: Proposed Central Square Development

Date: 05/06/20

Nature of Waiver:

See attached letter.

Subdivision Rules and Regulation Reference:

Chapter 185, Section 21 (B) - Parking Schedule

Reason the waiver is requested:

See attached letter.

Alternatives to granting the waiver:

See attached letter.

Impact of waiver denial on the project:

See attached letter.

Reasons this waiver is in the best interests of the Town and consistent with the intent and purpose of the Subdivision Control Law:

See attached letter.

**Form R:
Franklin Planning Board
Subdivision Waiver Request**

Prepared by: Erik Poulin Project Engineer
Jones and Beach Engineers

Signed: *Erik Poulin*

Subdivision: NA

Project Title: Proposed Central Square Development

Date: 05/06/20

Nature of Waiver:

See attached letter.

Subdivision Rules and Regulation Reference:

Chapter 300, Section 11 (B)(2)(a) - Piping ... The minimum cover is 42 inches above the top of pipe.

Reason the waiver is requested:

See attached letter.

Alternatives to granting the waiver:

See attached letter.

Impact of waiver denial on the project:

See attached letter.

Reasons this waiver is in the best interests of the Town and consistent with the intent and purpose of the Subdivision Control Law:

See attached letter.

Letter of Authorization

I, Jeffrey Gove, 340 East Central Street, LLC, 7 Swain Drive, Hampton Falls, NH 03844, developer of property located in Franklin, MA, known as Tax Map 285, Lot 9, do hereby authorize Jones & Beach Engineers, Inc., PO Box 219, Stratham, NH, to act on my behalf concerning the previously-mentioned property. The parcel is located on ~~340~~ 340 East Central Street in Franklin, MA.

I hereby appoint Jones & Beach Engineers, Inc., as my agent to act on my behalf in the review process, to include any required signatures.



Witness



Jeffrey Gove
340 East Central Street, LLC

2-20-2020
Date

JONES & BEACH
ENGINEERS INC.

8/5885

This Instrument Prepared
Without Opinion or the Issuance
of Title Insurance By and Return to:
Scott M. Grant, Esquire
GRANTLAW, P.A.
3400 Tamiami Trail North, Suite 201
Naples, Florida 34103

QUITCLAIM DEED
(340 East Central Street, Franklin, Massachusetts)

We, Paul K. Keigan and Evelyn L. Keigan, General Partners of Keigan Family Trust Limited Liability Partnership, a Massachusetts Limited Liability Partnership, for consideration paid of Ten Dollars, (\$10.00), grant to EPK Properties, LLC, a Massachusetts Limited Liability Company, which post office address is 5 Beechwood Lane, Franklin, MA 02038.

WITH QUITCLAIM COVENANTS

the land in Franklin, Norfolk, County, Massachusetts, together with any improvements thereon, described as follows:

Lot 5 shown on a plan drawn by Guerriere & Halnon, Inc., Surveyors, dated March 4, 1996, as approved by the Land Court, filed in the Land Registration Office said County as No. 11932G, a copy of a portion of which is filed in Norfolk Registry District with Certificate No. 149187, Book 746.

The Premises are conveyed subject to and with the benefit of all easements, restrictions, rights of way, takings, reservations, exceptions and covenants contained in the Certificate of Title of the Grantor herein and in all other instruments of record, to the extent now in force and applicable, but not intending hereby to recreate or extend restrictions, reservations, exceptions and covenants previously terminated or expired.

For Grantor's title, see Certificate of Title No. 153856, filed with the Norfolk County Registry District in Book 770, Page 56.

Property Address: 340 East Central Street, Franklin, MA 02035

IN WITNESS WHEREOF, Grantors has hereunder set Grantors' hand and seal the 10th day of December, 2014.

340 East Central Street
Franklin, Massachusetts

340 East Central Street
Franklin, Massachusetts

Signed, sealed, and delivered
in our presence:

KEIGAN FAMILY TRUST LIMITED
LIABILITY PARTNERSHIP, a
Massachusetts Limited Liability
Partnership.

