115 Winthrop Square

Draft Environmental Impact Report/ Project Impact Report

EEA No. 15610

VOLUME 3: TRANSPORTATION ATTACHMENT

Submitted to:
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS
MEPA Office
100 Cambridge Street, Suite 900
Boston, MA 02114

BOSTON PLANNING & DEVELOPMENT AGENCY
One City Hall, Ninth Floor
Boston, MA 02201

Submitted by:
MCAF Winthrop LLC
c/o Millennium Partners
7 Water Street
Boston, MA 02109

Prepared by:
EPSILON ASSOCIATES, INC.
3 Mill & Main Place, Suite 250
Maynard, MA 01754

January 2, 2018

Table of Contents

ATTACHMENT D TRANSPORTATION

ATTACHMENT D: Transportation Supporting Documentation

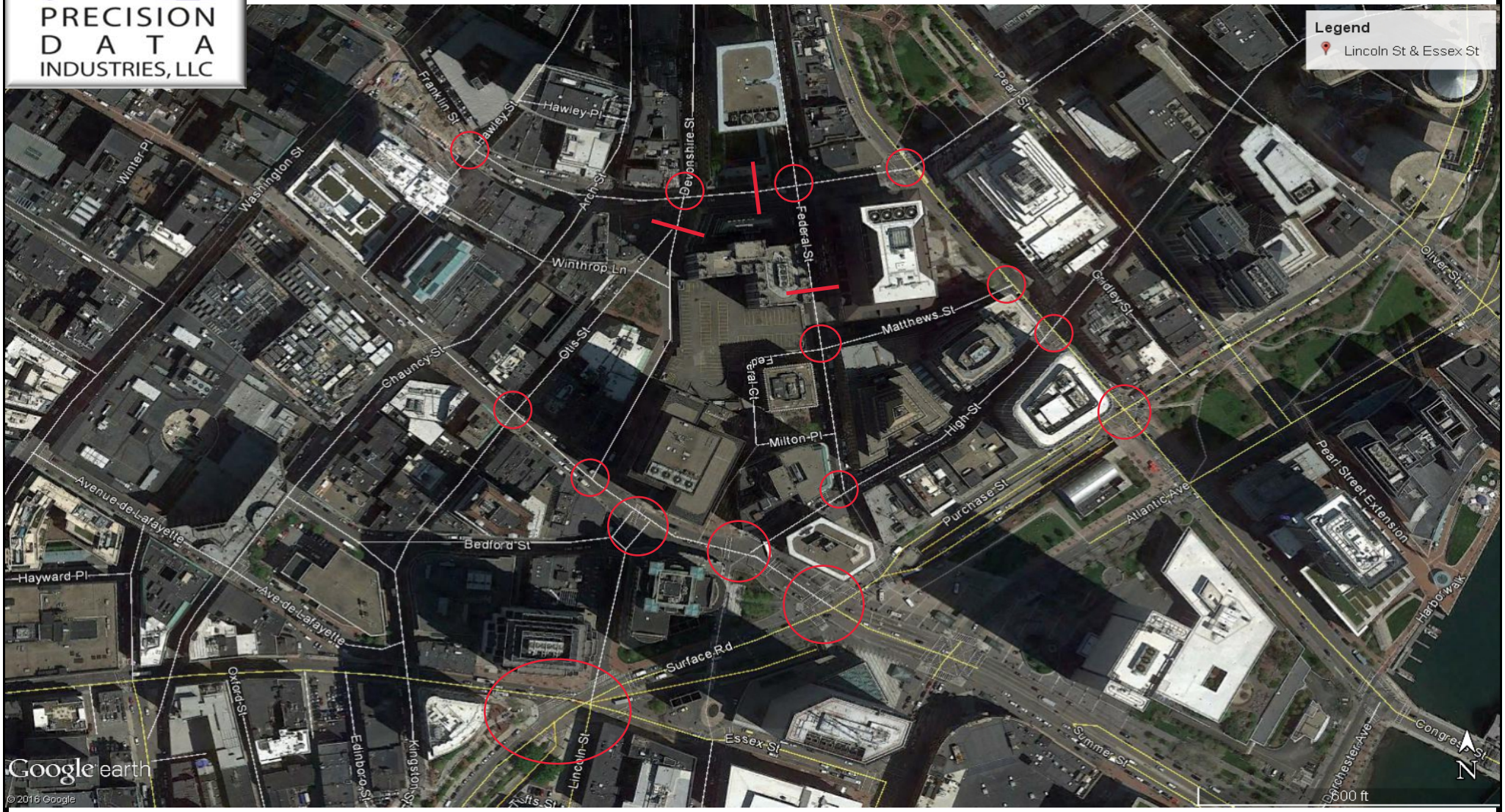
Materials are provided on the enclosed CD-ROM.

1. **Traffic Volume Data**
   - Turning Movement Counts (TMCs)
2. **Background Projects**
3. **ITE Internal Capture**
4. **ITE Trip Generation**
5. **Synchro Level of Service (LOS) Reports**
   - 2016 Existing Conditions
   - 2023 No-Build Conditions
   - 2023 Build Conditions
   - 2023 Build Mitigated Conditions
6. **Transit Analysis**
7. **Loading Dock Truck Turns**
8. **Parking Analysis**
9. **Truck Trip Generation**

1. Traffic Volume Data

PRECISION DATA INDUSTRIES, LLC
Office: 508.875.0100 Fax: 508.875.0118
Email: datarequests@pdillc.com

Traffic Counts with Precision



Client:	Engineer:	Site Code:	Date:	PDI Job Number:	City, State:
VHB	S. Wetmore	TBA	Tues 11/29 thru Wed 11/30/16	165369	Boston, MA

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Federal Street
north of Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore
NB

165369 A Class
Site Code: TBA

Start Time	Cars	Medium Heavy	Large Heavy											Total
11/29/1														
6	10	2	0	0	0	0	0	0	0	0	0	0	0	12
01:00	3	1	0	0	0	0	0	0	0	0	0	0	0	4
02:00	12	2	0	0	0	0	0	0	0	0	0	0	0	14
03:00	6	5	0	0	0	0	0	0	0	0	0	0	0	11
04:00	10	9	0	0	0	0	0	0	0	0	0	0	0	19
05:00	65	12	1	0	0	0	0	0	0	0	0	0	0	78
06:00	104	29	1	0	0	0	0	0	0	0	0	0	0	134
07:00	189	45	1	0	0	0	0	0	0	0	0	0	0	235
08:00	195	46	0	0	0	0	0	0	0	0	0	0	0	241
09:00	207	46	1	0	0	0	0	0	0	0	0	0	0	254
10:00	170	24	2	0	0	0	0	0	0	0	0	0	0	196
11:00	158	26	0	0	0	0	0	0	0	0	0	0	0	184
12 PM	164	19	1	0	0	0	0	0	0	0	0	0	0	184
13:00	151	18	0	0	0	0	0	0	0	0	0	0	0	169
14:00	119	13	0	0	0	0	0	0	0	0	0	0	0	132
15:00	105	28	0	0	0	0	0	0	0	0	0	0	0	133
16:00	124	33	0	0	0	0	0	0	0	0	0	0	0	157
17:00	110	40	0	0	0	0	0	0	0	0	0	0	0	150
18:00	92	34	0	0	0	0	0	0	0	0	0	0	0	126
19:00	67	17	0	0	0	0	0	0	0	0	0	0	0	84
20:00	54	11	1	0	0	0	0	0	0	0	0	0	0	66
21:00	34	2	0	0	0	0	0	0	0	0	0	0	0	36
22:00	28	2	0	0	0	0	0	0	0	0	0	0	0	30
23:00	14	1	0	0	0	0	0	0	0	0	0	0	0	15
Total	2191	465	8	0	0	0	0	0	0	0	0	0	0	2664
Percent	82.2%	17.5%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	08:00	10:00											09:00
Vol.	207	46	2											254
PM Peak	12:00	17:00	12:00											12:00
Vol.	164	40	1											184

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Federal Street
north of Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore
NB

165369 A Class
Site Code: TBA

Start Time	Cars	Medium Heavy	Large Heavy											Total
11/30/1														
6	10	0	1	0	0	0	0	0	0	0	0	0	0	11
01:00	4	1	0	0	0	0	0	0	0	0	0	0	0	5
02:00	10	2	0	0	0	0	0	0	0	0	0	0	0	12
03:00	5	2	0	0	0	0	0	0	0	0	0	0	0	7
04:00	12	4	0	0	0	0	0	0	0	0	0	0	0	16
05:00	62	10	0	0	0	0	0	0	0	0	0	0	0	72
06:00	109	28	0	0	0	0	0	0	0	0	0	0	0	137
07:00	182	37	1	0	0	0	0	0	0	0	0	0	0	220
08:00	193	53	0	0	0	0	0	0	0	0	0	0	0	246
09:00	190	45	0	0	0	0	0	0	0	0	0	0	0	235
10:00	165	28	0	0	0	0	0	0	0	0	0	0	0	193
11:00	158	21	0	0	0	0	0	0	0	0	0	0	0	179
12 PM	140	26	0	0	0	0	0	0	0	0	0	0	0	166
13:00	111	18	0	0	0	0	0	0	0	0	0	0	0	129
14:00	113	16	0	0	0	0	0	0	0	0	0	0	0	129
15:00	118	26	0	0	0	0	0	0	0	0	0	0	0	144
16:00	109	24	0	0	0	0	0	0	0	0	0	0	0	133
17:00	105	31	0	0	0	0	0	0	0	0	0	0	0	136
18:00	117	26	0	0	0	0	0	0	0	0	0	0	0	143
19:00	102	28	0	0	0	0	0	0	0	0	0	0	0	130
20:00	67	8	0	0	0	0	0	0	0	0	0	0	0	75
21:00	45	5	0	0	0	0	0	0	0	0	0	0	0	50
22:00	42	2	0	0	0	0	0	0	0	0	0	0	0	44
23:00	19	0	0	0	0	0	0	0	0	0	0	0	0	19
Total	2188	441	2	0	0	0	0	0	0	0	0	0	0	2631
Percent	83.2%	16.8%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	00:00											08:00
Vol.	193	53	1											246
PM Peak	12:00	17:00												12:00
Vol.	140	31												166

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Federal Street
north of Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

165369 A Volume
Site Code: TBA

Start Time	A.M.	NB	P.M.	
				Tue 11/29/20 16
12:00	5		40	
12:15	1		44	
12:30	3		47	
12:45	3	12	53	184
01:00	1		42	
01:15	0		31	
01:30	1		50	
01:45	2	4	46	169
02:00	6		30	
02:15	4		37	
02:30	2		29	
02:45	2	14	36	132
03:00	3		27	
03:15	4		30	
03:30	1		44	
03:45	3	11	32	133
04:00	3		35	
04:15	4		37	
04:30	4		41	
04:45	8	19	44	157
05:00	14		37	
05:15	14		27	
05:30	17		42	
05:45	33	78	44	150
06:00	24		39	
06:15	34		38	
06:30	39		25	
06:45	37	134	24	126
07:00	48		26	
07:15	80		22	
07:30	49		18	
07:45	58	235	18	84
08:00	49		22	
08:15	54		13	
08:30	58		12	
08:45	80	241	19	66
09:00	59		11	
09:15	70		7	
09:30	69		7	
09:45	56	254	11	36
10:00	51		5	
10:15	54		8	
10:30	39		6	
10:45	52	196	11	30
11:00	48		6	
11:15	37		3	
11:30	51		1	
11:45	48	184	5	15
Total	1382		1282	
Percent			100.0 %	
			0.0%	0.0%
Day Total		2664		
Peak	08:45	-	00:15	-
Vol.	278	-	186	-
P.H.F.	0.869		0.877	

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Federal Street
north of Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

165369 A Volume
Site Code: TBA

Start Time	A.M.	NB	P.M.		Wed 11/30/20 16
12:00	4		42		
12:15	4		33		
12:30	2		58		
12:45	1	11	33	166	
01:00	1		35		
01:15	1		32		
01:30	3		37		
01:45	0	5	25	129	
02:00	7		36		
02:15	3		35		
02:30	0		28		
02:45	2	12	30	129	
03:00	5		32		
03:15	2		28		
03:30	0		45		
03:45	0	7	39	144	
04:00	2		27		
04:15	3		40		
04:30	3		35		
04:45	8	16	31	133	
05:00	8		37		
05:15	18		37		
05:30	17		35		
05:45	29	72	27	136	
06:00	21		35		
06:15	37		53		
06:30	32		28		
06:45	47	137	27	143	
07:00	31		40		
07:15	72		29		
07:30	61		35		
07:45	56	220	26	130	
08:00	64		27		
08:15	51		20		
08:30	54		14		
08:45	77	246	14	75	
09:00	61		11		
09:15	71		18		
09:30	62		11		
09:45	41	235	10	50	
10:00	46		15		
10:15	49		7		
10:30	46		11		
10:45	52	193	11	44	
11:00	47		8		
11:15	52		4		
11:30	39		3		
11:45	41	179	4	19	
Total	1333		1298		
Percent			100.0 %	0.0%	0.0%
Day Total		2631			
Peak	08:45	-	12:00	-	- - - - - - - - - - - -
Vol.	271	-	166	-	- - - - - - - - - - - -
P.H.F.	0.880		0.716		

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Franklin Street
between Federal St & Devonshire St
City, State: Boston, MA
Client: VHB/ S. Wetmore
WB

165369 B Class
Site Code: TBA

Start Time	Cars	Medium Heavy	Large Heavy											Total
11/29/1														
6	15	1	0	0	0	0	0	0	0	0	0	0	0	16
01:00	9	1	0	0	0	0	0	0	0	0	0	0	0	10
02:00	12	2	0	0	0	0	0	0	0	0	0	0	0	14
03:00	13	5	1	0	0	0	0	0	0	0	0	0	0	19
04:00	21	4	0	0	0	0	0	0	0	0	0	0	0	25
05:00	79	19	3	0	0	0	0	0	0	0	0	0	0	101
06:00	109	36	0	0	0	0	0	0	0	0	0	0	0	145
07:00	140	49	0	0	0	0	0	0	0	0	0	0	0	189
08:00	205	50	0	0	0	0	0	0	0	0	0	0	0	255
09:00	224	51	2	0	0	0	0	0	0	0	0	0	0	277
10:00	220	32	0	0	0	0	0	0	0	0	0	0	0	252
11:00	206	17	0	0	0	0	0	0	0	0	0	0	0	223
12 PM	235	26	0	0	0	0	0	0	0	0	0	0	0	261
13:00	202	21	0	0	0	0	0	0	0	0	0	0	0	223
14:00	207	16	0	0	0	0	0	0	0	0	0	0	0	223
15:00	206	23	0	0	0	0	0	0	0	0	0	0	0	229
16:00	210	33	0	0	0	0	0	0	0	0	0	0	0	243
17:00	195	35	0	0	0	0	0	0	0	0	0	0	0	230
18:00	236	35	0	0	0	0	0	0	0	0	0	0	0	271
19:00	135	20	0	0	0	0	0	0	0	0	0	0	0	155
20:00	80	7	0	0	0	0	0	0	0	0	0	0	0	87
21:00	81	6	0	0	0	0	0	0	0	0	0	0	0	87
22:00	45	1	0	0	0	0	0	0	0	0	0	0	0	46
23:00	30	1	0	0	0	0	0	0	0	0	0	0	0	31
Total	3115	491	6	0	0	0	0	0	0	0	0	0	0	3612
Percent	86.2%	13.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	09:00	05:00											09:00
Vol.	224	51	3											277
PM Peak	18:00	17:00												18:00
Vol.	236	35												271

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Franklin Street
between Federal St & Devonshire St
City, State: Boston, MA
Client: VHB/ S. Wetmore
WB

165369 B Class
Site Code: TBA

Start Time	Cars	Medium Heavy	Large Heavy											Total
11/30/1														
6	20	0	0	0	0	0	0	0	0	0	0	0	0	20
01:00	14	1	0	0	0	0	0	0	0	0	0	0	0	15
02:00	8	0	0	0	0	0	0	0	0	0	0	0	0	8
03:00	11	4	1	0	0	0	0	0	0	0	0	0	0	16
04:00	19	9	0	0	0	0	0	0	0	0	0	0	0	28
05:00	86	15	1	0	0	0	0	0	0	0	0	0	0	102
06:00	98	39	0	0	0	0	0	0	0	0	0	0	0	137
07:00	157	33	1	0	0	0	0	0	0	0	0	0	0	191
08:00	204	52	1	0	0	0	0	0	0	0	0	0	0	257
09:00	234	29	0	0	0	0	0	0	0	0	0	0	0	263
10:00	201	35	0	0	0	0	0	0	0	0	0	0	0	236
11:00	234	22	0	0	0	0	0	0	0	0	0	0	0	256
12 PM	212	29	0	0	0	0	0	0	0	0	0	0	0	241
13:00	182	18	0	0	0	0	0	0	0	0	0	0	0	200
14:00	179	16	0	0	0	0	0	0	0	0	0	0	0	195
15:00	189	25	0	0	0	0	0	0	0	0	0	0	0	214
16:00	226	33	0	0	0	0	0	0	0	0	0	0	0	259
17:00	179	32	0	0	0	0	0	0	0	0	0	0	0	211
18:00	194	32	0	0	0	0	0	0	0	0	0	0	0	226
19:00	185	25	0	0	0	0	0	0	0	0	0	0	0	210
20:00	132	7	0	0	0	0	0	0	0	0	0	0	0	139
21:00	78	5	0	0	0	0	0	0	0	0	0	0	0	83
22:00	54	2	0	0	0	0	0	0	0	0	0	0	0	56
23:00	33	0	0	0	0	0	0	0	0	0	0	0	0	33
Total	3129	463	4	0	0	0	0	0	0	0	0	0	0	3596
Percent	87.0%	12.9%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	08:00	03:00											09:00
Vol.	234	52	1											263
PM Peak	16:00	16:00												16:00
Vol.	226	33												259

Franklin Street
between Federal St & Devonshire St
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

165369 B Volume
Site Code: TBA

Start Time	A.M.	WB	P.M.													Tue 11/29/20 16
12:00	6		53													
12:15	2		79													
12:30	5		65													
12:45	3	16	64	261												
01:00	1		62													
01:15	2		48													
01:30	4		46													
01:45	3	10	67	223												
02:00	5		57													
02:15	6		62													
02:30	2		53													
02:45	1	14	51	223												
03:00	5		60													
03:15	3		51													
03:30	8		71													
03:45	3	19	47	229												
04:00	2		60													
04:15	2		60													
04:30	11		70													
04:45	10	25	53	243												
05:00	13		54													
05:15	25		60													
05:30	21		51													
05:45	42	101	65	230												
06:00	32		65													
06:15	25		86													
06:30	45		66													
06:45	43	145	54	271												
07:00	46		46													
07:15	53		32													
07:30	40		35													
07:45	50	189	42	155												
08:00	58		33													
08:15	43		25													
08:30	64		13													
08:45	90	255	16	87												
09:00	71		19													
09:15	63		20													
09:30	77		22													
09:45	66	277	26	87												
10:00	66		10													
10:15	51		11													
10:30	61		15													
10:45	74	252	10	46												
11:00	56		8													
11:15	34		10													
11:30	68		8													
11:45	65	223	5	31												
Total	1526		2086													
Percent			100.0 %		0.0%		0.0%									
Day Total		3612														
Peak	08:45	-	05:45	-	-	-	-	-	-	-	-	-	-	-	-	
Vol.	301	-	282	-	-	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.836		0.820													

