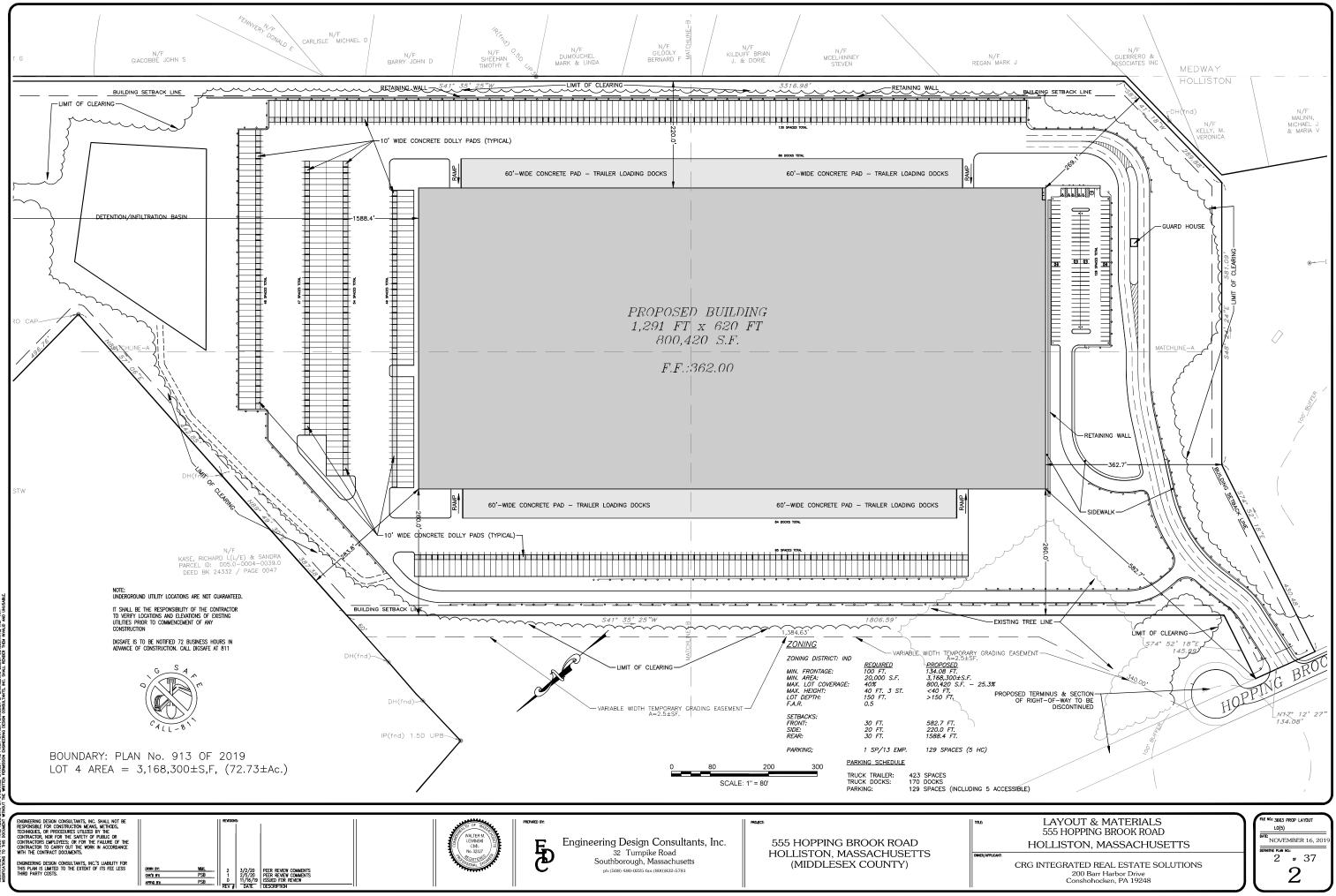
### **APPENDIX**

PROJECT SITE PLAN AUTOMATIC TRAFFIC RECORDER COUNT DATA MANUAL TURNING MOVEMENT COUNT DATA SEASONAL ADJUSTMENT DATA PUBLIC TRANSPORTATION SCHEDULES CRASH DATA MASSDOT CRASH RATE WORKSHEETS GENERAL BACKGROUND TRAFFIC GROWTH BACKGROUND DEVELOPMENT NETWORKS TRIP-GENERATION CALCULATIONS CAPACITY ANALYSIS WORKSHEETS HCS SIGNAL WARRANT ANALYSIS PROJECT SITE PLAN



AUTOMATIC TRAFFIC RECORDER COUNT DATA



197374 B Volume Site Code: TBA Date Start: 12/16/19 Date End: 12/19/19

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Page 1

Washington Street (Route 16) approx 500' east of Hopping Brook Road City, State: Holliston, MA Citent: EDC/ P. Bemis	Route 16) — Hopping Brook R MA is	toad				PRE D iNDU 46 Morton Street Office: 508 875-	PRECISION D A T A iNDUSTRIES.LLC 46.Moton Street Frammaham. MA 01702 Office: Goe 375-0100 Framic datarequers@pdflc.com	01702 01108 n						197374 A Volume Site Code: TBA Date Start: 12/16/19 Date End: 12/19/19	Volume de: TBA 2/16/19 2/19/19
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Page 1

MANUAL TURNING MOVEMENT COUNT DATA

### TURNING MOVEMENT COUNT REDUCTION WORKSHEET

### INTERSECTION: Washington Street at Hopping Brook Driove COUNT DATE: 7AM-9AM Wednesday 12/18/19 3PM-6PM Thursday 12/12/19

### Counted By: ZRB Weather Conditions: Clear 20-30 deg F

	N I	/ashing	ton S	treet		Wash	ingtor	1 Stre	et	H	loppi	ng Bro	ok Driv	e					TOTAL	TOTAL
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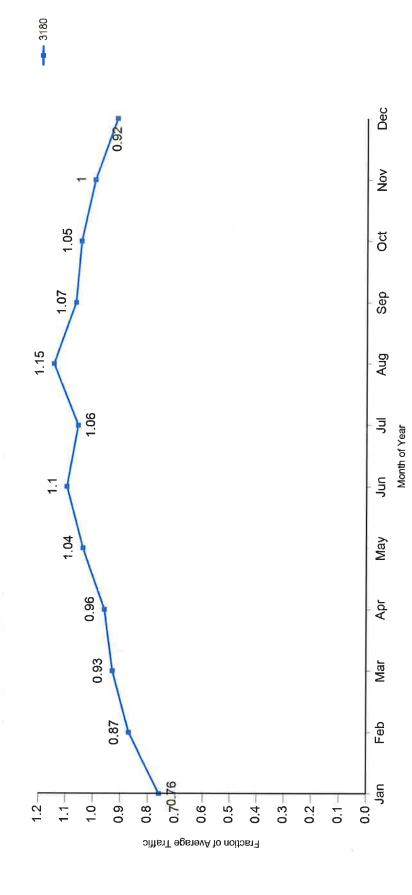
### PEAK HOUR VOLUMES:

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SEASONAL ADJUSTMENT DATA

Massachusetts Highway Department



Traffic Pattern by Month for 1/1/2017 - 12/31/2017

Generated 9/25/2020

Massachusetts Highway Department

Factor Group	Station	Weight	Jan	Feb	Mar	Apr	May	Jun	- In-	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	d Factors	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

# Traffic Pattern by Month for 1/1/2017 - 12/31/2017

PUBLIC TRANSPORTATION SCHEDULES

### Fare Information

Adult fare: \$1.50 cash / \$1.25 with a Charlie Card. Student fare: \$1.00 cash with valid Student ID.

Children under 6 ride free when accompanied by an adult. Children under 12 <u>may not</u>ride unaccompanied. Elderly (65 years of age or older): \$0.75 cash with photo ID indicating date of birth or \$0.70 with an MWRTA Senior TAP Pass. Individuals with disabilities: \$0.75 cash or \$0.70 with a valid MBTA Access Card, Medicare Card or MWRTA Disabled TAP Pass.

Charlie Cards are available free of charge at the Blandin Hub or on the bus. Value can be added to existing cards onboard, online at mbta.com, or at an MBTA kiosk. MetroWest Regional Transit Authority Public Transportation System

M

### **Transfer/Connections**

Transfer coupons are available on all buses and are good for transfers going in the same direction within the MWRTA system only. Transfers are not compatible within the MBTA system. One transfer per paid fare system. One transfer per paid fare is issued upon request and must be presented to the next driver within 90 minutes. Riders can access MBTA Commuter Rail Service in Downtown Framingham, Ashland, Southborough, and Natick. For MBTA schedule and service information call 617.222.3200.

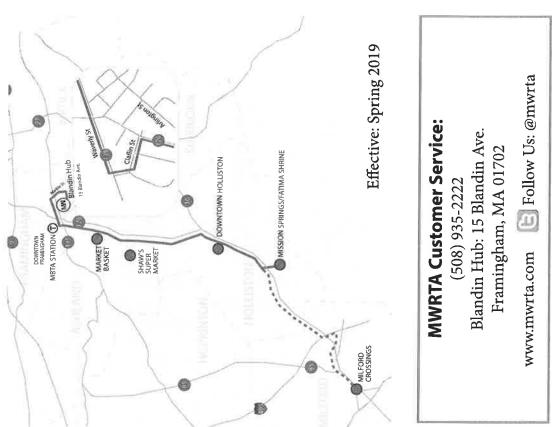
Scan the QR code below with your smartphone to be directed to the MWRTA Routes and Schedules website.



No service provided on the following Holidays:

New Year's Day Patriot's Day Memorial Day Independence Day Thanksgiving Day Christmas Day