Devon Raemei
Witness Signature

Paul K. Keigan
By: Paul K. Keigan, General Partner

Devon Raemei
Print Name

Judith A. Dyhouse
Witness Signature

Judith A. Dyhouse
Print Name

Devon Raemei
Witness Signature

Evelyn L. Keigan
Evelyn L. Keigan, General Partner

Devon Raemei
Print Name

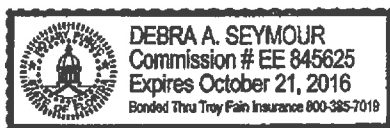
Judith A. Dyhouse
Witness Signature

Judith A. Dyhouse
Print Name

STATE OF FLORIDA
COUNTY OF COLLIER

The foregoing instrument was acknowledged before me on this 10th day of Dec., 2014 by Paul K. Keigan, General Partner, Keigan Family Trust Limited Liability Partnership, as his free act and deed, who is known to me or who has produced _____ as identification and who did (did not) take an oath, and by Evelyn L. Keigan, General Partner, Keigan Family Trust Limited Liability Partnership, as her free act and deed, who is known to me or who has produced _____ as identification and who did (did not) take an oath.

(SEAL)



Debra A. Seymour
Notary Public, State of Florida

Debra A. Seymour
Notary Public Print Name
My Commission Expires: 10/21/2016

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340 East Central Street
Franklin, Massachusetts



300 foot Abutters List Report

Franklin, MA
April 16, 2020

Subject Property:

Parcel Number: 285-009-000
CAMA Number: 285-009-000-000
Property Address: 340 EAST CENTRAL ST

Mailing Address: EPK PROPERTIES LLC
579 AVELLINO ISLES U25202
NAPLES, FL 34119

Abutters:

Parcel Number: 280-079-000
CAMA Number: 280-079-000-000
Property Address: GLEN MEADOW RD

Mailing Address: GLEN MEADOW OWNER LLC
536 GRANITE ST SUITE 301
BRAINTREE, MA 02184

Parcel Number: 285-001-000
CAMA Number: 285-001-000-000
Property Address: 355 EAST CENTRAL ST

Mailing Address: FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

Parcel Number: 285-008-000
CAMA Number: 285-008-000-000
Property Address: 348 EAST CENTRAL ST

Mailing Address: HALLIGAN JOSEPH TR C/O BIG Y
FOODS INC
2145 ROOSEVELT AVE PO BOX 7840
SPRINGFIELD, MA 01104

Parcel Number: 285-010-000
CAMA Number: 285-010-000-000
Property Address: 300 EAST CENTRAL ST

Mailing Address: NEW ENGLAND CHAPEL
PO BOX A
FRANKLIN, MA 02038

Parcel Number: 285-011-000
CAMA Number: 285-011-000-000
Property Address: 272 EAST CENTRAL ST

Mailing Address: FRASER, ROBERT B TR CURRIER, D
C/O CVS# 00929 STO ACCTG 272 E
1 CVS DRIVE, MC 2820
WOONSOCKET, RI 02895

Parcel Number: 285-107-000
CAMA Number: 285-107-000-000
Property Address: 265-303 EAST CENTRAL ST

Mailing Address: FRANKLIN SHOPPERS FAIR C/O JOHN
ALEVIZOS
396 WASHINGTON ST,#325
WELLESLEY, MA 02481

Parcel Number: 285-108-000
CAMA Number: 285-108-000-000
Property Address: EAST CENTRAL ST

Mailing Address: FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

Parcel Number: 285-109-000
CAMA Number: 285-109-000-000
Property Address: 333 EAST CENTRAL ST

Mailing Address: LENZI JOSEPH LENZI RACHEL
860 KING ST
FRANKLIN, MA 02038

Parcel Number: 285-112-000
CAMA Number: 285-112-000-000
Property Address: 345 EAST CENTRAL ST

Mailing Address: MCDONALDS CORP C/O HOGAN
COMPANY
10 OCEANA WAY SUITE #2
NORWOOD, MA 02062

Parcel Number: 285-113-000
CAMA Number: 285-113-000-000
Property Address: 349 EAST CENTRAL ST

Mailing Address: FRENCH LEONARD S ETALS,TRS C/O
MARC WINTERS
349 EAST CENTRAL ST
FRANKLIN, MA 02038



www.cai-tech.com

This information is believed to be correct but is subject to change and is not warranted.