Franklin Street
between Federal St & Devonshire St
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

165369 B Volume
Site Code: TBA

Start Time	A.M.	WB	P.M.												Wed 11/30/20 16
12:00	8		60												
12:15	1		58												
12:30	11		65												
12:45	0	20	58	241											
01:00	4		53												
01:15	2		47												
01:30	7		50												
01:45	2	15	50	200											
02:00	2		46												
02:15	4		53												
02:30	2		45												
02:45	0	8	51	195											
03:00	6		55												
03:15	6		52												
03:30	2		58												
03:45	2	16	49	214											
04:00	4		57												
04:15	6		62												
04:30	5		69												
04:45	13	28	71	259											
05:00	10		44												
05:15	32		61												
05:30	26		68												
05:45	34	102	38	211											
06:00	24		52												
06:15	31		59												
06:30	31		57												
06:45	51	137	58	226											
07:00	36		54												
07:15	56		58												
07:30	47		56												
07:45	52	191	42	210											
08:00	57		45												
08:15	69		44												
08:30	64		29												
08:45	67	257	21	139											
09:00	65		24												
09:15	74		19												
09:30	72		21												
09:45	52	263	19	83											
10:00	63		11												
10:15	48		17												
10:30	52		15												
10:45	73	236	13	56											
11:00	63		10												
11:15	60		9												
11:30	71		9												
11:45	62	256	5	33											
Total	1529		2067												
Percent			100.0 %		0.0%		0.0%								
Day Total		3596													
Peak	08:45	-	04:00	-	-	-	-	-	-	-	-	-	-	-	
Vol.	278	-	259	-	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.939		0.912												

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Devonshire Street
south of Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore
SB

165369 C Class
Site Code: TBA

Start Time	Cars	Medium Heavy	Large Heavy											Total
11/29/1														
6	24	1	0	0	0	0	0	0	0	0	0	0	0	25
01:00	7	0	0	0	0	0	0	0	0	0	0	0	0	7
02:00	11	2	0	0	0	0	0	0	0	0	0	0	0	13
03:00	6	3	0	0	0	0	0	0	0	0	0	0	0	9
04:00	17	3	0	0	0	0	0	0	0	0	0	0	0	20
05:00	44	7	0	0	0	0	0	0	0	0	0	0	0	51
06:00	55	27	0	0	0	0	0	0	0	0	0	0	0	82
07:00	103	45	0	0	0	0	0	0	0	0	0	0	0	148
08:00	131	43	0	0	0	0	0	0	0	0	0	0	0	174
09:00	164	44	0	0	0	0	0	0	0	0	0	0	0	208
10:00	159	30	0	0	0	0	0	0	0	0	0	0	0	189
11:00	176	20	0	0	0	0	0	0	0	0	0	0	0	196
12 PM	193	21	0	0	0	0	0	0	0	0	0	0	0	214
13:00	186	22	0	0	0	0	0	0	0	0	0	0	0	208
14:00	172	14	0	0	0	0	0	0	0	0	0	0	0	186
15:00	207	26	0	0	0	0	0	0	0	0	0	0	0	233
16:00	215	37	0	0	0	0	0	0	0	0	0	0	0	252
17:00	283	38	0	0	0	0	0	0	0	0	0	0	0	321
18:00	270	35	0	0	0	0	0	0	0	0	0	0	0	305
19:00	131	17	0	0	0	0	0	0	0	0	0	0	0	148
20:00	82	6	0	0	0	0	0	0	0	0	0	0	0	88
21:00	72	2	0	0	0	0	0	0	0	0	0	0	0	74
22:00	44	1	0	0	0	0	0	0	0	0	0	0	0	45
23:00	44	0	0	0	0	0	0	0	0	0	0	0	0	44
Total	2796	444	0	0	0	0	0	0	0	0	0	0	0	3240
Percent	86.3%	13.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	07:00												09:00
Vol.	176	45												208
PM Peak	17:00	17:00												17:00
Vol.	283	38												321

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Devonshire Street
south of Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore
SB

165369 C Class
Site Code: TBA

Start Time	Cars	Medium Heavy	Large Heavy											Total
11/30/1														
6	24	0	0	0	0	0	0	0	0	0	0	0	0	24
01:00	15	3	0	0	0	0	0	0	0	0	0	0	0	18
02:00	10	1	0	0	0	0	0	0	0	0	0	0	0	11
03:00	11	3	0	0	0	0	0	0	0	0	0	0	0	14
04:00	9	5	0	0	0	0	0	0	0	0	0	0	0	14
05:00	43	4	0	0	0	0	0	0	0	0	0	0	0	47
06:00	67	28	0	0	0	0	0	0	0	0	0	0	0	95
07:00	109	35	1	0	0	0	0	0	0	0	0	0	0	145
08:00	142	50	0	0	0	0	0	0	0	0	0	0	0	192
09:00	149	26	0	0	0	0	0	0	0	0	0	0	0	175
10:00	160	24	0	0	0	0	0	0	0	0	0	0	0	184
11:00	205	20	0	0	0	0	0	0	0	0	0	0	0	225
12 PM	177	18	0	0	0	0	0	0	0	0	0	0	0	195
13:00	149	20	0	0	0	0	0	0	0	0	0	0	0	169
14:00	164	15	0	0	0	0	0	0	0	0	0	0	0	179
15:00	194	25	0	0	0	0	0	0	0	0	0	0	0	219
16:00	250	35	0	0	0	0	0	0	0	0	0	0	0	285
17:00	199	30	0	0	0	0	0	0	0	0	0	0	0	229
18:00	176	29	0	0	0	0	0	0	0	0	0	0	0	205
19:00	166	23	0	0	0	0	0	0	0	0	0	0	0	189
20:00	131	5	0	0	0	0	0	0	0	0	0	0	0	136
21:00	66	4	0	0	0	0	0	0	0	0	0	0	0	70
22:00	56	1	0	0	0	0	0	0	0	0	0	0	0	57
23:00	33	0	0	0	0	0	0	0	0	0	0	0	0	33
Total	2705	404	1	0	0	0	0	0	0	0	0	0	0	3110
Percent	87.0%	13.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	08:00	07:00											11:00
Vol.	205	50	1											225
PM Peak	16:00	16:00												16:00
Vol.	250	35												285

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Devonshire Street
south of Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore
NB

165369 C Class
Site Code: TBA

Start Time	Cars	Medium Heavy	Large Heavy											Total
11/29/1														
6	15	2	0	0	0	0	0	0	0	0	0	0	0	17
01:00	9	1	0	0	0	0	0	0	0	0	0	0	0	10
02:00	6	2	0	0	0	0	0	0	0	0	0	0	0	8
03:00	4	2	0	0	0	0	0	0	0	0	0	0	0	6
04:00	22	2	3	0	0	0	0	0	0	0	0	0	0	27
05:00	85	5	0	0	0	0	0	0	0	0	0	0	0	90
06:00	104	9	0	0	0	0	0	0	0	0	0	0	0	113
07:00	191	10	0	0	0	0	0	0	0	0	0	0	0	201
08:00	223	8	0	0	0	0	0	0	0	0	0	0	0	231
09:00	207	11	0	0	0	0	0	0	0	0	0	0	0	218
10:00	135	12	0	0	0	0	0	0	0	0	0	0	0	147
11:00	138	6	0	0	0	0	0	0	0	0	0	0	0	144
12 PM	111	5	0	0	0	0	0	0	0	0	0	0	0	116
13:00	108	8	0	0	0	0	0	0	0	0	0	0	0	116
14:00	107	4	0	0	0	0	0	0	0	0	0	0	0	111
15:00	111	6	0	0	0	0	0	0	0	0	0	0	0	117
16:00	120	2	0	0	0	0	0	0	0	0	0	0	0	122
17:00	109	1	0	0	0	0	0	0	0	0	0	0	0	110
18:00	81	2	0	0	0	0	0	0	0	0	0	0	0	83
19:00	51	0	0	0	0	0	0	0	0	0	0	0	0	51
20:00	44	1	0	0	0	0	0	0	0	0	0	0	0	45
21:00	44	1	0	0	0	0	0	0	0	0	0	0	0	45
22:00	28	2	0	0	0	0	0	0	0	0	0	0	0	30
23:00	18	0	0	0	0	0	0	0	0	0	0	0	0	18
Total	2071	102	3	0	0	0	0	0	0	0	0	0	0	2176
Percent	95.2%	4.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	10:00	04:00											08:00
Vol.	223	12	3											231
PM Peak	16:00	13:00												16:00
Vol.	120	8												122

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Devonshire Street
south of Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore
NB

165369 C Class
Site Code: TBA

Start Time	Cars	Medium Heavy	Large Heavy											Total
11/30/1														
6	13	1	0	0	0	0	0	0	0	0	0	0	0	14
01:00	7	2	0	0	0	0	0	0	0	0	0	0	0	9
02:00	10	4	0	0	0	0	0	0	0	0	0	0	0	14
03:00	7	2	0	0	0	0	0	0	0	0	0	0	0	9
04:00	22	2	0	0	0	0	0	0	0	0	0	0	0	24
05:00	83	7	1	0	0	0	0	0	0	0	0	0	0	91
06:00	99	11	0	0	0	0	0	0	0	0	0	0	0	110
07:00	196	10	0	0	0	0	0	0	0	0	0	0	0	206
08:00	195	12	0	0	0	0	0	0	0	0	0	0	0	207
09:00	173	9	0	0	0	0	0	0	0	0	0	0	0	182
10:00	175	8	0	0	0	0	0	0	0	0	0	0	0	183
11:00	169	10	0	0	0	0	0	0	0	0	0	0	0	179
12 PM	148	5	0	0	0	0	0	0	0	0	0	0	0	153
13:00	123	4	0	0	0	0	0	0	0	0	0	0	0	127
14:00	134	4	0	0	0	0	0	0	0	0	0	0	0	138
15:00	121	8	0	0	0	0	0	0	0	0	0	0	0	129
16:00	141	2	0	0	0	0	0	0	0	0	0	0	0	143
17:00	121	1	0	0	0	0	0	0	0	0	0	0	0	122
18:00	150	1	0	0	0	0	0	0	0	0	0	0	0	151
19:00	134	1	0	0	0	0	0	0	0	0	0	0	0	135
20:00	59	1	0	0	0	0	0	0	0	0	0	0	0	60
21:00	63	1	0	0	0	0	0	0	0	0	0	0	0	64
22:00	48	2	0	0	0	0	0	0	0	0	0	0	0	50
23:00	32	2	0	0	0	0	0	0	0	0	0	0	0	34
Total	2423	110	1	0	0	0	0	0	0	0	0	0	0	2534
Percent	95.6%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	05:00											08:00
Vol.	196	12	1											207
PM Peak	18:00	15:00												12:00
Vol.	150	8												153

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Devonshire Street
south of Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

165369 C Volume
Site Code: TBA

Start	SB				NB				Combined				11/29/2016 Tue			
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.					
12:00	8		58		6		34		14		92					
12:15	7		51		5		28		12		79					
12:30	8		60		2		26		10		86					
12:45	2	25	45	214	4	17	28	116	6	42	73	330				
01:00	1		50		0		24		1		74					
01:15	4		60		6		26		10		86					
01:30	1		43		3		25		4		68					
01:45	1	7	55	208	1	10	41	116	2	17	96	324				
02:00	8		59		2		37		10		96					
02:15	4		32		4		25		8		57					
02:30	0		44		0		21		0		65					
02:45	1	13	51	186	2	8	28	111	3	21	79	297				
03:00	1		55		2		28		3		83					
03:15	4		53		1		26		5		79					
03:30	2		66		2		26		4		92					
03:45	2	9	59	233	1	6	37	117	3	15	96	350				
04:00	2		51		7		23		9		74					
04:15	5		69		3		29		8		98					
04:30	2		68		4		26		6		94					
04:45	11	20	64	252	13	27	44	122	24	47	108	374				
05:00	9		82		11		24		20		106					
05:15	14		76		21		28		35		104					
05:30	5		88		29		24		34		112					
05:45	23	51	75	321	29	90	34	110	52	141	109	431				
06:00	18		85		27		24		45		109					
06:15	17		98		30		25		47		123					
06:30	19		63		25		12		44		75					
06:45	28	82	59	305	31	113	22	83	59	195	81	388				
07:00	31		47		35		15		66		62					
07:15	41		43		59		15		100		58					
07:30	35		28		50		10		85		38					
07:45	41	148	30	148	57	201	11	51	98	349	41	199				
08:00	38		28		61		17		99		45					
08:15	38		20		67		8		105		28					
08:30	46		16		50		9		96		25					
08:45	52	174	24	88	53	231	11	45	105	405	35	133				
09:00	44		22		61		11		105		33					
09:15	62		21		59		13		121		34					
09:30	54		11		53		10		107		21					
09:45	48	208	20	74	45	218	11	45	93	426	31	119				
10:00	48		10		37		7		85		17					
10:15	38		12		33		9		71		21					
10:30	51		14		36		8		87		22					
10:45	52	189	9	45	41	147	6	30	93	336	15	75				
11:00	52		14		39		4		91		18					
11:15	33		10		30		6		63		16					
11:30	48		10		28		5		76		15					
11:45	63	196	10	44	47	144	3	18	110	340	13	62				
Total	1122		2118		1212		964		2334		3082					
Percent	48.1%		68.7%		51.9%		31.3%									
Day Total		3240				2176				5416						
Peak	08:45	-	05:30	-	07:30	-	01:15	-	08:45	-	05:30	-	-	-		
Vol.	212	-	346	-	235	-	129	-	438	-	453	-	-	-		
P.H.F.	0.855		0.883		0.877		0.787		0.905		0.921					

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Devonshire Street
south of Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

165369 C Volume
Site Code: TBA

Start	SB				NB				Combined				11/30/2016 Wed			
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.					
12:00	8		48		6		44		14		92					
12:15	3		56		2		46		5		102					
12:30	9		45		3		37		12		82					
12:45	4	24	46	195	3	14	26	153	7	38	72	348				
01:00	4		39		0		26		4		65					
01:15	9		32		3		40		12		72					
01:30	3		44		4		35		7		79					
01:45	2	18	54	169	2	9	26	127	4	27	80	296				
02:00	2		44		6		37		8		81					
02:15	5		38		1		40		6		78					
02:30	4		50		4		33		8		83					
02:45	0	11	47	179	3	14	28	138	3	25	75	317				
03:00	4		53		2		19		6		72					
03:15	6		49		2		30		8		79					
03:30	1		61		2		45		3		106					
03:45	3	14	56	219	3	9	35	129	6	23	91	348				
04:00	3		63		4		50		7		113					
04:15	1		70		5		29		6		99					
04:30	2		76		3		37		5		113					
04:45	8	14	76	285	12	24	27	143	20	38	103	428				
05:00	7		66		12		34		19		100					
05:15	14		52		31		28		45		80					
05:30	7		60		21		37		28		97					
05:45	19	47	51	229	27	91	23	122	46	138	74	351				
06:00	17		57		26		34		43		91					
06:15	24		55		31		38		55		93					
06:30	18		42		26		37		44		79					
06:45	36	95	51	205	27	110	42	151	63	205	93	356				
07:00	30		40		41		54		71		94					
07:15	38		66		61		38		99		104					
07:30	41		49		58		21		99		70					
07:45	36	145	34	189	46	206	22	135	82	351	56	324				
08:00	43		35		49		18		92		53					
08:15	50		41		57		13		107		54					
08:30	47		26		50		17		97		43					
08:45	52	192	34	136	51	207	12	60	103	399	46	196				
09:00	49		21		53		9		102		30					
09:15	48		12		46		18		94		30					
09:30	44		14		49		22		93		36					
09:45	34	175	23	70	34	182	15	64	68	357	38	134				
10:00	50		20		50		15		100		35					
10:15	29		11		50		8		79		19					
10:30	55		7		39		15		94		22					
10:45	50	184	19	57	44	183	12	50	94	367	31	107				
11:00	53		5		40		9		93		14					
11:15	53		10		44		11		97		21					
11:30	61		9		44		6		105		15					
11:45	58	225	9	33	51	179	8	34	109	404	17	67				
Total	1144		1966		1228		1306		2372		3272					
Percent	48.2%		60.1%		51.8%		39.9%									
Day Total		3110				2534				5644						
Peak	11:00	-	04:15	-	07:15	-	06:15	-	08:15	-	04:00	-	-	-		
Vol.	225	-	288	-	214	-	171	-	409	-	428	-	-	-		
P.H.F.	0.922		0.947		0.877		0.792		0.956		0.947					

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South							I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	15	0	104	13	0	18	0	0	0	0	0	0	6	16	124	0	1	0	0	0	0	0	0	0	0	0	0	0	0	20	23	0	40	27	21	0	428
07:15 AM	0	0	0	0	25	0	94	12	0	30	0	0	0	0	0	0	7	10	135	0	0	2	0	0	0	0	0	0	0	0	0	0	0	20	25	0	50	21	20	0	451
07:30 AM	0	0	0	0	24	0	98	16	0	30	0	0	0	0	0	0	5	24	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	33	0	54	28	30	0	487
07:45 AM	0	0	0	0	32	0	96	29	0	44	1	0	0	0	0	0	5	15	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	6	0	50	21	30	0	457
Total	0	0	0	0	96	0	392	70	0	122	1	0	0	0	0	0	23	65	492	0	1	2	0	0	0	0	0	0	0	0	0	0	0	80	87	0	194	97	101	0	1823
08:00 AM	0	0	0	0	30	0	105	16	0	38	2	0	0	0	0	0	8	16	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	26	0	56	34	19	0	510
08:15 AM	0	0	0	0	31	0	99	15	0	31	0	0	0	0	0	0	8	20	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	16	0	44	21	36	0	506
08:30 AM	0	0	0	0	15	0	70	21	0	35	0	0	0	0	0	0	6	21	113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	14	0	62	36	26	0	446
08:45 AM	0	0	0	0	44	0	95	27	0	41	1	0	0	0	0	0	24	12	120	0	1	0	0	0	0	0	0	0	0	0	0	0	0	31	18	0	68	22	22	0	526
Total	0	0	0	0	120	0	369	79	0	145	3	0	0	0	0	0	46	69	539	0	1	0	0	0	0	0	0	0	0	0	0	0	0	97	74	0	230	113	103	0	1988
Grand Total	0	0	0	0	216	0	761	149	0	267	4	0	0	0	0	0	69	134	1031	0	2	2	0	0	0	0	0	0	0	0	0	0	0	177	161	0	424	210	204	0	3811
Apprch %	0	0	0	0	15.5	0	54.5	10.7	0	19.1	0.3	0	0	0	0	0	5.6	10.8	83.3	0	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	15.1	13.7	0	36.1	17.9	17.3	0	
Total %	0	0	0	0	5.7	0	20	3.9	0	7	0.1	0	0	0	0	0	1.8	3.5	27.1	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	4.6	4.2	0	11.1	5.5	5.4	0	
Cars	0	0	0	0	213		672	142		255								128	961															128	146		374	182	193		3464
% Cars	0	0	0	0	98.6	0	88.3	95.3	0	95.5	100	0	0	0	0	0	89.9	95.5	93.2	0	100	100	0	0	0	0	0	0	0	0	0	0	0	72.3	90.7	0	88.2	86.7	94.6	0	90.9
Heavy Vehicles	0	0	0	0	3	0	89	7	0	12	0	0	0	0	0	0	7	6	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	15	0	50	28	11	0	347
% Heavy Vehicles	0	0	0	0	1.4	0	11.7	4.7	0	4.5	0	0	0	0	0	0	10.1	4.5	6.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27.7	9.3	0	11.8	13.3	5.4	0	9.1