Indin Ave.)         5:51         7:14         8:30         9:40         10:57         12:03         12:43         4:42           s. $\frac{1}{2}$ $\frac{7:17}{2}$ $\frac{8:33}{2}$ $\frac{9:43}{2}$ 10:57         12:03         12:24         4:42           s. $\frac{1}{2}$ $\frac{7:19}{2}$ $\frac{8:35}{2}$ $\frac{9:43}{2}$ 10:57         12:06         1:14         2:07         3:24         4:49           s. $\frac{1}{2}$ $\frac{7:19}{2}$ $\frac{8:35}{2}$ $\frac{9:43}{2}$ 11:07         12:16         1:17         2:09         3:31         4:49           more church $\frac{1}{2}$ $\frac{7:29}{2}$ $\frac{8:43}{2}$ $\frac{9:43}{2}$ 11:07         12:16         1:24 $\frac{2:17}{2}$ $\frac{3:49}{2}$ $\frac{5:55}{2}$ ong. Church $6:16$ $\frac{7:35}{2}$ $\frac{9:43}{2}$ 11:27         12:16         1:24 $\frac{2:17}{2}$ $\frac{3:49}{2}$ $\frac{5:55}{2}$ ong. Church $6:16$ $\frac{7:35}{2}$ $\frac{9:16}{2}$ $\frac{1:16}{2}$ $\frac{2:16}{2}$ $\frac{2:16}{2}$ $\frac{2:16}{2}$ $\frac{2:16}{2}$ $\frac{2:16}{2}$ $\frac{2:16}{2}$ $\frac{2:16}{2}$ $\frac$														
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Winthrop / Hollis Sts. $$ 7.198.359.4511:0012:1012:172:093:314:49Market Basket $$ 7.248:399:4911:0112:1612:02:173:424:57Market Basket $$ 7:298:439:5311:0712:1612:202:173:424:57Shaw's $$ 7:298:439:5311:0712:1612:42:173:424:57Washington St. at Cong. Church $6:16$ 7:358:5010:0011:1312:221:302:243:495:05Washington St. at Cong. Church $6:16$ 7:359:0410:1411:2712:361:452:464:045:20Withford Crossings $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ <	d	Framingham MBTA	5:57		8:33	9:43	10:57	12:06	1:14	2:07	3:28	4:46	6:02	7:15
Market Basket7:248:399:4911:0312:121:202:123:364:51Shaw's7:298:439:5311:0712:161:242:173:424:57Washington St. at Cong. Church $6:16$ 7:358:5010:0011:1312:221:302:243:495:05Washington St. at Cong. Church $6:16$ 7:358:5010:0011:1312:221:302:243:495:05Milford Crossings7:559:0410:1411:2712:361:452:464:045:20Spruce St. $6:31$ 7:559:0410:1411:2712:361:452:364:145:30Mission Springs* <th>INI.</th> <th>Winthrop / Hollis Sts.</th> <td> </td> <td></td> <td>8:35</td> <td>9:45</td> <td>11:00</td> <td>12:09</td> <td>1:17</td> <td>2:09</td> <td>3:31</td> <td>4:49</td> <td>6:04</td> <td>7:18</td>	INI.	Winthrop / Hollis Sts.			8:35	9:45	11:00	12:09	1:17	2:09	3:31	4:49	6:04	7:18
Shaw's $$ 7:298:439:5311:0712:161:242:173:424:57Washington St. at Cong. Church $6:16$ 7:35 $8:50$ $10:00$ $11:13$ $12:22$ $1:30$ $2:24$ $3:49$ $5:05$ Milford Crossings $$ $7:55$ $9:04$ $10:14$ $11:27$ $12:36$ $1:45$ $2:46$ $4:04$ $5:20$ Spruce St. $6:31$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ Beaver St. $6:32$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ Mission Springs* $$ $8:00$ $9:14$ $10:24$ $11:37$ $12:46$ $1:55$ $2:58$ $4:14$ $5:30$ Mission Springs* $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$	10	Market Basket	1	7:24	8:39	9:49	11:03	12:12	1:20	2:12	3:36	4:51	6:08	7:21
Washington St. at Cong. Church $6:16$ $7:35$ $8:50$ $10:00$ $11:13$ $12:22$ $1:30$ $2:24$ $3:49$ $5:05$ Milford Crossings $$ $$ $7:55$ $9:04$ $10:14$ $11:27$ $12:36$ $1:45$ $2:46$ $4:04$ $5:20$ Spruce St. $6:31$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$	<b>TB</b>	Shaw's		7:29	8:43	9:53	11:07	12:16	1:24	2:17	3:42	4:57	6:12	7:25
Milford Crossings— $7:55$ $9:04$ $10:14$ $11:27$ $12:36$ $1:45$ $2:46$ $4:04$ $5:20$ Spruce St. $6:31$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ <	no		6:16	7:35	8:50	10:00	11:13	12:22	1:30	2:24	3:49	5:05	6:19	7:32
Spruce St.       6:31		Milford Crossings	1	7:55	9:04	10:14	11:27	12:36	1:45	2:46	4:04	5:20	6:34	7.47
Beaver St.       6:42		Spruce St.	6:31	1	1	I	1	1	1			1		
Mission Springs*       —       8:00       9:14       10:24       11:37       12:46       1:55       2:58       4:14       5:30         Holliston Public Library       —       8:05       9:19       10:29       11:42       12:51       1:59       3:02       4:18       5:32         Holliston Public Library       —       8:05       9:19       10:29       11:42       12:57       2:04       3:07       4:23       5:37         Market Basket       —       8:16       9:30       10:40       11:53       1:02       2:09       3:12       4:28       5:42         Winthrop / Hollis Sts.       —       8:19       9:33       10:43       11:55       1:04       2:11       3:14       4:30       5:42         Framinghan MBTA       7:06       8:29       9:33       10:46       11:50       1:08       2:16       1:31       2:18       1:31       2:18       2:24		Beaver St.	6:42		1		1	1	1					
Holliston Public Library        8:05       9:19       10:29       11:42       12:51       15.9       3:02       4:18       5:32         Shaw's        8:11       9:25       10:35       11:42       12:57       2:04       3:07       4:23       5:37         Market Basket        8:16       9:30       10:40       11:53       12:57       2:04       3:07       4:23       5:37         Winthrop / Hollis Sts.        8:19       9:33       10:43       11:55       1:04       2:11       3:14       4:30       5:42         Framingham MBTA       7:06       8:27       9:36       10:46       11:50       1:08       2:16       2:18       2:26       3:27       2:24       3:27       2:42		Mission Springs*	1	8:00	9:14	10:24	11.37	12.46	1.55	2.58	4.14	5.30	6.44	7.57
Shaw's     —     8:11     9:25     10:35     11:48     12:57     2:04     3:07     4:23     5:37       Market Basket     —     8:16     9:30     10:40     11:53     1:02     2:09     3:12     4:28     5:42       Winthrop / Hollis Sts.     —     8:19     9:33     10:43     11:55     1:04     2:11     3:14     4:30     5:44       Framingham MBTA     7:06     8:27     9:36     10:46     11:50     1:08     2:15     4:30     5:44	AD	Holliston Public Library		8:05	9:19	10:29	11:42	12:51	1:59	3:02	4.18	5.30	6.48	CO-8
Market Basket         —         8:16         9:30         10:40         11:53         1:02         2:09         3:12         4:28         5:42           Winthrop / Hollis Sts.         —         8:19         9:33         10:43         11:55         1:04         2:11         3:14         4:30         5:44           Framingham MBTA         7:06         8:29         9:36         10:46         11:50         1:08         2:15         3:12         4:30         5:44	m	Shaw's	1	8:11	9:25	10:35	11:48	12:57	2:04	3:07	4:23	5:37	6.53	8.08
Winthrop / Hollis Sts.          8:19         9:33         10:43         11:55         1:04         2:11         3:14         4:30         5:44           Framingham MBTA         7:06         8:22         9:36         10:46         11:50         1:08         2:15         3:18         4:30         5:44	BC	Market Basket			9:30	10:40	11:53	1:02	2:09	3:12	4:28	5:42	6:58	8:13
7:06 8:22 9:36 10:46 11:50 1:08 2:18 2:23 5:50	II	Winthrop / Hollis Sts.		8:19	9:33	10:43	11:55	1:04	2:11	3:14	4:30	5:44	7:00	8:15
		Framingham MBTA	7:06	8:22	9:36	10:46	11:59	1:08	2:15	3:18	4:34	5:50	7:04	8:19
3:21 4:37 5:56		Blandin Hub (15 Blandin Ave.)	7:09	8:25	9:39	10:49	12:02P	1:11	2:18	3:21	4:37	5:56	7:07	8:22
		Scheduled T	imes							Trans	fers			
<u>Scheduled Times</u> <u>Transfers</u>	Sche sche	eduled times are only approximate; please wait f eduled times to assure not missing the bus. For u MWRTA at 508.935.2222 or visit www.n	or the MWRTA I up to the minuti nwrta.com for G	en minute e bus infor PS trackin	s in advan mation cal g.	ce of I the		Route 6 **R Rou	passenge oute 14 at te 45 & 5 a	ers can ma t Milford Ci at the Fran	ke the folk ossings (S ningham N	owing trar top & Sho ABTA static	nsfers: p) on	
Scheduled Times Approximate; please wait for the MWRTA ten minutes in advance of te not missing the bus. For up to the minute bus information call the 508.935.2222 or visit www.mwrta.com for GPS tracking.	:The M	WRTA uses the Flad Down System which allows	hises to stop a	c orania	and thoir			Rou	tes 4N, 4S,	, 5, 10, and	11 at the l	Blandin Hu	.qr	
<b>Scheduled Times</b> / approximate; please wait for the MWRTA ten minutes in advance of the not missing the bus. For up to the minute bus information call the 508.935.2222 or visit www.mwrta.com for GPS tracking.	top	ick up passengers, where it is safe to do so. Pass	enders can hail	WWRTA hi	rear hu was	routes:				l imes: P - PM	Md - d			

UN WOVI

\*Stop may NOT be serviced due to snow/ice.

**CRASH DATA** 

	Cloudy	Clear/Unknown	Clear	Snow	đ	Cloudy	Cloudy
1 and 1 and 1	N:2N/ N:TA	VI:E	V1: E / V2: N	1 ILA	V1: E / V2: W	W:2V/ 2:LV	V1: E / V2: W
Vrhicle Towed Fron Sinne (All Vehicles)	VI-(No) / V2:(Yes, whicle or trailer disabled)	V1:(Yes, vehicle or trailer disabled)	V1:(Yes, vehicle or trailer disabled) / V2:(No)	V1:(Yes, vehicle or trailer disabled)	V1:1446}/V2:(468) V1:E /V2:W	V1:(Yes, vehicle or trailer disabled) / V2:(No)	No controls V1,(No)/V2,(No) V1.E /V2:V
Fraffic Control Device Type	Stop Ages	No controls	Stop signs	No controls	No controli	Stop signs	No controls
Tutal Nan- Fatal Injuries	•	-	-	٥	0	o	0
Total Fatalition	Ð	o	0	-	0	0	o
RPA Abis evioti csi	MAPC	MAPC	MAPC	MAPC	MAPC	MAPC	MAPC
Roadw	T. Enterado	Not at junction	T. Intersects	Not at Junction	Not at Junction	Four way intersect	T. Interlect
115	λq	δų	Diy	Snow	Dry	Dry	Dry
111 Lines Margin	PW20141 4000211	PW20141 4000215	PW20141 8800203	PW20150 0600226	PW20151 7500108	PWZ0153 3400125	PW20171 0802153
MassBOF	m	m	м	m	2	m	m
Mannei of Cidision	Sideswipe , same direction	Single vehicle crash	Angle	Single vehicle crash	Sideswipe . opposite direction	Angle	Angle
lughi Canalitines	Daylight	Daylight	Daylight	Dark - Nghted roadway	Daylight	Darx - Righted roadway	Daylight
ls Greek crited	Yes	Yes	Yes	Yes	Yes	s,	Yes
First Harmful Cvent	Collision with motor vehicle in traffic	Collision with curb	Collision with motor vehicle in traffic	Coltaion with utility pole	Calision with motor vehicle in traffic	Collision with motor vehicle in traffic	Collision with motor vehicle in traffic
Drivel Contributing Calcumstances (All Drivers)	D1: [Unknown] / 02: [Unknown]	D1: (Physical impairment),(Unkn own)	D1: (No improper driving) / D2: (Visibility obstructed)	01: [Uriming too fast for conditions]	D1: (Failed to yield right of way) / D2: (No improper driving)	D1: (Failed to yield right of way),(Inattention) / D2: (No improper driving)	D1: (No improper driving) / D2: (Inattention)
Contrast	01:00PM to 01:59PM	07:00AM to 07:59AM	12:00PM to 12:59PM	07:00PM to 07:59PM	11:00AM to 11:59AM	04:00PM to 04:59PM	12:00PM to 12:59PM
111	55-64	25-34	55-64	21-24	75-84	55-64	25-34
11]]	45-54	25-34	45-54	21-24	45-54	₽¢-SE	21-24
sproop							
114	tocal police	local police	Lecal police	Local police	Local police	Lacal police	Local police
Number of Vehicles	7	1	$\mathbf{k}_{i}$	Ŧ	2	2	2
Max Injury Severity Reported	No injury	Non-fata) injury - Non- incapacitating	Non-fatal injury - Non- incapacitating	No injury	No Injury	No injury	No injury
Cravli Yisai	2014	5014	2014	2015	2015	2015	2017
11	1:11 PM	Closed 7:31 AM	Cloved 12:40 PM	7:12 PM	Closed 11:52 AM	4:34 PM	Closed 12:58 PM
H	Closed	Closed	Closed	Closed		Clowed	
1	Property damage only (none injured)	HOLLISTON Non-fatal interv	HOLLISTON Non-Fault Infury	Property damage only (name injured)	Property damage only (none injured)	Property damage only (none injured)	HoLLISTON Property damage
1	HOLLISTON	NOLISION	HOLLISTON	HOLLISTON	4054743 HOLLISTON	4114716 HOULSTON	HOLLISTON
5   5	3803351	3803355	3875931	6ET066E	4054743	4114716	4352416