4/16/2020

Page 1 of 2



300 foot Abutters List Report

Franklin, MA

April 16, 2020

Parcel Number: 298-004-000
CAMA Number: 298-004-000-000
Property Address: EAST CENTRAL ST

Mailing Address: FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

Jones & Beach Engineers, Inc., Attn. Wayne Morrill, PO Box 219, Stratham, NH 03885

340 East Central Street, LLC, Attn. Jeff Gore, 7 Swain Drive, Hampton Falls, NH 03844



www.cai-tech.com

This information is believed to be correct but is subject to change and is not warranted.

4/16/2020

Page 2 of 2

FRANKLIN SHOPPERS FAIR
 C/O JOHN ALEVIZOS
 396 WASHINGTON ST, #325
 WELLESLEY, MA 02481

NEW ENGLAND CHAPEL
 PO BOX A
 FRANKLIN, MA 02038

FRANKLIN TOWN OF
 355 EAST CENTRAL STREET
 FRANKLIN, MA 02038

JONES & BEACH ENGINEERS INC
 ATTN. WAYNE MORRILL
 PO BOX 219
 STRATHAM, NH 03885

FRANKLIN TOWN OF
 355 EAST CENTRAL STREET
 FRANKLIN, MA 02038

340 EAST CENTRAL STREET, LLC
 ATTN. JEFF GOVE
 7 SWAIN DRIVE
 HAMPTON FALLS, NH 03844

FRANKLIN TOWN OF
 355 EAST CENTRAL STREET
 FRANKLIN, MA 02038

FRASER, ROBERT B TR CURRI
 C/O CVS# 00929 STO ACCTG
 1 CVS DRIVE, MC 2820
 WOONSOCKET, RI 02895

FRENCH LEONARD S ETALS, TR
 C/O MARC WINTERS
 349 EAST CENTRAL ST
 FRANKLIN, MA 02038

GLEN MEADOW OWNER LLC
 536 GRANITE ST SUITE 301
 BRAINTREE, MA 02184

HALLIGAN JOSEPH TR
 C/O BIG Y FOODS INC
 2145 ROOSEVELT AVE PO BOX
 7840
 SPRINGFIELD, MA 01104

LENZI JOSEPH
 LENZI RACHEL
 860 KING ST
 FRANKLIN, MA 02038

MCDONALDS CORP
 C/O HOGAN COMPANY