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South							I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	0	0	0	0	30	0	105	16	0	38	2	191	0	0	0	0	0	0	8	16	140	0	0	0	0	164	0	0	0	0	0	0	0	0	0	0	0	20	26	0	56	34	19	0	155	510
08:15 AM	0	0	0	0	0	31	0	99	15	0	31	0	176	0	0	0	0	0	0	8	20	166	0	0	0	0	194	0	0	0	0	0	0	0	0	0	0	0	19	16	0	44	21	36	0	136	506
08:30 AM	0	0	0	0	0	15	0	70	21	0	35	0	141	0	0	0	0	0	0	6	21	113	0	0	0	0	140	0	0	0	0	0	0	0	0	0	0	0	27	14	0	62	36	26	0	165	446
08:45 AM	0	0	0	0	0	44	0	95	27	0	41	1	208	0	0	0	0	0	0	24	12	120	0	1	0	0	157	0	0	0	0	0	0	0	0	0	0	0	31	18	0	68	22	22	0	161	526
Total Volume	0	0	0	0	0	120	0	369	79	0	145	3	716	0	0	0	0	0	0	46	69	539	0	1	0	0	655	0	0	0	0	0	0	0	0	0	0	0	97	74	0	230	113	103	0	617	1988
% App. Total	0	0	0	0		16.8	0	51.5	11	0	20.3	0.4		0	0	0	0	0		7	10.5	82.3	0	0.2	0	0		0	0	0	0		0	0	0	0	0		15.7	12	0	37.3	18.3	16.7	0		
PHF	.000	.000	.000	.000	.000	.682	.000	.879	.731	.000	.884	.375	.861	.000	.000	.000	.000	.000	.000	.479	.821	.812	.000	.250	.000	.000	.844	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.782	.712	.000	.846	.785	.715	.000	.935	.945
Cars	0	0	0	0	0	119	0	327	76	0	139	3	664	0	0	0	0	0	0	43	65	504	0	1	0	0	613	0	0	0	0	0	0	0	0	0	0	0	72	70	0	200	94	97	0	533	1810
% Cars	0	0	0	0	0	99.2	0	88.6	96.2	0	95.9	100	92.7	0	0	0	0	0	0	93.5	94.2	93.5	0	100	0	0	93.6	0	0	0	0	0	0	0	0	0	0	0	74.2	94.6	0	87.0	83.2	94.2	0	86.4	91.0
Heavy Vehicles	0	0	0	0	0	1	0	42	3	0	6	0	52	0	0	0	0	0	0	3	4	35	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	25	4	0	30	19	6	0	84	178
% Heavy Vehicles	0	0	0	0	0	0.8	0	11.4	3.8	0	4.1	0	7.3	0	0	0	0	0	0	6.5	5.8	6.5	0	0	0	0	6.4	0	0	0	0	0	0	0	0	0	0	0	25.8	5.4	0	13.0	16.8	5.8	0	13.6	9.0

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast					Lincoln Street From South							I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	15	0	93	12	0	17	0	0	0	0	0	0	5	15	120	0	1	0	0	0	0	0	0	0	0	0	0	0	0	14	19	0	34	26	19	0	390
07:15 AM	0	0	0	0	25	0	81	10	0	30	0	0	0	0	0	0	6	10	125	0	0	2	0	0	0	0	0	0	0	0	0	0	0	10	23	0	43	18	19	0	402
07:30 AM	0	0	0	0	23	0	86	16	0	25	0	0	0	0	0	0	4	23	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	28	0	50	25	29	0	444
07:45 AM	0	0	0	0	31	0	85	28	0	44	1	0	0	0	0	0	4	15	97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	6	0	47	19	29	0	418
Total	0	0	0	0	94	0	345	66	0	116	1	0	0	0	0	0	19	63	457	0	1	2	0	0	0	0	0	0	0	0	0	0	0	56	76	0	174	88	96	0	1654
08:00 AM	0	0	0	0	30	0	95	16	0	36	2	0	0	0	0	0	6	15	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	25	0	51	30	18	0	459
08:15 AM	0	0	0	0	31	0	89	14	0	30	0	0	0	0	0	0	7	18	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	15	0	40	12	34	0	462
08:30 AM	0	0	0	0	15	0	57	20	0	34	0	0	0	0	0	0	6	20	104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	14	0	49	32	24	0	398
08:45 AM	0	0	0	0	43	0	86	26	0	39	1	0	0	0	0	0	24	12	116	0	1	0	0	0	0	0	0	0	0	0	0	0	0	26	16	0	60	20	21	0	491
Total	0	0	0	0	119	0	327	76	0	139	3	0	0	0	0	0	43	65	504	0	1	0	0	0	0	0	0	0	0	0	0	0	0	72	70	0	200	94	97	0	1810
Grand Total	0	0	0	0	213	0	672	142	0	255	4	0	0	0	0	0	62	128	961	0	2	2	0	0	0	0	0	0	0	0	0	0	0	128	146	0	374	182	193	0	3464
Apprch %	0	0	0	0	16.6	0	52.3	11	0	19.8	0.3	0	0	0	0	0	5.4	11.1	83.2	0	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	12.5	14.3	0	36.6	17.8	18.9	0	
Total %	0	0	0	0	6.1	0	19.4	4.1	0	7.4	0.1	0	0	0	0	0	1.8	3.7	27.7	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	3.7	4.2	0	10.8	5.3	5.6	0	

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	0	0	0	0	30	0	95	16	0	36	2	179	0	0	0	0	0	0	6	15	124	0	0	0	0	145	0	0	0	0	0	0	0	0	0	0	0	11	25	0	51	30	18	0	135	459
08:15 AM	0	0	0	0	0	31	0	89	14	0	30	0	164	0	0	0	0	0	0	7	18	160	0	0	0	0	185	0	0	0	0	0	0	0	0	0	0	0	12	15	0	40	12	34	0	113	462
08:30 AM	0	0	0	0	0	15	0	57	20	0	34	0	126	0	0	0	0	0	0	6	20	104	0	0	0	0	130	0	0	0	0	0	0	0	0	0	0	0	23	14	0	49	32	24	0	142	398
08:45 AM	0	0	0	0	0	43	0	86	26	0	39	1	195	0	0	0	0	0	0	24	12	116	0	1	0	0	153	0	0	0	0	0	0	0	0	0	0	0	26	16	0	60	20	21	0	143	491
Total Volume	0	0	0	0	0	119	0	327	76	0	139	3	664	0	0	0	0	0	0	43	65	504	0	1	0	0	613	0	0	0	0	0	0	0	0	0	0	0	72	70	0	200	94	97	0	533	1810
% App. Total	0	0	0	0		17.9	0	49.2	11.4	0	20.9	0.5		0	0	0	0	0		7	10.6	82.2	0	0.2	0	0		0	0	0	0		0	0	0	0	0		13.5	13.1	0	37.5	17.6	18.2	0		
PHF	.000	.000	.000	.000	.000	.692	.000	.861	.731	.000	.891	.375	.851	.000	.000	.000	.000	.000	.000	.448	.813	.788	.000	.250	.000	.000	.828	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.692	.700	.000	.833	.734	.713	.000	.932	.922

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast					Lincoln Street From South							I-93 Onramp From Southwest				Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	0	11	1	0	1	0	0	0	0	0	0	1	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	6	4	0	6	1	2	0	38
07:15 AM	0	0	0	0	0	0	13	2	0	0	0	0	0	0	0	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10	2	0	7	3	1	0	49
07:30 AM	0	0	0	0	1	0	12	0	0	5	0	0	0	0	0	0	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5	0	4	3	1	0	43
07:45 AM	0	0	0	0	1	0	11	1	0	0	0	0	0	0	0	0	1	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	3	2	1	0	39
Total	0	0	0	0	2	0	47	4	0	6	0	0	0	0	0	0	4	2	35	0	0	0	0	0	0	0	0	0	0	0	0	0	24	11	0	20	9	5	0	169
08:00 AM	0	0	0	0	0	0	10	0	0	2	0	0	0	0	0	0	2	1	16	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1	0	5	4	1	0	51
08:15 AM	0	0	0	0	0	0	10	1	0	1	0	0	0	0	0	0	1	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	0	4	9	2	0	44
08:30 AM	0	0	0	0	0	0	13	1	0	1	0	0	0	0	0	0	0	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	13	4	2	0	48
08:45 AM	0	0	0	0	1	0	9	1	0	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	0	8	2	1	0	35
Total	0	0	0	0	1	0	42	3	0	6	0	0	0	0	0	0	3	4	35	0	0	0	0	0	0	0	0	0	0	0	0	0	25	4	0	30	19	6	0	178
Grand Total	0	0	0	0	3	0	89	7	0	12	0	0	0	0	0	0	7	6	70	0	0	0	0	0	0	0	0	0	0	0	0	0	49	15	0	50	28	11	0	347
Apprch %	0	0	0	0	2.7	0	80.2	6.3	0	10.8	0	0	0	0	0	0	8.4	7.2	84.3	0	0	0	0	0	0	0	0	0	0	0	0	0	32	9.8	0	32.7	18.3	7.2	0	
Total %	0	0	0	0	0.9	0	25.6	2	0	3.5	0	0	0	0	0	0	2	1.7	20.2	0	0	0	0	0	0	0	0	0	0	0	0	0	14.1	4.3	0	14.4	8.1	3.2	0	

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	13	2	0	0	0	15	0	0	0	0	0	0	1	0	10	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	10	2	0	7	3	1	0	23	49
07:30 AM	0	0	0	0	0	1	0	12	0	0	5	0	18	0	0	0	0	0	0	1	1	6	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	4	5	0	4	3	1	0	17	43
07:45 AM	0	0	0	0	0	1	0	11	1	0	0	0	13	0	0	0	0	0	0	1	0	15	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	4	0	0	3	2	1	0	10	39
08:00 AM	0	0	0	0	0	0	0	10	0	0	2	0	12	0	0	0	0	0	0	2	1	16	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	9	1	0	5	4	1	0	20	51
Total Volume	0	0	0	0	0	2	0	46	3	0	7	0	58	0	0	0	0	0	0	5	2	47	0	0	0	0	54	0	0	0	0	0	0	0	0	0	0	0	27	8	0	19	12	4	0	70	182
% App. Total	0	0	0	0		3.4	0	79.3	5.2	0	12.1	0		0	0	0	0	0		9.3	3.7	87	0	0	0	0		0	0	0	0		0	0	0	0	0		38.6	11.4	0	27.1	17.1	5.7	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.885	.375	.000	.350	.000	.806	.000	.000	.000	.000	.000	.000	.625	.500	.734	.000	.000	.000	.000	.711	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.675	.400	.000	.679	.750	1.00	.000	.761	.892

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest								
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Bear Right	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	Bear Right	Thru	Bear Left	Left	Peds SWB	Peds NEB	Hard Right	Right	Thru	Bear Left	Left	Hard Left	Peds WB	Peds EB	Right	Bear Left	Left	Peds NWB	Peds SEB	Right	Thru	Left	Peds NB	Peds SB	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	Peds NEB	Peds SWB	Int. Total
07:00 AM	0	0	0	13	49	0	0	0	0	0	0	15	45	0	0	0	0	3	16	0	0	0	0	0	0	14	16	0	0	0	11	16	0	0	0	13	12	0	0	0	1	0	1	11	11	247
07:15 AM	0	0	0	17	81	0	0	1	0	0	0	17	64	0	0	0	0	2	25	0	0	0	0	0	0	23	16	0	0	0	22	17	0	0	0	21	15	0	0	0	3	0	1	13	23	361
07:30 AM	1	0	0	26	101	0	0	1	0	0	0	31	80	0	0	0	0	8	31	0	0	0	0	0	0	22	26	0	0	0	31	31	0	0	0	32	27	1	0	0	4	0	0	13	32	498
07:45 AM	0	0	0	35	108	0	0	1	0	0	0	34	90	0	0	0	0	13	80	0	0	1	0	0	0	24	31	0	0	0	32	31	0	0	0	29	28	0	0	0	7	0	6	20	19	589
Total	1	0	0	91	339	0	0	3	0	0	0	97	279	0	0	0	0	26	152	0	0	1	0	0	0	83	89	0	0	0	96	95	0	0	0	95	82	1	0	0	15	0	8	57	85	1695
08:00 AM	0	0	0	49	97	0	0	0	0	0	0	54	62	0	0	0	0	14	27	0	0	0	0	0	0	41	47	0	0	0	40	52	0	0	0	44	59	0	0	0	4	0	0	8	58	656
08:15 AM	0	0	0	78	161	0	0	0	0	0	1	82	200	0	0	0	0	15	65	0	0	0	0	0	0	52	43	0	0	0	65	43	0	0	0	64	40	0	0	0	3	1	0	36	45	994
08:30 AM	0	0	0	98	152	0	0	0	0	0	0	70	148	0	0	0	0	13	76	0	0	1	0	0	0	61	36	0	0	0	46	38	0	0	0	49	38	0	0	0	4	0	0	24	29	883
08:45 AM	0	0	0	75	165	1	0	0	0	0	0	77	116	0	0	0	0	30	44	0	0	1	0	0	0	49	36	0	0	0	49	49	0	0	0	59	42	0	0	0	9	0	0	38	33	873
Total	0	0	0	300	575	1	0	0	0	0	1	283	526	0	0	0	0	72	212	0	0	2	0	0	0	203	162	0	0	0	200	182	0	0	0	216	179	0	0	0	20	1	0	106	165	3406
Grand Total	1	0	0	391	914	1	0	3	0	0	1	380	805	0	0	0	0	98	364	0	0	3	0	0	0	286	251	0	0	0	296	277	0	0	0	311	261	1	0	0	35	1	8	163	250	5101
Apprch %	0.1	0	0	29.9	70	0.1	0	0.3	0	0	0.1	31.9	67.6	0	0	0	0	21.2	78.8	0	0	0.6	0	0	0	53	46.5	0	0	0	51.7	48.3	0	0	0	54.4	45.6	0.2	0	0	7.6	0.2	1.7	35.6	54.6	
Total %	0	0	0	7.7	17.9	0	0	0.1	0	0	0	7.4	15.8	0	0	0	0	1.9	7.1	0	0	0.1	0	0	0	5.6	4.9	0	0	0	5.8	5.4	0	0	0	6.1	5.1	0	0	0	0.7	0	0.2	3.2	4.9	

	Lincoln Street From North						Surface Road/I-93 Onramp From East								Essex Street From Southeast							Lincoln Street From South									I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest									
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	App. Total	Bear Right	Thru	Bear Left	Left	Peds SWB	Peds NEB	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	Peds WB	Peds EB	App. Total	Right	Bear Left	Left	Peds NWB	Peds SEB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	Peds NEB	Peds SWB	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	0	0	49	97	146	0	0	0	0	0	0	54	62	116	0	0	0	0	14	27	41	0	0	0	0	0	0	41	47	88	0	0	0	40	52	92	0	0	0	44	59	103	0	0	0	4	0	0	8	58	70	656
08:15 AM	0	0	0	78	161	239	0	0	0	0	0	1	82	200	283	0	0	0	0	15	65	80	0	0	0	0	0	0	52	43	95	0	0	0	65	43	108	0	0	0	64	40	104	0	0	0	3	1	0	36	45	85	994
08:30 AM	0	0	0	98	152	250	0	0	0	0	0	0	70	148	218	0	0	0	0	13	76	89	0	0	1	0	0	0	61	36	98	0	0	0	46	38	84	0	0	0	49	38	87	0	0	0	4	0	0	24	29	57	883
08:45 AM	0	0	0	75	165	240	1	0	0	0	0	0	77	116	194	0	0	0	0	30	44	74	0	0	1	0	0	0	49	36	86	0	0	0	49	49	98	0	0	0	59	42	101	0	0	0	9	0	0	38	33	80	873
Total Volume	0	0	0	300	575	875	1	0	0	0	0	1	283	526	811	0	0	0	0	72	212	284	0	0	2	0	0	0	203	162	367	0	0	0	200	182	382	0	0	0	216	179	395	0	0	0	20	1	0	106	165	292	3406
% App. Total	0	0	0	34.3	65.7		0.1	0	0	0	0	0.1	34.9	64.9		0	0	0	0	25.4	74.6		0	0	0.5	0	0	0	55.3	44.1		0	0	0	52.4	47.6		0	0	0	54.7	45.3		0	0	0	6.8	0.3	0	36.3	56.5		
PHF	.000	.000	.000	.765	.871	.875	.250	.000	.000	.000	.000	.250	.863	.658	.716	.000	.000	.000	.000	.600	.697	.798	.000	.000	.500	.000	.000	.000	.832	.862	.936	.000	.000	.000	.769	.875	.884	.000	.000	.000	.844	.754	.950	.000	.000	.000	.556	.250	.000	.697	.711	.859	.857