Data Level: CAASH Query Type: Spatial Criteria: If you conducted an Advanced Query your SQL statement will be listed here

MASSDOT CRASH RATE WORKSHEETS



### **INTERSECTION CRASH RATE WORKSHEET**

CITY/TOWN :	Holliston,MA			COUNT DA	TE:	Dec-19
	UNSIGN	ALIZED :	X	SIGNA	LIZED :	
		~ INT	ERSECTION	N DATA ~		
MAJOR STREET :	Washington	Street				
MINOR STREET(S) :	Hopping Bro	ok Road				
INTERSECTION DIAGRAM (Label Approaches)	↑ North	annaon at		TE HOME	and Brook Rd Hopping Brook R	Wagh
			PEAK HOUP	R VOLUMES		
APPROACH :	1	2	3	4	5	Total Peak Hourly
DIRECTION :	NEB	SWB	NB			Approach Volume
PEAK HOURLY VOLUMES (PM) :	571	785	255			1,611
"K" FACTOR :	0.092	INTERSE		( <b>V</b> ) = TOTA VOLUME :	AL DAILY	17,511
TOTAL # OF CRASHES :	7	# OF YEARS :	5	CRASHES	GE # OF PER YEAR ( .):	1.40
CRASH RATE CALCU	ILATION :	0.22	RATE =	(	000,000) * 365)	
Comments : Below Sta	tewide and Di	strict Crash R	ates			

Project Title & Date: Proposed Warehouse Development

GENERAL BACKGROUND TRAFFIC GROWTH

Proposed Warehouse Holliston, MA

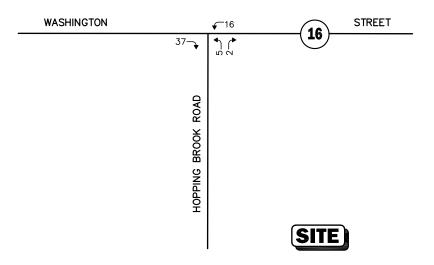
General Background Traffic Growth - Daily Traffic Volumes

NMO	ROUTE/STREET	LOCATION	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average
P	Route 27	NORTH MEADOWS ROAD		7,500								8.5/3	8 547	1 2%
u	Route 16	WASHINGTON STREET	19,300	19,368	19,659	20,893	21.023	22.179	19.653	19 908	20.127	20.409	105.00	0 4704

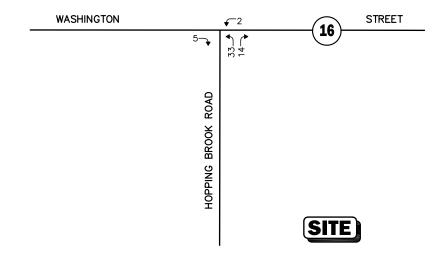
9/25/2020

BACKGROUND DEVELOPMENT NETWORKS

### WEEKDAY MORNING PEAK HOUR



### WEEKDAY EVENING PEAK HOUR





TRIP-GENERATION CALCULATIONS

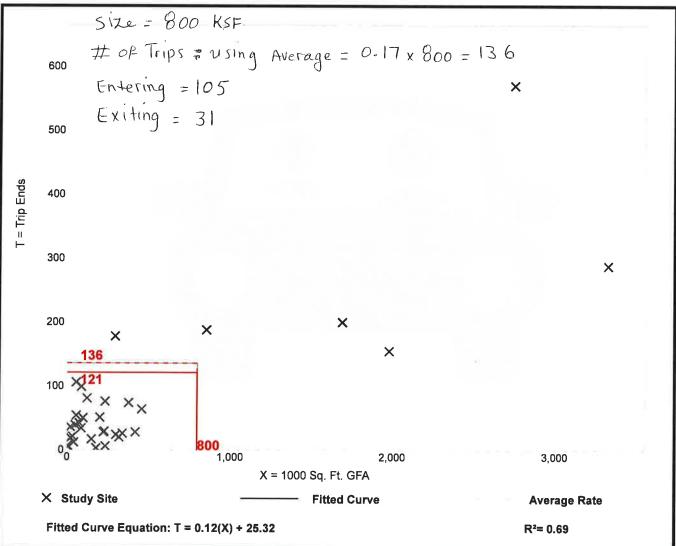
### Warehousing (150)

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:	34
Avg. 1000 Sq. Ft. GFA:	451
Directional Distribution:	77% entering, 23% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.02 - 1.93	0.20

### **Data Plot and Equation**



### Warehousing

(150)

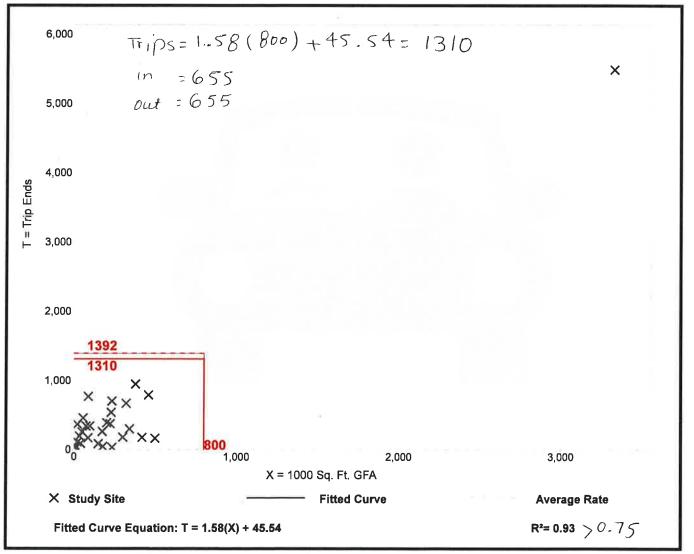
### Vehicle Trip Ends vs: 1000 Sq. Ft. GFA On a: Weekday

Setting/Location:	General Urban/Suburban
Number of Studies:	29
Avg. 1000 Sq. Ft. GFA:	285
Directional Distribution:	50% entering, 50% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation	
1.74	0.15 - 16.93	1.55	

### **Data Plot and Equation**

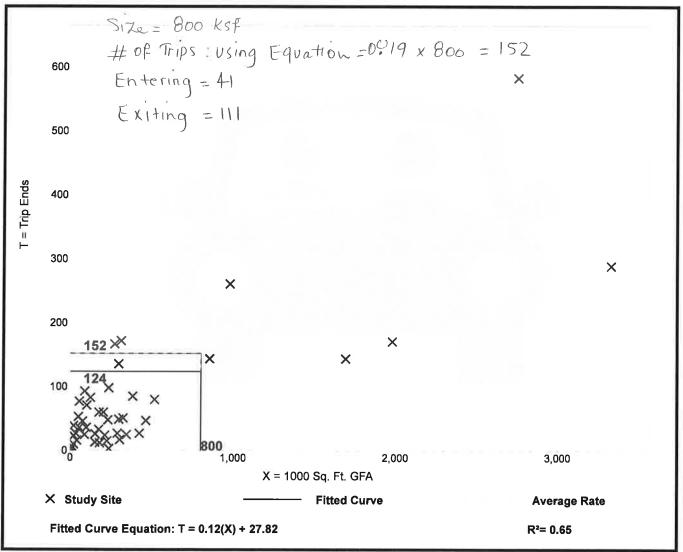


## Warehousing<br/>(150)Vehicle Trip Ends vs:1000 Sq. Ft. GFA<br/>On a:On a:Weekday,<br/>Peak Hour of Adjacent Street Traffic,<br/>One Hour Between 4 and 6 p.m.Setting/Location:General Urban/SuburbanNumber of Studies:47<br/>Avg. 1000 Sq. Ft. GFA:<br/>400<br/>Directional Distribution:27% entering, 73% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.19	0.01 - 1.80	0.18

### **Data Plot and Equation**



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### General Light Industrial (110)

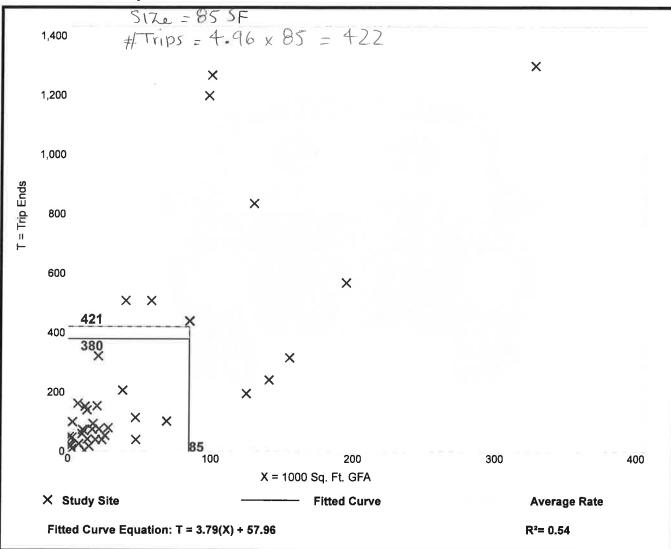
### Vehicle Trip Ends vs: 1000 Sq. Ft. GFA On a: Weekday

Setting/Location:	General Urban/Suburban
Number of Studies:	40
Avg. 1000 Sq. Ft. GFA:	49
Directional Distribution:	50% entering, 50% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Avera	ge Rate	Range of Rates	Standard Deviation
4	.96	0.34 - 43.86	4.20

### **Data Plot and Equation**



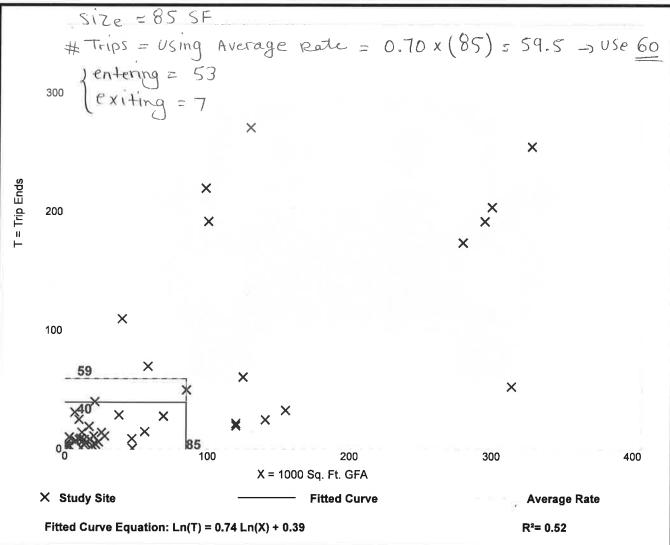
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## General Light Industrial<br/>(110)Vehicle Trip Ends vs:1000 Sq. Ft. GFAOn a:Weekday,<br/>Peak Hour of Adjacent Street Traffic,<br/>One Hour Between 7 and 9 a.m.Setting/Location:General Urban/SuburbanNumber of Studies:45Avg. 1000 Sq. Ft. GFA:73Directional Distribution:88% entering, 12% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.70	0.02 - 4.46	0.65