 10 OCEANA WAY SUITE #2
 NORWOOD, MA 02062



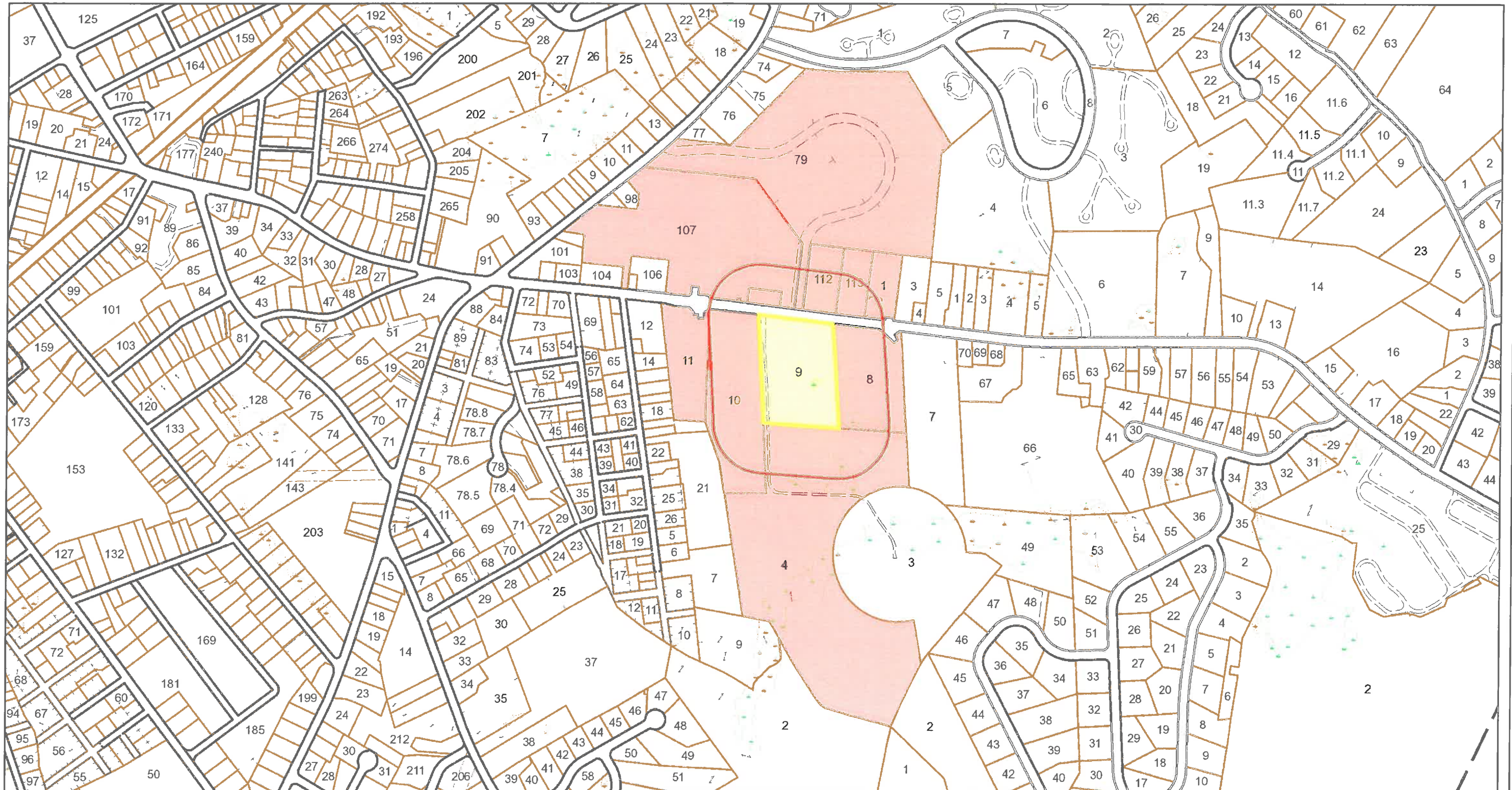
Franklin, MA

1 inch = 559 Feet

0 559 1118 1677



April 16, 2020



This information is believed to be correct but is subject to change and is not warranted.

Corporations Division

Business Entity Summary

ID Number: 001428974

[Request certificate](#)[New search](#)

Summary for: 340 EAST CENTRAL STREET, LLC

The exact name of the Domestic Limited Liability Company (LLC): 340 EAST CENTRAL STREET, LLC

Entity type: Domestic Limited Liability Company (LLC)

Identification Number: 001428974

Date of Organization in Massachusetts:
03-04-2020

Last date certain:

The location or address where the records are maintained (A PO box is not a valid location or address):

Address: 1 NEWELL DRIVE

City or town, State, Zip code, FRANKLIN, MA 02038 USA
Country:

The name and address of the Resident Agent:

Name: JOHN P. VIGNONE, ESQ.

Address: 14 COMMON ST

City or town, State, Zip code, WRENTHAM, MA 02093 USA
Country:

The name and business address of each Manager:

Title	Individual name	Address

In addition to the manager(s), the name and business address of the person(s) authorized to execute documents to be filed with the Corporations Division:

Title	Individual name	Address
SOC SIGNATORY	JEFFREY F. GOVE	1 NEWELL DRIVE FRANKLIN, MA 02038 USA
SOC SIGNATORY	CHRISTOPHER F. NASH	1 NEWELL DRIVE FRANKLIN, MA 02038 USA
SOC SIGNATORY	JOSEPH F. HALLIGAN JR.	1 NEWELL DRIVE FRANKLIN, MA 02038 USA