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

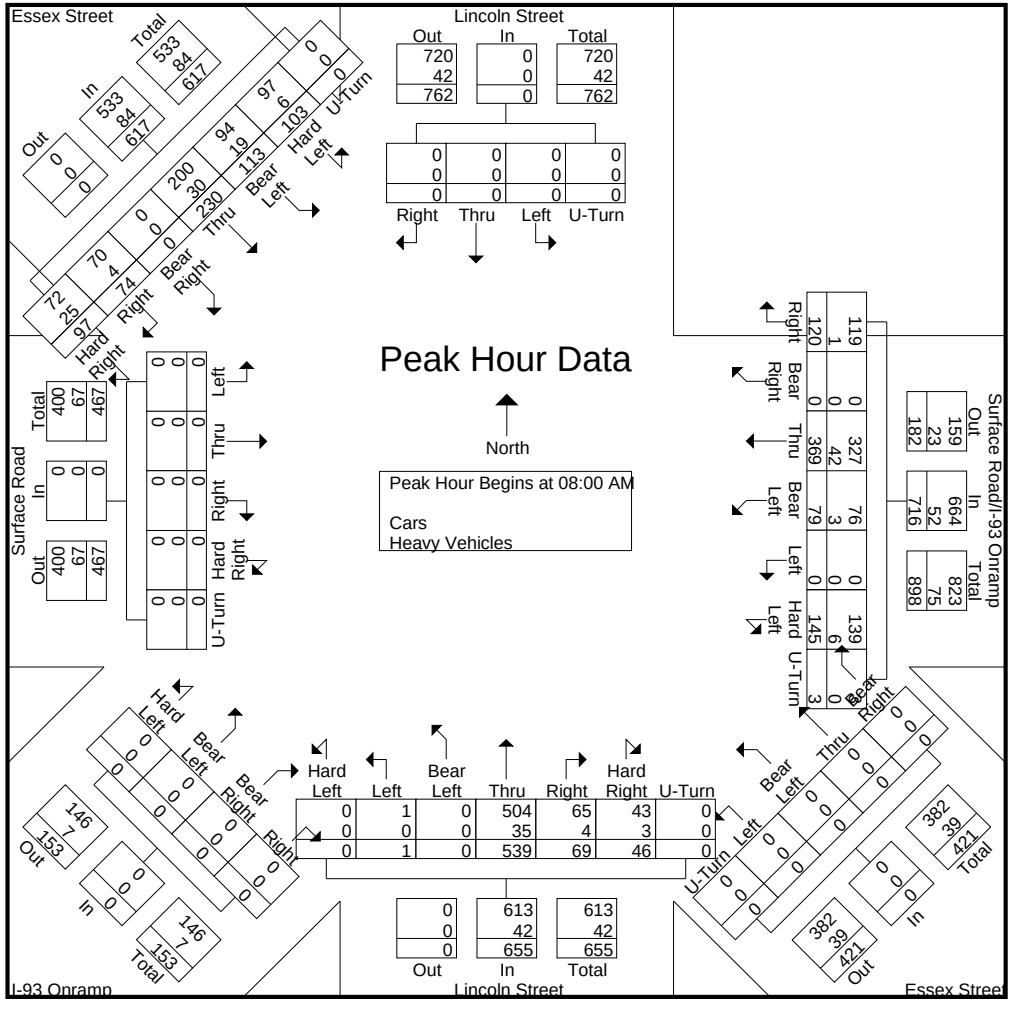
File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South							I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	0	0	0	0	30	0	105	16	0	38	2	191	0	0	0	0	0	0	8	16	140	0	0	0	0	164	0	0	0	0	0	0	0	0	0	0	0	20	26	0	56	34	19	0	155	510
08:15 AM	0	0	0	0	0	31	0	99	15	0	31	0	176	0	0	0	0	0	0	8	20	166	0	0	0	0	194	0	0	0	0	0	0	0	0	0	0	0	19	16	0	44	21	36	0	136	506
08:30 AM	0	0	0	0	0	15	0	70	21	0	35	0	141	0	0	0	0	0	0	6	21	113	0	0	0	0	140	0	0	0	0	0	0	0	0	0	0	0	27	14	0	62	36	26	0	165	446
08:45 AM	0	0	0	0	0	44	0	95	27	0	41	1	208	0	0	0	0	0	0	24	12	120	0	1	0	0	157	0	0	0	0	0	0	0	0	0	0	0	31	18	0	68	22	22	0	161	526
Total Volume	0	0	0	0	0	120	0	369	79	0	145	3	716	0	0	0	0	0	0	46	69	539	0	1	0	0	655	0	0	0	0	0	0	0	0	0	0	0	97	74	0	230	113	103	0	617	1988
% App. Total	0	0	0	0		16.8	0	51.5	11	0	20.3	0.4		0	0	0	0	0		7	10.5	82.3	0	0.2	0	0		0	0	0	0		0	0	0	0	0		15.7	12	0	37.3	18.3	16.7	0		
PHF	.000	.000	.000	.000	.000	.682	.000	.879	.731	.000	.884	.375	.861	.000	.000	.000	.000	.000	.000	.479	.821	.812	.000	.250	.000	.000	.844	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.782	.712	.000	.846	.785	.715	.000	.935	.945
Cars	0	0	0	0	0	119	0	327	76	0	139	3	664	0	0	0	0	0	0	43	65	504	0	1	0	0	613	0	0	0	0	0	0	0	0	0	0	0	72	70	0	200	94	97	0	533	1810
% Cars	0	0	0	0	0	99.2	0	88.6	96.2	0	95.9	100	92.7	0	0	0	0	0	0	93.5	94.2	93.5	0	100	0	0	93.6	0	0	0	0	0	0	0	0	0	0	0	74.2	94.6	0	87.0	83.2	94.2	0	86.4	91.0
Heavy Vehicles	0	0	0	0	0	1	0	42	3	0	6	0	52	0	0	0	0	0	0	3	4	35	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	25	4	0	30	19	6	0	84	178
% Heavy Vehicles	0	0	0	0	0	0.8	0	11.4	3.8	0	4.1	0	7.3	0	0	0	0	0	0	6.5	5.8	6.5	0	0	0	0	6.4	0	0	0	0	0	0	0	0	0	0	0	25.8	5.4	0	13.0	16.8	5.8	0	13.6	9.0

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 2



N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South							I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	8	0	148	48	0	19	0	0	0	0	0	0	8	47	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	25	0	34	43	9	0	492
04:15 PM	0	0	0	0	5	0	144	36	0	21	0	0	0	0	0	0	4	47	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	22	44	10	0	470
04:30 PM	0	0	0	0	3	0	149	39	0	19	1	0	0	0	0	0	1	64	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	22	0	42	47	13	0	516
04:45 PM	0	0	0	0	9	0	135	28	0	21	0	0	0	0	0	0	4	39	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	20	0	38	57	11	0	439
Total	0	0	0	0	25	0	576	151	0	80	1	0	0	0	0	0	17	197	244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	149	107	0	136	191	43	0	1917
05:00 PM	0	0	0	0	4	0	114	35	0	22	0	0	0	0	0	0	2	40	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	26	0	27	45	8	0	423
05:15 PM	0	0	0	0	7	0	137	45	0	20	0	0	0	0	0	0	4	51	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	32	0	27	43	6	0	462
05:30 PM	0	0	0	0	3	0	112	24	0	25	1	0	0	0	0	0	2	49	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	28	0	20	41	13	0	403
05:45 PM	0	0	0	0	4	0	89	49	0	23	0	0	0	0	0	0	0	44	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	15	0	18	23	2	0	335
Total	0	0	0	0	18	0	452	153	0	90	1	0	0	0	0	0	8	184	234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	109	101	0	92	152	29	0	1623
Grand Total	0	0	0	0	43	0	1028	304	0	170	2	0	0	0	0	0	25	381	478	0	0	0	0	0	0	0	0	0	0	0	0	0	0	258	208	0	228	343	72	0	3540
Apprch %	0	0	0	0	2.8	0	66.5	19.7	0	11	0.1	0	0	0	0	0	2.8	43.1	54.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23.3	18.8	0	20.6	30.9	6.5	0	
Total %	0	0	0	0	1.2	0	29	8.6	0	4.8	0.1	0	0	0	0	0	0.7	10.8	13.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.3	5.9	0	6.4	9.7	2	0	
Cars	0	0	0	0	41	0	970	294		165								366	428															225	206		215	332			3335
% Cars	0	0	0	0	95.3	0	94.4	96.7	0	97.1	100	0	0	0	0	0	96	96.1	89.5	0	0	0	0	0	0	0	0	0	0	0	0	0	87.2	99	0	94.3	96.8	93.1	0	94.2
Heavy Vehicles	0	0	0	0	2	0	58	10	0	5	0	0	0	0	0	0	1	15	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	2	0	13	11	5	0	205
% Heavy Vehicles	0	0	0	0	4.7	0	5.6	3.3	0	2.9	0	0	0	0	0	0	4	3.9	10.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.8	1	0	5.7	3.2	6.9	0	5.8

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast							Lincoln Street From South							I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	8	0	148	48	0	19	0	223	0	0	0	0	0	0	0	8	47	67	0	0	0	0	122	0	0	0	0	0	0	0	0	0	0	0	36	25	0	34	43	9	0	147	492
04:15 PM	0	0	0	0	0	5	0	144	36	0	21	0	206	0	0	0	0	0	0	0	4	47	57	0	0	0	0	108	0	0	0	0	0	0	0	0	0	0	0	40	40	0	22	44	10	0	156	470
04:30 PM	0	0	0	0	0	3	0	149	39	0	19	1	211	0	0	0	0	0	0	0	1	64	72	0	0	0	0	137	0	0	0	0	0	0	0	0	0	0	0	44	22	0	42	47	13	0	168	516
04:45 PM	0	0	0	0	0	9	0	135	28	0	21	0	193	0	0	0	0	0	0	0	4	39	48	0	0	0	0	91	0	0	0	0	0	0	0	0	0	0	0	29	20	0	38	57	11	0	155	439
Total Volume	0	0	0	0	0	25	0	576	151	0	80	1	833	0	0	0	0	0	0	0	17	197	244	0	0	0	0	458	0	0	0	0	0	0	0	0	0	0	0	149	107	0	136	191	43	0	626	1917
% App. Total	0	0	0	0		3	0	69.1	18.1	0	9.6	0.1		0	0	0	0	0		3.7	43	53.3	0	0	0	0		0	0	0	0		0	0	0	0	0		0	0	0	0	0	0		23.8	17.1	0	21.7	30.5	6.9	0	
PHF	.000	.000	.000	.000	.000	.694	.000	.966	.786	.000	.952	.250	.934	.000	.000	.000	.000	.000	.000	.531	.770	.847	.000	.000	.000	.000	.836	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.847	.669	.000	.810	.838	.827	.000	.932	.929
Cars	0	0	0	0	0	24	0	540	145	0	77	1	787	0	0	0	0	0	0	16	185	220	0	0	0	0	421	0	0	0	0	0	0	0	0	0	0	0	134	107	0	128	185	41	0	595	1803
% Cars	0	0	0	0	0	96.0	0	93.8	96.0	0	96.3	100	94.5	0	0	0	0	0	0	94.1	93.9	90.2	0	0	0	0	91.9	0	0	0	0	0	0	0	0	0	0	0	89.9	100	0	94.1	96.9	95.3	0	95.0	94.1
Heavy Vehicles	0	0	0	0	0	1	0	36	6	0	3	0	46	0	0	0	0	0	0	1	12	24	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	15	0	0	8	6	2	0	31	114
% Heavy Vehicles	0	0	0	0	0	4.0	0	6.3	4.0	0	3.8	0	5.5	0	0	0	0	0	0	5.9	6.1	9.8	0	0	0	0	8.1	0	0	0	0	0	0	0	0	0	0	0	10.1	0	0	5.9	3.1	4.7	0	5.0	5.9

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast					Lincoln Street From South							I-93 Onramp From Southwest				Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	7	0	138	47	0	19	0	0	0	0	0	0	8	41	64	0	0	0	0	0	0	0	0	0	0	0	0	0	33	25	0	34	42	9	0	467
04:15 PM	0	0	0	0	5	0	137	34	0	20	0	0	0	0	0	0	4	44	49	0	0	0	0	0	0	0	0	0	0	0	0	0	37	40	0	19	40	10	0	439
04:30 PM	0	0	0	0	3	0	141	39	0	17	1	0	0	0	0	0	1	62	65	0	0	0	0	0	0	0	0	0	0	0	0	0	38	22	0	39	46	13	0	487
04:45 PM	0	0	0	0	9	0	124	25	0	21	0	0	0	0	0	0	3	38	42	0	0	0	0	0	0	0	0	0	0	0	0	0	26	20	0	36	57	9	0	410
Total	0	0	0	0	24	0	540	145	0	77	1	0	0	0	0	0	16	185	220	0	0	0	0	0	0	0	0	0	0	0	0	0	134	107	0	128	185	41	0	1803
05:00 PM	0	0	0	0	4	0	109	32	0	21	0	0	0	0	0	0	2	40	61	0	0	0	0	0	0	0	0	0	0	0	0	0	25	26	0	27	42	7	0	396
05:15 PM	0	0	0	0	6	0	129	44	0	20	0	0	0	0	0	0	4	50	51	0	0	0	0	0	0	0	0	0	0	0	0	0	24	31	0	24	42	5	0	430
05:30 PM	0	0	0	0	3	0	107	24	0	24	1	0	0	0	0	0	2	48	46	0	0	0	0	0	0	0	0	0	0	0	0	0	33	27	0	18	40	12	0	385
05:45 PM	0	0	0	0	4	0	85	49	0	23	0	0	0	0	0	0	0	43	50	0	0	0	0	0	0	0	0	0	0	0	0	0	9	15	0	18	23	2	0	321
Total	0	0	0	0	17	0	430	149	0	88	1	0	0	0	0	0	8	181	208	0	0	0	0	0	0	0	0	0	0	0	0	0	91	99	0	87	147	26	0	1532
Grand Total	0	0	0	0	41	0	970	294	0	165	2	0	0	0	0	0	24	366	428	0	0	0	0	0	0	0	0	0	0	0	0	0	225	206	0	215	332	67	0	3335
Apprch %	0	0	0	0	2.8	0	65.9	20	0	11.2	0.1	0	0	0	0	0	2.9	44.7	52.3	0	0	0	0	0	0	0	0	0	0	0	0	0	21.5	19.7	0	20.6	31.8	6.4	0	
Total %	0	0	0	0	1.2	0	29.1	8.8	0	4.9	0.1	0	0	0	0	0	0.7	11	12.8	0	0	0	0	0	0	0	0	0	0	0	0	0	6.7	6.2	0	6.4	10	2	0	

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	7	0	138	47	0	19	0	211	0	0	0	0	0	0	8	41	64	0	0	0	0	113	0	0	0	0	0	0	0	0	0	0	0	33	25	0	34	42	9	0	143	467
04:15 PM	0	0	0	0	0	5	0	137	34	0	20	0	196	0	0	0	0	0	0	4	44	49	0	0	0	0	97	0	0	0	0	0	0	0	0	0	0	0	37	40	0	19	40	10	0	146	439
04:30 PM	0	0	0	0	0	3	0	141	39	0	17	1	201	0	0	0	0	0	0	1	62	65	0	0	0	0	128	0	0	0	0	0	0	0	0	0	0	0	38	22	0	39	46	13	0	158	487
04:45 PM	0	0	0	0	0	9	0	124	25	0	21	0	179	0	0	0	0	0	0	3	38	42	0	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	26	20	0	36	57	9	0	148	410
Total Volume	0	0	0	0	0	24	0	540	145	0	77	1	787	0	0	0	0	0	0	16	185	220	0	0	0	0	421	0	0	0	0	0	0	0	0	0	0	0	134	107	0	128	185	41	0	595	1803
% App. Total	0	0	0	0		3	0	68.6	18.4	0	9.8	0.1		0	0	0	0	0		3.8	43.9	52.3	0	0	0	0		0	0	0	0		0	0	0	0	0		22.5	18	0	21.5	31.1	6.9	0		
PHF	.000	.000	.000	.000	.000	.667	.000	.957	.771	.000	.917	.250	.932	.000	.000	.000	.000	.000	.000	.500	.746	.846	.000	.000	.000	.000	.822	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.882	.669	.000	.821	.811	.788	.000	.941	.926

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast					Lincoln Street From South							I-93 Onramp From Southwest				Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	1	0	10	1	0	0	0	0	0	0	0	0	0	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	25
04:15 PM	0	0	0	0	0	0	7	2	0	1	0	0	0	0	0	0	0	3	8	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	4	0	0	31
04:30 PM	0	0	0	0	0	0	8	0	0	2	0	0	0	0	0	0	0	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	3	1	0	0	29
04:45 PM	0	0	0	0	0	0	11	3	0	0	0	0	0	0	0	0	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	0	2	0	29
Total	0	0	0	0	1	0	36	6	0	3	0	0	0	0	0	0	1	12	24	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	8	6	2	0	114
05:00 PM	0	0	0	0	0	0	5	3	0	1	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	0	27
05:15 PM	0	0	0	0	1	0	8	1	0	0	0	0	0	0	0	0	0	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	3	1	1	0	32
05:30 PM	0	0	0	0	0	0	5	0	0	1	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	2	1	1	0	18
05:45 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	14
Total	0	0	0	0	1	0	22	4	0	2	0	0	0	0	0	0	0	3	26	0	0	0	0	0	0	0	0	0	0	0	0	0	18	2	0	5	5	3	0	91
Grand Total	0	0	0	0	2	0	58	10	0	5	0	0	0	0	0	0	1	15	50	0	0	0	0	0	0	0	0	0	0	0	0	0	33	2	0	13	11	5	0	205
Apprch %	0	0	0	0	2.7	0	77.3	13.3	0	6.7	0	0	0	0	0	0	1.5	22.7	75.8	0	0	0	0	0	0	0	0	0	0	0	0	0	51.6	3.1	0	20.3	17.2	7.8	0	
Total %	0	0	0	0	1	0	28.3	4.9	0	2.4	0	0	0	0	0	0	0.5	7.3	24.4	0	0	0	0	0	0	0	0	0	0	0	0	0	16.1	1	0	6.3	5.4	2.4	0	

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	0	0	0	0	0	0	0	8	0	0	2	0	10	0	0	0	0	0	0	0	2	7	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	6	0	0	3	1	0	0	10	29
04:45 PM	0	0	0	0	0	0	0	11	3	0	0	0	14	0	0	0	0	0	0	1	1	6	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	0	2	0	7	29
05:00 PM	0	0	0	0	0	0	0	5	3	0	1	0	9	0	0	0	0	0	0	0	0	11	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	0	7	27
05:15 PM	0	0	0	0	0	1	0	8	1	0	0	0	10	0	0	0	0	0	0	0	1	10	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	5	1	0	3	1	1	0	11	32
Total Volume	0	0	0	0	0	1	0	32	7	0	3	0	43	0	0	0	0	0	0	1	4	34	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	17	1	0	8	5	4	0	35	117
% App. Total	0	0	0	0		2.3	0	74.4	16.3	0	7	0		0	0	0	0	0		2.6	10.3	87.2	0	0	0	0		0	0	0	0		0	0	0	0	0		48.6	2.9	0	22.9	14.3	11.4	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.727	.583	.000	.375	.000	.768	.000	.000	.000	.000	.000	.000	.250	.500	.773	.000	.000	.000	.000	.886	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.708	.250	.000	.667	.417	.500	.000	.795	.914