### **Data Plot and Equation**



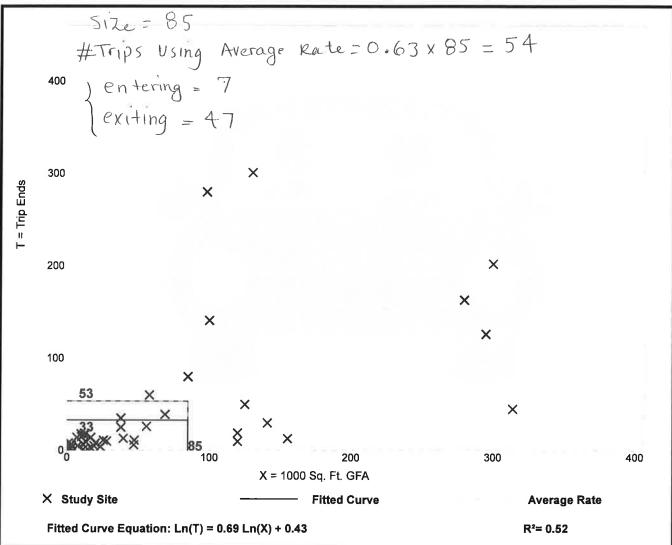
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### General Light Industrial (110) Vehicle Trip Ends vs: 1000 Sq. Ft. GFA On a: Weekday, Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m. Setting/Location: General Urban/Suburban Number of Studies: 44 Avg. 1000 Sq. Ft. GFA: 67 Directional Distribution: 13% entering, 87% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.63	0.07 - 7.02	0.68

### **Data Plot and Equation**



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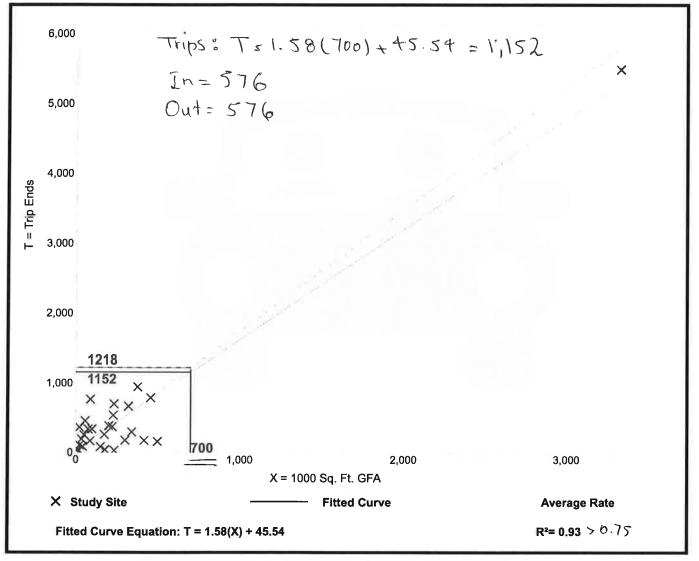
Ultimat	e Buildont
	nousing 50)
Vehicle Trip Ends vs:	1000 Sq. Ft. GFA Weekday

Setting/Location:	General Urban/Suburban
Number of Studies:	29 > 20
Avg. 1000 Sq. Ft. GFA:	285
Directional Distribution:	50% entering, 50% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.74	0.15 - 16.93	1.55

### **Data Plot and Equation**



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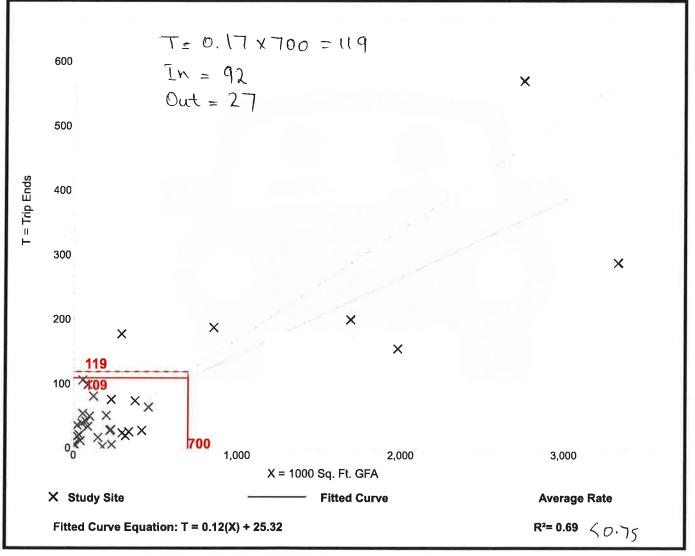
https://itetripgen.org/PrintGraph.htm?code=150&ivlabel=QFQAF&timeperiod=AWDVTE&x=700&edition=544&locationCode=General Urban/Suburban... 1/2

_	h <b>ousing</b> 50)
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:	34
Avg. 1000 Sq. Ft. GFA:	451
Directional Distribution:	77% entering, 23% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.17	0.02 - 1.93	0.20

### **Data Plot and Equation**



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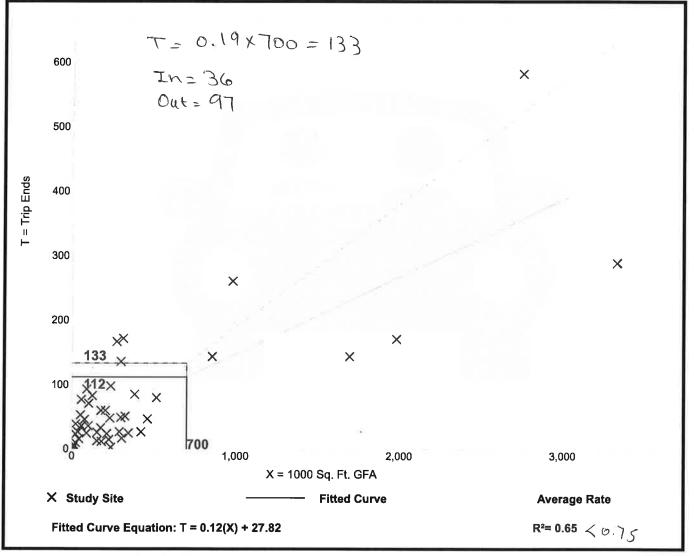
https://itetripgen.org/PrintGraph.htm?code=150&ivlabel=QFQAF&timeperiod=TASIDE&x=700&edition=544&locationCode=General Urban/Suburban&... 1/2

	nousing 50)
Vehicle Trip Ends vs: On a:	1000 Sq. Ft. GFA Weekday,
	Peak Hour of Adjacent Street Traffic, One Hour Between 4 and 6 p.m.
Setting/Location:	General Urban/Suburban
Number of Studies:	47
Avg. 1000 Sq. Ft. GFA:	400
Directional Distribution:	27% entering, 73% exiting

### Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.19	0.01 - 1.80	0.18

### **Data Plot and Equation**



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https://itetripgen.org/PrintGraph.htm?code=150&ivlabel=QFQAF&timeperiod=TPSIDE&x=700&edition=544&locationCode=General Urban/Suburban&... 1/2

CAPACITY ANALYSIS WORKSHEETS

### CAPACITY ANALYSIS WORKSHEETS

Washington Street at Hopping Brook Road

Washington Street at Hopping Brook Road

Intersection	1.1.1.1	A Store	1998	The Walter	1248	W Mars	- 8-
Int Delay, s/veh	4.6						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4			र्स	ሻ	1	
Traffic Vol, veh/h	639	179	45	512	51	18	
Future Vol, veh/h	639	179	45	512	51	18	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	. J. L. 14	None	1 -	None		None	
Storage Length	-	-	-	-	0	0	
Veh in Median Storage	# 0	-	-	0	0	-	
Grade, %	0		-	0	0	-	
Peak Hour Factor	94	94	89	89	60	60	
Heavy Vehicles, %	0	0	2	0	5	2	
Mymt Flow	680	190	51	575	85	30	

Major/Minor	Major1		Major2	S. add	Minor1	Said		s in th	112		- 14
Conflicting Flow All	C	) ()		0	1452	775					
Stage 1				11.2	775	10.00					
Stage 2				-	677	-					
Critical Hdwy	1.1.1.		4.12	-	6.45	6.22					
Critical Hdwy Stg 1				-	5.45						
Critical Hdwy Stg 2				•	5.45						
Follow-up Hdwy	-		2.218	-	3.545	3.318					
Pot Cap-1 Maneuver			775	8 P <del>-</del>	142	398					
Stage 1	2	-	( 18)	-	449	•					
Stage 2				-	499						
Platoon blocked, %											
Mov Cap-1 Maneuve		1 c.	775		128	398					
Mov Cap-2 Maneuve	н <b>г</b> –	e o <del>t</del>	: ::::::::::::::::::::::::::::::::::::		128	-					
Stage 1		- 2.4	-	1	449	•					
Stage 2		( ) ( <b>*</b>	: 3 <b>2</b> 3	1	451	-					
Approach	EB		WB		NB	ent.	12.5	Mille-	110	1.00	1
HCM Control Delay,	s 0		0.8	1997	60.3		1	71	1.56		1
HCM LOS					F						
Minor Lane/Major Mv	mt	NBLn1	NBLn2	EBT	EBR	WBL	WBT			(U <sub>12</sub> ) -	
Capacity (veh/h)	1.1	128	398	-	-	775					
HCM Lane V/C Ratio		0.664	0.075	<b>1</b>	840	0.065	-				
HCM Control Delay (	s)	76.4	14.8		-0	10	0				
HCM Lane LOS		F	В		4	А	А				
HCM 95th %tile Q(ve	h)	3.6	0.2	1	1	0.2					

#### Intersection Int Delay, s/veh

Int Delay, s/veh	52.8						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	4			च	٦	1	
Traffic Vol, veh/h	545	26	17	768	182	73	
Future Vol, veh/h	545	26	17	768	182	73	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized		None	•	None	-	None	
Storage Length	-	Ξ.			0	0	
Veh in Median Storage,	# 0	-	-	0	0	-	
Grade, %	0	-	-	0	0		
Peak Hour Factor	95	95	94	94	77	77	
Heavy Vehicles, %	0	0	0	0	2	2	
Mvmt Flow	574	27	18	817	236	95	

Major/Minor	Major1	7. VO	Major2		Minor1			
Conflicting Flow All	0	0	601	0	1441	588		
Stage 1					588	- 11 E		
Stage 2	-	-			853	-		
Critical Hdwy	161 -	-	4.1		6.42	6.22		
Critical Hdwy Stg 1	-	-		28	5.42	-		
Critical Hdwy Stg 2	-	-		-	5.42	- 112		
Follow-up Hdwy	-	2	2.2	044	3.518	3.318		
Pot Cap-1 Maneuver			986		~ 146	509		
Stage 1	÷	,÷	-		555	-		
Stage 2			-		418	-		
Platoon blocked, %	-							
Mov Cap-1 Maneuver			986		~ 141	509		
Mov Cap-2 Maneuver		20		2 <b>4</b> 0	~ 141	343		
Stage 1		-	-	-	555			
Stage 2	0.22				404	•		
Approach	EB	Autorie.	WB		NB			
HCM Control Delay, s	0	1.21	0.2		281.3		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
HCM LOS					F			
Minor Lane/Major Mvm	nt N	BLn1	NBLn2	EBT	EBR	WBL	WBT	
Capacity (veh/h)		141	509		-	986	State of the second	
HCM Lane V/C Ratio		1.676	0.186	14	3 <b>2</b> 11	0.018	-	
HCM Control Delay (s)	\$	388.7	13.7		E 11 34	8.7	0	
HCM Lane LOS		F	В	÷.,		A	A	
HCM 95th %tile Q(veh)		17.1	0.7	21.4		0.1	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	
Notes				Ŋ 113 A		28.1.10		
-: Volume exceeds cap	pacity	\$: De	alay exc	eeds 30	)0s +	+: Com	outation Not Defined	*: All major volume in platoon