The name and business address of the person(s) authorized to execute, acknowledge, deliver, and record any recordable instrument purporting to affect an interest in real property:

Title	Individual name	Address
REAL PROPERTY	JEFFREY F. GOVE	1 NEWELL DRIVE FRANKLIN, MA 02038 USA
REAL PROPERTY	CHRISTOPHER F. NASH	1 NEWELL DRIVE FRANKLIN, MA 02038 USA
REAL PROPERTY	JOSEPH F. HALLIGAN JR.	1 NEWELL DRIVE FRANKLIN, MA 02038 USA

☒ Confidential☒ Merger

Consent Data**Allowed****Manufacturing****View filings for this business entity:**

ALL FILINGS
Annual Report
Annual Report - Professional
Articles of Entity Conversion
Certificate of Amendment
Certificate of Consolidation

[View filings](#)**Comments or notes associated with this business entity:**[New search](#)

GLEN MEADOW OWNER LLC
536 GRANITE ST SUITE 301
BRAINTREE, MA 02184

FRENCH LEONARD S ETALS,TR
C/O MARC WINTERS
349 EAST CENTRAL ST
FRANKLIN, MA 02038

FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

HALLIGAN JOSEPH TR
C/O BIG Y FOODS INC
2145 ROOSEVELT AVE PO BOX
7840
SPRINGFIELD, MA 01104

EPK PROPERTIES LLC
579 AVELLINO ISLES U25202
NAPLES, FL 34119

NEW ENGLAND CHAPEL
PO BOX A
FRANKLIN, MA 02038

FRASER, ROBERT B TR CURRI
C/O CVS# 00929 STO ACCTG
1 CVS DRIVE, MC 2820
WOONSOCKET, RI 02895

FRANKLIN SHOPPERS FAIR
C/O JOHN ALEVIZOS
396 WASHINGTON ST,#325
WELLESLEY, MA 02481

FRANKLIN TOWN OF
355 EAST CENTRAL STREET
FRANKLIN, MA 02038

LENZI JOSEPH
LENZI RACHEL
860 KING ST
FRANKLIN, MA 02038

MCDONALDS CORP
C/O HOGAN COMPANY
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NORWOOD, MA 02062

Town of Franklin



Planning Board

The following notice will be published in the Milford Daily Newspaper once on Monday, June 8, 2020 and again on June 15, 2020

FRANKLIN PLANNING BOARD PUBLIC HEARING NOTICE

In accordance with the Town of Franklin Zoning By-Laws, the Franklin Planning Board will hold a Remote Public Hearing on **Monday, June 22, 2020 at 7:05 PM**, for a Special Permit and Site Plan application titled "Proposed Development Central Square, 340 East Central Street" Franklin, MA prepared by Jones & Beach Engineers, Stratham, NH., and submitted to the Department of Planning & Community Development on May 11, 2020, by 340 East Central Street, LLC, Hampton Falls, NH.

The property is located in the Commercial II Zoning District (Assessors Map 285 Lot 009) at 340 East Central Street. The applicant is proposing to construct a mixed use development consisting of 42,080+/- sq/ft of residential, 15,219+/-sq/ft of retail and 2,250+/- for a coffee shop. The applicant is requesting two (2) Special Permits for a four stories and fifty feet building under the Chapter 185 Attachment 9, Maximum Height of Building and Chapter 185 Attachment 3, Part II 2.16 to allow the use of a Vehicle Service Establishment.

Please note: This will be your only written notice of this public hearing. Should the Planning Board vote to continue this Public Hearing, the date and time will be posted on the Planning Board's website under Agendas.

This meeting will be done remotely via "ZOOM" platform. Residents can view the Town Website and click on the Town Calendar for up to date information on to access the meeting.

Please contact the Department of Planning & Community Development at (508) 520-4907 if you require further information or if you need to make arrangements to provide translation services for the hearing impaired, or for persons with language barriers.

To access records and files for this project, please go to <https://www.franklinma.gov/planning-board/pages/340-east-central-street-mixed-use>.

Anthony Padula, Chairman