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest								
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Bear Right	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	Bear Right	Thru	Bear Left	Left	Peds SWB	Peds NEB	Hard Right	Right	Thru	Bear Left	Left	Hard Left	Peds WB	Peds EB	Right	Bear Left	Left	Peds NWB	Peds SEB	Right	Thru	Left	Peds NB	Peds SB	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	Peds NEB	Peds SWB	Int. Total
04:00 PM	1	0	0	69	11	0	0	0	0	0	0	78	16	0	0	0	0	14	23	1	0	0	0	0	0	21	51	0	0	0	22	38	0	0	0	24	38	0	0	0	1	0	0	5	9	422
04:15 PM	0	0	0	65	13	0	0	0	0	0	0	58	17	0	0	0	0	9	19	0	0	0	0	0	0	20	51	0	0	0	21	41	0	0	0	27	37	0	0	0	0	0	0	6	15	399
04:30 PM	0	0	0	87	22	0	0	0	0	0	0	89	23	0	0	0	0	8	20	0	0	1	0	0	0	19	44	0	0	0	21	41	0	0	0	22	36	0	0	0	0	0	0	22	18	473
04:45 PM	0	0	0	102	37	0	0	0	0	0	0	151	23	0	0	0	0	13	19	0	0	0	0	0	0	22	62	0	0	0	23	35	0	0	0	22	33	0	0	0	0	0	0	6	32	580
Total	1	0	0	323	83	0	0	0	0	0	0	376	79	0	0	0	0	44	81	1	0	1	0	0	0	82	208	0	0	0	87	155	0	0	0	95	144	0	0	0	1	0	0	39	74	1874
05:00 PM	0	0	0	171	61	0	0	0	0	0	0	120	38	0	0	0	0	8	32	0	0	0	0	0	0	22	49	0	0	0	38	40	0	0	0	47	50	0	0	0	0	0	0	9	23	708
05:15 PM	0	0	0	145	56	0	0	0	0	0	0	85	24	0	0	0	0	10	21	0	0	0	0	0	0	34	44	0	0	0	39	36	0	0	0	47	52	1	0	0	0	0	0	5	34	633
05:30 PM	0	0	0	133	64	0	0	0	0	0	0	106	22	0	0	0	0	27	27	0	0	1	0	0	0	29	40	0	0	0	53	41	0	0	0	58	38	0	0	0	0	0	0	22	48	709
05:45 PM	0	0	0	64	63	0	0	0	0	0	0	46	23	0	0	0	0	12	30	0	0	0	0	0	0	15	29	0	0	0	37	28	0	0	0	25	34	0	0	0	0	0	0	5	28	439
Total	0	0	0	513	244	0	0	0	0	0	0	357	107	0	0	0	0	57	110	0	0	1	0	0	0	100	162	0	0	0	167	145	0	0	0	177	174	1	0	0	0	0	0	41	133	2489
Grand Total	1	0	0	836	327	0	0	0	0	0	0	733	186	0	0	0	0	101	191	1	0	2	0	0	0	182	370	0	0	0	254	300	0	0	0	272	318	1	0	0	1	0	0	80	207	4363
Apprch %	0.1	0	0	71.8	28.1	0	0	0	0	0	0	79.8	20.2	0	0	0	0	34.6	65.4	0.2	0	0.4	0	0	0	32.8	66.7	0	0	0	45.8	54.2	0	0	0	46.1	53.9	0.3	0	0	0.3	0	0	27.7	71.6	
Total %	0	0	0	19.2	7.5	0	0	0	0	0	0	16.8	4.3	0	0	0	0	2.3	4.4	0	0	0	0	0	0	4.2	8.5	0	0	0	5.8	6.9	0	0	0	6.2	7.3	0	0	0	0	0	0	1.8	4.7	

	Lincoln Street From North						Surface Road/I-93 Onramp From East							Essex Street From Southeast							Lincoln Street From South								I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	App. Total	Bear Right	Thru	Bear Left	Left	Peds SWB	Peds NEB	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	Peds WB	Peds EB	App. Total	Right	Bear Left	Left	Peds NWB	Peds SEB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	Peds NEB	Peds SWB	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	102	37	139	0	0	0	0	0	0	151	23	174	0	0	0	0	13	19	32	0	0	0	0	0	0	22	62	84	0	0	0	23	35	58	0	0	0	22	33	55	0	0	0	0	0	0	6	32	38	580
05:00 PM	0	0	0	171	61	232	0	0	0	0	0	0	120	38	158	0	0	0	0	8	32	40	0	0	0	0	0	0	22	49	71	0	0	0	38	40	78	0	0	0	47	50	97	0	0	0	0	0	0	9	23	32	708
05:15 PM	0	0	0	145	56	201	0	0	0	0	0	0	85	24	109	0	0	0	0	10	21	31	0	0	0	0	0	0	34	44	78	0	0	0	39	36	75	0	0	0	47	52	99	1	0	0	0	0	0	5	34	40	633
05:30 PM	0	0	0	133	64	197	0	0	0	0	0	0	106	22	128	0	0	0	0	27	27	54	0	0	1	0	0	0	29	40	70	0	0	0	53	41	94	0	0	0	58	38	96	0	0	0	0	0	0	22	48	70	709
Total Volume	0	0	0	551	218	769	0	0	0	0	0	0	462	107	569	0	0	0	0	58	99	157	0	0	1	0	0	0	107	195	303	0	0	0	153	152	305	0	0	0	174	173	347	1	0	0	0	0	0	42	137	180	2630
% App. Total	0	0	0	71.7	28.3		0	0	0	0	0	0	81.2	18.8		0	0	0	0	36.9	63.1		0	0	0.3	0	0	0	35.3	64.4		0	0	0	50.2	49.8		0	0	0	50.1	49.9		0.6	0	0	0	0	0	23.3	76.7		
PHF	.000	.000	.000	.806	.852	.829	.000	.000	.000	.000	.000	.000	.765	.704	.818	.000	.000	.000	.000	.537	.773	.727	.000	.000	.250	.000	.000	.000	.787	.786	.902	.000	.000	.000	.722	.927	.811	.000	.000	.000	.750	.839	.876	.250	.000	.000	.000	.000	.000	.477	.714	.643	.927

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

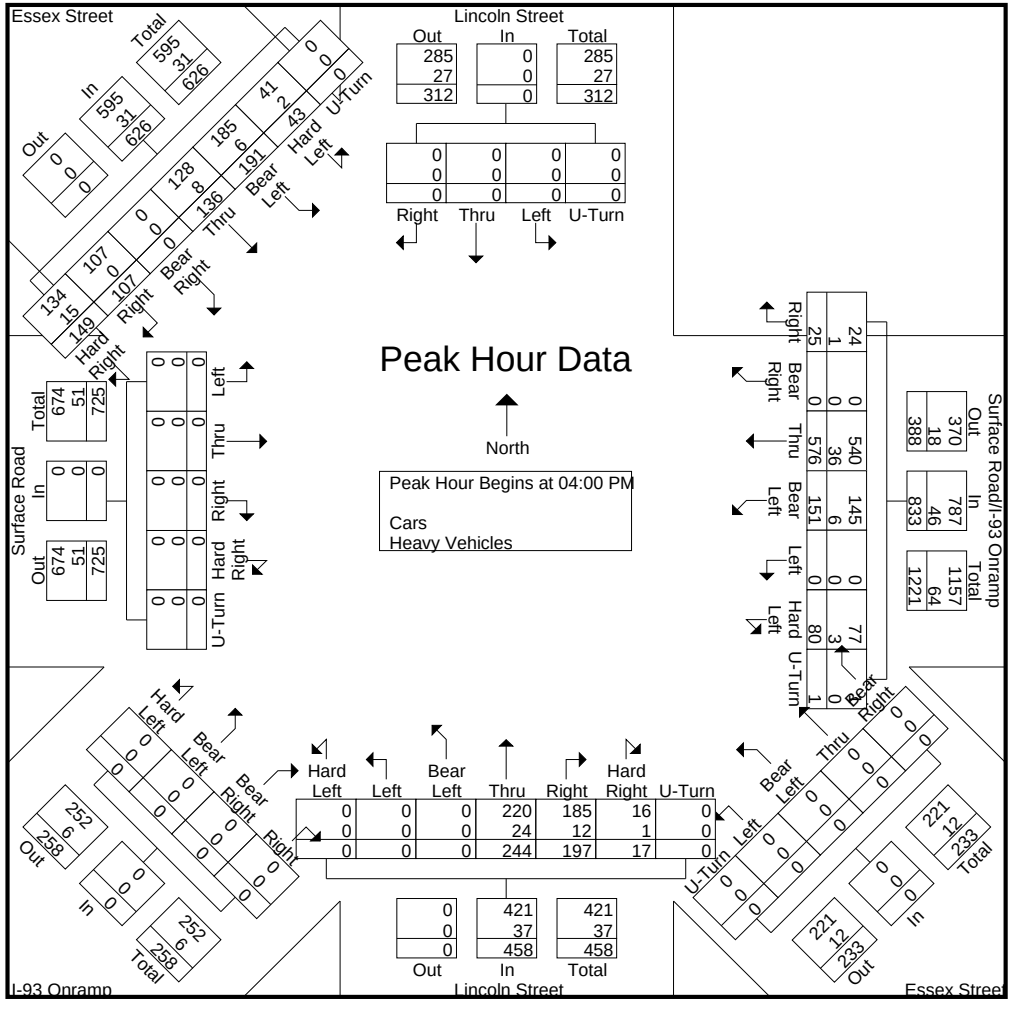
File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast							Lincoln Street From South								I-93 Onramp From Southwest						Surface Road From West								Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Int. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	8	0	148	48	0	19	0	223	0	0	0	0	0	0		8	47	67	0	0	0	0	122	0	0	0	0	0	0	0	0	0	0	0	36	25	0	34	43	9	0	147	492
04:15 PM	0	0	0	0	0	5	0	144	36	0	21	0	206	0	0	0	0	0	0		4	47	57	0	0	0	0	108	0	0	0	0	0	0	0	0	0	0	0	40	40	0	22	44	10	0	156	470
04:30 PM	0	0	0	0	0	3	0	149	39	0	19	1	211	0	0	0	0	0	0		1	64	72	0	0	0	0	137	0	0	0	0	0	0	0	0	0	0	0	44	22	0	42	47	13	0	168	516
04:45 PM	0	0	0	0	0	9	0	135	28	0	21	0	193	0	0	0	0	0	0		4	39	48	0	0	0	0	91	0	0	0	0	0	0	0	0	0	0	0	29	20	0	38	57	11	0	155	439
Total Volume	0	0	0	0	0	25	0	576	151	0	80	1	833	0	0	0	0	0	0		17	197	244	0	0	0	0	458	0	0	0	0	0	0	0	0	0	0	0	149	107	0	136	191	43	0	626	1917
% App. Total	0	0	0	0		3	0	69.1	18.1	0	9.6	0.1		0	0	0	0	0			3.7	43	53.3	0	0	0	0		0	0	0	0		0	0	0	0	0		23.8	17.1	0	21.7	30.5	6.9	0		
PHF	.000	.000	.000	.000	.000	.694	.000	.966	.786	.000	.952	.250	.934	.000	.000	.000	.000	.000	.000		.531	.770	.847	.000	.000	.000	.000	.836	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.847	.669	.000	.810	.838	.827	.000	.932	.929
Cars	0	0	0	0	0	24	0	540	145	0	77	1	787	0	0	0	0	0	0		16	185	220	0	0	0	0	421	0	0	0	0	0	0	0	0	0	0	0	134	107	0	128	185	41	0	595	1803
% Cars	0	0	0	0	0	96.0	0	93.8	96.0	0	96.3	100	94.5	0	0	0	0	0	0		94.1	93.9	90.2	0	0	0	0	91.9	0	0	0	0	0	0	0	0	0	0	0	89.9	100	0	94.1	96.9	95.3	0	95.0	94.1
Heavy Vehicles	0	0	0	0	0	1	0	36	6	0	3	0	46	0	0	0	0	0	0		1	12	24	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	15	0	0	8	6	2	0	31	114
% Heavy Vehicles	0	0	0	0	0	4.0	0	6.3	4.0	0	3.8	0	5.5	0	0	0	0	0	0		5.9	6.1	9.8	0	0	0	0	8.1	0	0	0	0	0	0	0	0	0	0	0	10.1	0	0	5.9	3.1	4.7	0	5.0	5.9

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 2



N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 B
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Summer Street From North				Surface Road From East				Summer Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	3	11	0	0	52	90	83	0	0	67	61	1	0	0	0	0	368
07:15 AM	8	19	0	0	48	110	77	0	0	91	44	1	0	0	0	0	398
07:30 AM	10	16	0	0	42	133	88	0	0	103	46	1	0	0	0	0	439
07:45 AM	5	17	0	0	49	131	88	0	0	91	56	1	0	0	0	0	438
Total	26	63	0	0	191	464	336	0	0	352	207	4	0	0	0	0	1643
08:00 AM	9	24	0	0	58	129	99	0	0	102	52	0	0	0	0	0	473
08:15 AM	7	15	0	0	61	126	80	0	0	101	51	0	0	0	0	0	441
08:30 AM	10	24	0	0	48	112	83	0	0	109	42	1	0	0	0	0	429
08:45 AM	12	31	0	0	57	131	70	0	0	124	58	0	0	0	0	0	483
Total	38	94	0	0	224	498	332	0	0	436	203	1	0	0	0	0	1826
Grand Total	64	157	0	0	415	962	668	0	0	788	410	5	0	0	0	0	3469
Apprch %	29	71	0	0	20.3	47	32.7	0	0	65.5	34.1	0.4	0	0	0	0	
Total %	1.8	4.5	0	0	12	27.7	19.3	0	0	22.7	11.8	0.1	0	0	0	0	
Cars	58	130	0	0	384	890	638	0	0	726	375	5	0	0	0	0	3206
% Cars	90.6	82.8	0	0	92.5	92.5	95.5	0	0	92.1	91.5	100	0	0	0	0	92.4
Heavy Vehicles	6	27	0	0	31	72	30	0	0	62	35	0	0	0	0	0	263
% Heavy Vehicles	9.4	17.2	0	0	7.5	7.5	4.5	0	0	7.9	8.5	0	0	0	0	0	7.6

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	9	24	0	0	33	58	129	99	0	286	0	102	52	0	154	0	0	0	0	0	473
08:15 AM	7	15	0	0	22	61	126	80	0	267	0	101	51	0	152	0	0	0	0	0	441
08:30 AM	10	24	0	0	34	48	112	83	0	243	0	109	42	1	152	0	0	0	0	0	429
08:45 AM	12	31	0	0	43	57	131	70	0	258	0	124	58	0	182	0	0	0	0	0	483
Total Volume	38	94	0	0	132	224	498	332	0	1054	0	436	203	1	640	0	0	0	0	0	1826
% App. Total	28.8	71.2	0	0		21.3	47.2	31.5	0		0	68.1	31.7	0.2		0	0	0	0		
PHF	.792	.758	.000	.000	.767	.918	.950	.838	.000	.921	.000	.879	.875	.250	.879	.000	.000	.000	.000	.000	.945
Cars	34	79	0	0	113	207	461	312	0	980	0	407	189	1	597	0	0	0	0	0	1690
% Cars	89.5	84.0	0	0	85.6	92.4	92.6	94.0	0	93.0	0	93.3	93.1	100	93.3	0	0	0	0	0	92.6
Heavy Vehicles	4	15	0	0	19	17	37	20	0	74	0	29	14	0	43	0	0	0	0	0	136
% Heavy Vehicles	10.5	16.0	0	0	14.4	7.6	7.4	6.0	0	7.0	0	6.7	6.9	0	6.7	0	0	0	0	0	7.4

N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 B
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Summer Street From North				Surface Road From East				Summer Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	3	9	0	0	49	82	83	0	0	61	56	1	0	0	0	0	344
07:15 AM	7	15	0	0	43	103	73	0	0	83	38	1	0	0	0	0	363
07:30 AM	10	14	0	0	38	119	84	0	0	98	43	1	0	0	0	0	407
07:45 AM	4	13	0	0	47	125	86	0	0	77	49	1	0	0	0	0	402
Total	24	51	0	0	177	429	326	0	0	319	186	4	0	0	0	0	1516
08:00 AM	8	21	0	0	55	119	92	0	0	96	51	0	0	0	0	0	442
08:15 AM	7	12	0	0	53	118	73	0	0	95	47	0	0	0	0	0	405
08:30 AM	8	19	0	0	43	101	78	0	0	101	38	1	0	0	0	0	389
08:45 AM	11	27	0	0	56	123	69	0	0	115	53	0	0	0	0	0	454
Total	34	79	0	0	207	461	312	0	0	407	189	1	0	0	0	0	1690
Grand Total	58	130	0	0	384	890	638	0	0	726	375	5	0	0	0	0	3206
Apprch %	30.9	69.1	0	0	20.1	46.5	33.4	0	0	65.6	33.9	0.5	0	0	0	0	
Total %	1.8	4.1	0	0	12	27.8	19.9	0	0	22.6	11.7	0.2	0	0	0	0	

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	8	21	0	0	29	55	119	92	0	266	0	96	51	0	147	0	0	0	0	0	442
08:15 AM	7	12	0	0	19	53	118	73	0	244	0	95	47	0	142	0	0	0	0	0	405
08:30 AM	8	19	0	0	27	43	101	78	0	222	0	101	38	1	140	0	0	0	0	0	389
08:45 AM	11	27	0	0	38	56	123	69	0	248	0	115	53	0	168	0	0	0	0	0	454
Total Volume	34	79	0	0	113	207	461	312	0	980	0	407	189	1	597	0	0	0	0	0	1690
% App. Total	30.1	69.9	0	0		21.1	47	31.8	0		0	68.2	31.7	0.2		0	0	0	0		
PHF	.773	.731	.000	.000	.743	.924	.937	.848	.000	.921	.000	.885	.892	.250	.888	.000	.000	.000	.000	.000	.931

N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 B
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Summer Street From North				Surface Road From East				Summer Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	2	0	0	3	8	0	0	0	6	5	0	0	0	0	0	24
07:15 AM	1	4	0	0	5	7	4	0	0	8	6	0	0	0	0	0	35
07:30 AM	0	2	0	0	4	14	4	0	0	5	3	0	0	0	0	0	32
07:45 AM	1	4	0	0	2	6	2	0	0	14	7	0	0	0	0	0	36
Total	2	12	0	0	14	35	10	0	0	33	21	0	0	0	0	0	127
08:00 AM	1	3	0	0	3	10	7	0	0	6	1	0	0	0	0	0	31
08:15 AM	0	3	0	0	8	8	7	0	0	6	4	0	0	0	0	0	36
08:30 AM	2	5	0	0	5	11	5	0	0	8	4	0	0	0	0	0	40
08:45 AM	1	4	0	0	1	8	1	0	0	9	5	0	0	0	0	0	29
Total	4	15	0	0	17	37	20	0	0	29	14	0	0	0	0	0	136
Grand Total	6	27	0	0	31	72	30	0	0	62	35	0	0	0	0	0	263
Apprch %	18.2	81.8	0	0	23.3	54.1	22.6	0	0	63.9	36.1	0	0	0	0	0	
Total %	2.3	10.3	0	0	11.8	27.4	11.4	0	0	23.6	13.3	0	0	0	0	0	