	_	_		_		_						_				
Intersection	united in the		1. The	1 82.7		1	100		1-21	a the second	1.12		Ships:	al an	14.23	
Int Delay, s/veh	9.1															
Movement	EBT	EBR	WBL	WBT	NBL	NBR			nai y a	S.15	ng m		<sup>0</sup> 1610		i index	
Lane Configurations	ef 👘			स	ሻ	1										
Traffic Vol, veh/h	685	216	61	554	56	20										
Future Vol, veh/h	685	216	61	554	56	20										
Conflicting Peds, #/hi	r 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 Storag	ge,# 0	-		0	0	100										
Grade, %	0	÷	-	0	0	-										
Peak Hour Factor	94	94	89	89	60	60										
Heavy Vehicles, %	0	0	2	0	5	2										
Mvmt Flow	729	230	69	622	93	33										
Major/Minor	Major1	A let	Aajor2	N	/linor1		d i si l	138.1	90 A L		2. S 11	- Juin	ingent.	1 202	19473	1915
Conflicting Flow All	0	0	959	0	1604	844										
Stage 1		-	•		844	11.4										
Stage 2		-		-	760	1.75										
Critical Hdwy		10 X	4.12	5145	6.45	6.22										
Critical Hdwy Stg 1			-		5.45											
Critical Hdwy Stg 2				-	5.45	-										

							0110										
Follow-up Hdwy		÷	-	2.218		-	3.545	3.318									
Pot Cap-1 Maneuver		<u>.</u>	-	717		•	114	363									
Stage 1		2	-	1046		-	417	-									
Stage 2		-		1.10		-	456	•									
Platoon blocked, %		-															
Mov Cap-1 Maneuver		•	1.18	717			97	363									
Mov Cap-2 Maneuver		-	5 <del>9</del> 8			×	97	-									
Stage 1		-	-				417	1.1									
Stage 2		-	19 <b>-</b>			-	389	-									
Approach	E	3	1	WB	n.20		NB		te liste a	Sult.	- 110	- 8'	13.1	1140	N Lu Š	1 2 2 1	
HCM Control Delay, s	(	)	111-1	- 1			122.6	a gi	n de la	 1.79	1						
HCM LOS							F										

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT	
Capacity (veh/h)	97	363		-	717	-	
HCM Lane V/C Ratio	0.962	0.092		-	0.096	-	
HCM Control Delay (s)	160.7	15.9	-		10.6	0	
HCM Lane LOS	F	С	7 <b>4</b> ()	-	В	А	
HCM 95th %tile Q(veh)	5.7	0.3		•	0.3	1.4	

Intersection		SA BIE			il Fast	A State
Int Delay, s/veh	97.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	e î			ન	۲	1
Traffic Vol, veh/h	584	31	19	823	215	87
Future Vol, veh/h	584	31	19	823	215	87
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None		None	10.00	None
Storage Length	-	-	4	(i <b></b>	0	0
Veh in Median Storage	,# 0	0.04	-	0	0	
Grade, %	0	5	-	0	0	-
Peak Hour Factor	95	95	94	94	77	77
Heavy Vehicles, %	0	0	0	0	2	2
Mvmt Flow	615	33	20	876	279	113

Major/Minor	Major1	11-1	Major2		Minor1	2021	126-51	2 Junio	11.1	1.021=	A DE	1.70	1.2	Si gir	19161	
Conflicting Flow All	0	0	648	0	1548	632										
Stage 1				-	632	- 1 <b>-</b>										
Stage 2	0.52	1.72		-	916	-										
Critical Hdwy		·	4.1		6.42	6.22										
Critical Hdwy Stg 1	3 <b>-</b> 1			-	5.42	-										
Critical Hdwy Stg 2	n en de s			-	5.42											
Follow-up Hdwy	245	~	2.2			3.318										
Pot Cap-1 Maneuver	14	1	947	-	~ 126	480										
Stage 1		•			530	-										
Stage 2			-		390	-										
Platoon blocked, %				1 <b>7</b> 2												
Mov Cap-1 Maneuver			947	10 -0	~ 121	480										
Mov Cap-2 Maneuver		20		( <del>₩</del> ));	~ 121											
Stage 1			-	. *	530	-										
Stage 2	140	1	121	5 <u>4</u> 1	374	2										
Approach	EB	ilda. <sup>10</sup>	WB	i fi P	NB		STY 1		17.5%				5,00			71525
HCM Control Delay, s	0		0.2	\$	482.5	1311	TYPE I		1.51	011 22	1.1.1	1.00	1.14	1.15	1-24	EIT
HCM LOS					F											
Minor Lane/Major Mvm	nt NE	BLn1 M	BLn2	EBT	EBR	WBL	WBT			¶wi ₹	1.83	Tid 2		1 Miles		173
Capacity (veh/h)		121	480			947		1	6. L. H.	27.1	1.2	181		24		50
HCM Lane V/C Ratio	2	.308	0.235	-		0.021	-									
HCM Control Delay (s)	\$6	71.7	14.8	N (M)	1114	8.9	0									
HCM Lane LOS		F	В	ě	÷.	А	A									
HCM 95th %tile Q(veh)		24.1	0.9	i ŝ	1116	0.1	lai tu									
Notes		- IWU	105		12 A - 11			10466.724					1. 	0. TR.T	The second	
~: Volume exceeds cap	pacity	\$: De	lay exce	eds 30	0s +	: Comp	outation	Not Def	ined	*: Ali m	ajor vo	lume in	plato	ก	3 2 2	

Intersection	1	8		and the	1800	
Int Delay, s/veh	12.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	¢,			र्स	1	1
Traffic Vol, veh/h	685	294	88	554	79	28
Future Vol, veh/h	685	294	88	554	79	28
Conflicting Peds, #/h	r 0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	1.0	None	-	None	-	None
Storage Length	-		-	-	0	0
Veh in Median Storag	ge, # 0		-	0	0	Sec. 3.
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	89	89	92	92
Heavy Vehicles, %	0	5	2	0	9	4
Mvmt Flow	729	313	99	622	86	30
Major/Minor	Major1	ll-rein	Major2		Minor1	a na sa
Conflicting Flow All	0	0	1042	0	1706	886
Stage 1				-	886	-
Stage 2				-	820	
Critical Hdwy			4.12	-	6.49	6.24
Critical Hdwy Stg 1		.( <b>a</b> )	1.000	-	5.49	-
Critical Hdwy Stg 2		1.1	200	1.1	5.49	-
Follow-up Hdwy		-	2.218	-	3.581	3.336
Pot Cap-1 Maneuver			667	1	96	341
Stage 1	1.5	120		-	392	
Stage 2					421	
Platoon blocked %		1.04.04				

v											
Platoon blocked, %	0.000	5 <b>9</b> 3									
Mov Cap-1 Maneuver	0.00	(#)	667	(*)	~ 74	341					
Mov Cap-2 Maneuver	8 <b>4</b> 6	347	848	( <b>-</b> )	~ 74	-					
Stage 1	-			1940	392	•					
Stage 2					325	-					

Approach	EB	WB	NB	
HCM Control Delay, s	0	1.6	191.3	
HCM LOS			F	

NBLn1	NBLn2	EBT	EBR	WBL	WBT	
74	341			667		
1.16	0.089	2	-	0.148	-	
253.2	16.6		•	11.3	0	
F	С			В	Α	
6.5	0.3		ч I .	0.5	2	
	74 1.16 253.2 F	1.16 0.089 253.2 16.6 F C	74 341 - 1.16 0.089 - 253.2 16.6 - F C -	74 341 1.16 0.089 253.2 16.6 F C	74       341       -       -       667         1.16       0.089       -       -       0.148         253.2       16.6       -       -       11.3         F       C       -       -       B	74       341       -       -       667       -         1.16       0.089       -       -       0.148       -         253.2       16.6       -       -       11.3       0         F       C       -       -       B       A

Notes

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined \*: All major volume in platoon

Intersection	No. of the local distribution of the local d	1-10-5			Sec. 3	
Int Delay, s/veh	157.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	Þ			स	3	1
Traffic Vol, veh/h	584	62	29	823	298	115
Future Vol, veh/h	584	62	29	823	298	115
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 Storag	e,# 0			0	0	- 1
Grade, %	0		-	0	0	
Peak Hour Factor	95	95	94	94	92	92
Heavy Vehicles, %	0	11	0	0	8	2
Mvmt Flow	615	65	31	876	324	125
Major/Minor	Major1	N	Major2	The f	Minor1	10
Conflicting Flow All	0	0	680	0	1586	648
Stage 1	-		۲		648	•
Stage 2	-	÷.			938	
Critical Hdwy	-		4.1	-	6.48	6.22
Critical Hdwy Stg 1		3.02	-	-	5.48	
Critical Hdwy Stg 2	1.		-	-	5.48	1.2.7
Follow-up Hdwy	:5=5	۲	2.2	-	3.572	3.318
Pot Cap-1 Maneuver	144		922	•	~ 115	470
Stage 1			-	-	510	
Stage 2				-	371	11- 8
Platoon blocked, %		250				
Mov Cap-1 Maneuver	1	1.000	922	-	~ 108	470
Mov Cap-2 Maneuver	3.00	:•:	90	-	~ 108	-
Stage 1		(1) (#)			510	-
Stage 2	-	(*)	-	-	347	-
Approach	EB	20 D	WB	1.57	NB	Y Leve
HCM Control Delay, s		S	0.3	\$	715.4	11.52
HCM LOS	v		0.0	Ψ	F	
				15-14		
Minorianolitaisett				FOT	CDD	14/01
Minor Lane/Major Mvn	nt N	IBLn1 N	IBLN2	EBT	EBR	WBL

wintor Lane/wajor wwith	NDLIII	NDLIIZ	EDI	con	VVDL	WDI	
Capacity (veh/h)	108	470			922		
HCM Lane V/C Ratio	2.999	0.266	-	÷	0.033		
HCM Control Delay (s)	\$ 985.5	15.4	-		9	0	
HCM Lane LOS	F	С	-	1	Α	A	
HCM 95th %tile Q(veh)	30.9	1.1			0.1	1.5	
Notes		- Incord	6.6				

-: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined \*: All major volume in platoon

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Intersection			4.1.2	28	Parel	. Dari	
Int Delay, s/veh	31						
Movement	EBT	EBR	WBL	WBT	NBL	NBR	$x^{25}$
Lane Configurations	ţ,			र्भ	٦	1	
Traffic Vol, veh/h	685	362	112	554	99	35	
Future Vol, veh/h	685	362	112	554	99	35	
Conflicting Peds, #/hr	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Stop	Stop	
RT Channelized	-	None	- C.	None	1.14	None	
Storage Length	-	-	-	-	0	0	
Veh in Median Storage		-		0	0	4	
Grade, %	0	-	X	0	0	•	
Peak Hour Factor	94	94	89	89	92	92	
Heavy Vehicles, %	0	8	2	0	12	3	
Mvmt Flow	729	385	126	622	108	38	
Major/Minor N	Aajor1		Major2		Minor1		*I
Conflicting Flow All	0	0	1114	0	1796	922	
Stage 1	-	1	-		922		
Stage 2	2	R.	÷		874		
Critical Hdwy			4.12	-	6.52	6.23	
Critical Hdwy Stg 1					5.52	-	
Critical Hdwy Stg 2	2	- 6-			5.52		
Follow-up Hdwy		-	2.218	0.0		3.327	
Pot Cap-1 Maneuver	1.04		627	-	~ 83	326	
Stage 1	2	-		S#3	372	-	
Stage 2		2	1.14		392		
Platoon blocked, %	-						
Mov Cap-1 Maneuver			627		~ 58	326	
Mov Cap-2 Maneuver			-		~ 58	-	
Stage 1	752				372	1	
Stage 2	:(•)	-			272		
	1.1.		1.22				
Approach	CD		WD	(CMA)	NID		
Approach	EB	1 2 1	WB		NB		
HCM Control Delay, s	0		2	\$	416.5		
HCM LOS					F		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
Minor Lane/Major Mvmt	N	BLn1 N	IBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)		58	326			627	
HCM Lane V/C Ratio		1.855		:=0	× .	0.201	-
HCM Control Delay (s)		557.6	17.5			12.2	0
HCM Lane LOS		F	С	( <b>4</b> )	2	В	A
HCM 95th %tile Q(veh)		10.2	0.4	14	4	0.7	
	-			-	-		-

+: Computation Not Defined

\$: Delay exceeds 300s

Notes

~: Volume exceeds capacity

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\*: All major volume in platoon

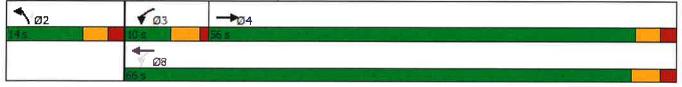
ntersection	070	1.7224	at the little				2013/11/35/110	
nt Delay, s/veh	272							
Novement	EBT	EBR	WBL	WBT	NBL	NBR	La la construction	Automatical States of the States
ane Configurations	₽			र्स	7	7		
raffic Vol, veh/h	584	89	38	823	370	140		
ture Vol, veh/h	584	89	38	823	370	140		
onflicting Peds, #/hr	0	0	0	0	0	0		
gn Control	Free	Free	Free	Free	Stop	Stop		
T Channelized	-	None		None		None		
orage Length	-		-	-	0	0		
eh in Median Storag	e,# 0	· · ·		0	0	· · ·		and the second second second
ade, %	0	-	-	0	0	-		
ak Hour Factor	95	95	94	94	92	92		
avy Vehicles, %	0	14	0	0	11	5		
mt Flow	615	94	40	876	402	152		
jor/Minor	Major1		Major2		Minor1			
nflicting Flow All	0	0	709	0	1618	662		
Stage 1	0		103	-	662	002		
Stage 2	544				956			
tical Hdwy	194		4.1		6.51	6.25		
tical Hdwy Stg 1	-	10	4.1		5.51	0.20		
tical Hdwy Stg 2			1 .		5.51	-		
llow-up Hdwy			2.2			3.345		
t Cap-1 Maneuver	8 <b>%</b>	( <b>*</b> )	899		~ 108	3.345 457		
Stage 1	-		999	•	~ 108	457		
Stage 2		:••: 			~ 360			
					~ 300			
atoon blocked, %			000	-	00	457		
ov Cap-1 Maneuver			899		~ 99	457	2	
ov Cap-2 Maneuver	. Aller		150	-	~ 99	-		
Stage 1	0.00	100	18		496			
Stage 2	200	100	9 <b>0</b> 0		~ 329	•		
	- e- <sub>1</sub>							
oroach	EB	24 1	WB	581	NB			
CM Control Delay, s	0		0.4	\$ 1	068.3			
MLOS					F			
nor Lane/Major Mvn	nt N	NBLn1	VBLn2	EBT	EBR	WBL	WBT	
pacity (veh/h)		99	457			899		
I Lane V/C Ratio		4.062				0.045	-	
A Control Delay (s)		466.1	16.8			9.2	0	
M Lane LOS		F	С			Α	A	
M 95th %tile Q(veh	)	41.5	1.4			0.1	1	
es		-	24.11	10.37	1.6.1	96.0	and the second second	
	nooit :	¢. D-		ands Of	0.0	. 0	whether Net Define	* All material in the last
lume exceeds ca	pacity	\$: De	lay exc	eeas 30	JUS -	-: Com	outation Not Defined	*: All major volume in platoon

Lanes, Volumes, Timings20273: Hopping Brook Road & Washington Street

	-	$\mathbf{i}$	4	+-	1	1
Lane Group	EBT	EBR	WBL.	WBT	NBL	NBR
Lane Configurations	ţ,		۲	1	1	1
Traffic Volume (vph)	685	294	88	554	79	28
Future Volume (vph)	685	294	88	554	79	28
Satd. Flow (prot)	2017	0	1770	1900	1612	1568
Flt Permitted	2017	U	0.092	1000	0.950	1000
Satd. Flow (perm)	2017	0	171	1900	1612	1568
Satd. Flow (RTOR)	53	U	171	1300	1012	30
Confl. Peds. (#/hr)	50					50
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor			100%	100%		
	100%	100%			100%	100%
Heavy Vehicles (%)	0%	8%	2%	0%	12%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1065	0	96	602	86	30
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase	1.000				1.1.1.1	
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	23.0		9.5	23.5	23.0	23.0
Total Split (s)	56.0		10.0	66.0	14.0	14.0
Total Split (%)	70.0%		12.5%	82.5%	17.5%	17.5%
Yellow Time (s)	3.0		3.5	3.5	3.0	3.0
All-Red Time (s)	2.0		1.0	2.0	2.0	2.0
Lost Time Adjust (s)	2.0		0.0	2.0	2.0	2.0
			4.5			
Total Lost Time (s)	5.0			5.5	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		None	None	Min	Min
Act Effct Green (s)	39.3		47.1	46.0	8.3	8.3
Actuated g/C Ratio	0.60		0.71	0.70	0.13	0.13
v/c Ratio	0.87		0.36	0.45	0.42	0.13
Control Delay	20.0		6.7	5.0	38.8	14.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	20.0		6.7	5.0	38.8	14.2
LOS	В		A	A	D	В
Approach Delay	20.0			5.2	32.5	_
Approach LOS	B			A	C	
Queue Length 50th (ft)	339		9	83	37	0
Queue Length 95th (ft)	535		24	126	85	24
Internal Link Dist (ft)	435		24	455		24
	430		150	400	753	
Turn Bay Length (ft)	4544		150	1040	040	000
Base Capacity (vph)	1544		269	1640	243	262
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0

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	-	$\mathbf{Y}$	-	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.69		0.36	0.37	0.35	0.11
Intersection Summary						N. W. W.
Cycle Length: 80						
Actuated Cycle Length: 65.	9					
Natural Cycle: 80						
Control Type: Actuated-Und	coordinated					
Maximum v/c Ratio: 0.87						
Intersection Signal Delay: 1	5.3			Int	ersection	LOS: B
Intersection Capacity Utiliza	ation 75.3%			IC	U Level o	f Service D
Analysis Period (min) 15						



Lanes, Volumes, Timings20273: Hopping Brook Road & Washington Street

	<b>→</b>	~	6	-	-	1
Long Crown	. COT	FDD		MOT	NDI	/
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	4		٦	1	ሻ	1
Traffic Volume (vph)	584	62	29	823	298	115
Future Volume (vph)	584	62	29	823	298	115
Satd. Flow (prot)	1856	0	1805	1900	1671	1583
Flt Permitted			0.180		0.950	
Satd. Flow (perm)	1856	0	342	1900	1671	1583
Satd. Flow (RTOR)	9					125
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	11%	0%	0%	8%	2%
Bus Blockages (#/hr)	078	0	0 /8	0 /8	0 /0	2 /0
	U	U	U	U	U	U
Parking (#/hr)	00/			00/	00/	
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	702	0	32	895	324	125
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	23.0		9.5	23.5	23.0	23.0
Total Split (s)	43.5		6.5	50.0	30.0	30.0
Total Split (%)	54.4%		8.1%	62.5%	37.5%	37.5%
	3.0					
Yellow Time (s)			3.5	3.5	3.0	3.0
All-Red Time (s)	2.0		1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		4.5	5.5	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		None	None	Min	Min
Act Effct Green (s)	33.8		36.4	35.4	18.0	18.0
Actuated g/C Ratio	0.52		0.56	0.55	0.28	0.28
v/c Ratio	0.72		0.13	0.86	0.70	0.24
Control Delay	18.6		8.2	23.4	31.2	5.7
Queue Delay	0.0		0.2	23.4	0.0	0.0
Total Delay	18.6		8.2	23.4	31.2	5.7
LOS	B		A	С	С	Α
Approach Delay	18.6			22.9	24.1	
Approach LOS	В			С	С	
Queue Length 50th (ft)	179		5	279	122	0
Queue Length 95th (ft)	422		18	#607	223	36
Internal Link Dist (ft)	435			455	753	
Turn Bay Length (ft)			150			
Base Capacity (vph)	1186		241	1361	688	725
Starvation Cap Reductn	0		0	0	000	0
Spillback Cap Reductn	0		0	0	0	0

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	-	$\mathbf{\hat{v}}$	4	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Storage Cap Reductn	0	1.20	0	0	0	0
Reduced v/c Ratio	0.59		0.13	0.66	0.47	0.17
Intersection Summary	Sec. 12		All IN	13131	3.5	
Cycle Length: 80						
Actuated Cycle Length: 64.5	5					
Natural Cycle: 65						
Control Type: Actuated-Unc	oordinated					
Maximum v/c Ratio: 0.86						
Intersection Signal Delay: 2	1.7			Int	ersection	LOS: C
Intersection Capacity Utiliza	tion 68.6%			IC	U Level o	f Service C
Analysis Period (min) 15						
# 95th percentile volume e	exceeds capa	acity, qu	eue may l	be longer.		
Queue shown is maximu	m after two o	ycles.	and the second	2.0		

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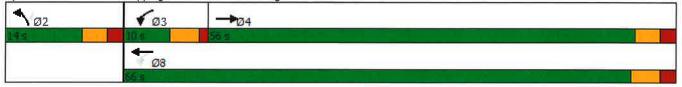
Lanes, Volumes, Timings2027 Ultimate Build Weekday Morning Peak Hour W/Mitigation3: Hopping Brook Road & Washington Street10/21/2020