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	4	0	0	5	2	6	2	0	10	0	14	7	0	21	0	0	0	0	0	36
08:00 AM	1	3	0	0	4	3	10	7	0	20	0	6	1	0	7	0	0	0	0	0	31
08:15 AM	0	3	0	0	3	8	8	7	0	23	0	6	4	0	10	0	0	0	0	0	36
08:30 AM	2	5	0	0	7	5	11	5	0	21	0	8	4	0	12	0	0	0	0	0	40
Total Volume	4	15	0	0	19	18	35	21	0	74	0	34	16	0	50	0	0	0	0	0	143
% App. Total	21.1	78.9	0	0		24.3	47.3	28.4	0		0	68	32	0		0	0	0	0		
PHF	.500	.750	.000	.000	.679	.563	.795	.750	.000	.804	.000	.607	.571	.000	.595	.000	.000	.000	.000	.000	.894

N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 B
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	2	0	3	4	0	0	1	36	205	0	0	0	5	22	0	0	0	93	29	400
07:15 AM	0	0	0	11	19	0	1	0	64	224	0	0	0	11	27	0	0	0	177	52	586
07:30 AM	0	0	0	9	28	0	0	0	52	260	0	3	0	8	47	0	0	0	181	52	640
07:45 AM	0	2	0	23	39	0	1	0	79	210	0	2	0	17	28	0	0	0	221	96	718
Total	0	4	0	46	90	0	2	1	231	899	0	5	0	41	124	0	0	0	672	229	2344
08:00 AM	0	2	0	18	19	0	0	0	60	81	0	0	0	0	6	0	0	0	236	90	512
08:15 AM	0	0	0	31	27	0	0	1	78	164	0	2	0	0	23	0	0	0	524	82	932
08:30 AM	0	1	0	30	24	0	1	0	68	113	0	5	0	8	26	0	0	0	347	62	685
08:45 AM	0	4	0	29	38	0	5	0	65	125	0	0	1	7	27	0	0	0	345	119	765
Total	0	7	0	108	108	0	6	1	271	483	0	7	1	15	82	0	0	0	1452	353	2894
Grand Total	0	11	0	154	198	0	8	2	502	1382	0	12	1	56	206	0	0	0	2124	582	5238
Apprch %	0	3	0	42.4	54.5	0	0.4	0.1	26.5	73	0	4.4	0.4	20.4	74.9	0	0	0	78.5	21.5	
Total %	0	0.2	0	2.9	3.8	0	0.2	0	9.6	26.4	0	0.2	0	1.1	3.9	0	0	0	40.5	11.1	

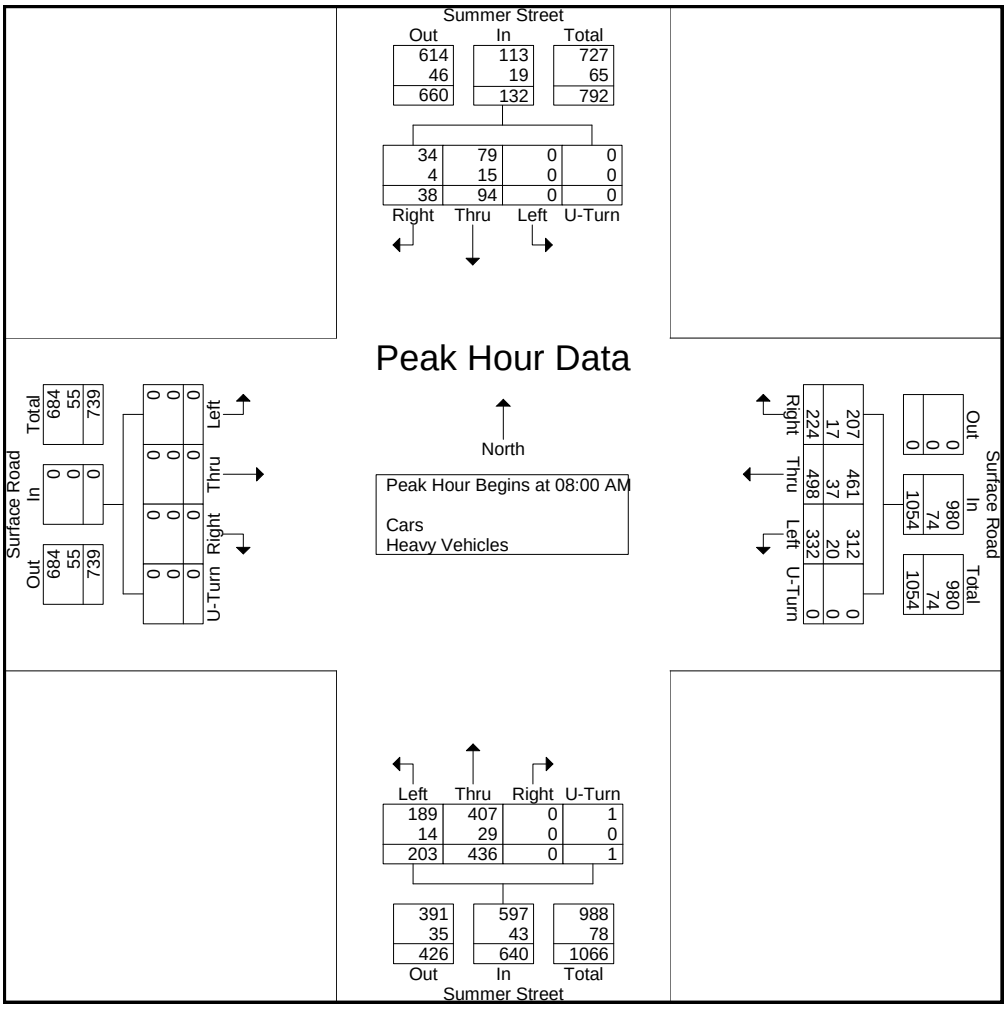
	Summer Street From North						Surface Road From East						Summer Street From South						Surface Road From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. 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	2	0	18	19	39	0	0	0	60	81	141	0	0	0	0	6	6	0	0	0	236	90	326	512
08:15 AM	0	0	0	31	27	58	0	0	1	78	164	243	0	2	0	0	23	25	0	0	0	524	82	606	932
08:30 AM	0	1	0	30	24	55	0	1	0	68	113	182	0	5	0	8	26	39	0	0	0	347	62	409	685
08:45 AM	0	4	0	29	38	71	0	5	0	65	125	195	0	0	1	7	27	35	0	0	0	345	119	464	765
Total Volume	0	7	0	108	108	223	0	6	1	271	483	761	0	7	1	15	82	105	0	0	0	1452	353	1805	2894
% App. Total	0	3.1	0	48.4	48.4		0	0.8	0.1	35.6	63.5		0	6.7	1	14.3	78.1		0	0	0	80.4	19.6		
PHF	.000	.438	.000	.871	.711	.785	.000	.300	.250	.869	.736	.783	.000	.350	.250	.469	.759	.673	.000	.000	.000	.693	.742	.745	.776

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 B
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	9	24	0	0	33	58	129	99	0	286	0	102	52	0	154	0	0	0	0	0	473
08:15 AM	7	15	0	0	22	61	126	80	0	267	0	101	51	0	152	0	0	0	0	0	441
08:30 AM	10	24	0	0	34	48	112	83	0	243	0	109	42	1	152	0	0	0	0	0	429
08:45 AM	12	31	0	0	43	57	131	70	0	258	0	124	58	0	182	0	0	0	0	0	483
Total Volume	38	94	0	0	132	224	498	332	0	1054	0	436	203	1	640	0	0	0	0	0	1826
% App. Total	28.8	71.2	0	0		21.3	47.2	31.5	0		0	68.1	31.7	0.2		0	0	0	0		
PHF	.792	.758	.000	.000	.767	.918	.950	.838	.000	.921	.000	.879	.875	.250	.879	.000	.000	.000	.000	.000	.945
Cars	34	79	0	0	113	207	461	312	0	980	0	407	189	1	597	0	0	0	0	0	1690
% Cars	89.5	84.0	0	0	85.6	92.4	92.6	94.0	0	93.0	0	93.3	93.1	100	93.3	0	0	0	0	0	92.6
Heavy Vehicles	4	15	0	0	19	17	37	20	0	74	0	29	14	0	43	0	0	0	0	0	136
% Heavy Vehicles	10.5	16.0	0	0	14.4	7.6	7.4	6.0	0	7.0	0	6.7	6.9	0	6.7	0	0	0	0	0	7.4



N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 BB
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Summer Street From North				Surface Road From East				Summer Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	14	23	0	0	26	168	47	0	0	49	49	0	0	0	0	0	376
04:15 PM	18	26	0	0	19	131	46	0	0	59	42	0	0	0	0	0	341
04:30 PM	18	30	0	0	14	149	42	0	0	68	49	0	0	0	0	0	370
04:45 PM	18	32	0	0	23	146	37	0	0	54	37	0	0	0	0	0	347
Total	68	111	0	0	82	594	172	0	0	230	177	0	0	0	0	0	1434
05:00 PM	10	22	0	0	14	75	44	0	0	78	27	0	0	0	0	0	270
05:15 PM	28	32	0	0	10	100	43	0	0	62	37	0	0	0	0	0	312
05:30 PM	30	21	0	0	12	93	39	0	0	81	39	0	0	0	0	0	315
05:45 PM	12	10	0	0	18	59	30	0	0	52	38	0	0	0	0	0	219
Total	80	85	0	0	54	327	156	0	0	273	141	0	0	0	0	0	1116
Grand Total	148	196	0	0	136	921	328	0	0	503	318	0	0	0	0	0	2550
Apprch %	43	57	0	0	9.8	66.5	23.7	0	0	61.3	38.7	0	0	0	0	0	
Total %	5.8	7.7	0	0	5.3	36.1	12.9	0	0	19.7	12.5	0	0	0	0	0	
Cars	141	172	0	0	132	874	317	0	0	471	305	0	0	0	0	0	2412
% Cars	95.3	87.8	0	0	97.1	94.9	96.6	0	0	93.6	95.9	0	0	0	0	0	94.6
Heavy Vehicles	7	24	0	0	4	47	11	0	0	32	13	0	0	0	0	0	138
% Heavy Vehicles	4.7	12.2	0	0	2.9	5.1	3.4	0	0	6.4	4.1	0	0	0	0	0	5.4

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	14	23	0	0	37	26	168	47	0	241	0	49	49	0	98	0	0	0	0	0	376
04:15 PM	18	26	0	0	44	19	131	46	0	196	0	59	42	0	101	0	0	0	0	0	341
04:30 PM	18	30	0	0	48	14	149	42	0	205	0	68	49	0	117	0	0	0	0	0	370
04:45 PM	18	32	0	0	50	23	146	37	0	206	0	54	37	0	91	0	0	0	0	0	347
Total Volume	68	111	0	0	179	82	594	172	0	848	0	230	177	0	407	0	0	0	0	0	1434
% App. Total	38	62	0	0		9.7	70	20.3	0		0	56.5	43.5	0		0	0	0	0		
PHF	.944	.867	.000	.000	.895	.788	.884	.915	.000	.880	.000	.846	.903	.000	.870	.000	.000	.000	.000	.000	.953
Cars	65	97	0	0	162	79	564	165	0	808	0	216	167	0	383	0	0	0	0	0	1353
% Cars	95.6	87.4	0	0	90.5	96.3	94.9	95.9	0	95.3	0	93.9	94.4	0	94.1	0	0	0	0	0	94.4
Heavy Vehicles	3	14	0	0	17	3	30	7	0	40	0	14	10	0	24	0	0	0	0	0	81
% Heavy Vehicles	4.4	12.6	0	0	9.5	3.7	5.1	4.1	0	4.7	0	6.1	5.6	0	5.9	0	0	0	0	0	5.6

N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 BB
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Summer Street From North				Surface Road From East				Summer Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	14	21	0	0	25	161	45	0	0	47	46	0	0	0	0	0	359
04:15 PM	17	22	0	0	18	126	44	0	0	55	41	0	0	0	0	0	323
04:30 PM	18	26	0	0	14	142	39	0	0	62	45	0	0	0	0	0	346
04:45 PM	16	28	0	0	22	135	37	0	0	52	35	0	0	0	0	0	325
Total	65	97	0	0	79	564	165	0	0	216	167	0	0	0	0	0	1353
05:00 PM	9	21	0	0	13	69	42	0	0	77	26	0	0	0	0	0	257
05:15 PM	26	30	0	0	10	96	42	0	0	58	36	0	0	0	0	0	298
05:30 PM	29	18	0	0	12	88	39	0	0	72	38	0	0	0	0	0	296
05:45 PM	12	6	0	0	18	57	29	0	0	48	38	0	0	0	0	0	208
Total	76	75	0	0	53	310	152	0	0	255	138	0	0	0	0	0	1059
Grand Total	141	172	0	0	132	874	317	0	0	471	305	0	0	0	0	0	2412
Apprch %	45	55	0	0	10	66.1	24	0	0	60.7	39.3	0	0	0	0	0	
Total %	5.8	7.1	0	0	5.5	36.2	13.1	0	0	19.5	12.6	0	0	0	0	0	

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	14	21	0	0	35	25	161	45	0	231	0	47	46	0	93	0	0	0	0	0	359
04:15 PM	17	22	0	0	39	18	126	44	0	188	0	55	41	0	96	0	0	0	0	0	323
04:30 PM	18	26	0	0	44	14	142	39	0	195	0	62	45	0	107	0	0	0	0	0	346
04:45 PM	16	28	0	0	44	22	135	37	0	194	0	52	35	0	87	0	0	0	0	0	325
Total Volume	65	97	0	0	162	79	564	165	0	808	0	216	167	0	383	0	0	0	0	0	1353
% App. Total	40.1	59.9	0	0		9.8	69.8	20.4	0		0	56.4	43.6	0		0	0	0	0		
PHF	.903	.866	.000	.000	.920	.790	.876	.917	.000	.874	.000	.871	.908	.000	.895	.000	.000	.000	.000	.000	.942

N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 BB
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Summer Street From North				Surface Road From East				Summer Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	2	0	0	1	7	2	0	0	2	3	0	0	0	0	0	17
04:15 PM	1	4	0	0	1	5	2	0	0	4	1	0	0	0	0	0	18
04:30 PM	0	4	0	0	0	7	3	0	0	6	4	0	0	0	0	0	24
04:45 PM	2	4	0	0	1	11	0	0	0	2	2	0	0	0	0	0	22
Total	3	14	0	0	3	30	7	0	0	14	10	0	0	0	0	0	81
05:00 PM	1	1	0	0	1	6	2	0	0	1	1	0	0	0	0	0	13
05:15 PM	2	2	0	0	0	4	1	0	0	4	1	0	0	0	0	0	14
05:30 PM	1	3	0	0	0	5	0	0	0	9	1	0	0	0	0	0	19
05:45 PM	0	4	0	0	0	2	1	0	0	4	0	0	0	0	0	0	11
Total	4	10	0	0	1	17	4	0	0	18	3	0	0	0	0	0	57
Grand Total	7	24	0	0	4	47	11	0	0	32	13	0	0	0	0	0	138
Apprch %	22.6	77.4	0	0	6.5	75.8	17.7	0	0	71.1	28.9	0	0	0	0	0	
Total %	5.1	17.4	0	0	2.9	34.1	8	0	0	23.2	9.4	0	0	0	0	0	

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	2	0	0	2	1	7	2	0	10	0	2	3	0	5	0	0	0	0	0	17
04:15 PM	1	4	0	0	5	1	5	2	0	8	0	4	1	0	5	0	0	0	0	0	18
04:30 PM	0	4	0	0	4	0	7	3	0	10	0	6	4	0	10	0	0	0	0	0	24
04:45 PM	2	4	0	0	6	1	11	0	0	12	0	2	2	0	4	0	0	0	0	0	22
Total Volume	3	14	0	0	17	3	30	7	0	40	0	14	10	0	24	0	0	0	0	0	81
% App. Total	17.6	82.4	0	0		7.5	75	17.5	0		0	58.3	41.7	0		0	0	0	0		
PHF	.375	.875	.000	.000	.708	.750	.682	.583	.000	.833	.000	.583	.625	.000	.600	.000	.000	.000	.000	.000	.844

N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 BB
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	2	0	15	15	0	2	0	24	26	0	2	0	5	5	0	0	0	41	221	358
04:15 PM	0	1	0	5	10	0	2	1	34	19	0	0	0	4	10	0	0	0	37	191	314
04:30 PM	0	1	0	7	9	0	2	0	39	25	0	0	0	2	9	0	0	0	63	234	391
04:45 PM	0	0	0	13	26	0	4	0	37	29	0	0	0	0	3	0	0	0	76	289	477
Total	0	4	0	40	60	0	10	1	134	99	0	2	0	11	27	0	0	0	217	935	1540
05:00 PM	0	0	0	15	16	0	0	0	49	55	0	1	0	5	17	0	0	0	89	263	510
05:15 PM	0	0	0	17	16	0	0	0	53	70	0	4	0	2	3	0	0	0	98	293	556
05:30 PM	0	0	0	13	22	0	0	0	51	67	0	5	0	3	4	0	0	0	118	356	639
05:45 PM	0	0	0	19	15	0	0	0	42	50	0	4	0	2	1	0	0	0	66	220	419
Total	0	0	0	64	69	0	0	0	195	242	0	14	0	12	25	0	0	0	371	1132	2124
Grand Total	0	4	0	104	129	0	10	1	329	341	0	16	0	23	52	0	0	0	588	2067	3664
Apprch %	0	1.7	0	43.9	54.4	0	1.5	0.1	48.3	50.1	0	17.6	0	25.3	57.1	0	0	0	22.1	77.9	
Total %	0	0.1	0	2.8	3.5	0	0.3	0	9	9.3	0	0.4	0	0.6	1.4	0	0	0	16	56.4	