	-+	7	4	-	1	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	¢		5	1	T.	T
Traffic Volume (vph)	685	362	112	554	99	35
Future Volume (vph)	685	362	112	554	99	35
Satd. Flow (prot)	1997	0	1770	1900	1612	1568
Flt Permitted	1991	0	0.084	1300	0.950	1000
Satd. Flow (perm)	1997	0	156	1900	1612	1568
Satd. Flow (RTOR)	65	0	100	1900	1012	38
Confl. Peds. (#/hr)	00					30
Confl. Bikes (#/hr)						
	0.00	0.00	0.00	0.00	0.00	0.00
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	8%	2%	0%	12%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1138	0	122	602	108	38
Turn Type	NA	1	pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	23.0		9.5	23.5	23.0	23.0
Total Split (s)	23.0 56.0		9.5	66.0	14.0	14.0
	70.0%		12.5%	82.5%	17.5%	17.5%
Total Split (%)						
Yellow Time (s)	3.0		3.5	3.5	3.0	3.0
All-Red Time (s)	2.0		1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		4.5	5.5	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		None	None	Min	Min
Act Effct Green (s)	43.4		51.2	50.1	8.7	8.7
Actuated g/C Ratio	0.62		0.73	0.71	0.12	0.12
v/c Ratio	0.90		0.49	0.44	0.54	0.17
Control Delay	23.0		13.0	4.9	45.0	13.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	23.0		13.0	4.9	45.0	13.5
LOS	C		B	A	40.0 D	B
Approach Delay	23.0		U	6.2	36.8	U
Approach LOS	23.0 C					
			4.4	A	D	0
Queue Length 50th (ft)	394		11	83	52	0
Queue Length 95th (ft)	#739		50	126	#117	27
Internal Link Dist (ft)	435			455	753	
Turn Bay Length (ft)			150		1.1	
Base Capacity (vph)	1465		250	1563	223	250
Starvation Cap Reductin	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0

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Lanes, Volumes, Timings2027 Ultimate Build Weekday Morning Peak Hour W/Mitigation3: Hopping Brook Road & Washington Street10/21/2020

	-	$\mathbf{N}$	<	+	•	1	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR	
Storage Cap Reductn	0	1 1 5	0	0	0	0	1
Reduced v/c Ratio	0.78		0.49	0.39	0.48	0.15	
Intersection Summary					$X_{f}$	1211	
Cycle Length: 80							
Actuated Cycle Length: 70.	.1						
Natural Cycle: 90							
Control Type: Actuated-Une	coordinated						a the second states of the second
Maximum v/c Ratio: 0.90							
Intersection Signal Delay: 1	8.0			In	tersection	LOS: B	
Intersection Capacity Utiliza	ation 81.9%			IC	U Level o	of Service D	
Analysis Period (min) 15							
# 95th percentile volume	exceeds cap	acity, que	eue may	be longer			
Queue shown is maximu							



Lanes, Volumes, Timings2027 Ultimate Build Weekday Evening Peak Hour W/Mitigation3: Hopping Brook Road & Washington Street10/21/2020

	-	$\mathbf{r}$	4	-	•	1
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	12		٦	1	7	1
Traffic Volume (vph)	584	89	38	823	370	140
Future Volume (vph)	584	89	38	823	370	140
Satd. Flow (prot)	1832	0	1805	1900	1626	1538
Fit Permitted	1002	U	0.143	1300	0.950	1000
Satd. Flow (perm)	1832	0	272	1900	1626	1538
		U	212	1900	1020	
Satd. Flow (RTOR)	13					152
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)	0.00	0.00	0.00		0.00	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	14%	0%	0%	11%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	732	0	41	895	402	152
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	4		3	8	2	
Permitted Phases			8			2
Detector Phase	4		3	8	2	2
Switch Phase	1.1.1.1.1.1			J. J. J.		
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	23.0		9.5	23.5	23.0	23.0
	45.5		9.5	23.5 52.0	30.0	30.0
Total Split (s)						
Total Split (%)	55.5%		7.9%	63.4%	36.6%	36.6%
Yellow Time (s)	3.0		3.5	3.5	3.0	3.0
All-Red Time (s)	2.0		1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		4.5	5.5	5.0	5.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		None	None	Min	Min
Act Effct Green (s)	35.3		39.3	38.2	21.4	21.4
Actuated g/C Ratio	0.50		0.56	0.54	0.30	0.30
v/c Ratio	0.79		0.21	0.87	0.82	0.27
Control Delay	23.6		9.9	25.4	39.9	5.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	23.6		9.9	25.4	39.9	5.5
LOS	20.0 C		9.5 A	2J.4	09.9 D	3.5 A
Approach Delay	23.6		~	24.7	30.5	n
Approach LOS	C		_	C	C	^
Queue Length 50th (ft)	294		8	347	179	0
Queue Length 95th (ft)	#467		21	#561	#337	40
Internal Link Dist (ft)	435			455	753	
Turn Bay Length (ft)		- 0 TU)	150			
Base Capacity (vph)	1108		196	1312	604	667
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0

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Lanes, Volumes, Timings2027 Ultimate Build Weekday Evening Peak Hour W/Mitigation3: Hopping Brook Road & Washington Street10/21/2020

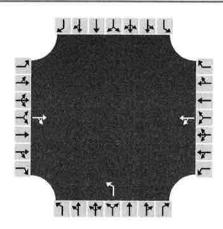
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Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Storage Cap Reductn	0	1.000	0	0	0	0
Reduced v/c Ratio	0.66		0.21	0.68	0.67	0.23
Intersection Summary			13.0 10	12 a 1	23.h	14510
Cycle Length: 82						
Actuated Cycle Length: 70.6						
Natural Cycle: 70						
Control Type: Actuated-Unco	ordinated					
Maximum v/c Ratio: 0.87						
Intersection Signal Delay: 25.	8			Int	tersection	LOS: C
Intersection Capacity Utilization	on 72.6%			IC	U Level o	f Service C
Analysis Period (min) 15						
# 95th percentile volume ex	ceeds cap	acity, qu	eue may l	be longer		
Queue shown is maximum	after two	cycles.	1,2			

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20 4	5.5 5	
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HCS SIGNAL WARRANT ANALYSIS

**a**)

#### **Project Information** Analyst RE Date 9/30/2020 Agency VAI Analysis Year 2020 Existing- RT removed Jurisdiction MassDOT/Holliston Time Period Analyzed **Project Description** Warehouse General Major Street Direction East-West Population < 10,000 No 7 Starting Time Interval No **Coordinated Signal System** Undivided Median Type Crashes (crashes/year) 0 Major Street Speed (mi/h) 42 Adequate Trials of Crash Exp. Alt. No 9000 Nearest Signal (ft) **Geometry and Traffic**



Approach		Eastbound	d		Westboun	d	N	lorthbour	nd	Southbound				
Movement	L	Т	R	L	Т	R	L	Т	R	L	Т	R		
Number of Lanes, N	0	1	0	0	1	0	1	0	0	0	0	0		
Lane Usage		TR			LT		L							
Vehicle Volumes Averages (veh/h)	0	482	0	0	466	0	102	0	0	0	0	0		
Pedestrian Averages (peds/h)		0			0			0		0				
Gap Averages (gaps/h)		0			0			0			0			
Delay (s/veh)		0.0			0.0			0.0			0.0			
Delay (veh-hrs)		0.0			0.0		0.0			0.0				
School Crossing and Roadway	y Netwo	rk												
Number of Students in Highest Hour	0			T	wo or Mo	re Major	Routes		No					
Number of Adequate Gaps in Period	0			V	Veekend C		No							
Number of Minutes in Period	0			5	5-year Growth Factor (%)				0					
Railroad Crossing			1.1		-					1941				
Grade Crossing Approach	None			F	Rail Traffic (trains/day)					0				
Highest Volume Hour with Trains	Unknow	n		H	High Occupancy Buses (%)				0					
Distance to Stop Line (ft)				Т	Tractor-Trailer Trucks (%)					0				

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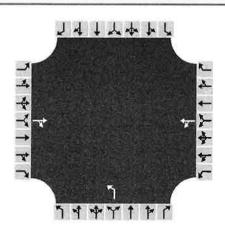
HCS 11 Signal Warrants Version 7.8.5 Warrants Exisitng- Right Turn removed.xsw Generated: 11/17/2020 9:47:11 AM

Hour	ummary Major	Minor	Total	De de /h	Comella	1.4	1.4	10	40		24	25		
нош	Volume	Volume	Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%
07 - 08	947	45	<del>9</del> 92	0	0	No	No	No	Yes	No	No	No	No	No
08 - 09	976	44	1020	0	0	No	No	No	Yes	No	No	No	No	No
09 - 10	804	37	841	0	0	No	No	No	No	No	No	No	No	No
10 - 11	772	54	826	0	0	No	No	Yes	Yes	No	No	No	No	No
11 - 12	795	79	874	0	0	No	No	Yes	Yes	Yes	No	No	No	No
12 - 13	866	152	1018	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
13 - 14	879	83	962	0	0	No	No	Yes	Yes	Yes	No	No	No	No
14 - 15	1009	103	1112	0	0	No	Yes	Yes	Yes	Yes	No	Yes	No	No
15 - 16	1098	171	1269	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16 - 17	1155	201	1356	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1209	205	1414	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18 - 19	873	56	929	0	0	No	No	Yes	Yes	No	No	No	No	No
Total	11383	1230	12613	0	0	4	5	9	11	7	0	5	0	0
Warrants										5 12			1.0	
Warrant 1: I	Eight-Hou	r Vehicul	lar Volun	ne		_						T	1	
	m Vehicula	_			chesand	1 higher	minor app	roach)o	)r				•	
the state of the s	tion of Cor												~	
	ularand												v	
Warrant 2: F						ouches c	ind ingh		ipproactij				1	
	Vehicular \		-		sand	higher mi	or approa	ach)			_		<b>▼</b>	
Warrant 3: F			, and the second s	approache		ingrier init							 ✓	
	our Conditio		r delav a	nd mine	or volume	and to	tal volume	a)Or					•	
Contraction of the second	our Vehicula			_		_	_	and the second					~	
Warrant 4: F					iches ani	a nigrici	miller app	Joachy					•	
Number of Street, or	ur Volumes		_		_	-								
	ur Volumes													
Narrant 5: S														
	Perioda													
Student Vo											1			
Nearest Tra		l Signal (o	ntional)				_						1	
Narrant 6: C	_										-		v	
Degree of I				ion or hot	h direction	ns)								
Narrant 7: C					in an eet.o	,								
A. Adequat			s, observar	nce and er	forcemen	t failed	nd							
B. Reported					_									
C. 56% Volu		-		_		and period	a, unu						./	
	oadway N		,,	. are sut							-		v	
VUITUIIL O. R			totaland	project	ed warran	ts 1, 2, or 3	3)or	×						
		Sur HOUT	and and	, project		ο η <i>ε</i> , οι :	J) 01		_					
A. Weekday	the second days of the second da	ive hours	total)											
A. Weekday B. Weekenc	d Volume (F		total)											
A. Weekday	d Volume (F F <b>rade Cros</b>	sing												

#### **Project Information**

Analyst	RE	Date	9/30/2020
Agency	VAI	Analysis Year	2027 Build
Jurisdiction	MassDOT/Holliston	Time Period Analyzed	
Project Description	Warehouse		
General			
Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	0
Major Street Speed (mi/h)	42	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	9000		

#### **Geometry and Traffic**



Approach		Eastbound	d		Westboun	d	1	lorthbour	d Southbound				
Movement	L	Т	R	L	Т	R	L	Т	R	L	Т	R	
Number of Lanes, N	0	1	0	0	1	0	1	0	0	0	0	0	
Lane Usage		TR			LT		L						
Vehicle Volumes Averages (veh/h)	0	525	0	0	508	0	129	0	0	0	0	0	
Pedestrian Averages (peds/h)		0			0			0		0			
Gap Averages (gaps/h)		0		0			0			0			
Delay (s/veh)	1		0.0			0.0			0.0				
Delay (veh-hrs)		0.0		0.0		0.0			0.0				
School Crossing and Roadway	y Netwo	rk											
Number of Students in Highest Hour	0			T	wo or Mo	re Major	Routes		No				
Number of Adequate Gaps in Period	0			N	Weekend Counts				No				
Number of Minutes in Period	0			5	5-year Growth Factor (%)					0			
Railroad Crossing	1				1.0					-			
Grade Crossing Approach	None			F	ail Traffic	(trains/da	iy)		0				
Highest Volume Hour with Trains	Unknow	n		F	High Occupancy Buses (%)				0				
Distance to Stop Line (ft)				Т	ractor-Tra	ler Truck	s (%)		0				