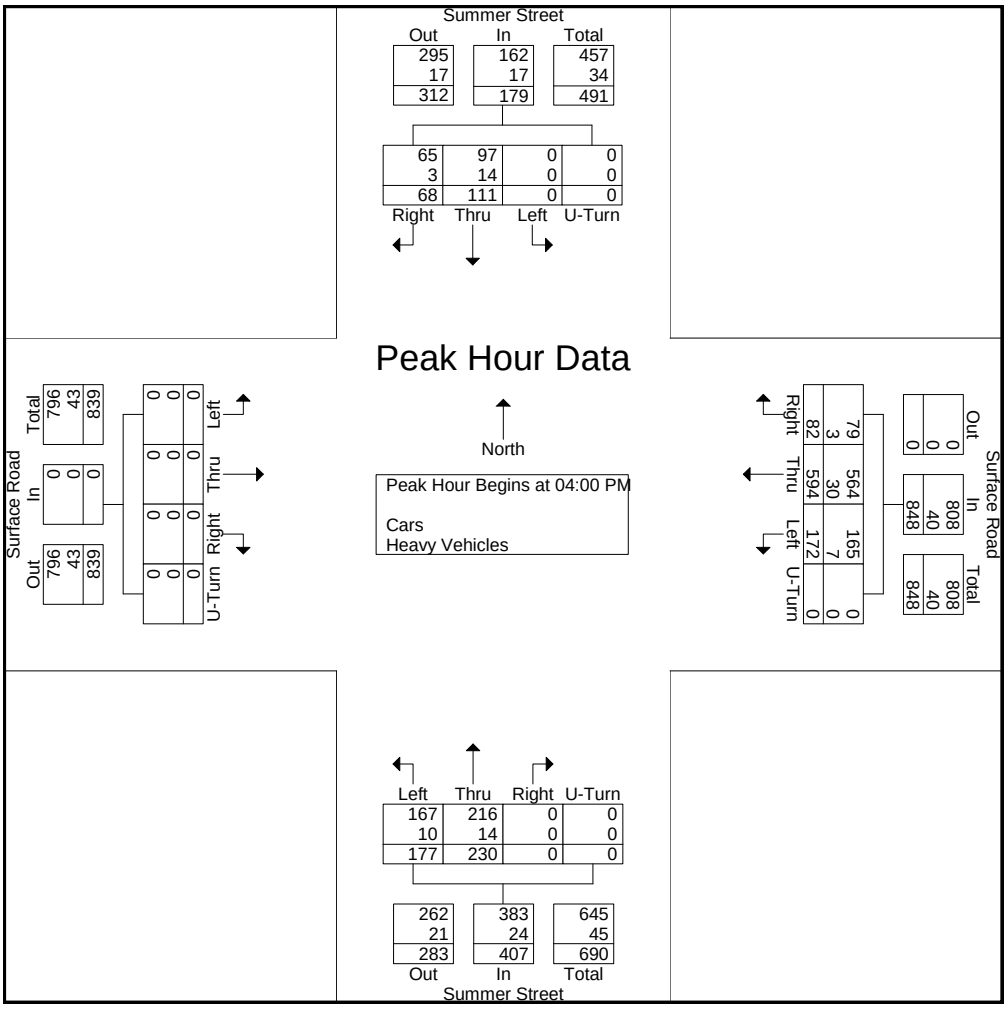
	Summer Street From North						Surface Road From East						Summer Street From South						Surface Road From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. 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	13	26	39	0	4	0	37	29	70	0	0	0	0	3	3	0	0	0	76	289	365	477
05:00 PM	0	0	0	15	16	31	0	0	0	49	55	104	0	1	0	5	17	23	0	0	0	89	263	352	510
05:15 PM	0	0	0	17	16	33	0	0	0	53	70	123	0	4	0	2	3	9	0	0	0	98	293	391	556
05:30 PM	0	0	0	13	22	35	0	0	0	51	67	118	0	5	0	3	4	12	0	0	0	118	356	474	639
Total Volume	0	0	0	58	80	138	0	4	0	190	221	415	0	10	0	10	27	47	0	0	0	381	1201	1582	2182
% App. Total	0	0	0	42	58		0	1	0	45.8	53.3		0	21.3	0	21.3	57.4		0	0	0	24.1	75.9		
PHF	.000	.000	.000	.853	.769	.885	.000	.250	.000	.896	.789	.843	.000	.500	.000	.500	.397	.511	.000	.000	.000	.807	.843	.834	.854

N/S: Summer Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 BB
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Summer Street From North					Surface Road From East					Summer Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	14	23	0	0	37	26	168	47	0	241	0	49	49	0	98	0	0	0	0	0	376
04:15 PM	18	26	0	0	44	19	131	46	0	196	0	59	42	0	101	0	0	0	0	0	341
04:30 PM	18	30	0	0	48	14	149	42	0	205	0	68	49	0	117	0	0	0	0	0	370
04:45 PM	18	32	0	0	50	23	146	37	0	206	0	54	37	0	91	0	0	0	0	0	347
Total Volume	68	111	0	0	179	82	594	172	0	848	0	230	177	0	407	0	0	0	0	0	1434
% App. Total	38	62	0	0		9.7	70	20.3	0		0	56.5	43.5	0		0	0	0	0		
PHF	.944	.867	.000	.000	.895	.788	.884	.915	.000	.880	.000	.846	.903	.000	.870	.000	.000	.000	.000	.000	.953
Cars	65	97	0	0	162	79	564	165	0	808	0	216	167	0	383	0	0	0	0	0	1353
% Cars	95.6	87.4	0	0	90.5	96.3	94.9	95.9	0	95.3	0	93.9	94.4	0	94.1	0	0	0	0	0	94.4
Heavy Vehicles	3	14	0	0	17	3	30	7	0	40	0	14	10	0	24	0	0	0	0	0	81
% Heavy Vehicles	4.4	12.6	0	0	9.5	3.7	5.1	4.1	0	4.7	0	6.1	5.6	0	5.9	0	0	0	0	0	5.6



N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North				Surface Road From East				Congress Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	72	68	0	0	0	118	64	0	0	0	0	0	0	0	0	0	322
07:15 AM	70	84	0	0	0	123	86	0	0	0	0	0	0	0	0	0	363
07:30 AM	90	109	0	0	0	144	90	0	0	0	0	0	0	0	0	0	433
07:45 AM	92	112	0	0	0	130	103	0	0	0	0	0	0	0	0	0	437
Total	324	373	0	0	0	515	343	0	0	0	0	0	0	0	0	0	1555
08:00 AM	98	123	0	0	0	190	110	0	0	0	0	0	0	0	0	0	521
08:15 AM	127	145	0	0	0	162	99	0	0	0	0	0	0	0	0	0	533
08:30 AM	93	131	0	0	0	180	115	0	0	0	0	0	0	0	0	0	519
08:45 AM	87	138	0	0	0	154	105	0	0	0	0	0	0	0	0	0	484
Total	405	537	0	0	0	686	429	0	0	0	0	0	0	0	0	0	2057
Grand Total	729	910	0	0	0	1201	772	0	0	0	0	0	0	0	0	0	3612
Apprch %	44.5	55.5	0	0	0	60.9	39.1	0	0	0	0	0	0	0	0	0	
Total %	20.2	25.2	0	0	0	33.3	21.4	0	0	0	0	0	0	0	0	0	
Cars	681	835	0	0	0	1125	712	0	0	0	0	0	0	0	0	0	3353
% Cars	93.4	91.8	0	0	0	93.7	92.2	0	0	0	0	0	0	0	0	0	92.8
Heavy Vehicles	48	75	0	0	0	76	60	0	0	0	0	0	0	0	0	0	259
% Heavy Vehicles	6.6	8.2	0	0	0	6.3	7.8	0	0	0	0	0	0	0	0	0	7.2

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	98	123	0	0	221	0	190	110	0	300	0	0	0	0	0	0	0	0	0	0	521
08:15 AM	127	145	0	0	272	0	162	99	0	261	0	0	0	0	0	0	0	0	0	0	533
08:30 AM	93	131	0	0	224	0	180	115	0	295	0	0	0	0	0	0	0	0	0	0	519
08:45 AM	87	138	0	0	225	0	154	105	0	259	0	0	0	0	0	0	0	0	0	0	484
Total Volume	405	537	0	0	942	0	686	429	0	1115	0	0	0	0	0	0	0	0	0	0	2057
% App. Total	43	57	0	0		0	61.5	38.5	0		0	0	0	0		0	0	0	0		
PHF	.797	.926	.000	.000	.866	.000	.903	.933	.000	.929	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.965
Cars	381	502	0	0	883	0	646	395	0	1041	0	0	0	0	0	0	0	0	0	0	1924
% Cars	94.1	93.5	0	0	93.7	0	94.2	92.1	0	93.4	0	0	0	0	0	0	0	0	0	0	93.5
Heavy Vehicles	24	35	0	0	59	0	40	34	0	74	0	0	0	0	0	0	0	0	0	0	133
% Heavy Vehicles	5.9	6.5	0	0	6.3	0	5.8	7.9	0	6.6	0	0	0	0	0	0	0	0	0	0	6.5

N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North				Surface Road From East				Congress Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	64	58	0	0	0	110	58	0	0	0	0	0	0	0	0	0	290
07:15 AM	65	72	0	0	0	115	82	0	0	0	0	0	0	0	0	0	334
07:30 AM	85	97	0	0	0	129	82	0	0	0	0	0	0	0	0	0	393
07:45 AM	86	106	0	0	0	125	95	0	0	0	0	0	0	0	0	0	412
Total	300	333	0	0	0	479	317	0	0	0	0	0	0	0	0	0	1429
08:00 AM	92	115	0	0	0	179	98	0	0	0	0	0	0	0	0	0	484
08:15 AM	120	135	0	0	0	153	90	0	0	0	0	0	0	0	0	0	498
08:30 AM	89	123	0	0	0	167	108	0	0	0	0	0	0	0	0	0	487
08:45 AM	80	129	0	0	0	147	99	0	0	0	0	0	0	0	0	0	455
Total	381	502	0	0	0	646	395	0	0	0	0	0	0	0	0	0	1924
Grand Total	681	835	0	0	0	1125	712	0	0	0	0	0	0	0	0	0	3353
Apprch %	44.9	55.1	0	0	0	61.2	38.8	0	0	0	0	0	0	0	0	0	
Total %	20.3	24.9	0	0	0	33.6	21.2	0	0	0	0	0	0	0	0	0	

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	92	115	0	0	207	0	179	98	0	277	0	0	0	0	0	0	0	0	0	0	484
08:15 AM	120	135	0	0	255	0	153	90	0	243	0	0	0	0	0	0	0	0	0	0	498
08:30 AM	89	123	0	0	212	0	167	108	0	275	0	0	0	0	0	0	0	0	0	0	487
08:45 AM	80	129	0	0	209	0	147	99	0	246	0	0	0	0	0	0	0	0	0	0	455
Total Volume	381	502	0	0	883	0	646	395	0	1041	0	0	0	0	0	0	0	0	0	0	1924
% App. Total	43.1	56.9	0	0		0	62.1	37.9	0		0	0	0	0		0	0	0	0		
PHF	.794	.930	.000	.000	.866	.000	.902	.914	.000	.940	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.966

N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North				Surface Road From East				Congress Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	8	10	0	0	0	8	6	0	0	0	0	0	0	0	0	0	32
07:15 AM	5	12	0	0	0	8	4	0	0	0	0	0	0	0	0	0	29
07:30 AM	5	12	0	0	0	15	8	0	0	0	0	0	0	0	0	0	40
07:45 AM	6	6	0	0	0	5	8	0	0	0	0	0	0	0	0	0	25
Total	24	40	0	0	0	36	26	0	0	0	0	0	0	0	0	0	126
08:00 AM	6	8	0	0	0	11	12	0	0	0	0	0	0	0	0	0	37
08:15 AM	7	10	0	0	0	9	9	0	0	0	0	0	0	0	0	0	35
08:30 AM	4	8	0	0	0	13	7	0	0	0	0	0	0	0	0	0	32
08:45 AM	7	9	0	0	0	7	6	0	0	0	0	0	0	0	0	0	29
Total	24	35	0	0	0	40	34	0	0	0	0	0	0	0	0	0	133
Grand Total	48	75	0	0	0	76	60	0	0	0	0	0	0	0	0	0	259
Apprch %	39	61	0	0	0	55.9	44.1	0	0	0	0	0	0	0	0	0	
Total %	18.5	29	0	0	0	29.3	23.2	0	0	0	0	0	0	0	0	0	

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	5	12	0	0	17	0	15	8	0	23	0	0	0	0	0	0	0	0	0	0	40
07:45 AM	6	6	0	0	12	0	5	8	0	13	0	0	0	0	0	0	0	0	0	0	25
08:00 AM	6	8	0	0	14	0	11	12	0	23	0	0	0	0	0	0	0	0	0	0	37
08:15 AM	7	10	0	0	17	0	9	9	0	18	0	0	0	0	0	0	0	0	0	0	35
Total Volume	24	36	0	0	60	0	40	37	0	77	0	0	0	0	0	0	0	0	0	0	137
% App. Total	40	60	0	0		0	51.9	48.1	0		0	0	0	0		0	0	0	0		
PHF	.857	.750	.000	.000	.882	.000	.667	.771	.000	.837	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.856

N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	1	0	34	7	0	1	0	21	23	0	0	0	0	7	0	0	0	6	6	106
07:15 AM	0	3	0	54	23	0	0	0	24	57	0	0	0	0	27	0	0	0	19	20	227
07:30 AM	0	5	0	66	20	0	0	0	44	32	0	0	0	2	21	0	0	0	21	13	224
07:45 AM	0	5	0	88	19	0	3	0	43	38	0	0	0	3	35	0	0	0	41	18	293
Total	0	14	0	242	69	0	4	0	132	150	0	0	0	5	90	0	0	0	87	57	850
08:00 AM	0	6	0	119	18	0	0	1	50	45	0	0	0	5	12	0	0	0	43	21	320
08:15 AM	1	3	0	207	16	0	0	2	51	61	0	0	0	0	51	0	0	0	98	31	521
08:30 AM	1	6	0	161	21	0	0	1	56	61	0	0	0	5	21	0	0	0	47	36	416
08:45 AM	0	4	0	180	17	0	2	1	61	70	0	0	0	1	21	0	0	0	38	44	439
Total	2	19	0	667	72	0	2	5	218	237	0	0	0	11	105	0	0	0	226	132	1696
Grand Total	2	33	0	909	141	0	6	5	350	387	0	0	0	16	195	0	0	0	313	189	2546
Apprch %	0.2	3	0	83.8	13	0	0.8	0.7	46.8	51.7	0	0	0	7.6	92.4	0	0	0	62.4	37.6	
Total %	0.1	1.3	0	35.7	5.5	0	0.2	0.2	13.7	15.2	0	0	0	0.6	7.7	0	0	0	12.3	7.4	

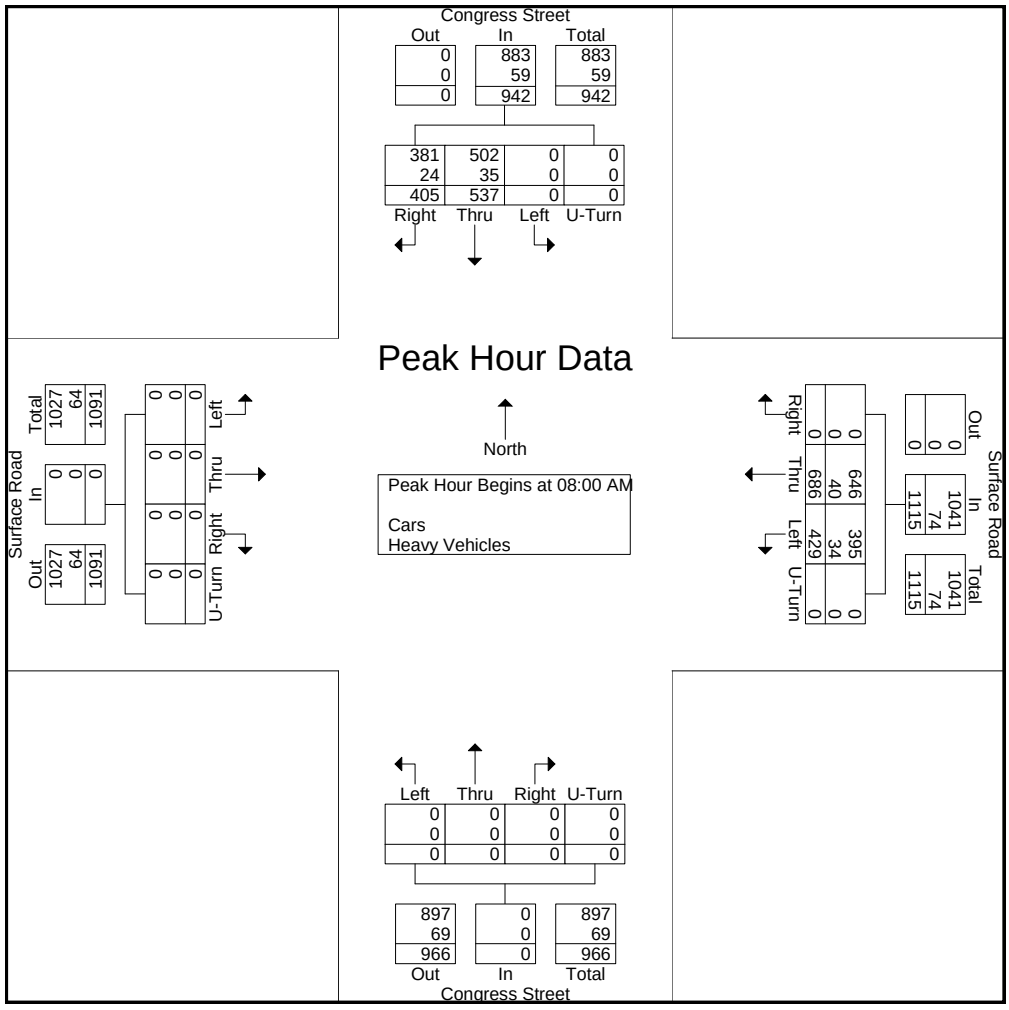
	Congress Street From North						Surface Road From East						Congress Street From South						Surface Road From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	6	0	119	18	143	0	0	1	50	45	96	0	0	0	5	12	17	0	0	0	43	21	64	320
08:15 AM	1	3	0	207	16	227	0	0	2	51	61	114	0	0	0	0	51	51	0	0	0	98	31	129	521
08:30 AM	1	6	0	161	21	189	0	0	1	56	61	118	0	0	0	5	21	26	0	0	0	47	36	83	416
08:45 AM	0	4	0	180	17	201	0	2	1	61	70	134	0	0	0	1	21	22	0	0	0	38	44	82	439
Total Volume	2	19	0	667	72	760	0	2	5	218	237	462	0	0	0	11	105	116	0	0	0	226	132	358	1696
% App. Total	0.3	2.5	0	87.8	9.5		0	0.4	1.1	47.2	51.3		0	0	0	9.5	90.5		0	0	0	63.1	36.9		
PHF	.500	.792	.000	.806	.857	.837	.000	.250	.625	.893	.846	.862	.000	.000	.000	.550	.515	.569	.000	.000	.000	.577	.750	.694	.814