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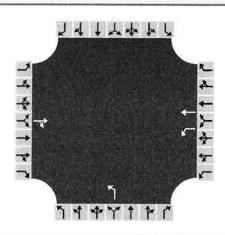
HCS<sup>TMM</sup> Signal Warrants Version 7.8.5 Warrants Build - Right Turn removed.xsw Generated: 11/17/2020 9:45:10 AM

	ies di la				HCS	57 Wa	rrants	Repo	rt					
Volume S	ummary	,								-				
Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%
07 - 08	1041	73	1114	0	0	No	No	Yes	Yes	Yes	No	No	No	No
08 - 09	1061	65	1126	0	0	No	No	Yes	Yes	Yes	No	No	No	No
09 - 10	879	60	939	0	0	No	No	Yes	Yes	No	No	No	No	No
10 - 11	844	77	921	0	0	No	No	Yes	Yes	Yes	No	No	No	No
11 - 12	873	108	981	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
12 - <b>1</b> 3	949	186	1135	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
13 - 14	958	107	1065	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
14 - 15	1102	134	1236	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
15 - 16	1197	207	1404	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16 - 17	1260	239	1499	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1308	233	1541	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18 - 19	935	60	995	0	0	No	No	Yes	Yes	No	No	No	No	No
Total	12407	1549	13956	0	0	7	7	12	12	10	0	7	0	0
Warrants							-	10 A						
Warrant 1: I	Eight-Hou	r Vehicu	lar Volun	ne								T	1	-
	m Vehicula				chesand	d higher	minor app	roach)o	or					
	tion of Cor	_			and the local data in the loca								~	
	ularand-												•	
Warrant 2: I	and the second division of the second divisio				3 17	_							1	
Four-Hour	Vehicular \	Volume (B	oth major	approache	esand	hiaher mi	nor approa	ach)						
Narrant 3: I						5								
A. Peak-Ho	our Conditio	ons (Mino	r delav a	and mind	or volume	and to	tal volume	e)or						
B. Peak-Ho													1	
Narrant 4: F													•	
A. Four Ho	ur Volumes	sor												
B. One-Ho	ur Volumes													
Narrant 5: S	chool Cro	ssing												
Gaps Same														
Student Vo														
Nearest Tra	affic Contro	l Signal (o	ptional)										1	
Varrant 6: C														
Degree of	Platooning	(Predomin	nant direct	ion or bot	h directio	ns)								
- Varrant 7: C	_	_												
A. Adequat	e trials of a	Iternative	s, observar	nce and er	oforcemen	t faileda	ind							
B. Reported	the second se				-									
C. 56% Vol					-								~	
Varrant 8: R	oadway N	Vetwork			_									
A. Weekday	/ Volume (P	eak hour	totaland	l project	ed warran	ts 1, 2, or 3	3)or							
B. Weekend		the second s	the second division of											
Varrant 9: G	rade Cros	sing												
A. Grade Cr			-and											
B. Peak-Ho														
		- 5 EL - 2 L										-		

#### **Project Information**

Analyst	RE	Date	9/30/2020
Agency	VAI	Analysis Year	2027 Ultimate build-RT removed
Jurisdiction	MassDOT/Holliston	Time Period Analyzed	
Project Description	Warehouse		
General			
Major Street Direction	East-West	Population < 10,000	No
Starting Time Interval	7	Coordinated Signal System	No
Median Type	Undivided	Crashes (crashes/year)	0
Major Street Speed (mi/h)	42	Adequate Trials of Crash Exp. Alt.	No
Nearest Signal (ft)	9000		
		The second s	the second s

#### **Geometry and Traffic**



	Eastbound	d	,	Westboun	d	1	lorthbour	nd	Southbound			
L	Т	R	L	Т	R	L	Т	R	L	Т	R	
0	1	0	1	1	0	1	0	0	0	0	0	
	TR		L	Т		L						
0	529	0	0	512	0	138	0	0	0	0	0	
	0			0			0		0			
	0			0			0			0		
	0.0						0.0		0.0			
		0.0			0.0			0.0				
y Netwo	rk											
0			Т	wo or Mo	re Major I	Routes		No				
0			V	Weekend Counts				No				
0			5	5-year Growth Factor (%)				0				
None			R	ail Traffic	(trains/da	y)		0				
Unknow	n		F	High Occupancy Buses (%)				0				
			T	ractor-Tra	iler Trucks	5 (%)		0				
	L 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	L       T         0       1         0       TR         0       529         0       0         0       0         0       0.0         0       0.0         0       0.0         0       0.0         0       0.0         0       0         0       0	0       1       0         TR       TR         0       529       0         0       0       0         0       0.0       0         y       vetwork       0         0       0       0         0       0       0         0       0       0         None       0       0	L       T       R       L         0       1       0       1         0       TR       L       L         0       529       0       0         0       529       0       0         0       0       0       0         0       0.0       0       0         Vetwork       0       7         0       0       5         None       R       None       R         Unknown       H       H	L       T       R       L       T         0       1       0       1       1         0       1       0       1       1         0       TR       L       T         0       529       0       0       512         0       0       529       0       0       512         0       0       0       0       0       0         0       0.0       0.0       0.0       0.0         Vetwork       0       0.0       0.0       0.0         0       0       Two or Mo       0.0       0.0         0       Two or Mo       0.0       5-year Gro         None       Rail Traffic       High Occur       10	L       T       R       L       T       R         0       1       0       1       1       0         0       TR       L       T       T         0       529       0       0       512       0         0       0       529       0       0       512       0         0       0       0       0       0       0       0         0.0       0.0       0.0       0.0       0.0       0.0         vetwork       0       0.0       0.0       0.0       0.0       0.0         0       0.0       0.0       0.0       0.0       0.0       0.0       0.0         vetwork       Vetwork       Veekend Counts       0       5-year Growth Factor       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       <	L       T       R       L       T       R       L         0       1       0       1       1       0       1         0       1       0       1       1       0       1         0       1       0       1       1       0       1         0       529       0       0       512       0       138         0       0       0       512       0       138         0       0       0       0       1       0         0       0       0       0       0       138         0       0       0       0       0       138         0       0       0       0       0       1         0       0.0       0.0       0.0       0       1         y       Vetwork       Veekend Counts       0       5-year Growth Factor (%)         0       0       5-year Growth Factor (%)       1         None       Rail Traffic (trains/day)       1       1	L       T       R       L       T       R       L       T         0       1       0       1       1       0       1       0         0       TR       L       T       R       L       T         0       529       0       0       512       0       138       0         0       529       0       0       512       0       138       0         0       0       0       0       0       0       0       0         0       0       0       0.0       0.0       0.0       0.0       0.0         Two or More Major Routes         0       Two or More Major Routes       Veekend Counts       Source       Source         0       Two or More Major Routes       Rail Traffic (trains/day)       High Occupancy Buses (%)	L       T       R       L       T       R       L       T       R         0       1       0       1       1       0       1       0       0         TR       L       T       L       T       L       0       1       0       0         0       529       0       0       512       0       138       0       0         0       529       0       0       512       0       138       0       0         0       0       0       0       0       0       0       0       0         0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0         Two or More Major Routes       No         0       Image:	L       T       R       L       T       R       L       T       R       L         0       1       0       1       1       0       1       0       0       0         1       0       1       0       1       0       1       0       0       0         0       529       0       0       512       0       138       0       0       0         0       529       0       0       512       0       138       0       0       0         0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0       0 </td <td><math display="block"> \begin{array}{ c c c c } \hline   c   c   c   c   c   c   c   c   c  </math></td>	$ \begin{array}{ c c c c } \hline   c   c   c   c   c   c   c   c   c  $	

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HCS 100 Signal Warrants Version 7.8.5 Warrants UBuild- Right Turn removed.xsw Generated: 11/17/2020 9:48:11 AM

					HCS	57 Wa	rrants	Repo	rt					
Volume S	ummary	,											I STOCK	
Hour	Major Volume	Minor Volume	Total Volume	Peds/h	Gaps/h	1A (70%)	1A (56%)	1B (70%)	1B (56%)	2 (70%)	3A (70%)	3B (70%)	4A (70%)	4B (70%
07 - 08	1051	83	1134	0	0	No	No	Yes	Yes	Yes	No	No	No	No
08 - 09	1068	72	1140	0	0	No	No	Yes	Yes	Yes	No	No	No	No
09 - 10	888	70	958	0	0	No	No	Yes	Yes	Yes	No	No	No	No
10 - 11	852	87	939	0	0	No	Yes	Yes	Yes	Yes	No	No	No	No
11 - 12	883	119	1002	0	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
12 - 13	958	197	1155	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
13 - 14	966	117	1083	0	0	Yes	Yes	Yes	Yes	Yes	No	No	No	No
14 - 15	1111	146	1257	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
15 - 16	1207	219	1426	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
16 - 17	1270	251	1521	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
17 - 18	1313	239	1552	0	0	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No
18 - 19	937	60	997	0	0	No	No	Yes	Yes	Yes	No	No	No	No
Total	12504	1660	14164	0	0	7	8	12	12	12	0	5	0	0
Warrants	2.1							1				-		1
Warrant 1: I	Eight-Hou	r Vehicu	lar Volun	ne		-							1	
A. Minimu	m Vehicula	r Volumes	(Both maj	or approa	chesand	d higher	minor app	oroach)c	pr					
	tion of Cor									-			~	
	ularand-		_										· •	
Narrant 2: I		_											1	
Four-Hour	Vehicular	Volume (Be	oth major	approache	esand	higher mi	nor approa	ach)					 ✓	
Narrant 3: I								_					· •	
A. Peak-Ho	our Conditi	ons (Mino	r delay a	and mine	or volume	and to	tal volume	e)or						
	our Vehicula			-		_							1	
Narrant 4: F								_						
A. Four Ho	ur Volumes	sor												
B. One-Ho	ur Volumes													
Narrant 5: S	chool Cro	ssing												
Gaps Same	e Perioda	nd												
Student Vo	lumes													
Nearest Tra	affic Contro	l Signal (o	ptional)										1	
Varrant 6: C	oordinate	ed Signal	System											
Degree of	Platooning	(Predomin	nant direct	ion or bot	h directio	ns)								
Varrant 7: C	rash Expe	erience												
A. Adequat	e trials of a	Iternative	s, observai	nce and er	nforcemen	t faileda	and							
B. Reported	d crashes su	usceptible	to correct	ion by sigi	nal (12-mo	onth perio	d)and							
C. 56% Vol	umes for W	arrants 1A	, 1B,or-	- 4 are sat	isfied								1	
Varrant 8: R	oadway I	Vetwork												
A. Weekday	/ Volume (F	Peak hour	totaland	I project	ed warran	ts 1, 2, or	3)or							
B. Weekend	d Volume (F	ive hours	total)											
Varrant 9: G	rade Cros	sing												
A. Grade Cr	ossing with	nin 140 ft -	-and											
B. Peak-Ho	ur Vehicula	r Volumes												