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	98	123	0	0	221	0	190	110	0	300	0	0	0	0	0	0	0	0	0	0	521
08:15 AM	127	145	0	0	272	0	162	99	0	261	0	0	0	0	0	0	0	0	0	0	533
08:30 AM	93	131	0	0	224	0	180	115	0	295	0	0	0	0	0	0	0	0	0	0	519
08:45 AM	87	138	0	0	225	0	154	105	0	259	0	0	0	0	0	0	0	0	0	0	484
Total Volume	405	537	0	0	942	0	686	429	0	1115	0	0	0	0	0	0	0	0	0	0	2057
% App. Total	43	57	0	0		0	61.5	38.5	0		0	0	0	0		0	0	0	0		
PHF	.797	.926	.000	.000	.866	.000	.903	.933	.000	.929	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.965
Cars	381	502	0	0	883	0	646	395	0	1041	0	0	0	0	0	0	0	0	0	0	1924
% Cars	94.1	93.5	0	0	93.7	0	94.2	92.1	0	93.4	0	0	0	0	0	0	0	0	0	0	93.5
Heavy Vehicles	24	35	0	0	59	0	40	34	0	74	0	0	0	0	0	0	0	0	0	0	133
% Heavy Vehicles	5.9	6.5	0	0	6.3	0	5.8	7.9	0	6.6	0	0	0	0	0	0	0	0	0	0	6.5



N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North				Surface Road From East				Congress Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	144	178	0	0	0	189	78	0	0	0	0	0	0	0	0	0	589
04:15 PM	132	128	0	0	0	167	63	0	0	0	0	0	0	0	0	0	490
04:30 PM	147	151	0	0	0	181	62	0	0	0	0	0	0	0	0	0	541
04:45 PM	174	155	0	0	0	173	72	0	0	0	0	0	0	0	0	0	574
Total	597	612	0	0	0	710	275	0	0	0	0	0	0	0	0	0	2194
05:00 PM	181	176	0	0	0	172	63	0	0	0	0	0	0	0	0	0	592
05:15 PM	155	130	0	0	0	183	77	0	0	0	0	0	0	0	0	0	545
05:30 PM	155	128	0	0	0	139	60	0	0	0	0	0	0	0	0	0	482
05:45 PM	132	160	0	0	0	163	70	0	0	0	0	0	0	0	0	0	525
Total	623	594	0	0	0	657	270	0	0	0	0	0	0	0	0	0	2144
Grand Total	1220	1206	0	0	0	1367	545	0	0	0	0	0	0	0	0	0	4338
Apprch %	50.3	49.7	0	0	0	71.5	28.5	0	0	0	0	0	0	0	0	0	
Total %	28.1	27.8	0	0	0	31.5	12.6	0	0	0	0	0	0	0	0	0	
Cars	1200	1176	0	0	0	1322	518	0	0	0	0	0	0	0	0	0	4216
% Cars	98.4	97.5	0	0	0	96.7	95	0	0	0	0	0	0	0	0	0	97.2
Heavy Vehicles	20	30	0	0	0	45	27	0	0	0	0	0	0	0	0	0	122
% Heavy Vehicles	1.6	2.5	0	0	0	3.3	5	0	0	0	0	0	0	0	0	0	2.8

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	147	151	0	0	298	0	181	62	0	243	0	0	0	0	0	0	0	0	0	0	541
04:45 PM	174	155	0	0	329	0	173	72	0	245	0	0	0	0	0	0	0	0	0	0	574
05:00 PM	181	176	0	0	357	0	172	63	0	235	0	0	0	0	0	0	0	0	0	0	592
05:15 PM	155	130	0	0	285	0	183	77	0	260	0	0	0	0	0	0	0	0	0	0	545
Total Volume	657	612	0	0	1269	0	709	274	0	983	0	0	0	0	0	0	0	0	0	0	2252
% App. Total	51.8	48.2	0	0		0	72.1	27.9	0		0	0	0	0		0	0	0	0		
PHF	.907	.869	.000	.000	.889	.000	.969	.890	.000	.945	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.951
Cars	642	597	0	0	1239	0	679	258	0	937	0	0	0	0	0	0	0	0	0	0	2176
% Cars	97.7	97.5	0	0	97.6	0	95.8	94.2	0	95.3	0	0	0	0	0	0	0	0	0	0	96.6
Heavy Vehicles	15	15	0	0	30	0	30	16	0	46	0	0	0	0	0	0	0	0	0	0	76
% Heavy Vehicles	2.3	2.5	0	0	2.4	0	4.2	5.8	0	4.7	0	0	0	0	0	0	0	0	0	0	3.4

N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North				Surface Road From East				Congress Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	143	174	0	0	0	181	73	0	0	0	0	0	0	0	0	0	571
04:15 PM	130	123	0	0	0	162	60	0	0	0	0	0	0	0	0	0	475
04:30 PM	141	148	0	0	0	173	58	0	0	0	0	0	0	0	0	0	520
04:45 PM	167	150	0	0	0	164	66	0	0	0	0	0	0	0	0	0	547
Total	581	595	0	0	0	680	257	0	0	0	0	0	0	0	0	0	2113
05:00 PM	179	171	0	0	0	162	59	0	0	0	0	0	0	0	0	0	571
05:15 PM	155	128	0	0	0	180	75	0	0	0	0	0	0	0	0	0	538
05:30 PM	155	126	0	0	0	137	58	0	0	0	0	0	0	0	0	0	476
05:45 PM	130	156	0	0	0	163	69	0	0	0	0	0	0	0	0	0	518
Total	619	581	0	0	0	642	261	0	0	0	0	0	0	0	0	0	2103
Grand Total	1200	1176	0	0	0	1322	518	0	0	0	0	0	0	0	0	0	4216
Apprch %	50.5	49.5	0	0	0	71.8	28.2	0	0	0	0	0	0	0	0	0	
Total %	28.5	27.9	0	0	0	31.4	12.3	0	0	0	0	0	0	0	0	0	

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	141	148	0	0	289	0	173	58	0	231	0	0	0	0	0	0	0	0	0	0	520
04:45 PM	167	150	0	0	317	0	164	66	0	230	0	0	0	0	0	0	0	0	0	0	547
05:00 PM	179	171	0	0	350	0	162	59	0	221	0	0	0	0	0	0	0	0	0	0	571
05:15 PM	155	128	0	0	283	0	180	75	0	255	0	0	0	0	0	0	0	0	0	0	538
Total Volume	642	597	0	0	1239	0	679	258	0	937	0	0	0	0	0	0	0	0	0	0	2176
% App. Total	51.8	48.2	0	0		0	72.5	27.5	0		0	0	0	0		0	0	0	0		
PHF	.897	.873	.000	.000	.885	.000	.943	.860	.000	.919	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.953

N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North				Surface Road From East				Congress Street From South				Surface Road From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	1	4	0	0	0	8	5	0	0	0	0	0	0	0	0	0	18
04:15 PM	2	5	0	0	0	5	3	0	0	0	0	0	0	0	0	0	15
04:30 PM	6	3	0	0	0	8	4	0	0	0	0	0	0	0	0	0	21
04:45 PM	7	5	0	0	0	9	6	0	0	0	0	0	0	0	0	0	27
Total	16	17	0	0	0	30	18	0	0	0	0	0	0	0	0	0	81
05:00 PM	2	5	0	0	0	10	4	0	0	0	0	0	0	0	0	0	21
05:15 PM	0	2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	7
05:30 PM	0	2	0	0	0	2	2	0	0	0	0	0	0	0	0	0	6
05:45 PM	2	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	7
Total	4	13	0	0	0	15	9	0	0	0	0	0	0	0	0	0	41
Grand Total	20	30	0	0	0	45	27	0	0	0	0	0	0	0	0	0	122
Apprch %	40	60	0	0	0	62.5	37.5	0	0	0	0	0	0	0	0	0	
Total %	16.4	24.6	0	0	0	36.9	22.1	0	0	0	0	0	0	0	0	0	

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	2	5	0	0	7	0	5	3	0	8	0	0	0	0	0	0	0	0	0	0	15
04:30 PM	6	3	0	0	9	0	8	4	0	12	0	0	0	0	0	0	0	0	0	0	21
04:45 PM	7	5	0	0	12	0	9	6	0	15	0	0	0	0	0	0	0	0	0	0	27
05:00 PM	2	5	0	0	7	0	10	4	0	14	0	0	0	0	0	0	0	0	0	0	21
Total Volume	17	18	0	0	35	0	32	17	0	49	0	0	0	0	0	0	0	0	0	0	84
% App. Total	48.6	51.4	0	0		0	65.3	34.7	0		0	0	0	0		0	0	0	0		
PHF	.607	.900	.000	.000	.729	.000	.800	.708	.000	.817	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.778

N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	0	11	51	0	1	1	50	10	0	0	0	10	1	0	0	0	9	10	154
04:15 PM	0	1	0	10	45	0	3	0	29	20	0	0	0	13	6	0	0	0	6	7	140
04:30 PM	0	2	0	13	58	0	1	0	48	16	0	0	0	10	2	0	0	0	11	15	176
04:45 PM	0	0	0	11	85	0	2	0	71	27	0	0	0	12	3	0	0	0	11	18	240
Total	0	3	0	45	239	0	7	1	198	73	0	0	0	45	12	0	0	0	37	50	710
05:00 PM	0	1	0	24	109	0	0	0	122	57	0	0	0	26	7	0	0	0	30	29	405
05:15 PM	0	1	0	25	97	0	0	1	72	64	0	0	0	17	2	0	0	0	40	20	339
05:30 PM	0	0	0	19	124	0	0	0	81	50	0	0	0	12	4	0	0	0	27	29	346
05:45 PM	0	2	0	14	85	0	0	0	38	31	0	0	0	3	6	0	0	0	25	28	232
Total	0	4	0	82	415	0	0	1	313	202	0	0	0	58	19	0	0	0	122	106	1322
Grand Total	0	7	0	127	654	0	7	2	511	275	0	0	0	103	31	0	0	0	159	156	2032
Apprch %	0	0.9	0	16.1	83	0	0.9	0.3	64.3	34.6	0	0	0	76.9	23.1	0	0	0	50.5	49.5	
Total %	0	0.3	0	6.2	32.2	0	0.3	0.1	25.1	13.5	0	0	0	5.1	1.5	0	0	0	7.8	7.7	

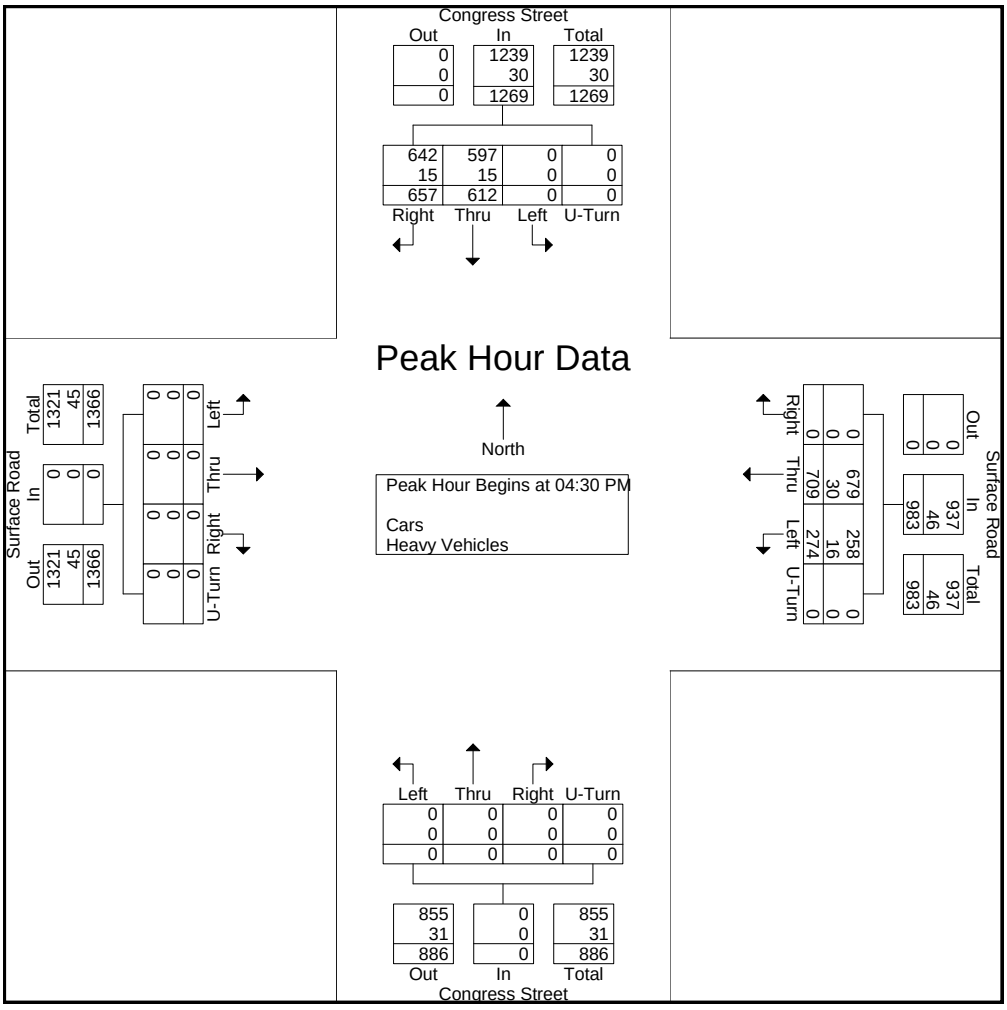
	Congress Street From North						Surface Road From East						Congress Street From South						Surface Road From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	11	85	96	0	2	0	71	27	100	0	0	0	12	3	15	0	0	0	11	18	29	240
05:00 PM	0	1	0	24	109	134	0	0	0	122	57	179	0	0	0	26	7	33	0	0	0	30	29	59	405
05:15 PM	0	1	0	25	97	123	0	0	1	72	64	137	0	0	0	17	2	19	0	0	0	40	20	60	339
05:30 PM	0	0	0	19	124	143	0	0	0	81	50	131	0	0	0	12	4	16	0	0	0	27	29	56	346
Total Volume	0	2	0	79	415	496	0	2	1	346	198	547	0	0	0	67	16	83	0	0	0	108	96	204	1330
% App. Total	0	0.4	0	15.9	83.7		0	0.4	0.2	63.3	36.2		0	0	0	80.7	19.3		0	0	0	52.9	47.1		
PHF	.000	.500	.000	.790	.837	.867	.000	.250	.250	.709	.773	.764	.000	.000	.000	.644	.571	.629	.000	.000	.000	.675	.828	.850	.821

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W: Surface Road
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North					Surface Road From East					Congress Street From South					Surface Road From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	147	151	0	0	298	0	181	62	0	243	0	0	0	0	0	0	0	0	0	0	541
04:45 PM	174	155	0	0	329	0	173	72	0	245	0	0	0	0	0	0	0	0	0	0	574
05:00 PM	181	176	0	0	357	0	172	63	0	235	0	0	0	0	0	0	0	0	0	0	592
05:15 PM	155	130	0	0	285	0	183	77	0	260	0	0	0	0	0	0	0	0	0	0	545
Total Volume	657	612	0	0	1269	0	709	274	0	983	0	0	0	0	0	0	0	0	0	0	2252
% App. Total	51.8	48.2	0	0		0	72.1	27.9	0		0	0	0	0		0	0	0	0		
PHF	.907	.869	.000	.000	.889	.000	.969	.890	.000	.945	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.951
Cars	642	597	0	0	1239	0	679	258	0	937	0	0	0	0	0	0	0	0	0	0	2176
% Cars	97.7	97.5	0	0	97.6	0	95.8	94.2	0	95.3	0	0	0	0	0	0	0	0	0	0	96.6
Heavy Vehicles	15	15	0	0	30	0	30	16	0	46	0	0	0	0	0	0	0	0	0	0	76
% Heavy Vehicles	2.3	2.5	0	0	2.4	0	4.2	5.8	0	4.7	0	0	0	0	0	0	0	0	0	0	3.4



N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 D
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Otis Street From North				Summer Street From East				Kingston Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	26	10	0	0	1	22	0	0	0	0	0	8	19	0	0	86
07:15 AM	0	22	16	0	0	0	15	0	0	0	0	0	18	19	0	0	90
07:30 AM	0	34	11	0	0	0	15	0	0	0	0	0	11	16	0	0	87
07:45 AM	0	29	21	0	0	0	19	0	0	0	0	0	19	18	0	0	106
Total	0	111	58	0	0	1	71	0	0	0	0	0	56	72	0	0	369
08:00 AM	0	32	15	0	0	0	19	0	0	0	0	0	22	28	0	0	116
08:15 AM	0	37	14	0	0	0	14	0	0	0	0	0	7	24	0	0	96
08:30 AM	0	42	18	0	0	0	25	0	0	0	0	0	11	23	0	0	119
08:45 AM	0	38	27	0	0	0	27	0	0	0	0	0	11	32	0	0	135
Total	0	149	74	0	0	0	85	0	0	0	0	0	51	107	0	0	466
Grand Total	0	260	132	0	0	1	156	0	0	0	0	0	107	179	0	0	835
Apprch %	0	66.3	33.7	0	0	0.6	99.4	0	0	0	0	0	37.4	62.6	0	0	
Total %	0	31.1	15.8	0	0	0.1	18.7	0	0	0	0	0	12.8	21.4	0	0	
Cars	0	205	96	0	0	1	147	0	0	0	0	0	85	157	0	0	691
% Cars	0	78.8	72.7	0	0	100	94.2	0	0	0	0	0	79.4	87.7	0	0	82.8
Heavy Vehicles	0	55	36	0	0	0	9	0	0	0	0	0	22	22	0	0	144
% Heavy Vehicles	0	21.2	27.3	0	0	0	5.8	0	0	0	0	0	20.6	12.3	0	0	17.2

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	32	15	0	47	0	0	19	0	19	0	0	0	0	0	22	28	0	0	50	116
08:15 AM	0	37	14	0	51	0	0	14	0	14	0	0	0	0	0	7	24	0	0	31	96
08:30 AM	0	42	18	0	60	0	0	25	0	25	0	0	0	0	0	11	23	0	0	34	119
08:45 AM	0	38	27	0	65	0	0	27	0	27	0	0	0	0	0	11	32	0	0	43	135
Total Volume	0	149	74	0	223	0	0	85	0	85	0	0	0	0	0	51	107	0	0	158	466
% App. Total	0	66.8	33.2	0		0	0	100	0		0	0	0	0		32.3	67.7	0	0		
PHF	.000	.887	.685	.000	.858	.000	.000	.787	.000	.787	.000	.000	.000	.000	.000	.580	.836	.000	.000	.790	.863
Cars	0	118	56	0	174	0	0	78	0	78	0	0	0	0	0	46	94	0	0	140	392
% Cars	0	79.2	75.7	0	78.0	0	0	91.8	0	91.8	0	0	0	0	0	90.2	87.9	0	0	88.6	84.1
Heavy Vehicles	0	31	18	0	49	0	0	7	0	7	0	0	0	0	0	5	13	0	0	18	74
% Heavy Vehicles	0	20.8	24.3	0	22.0	0	0	8.2	0	8.2	0	0	0	0	0	9.8	12.1	0	0	11.4	15.9

N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 D
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Otis Street From North				Summer Street From East				Kingston Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	21	8	0	0	1	22	0	0	0	0	0	6	17	0	0	75
07:15 AM	0	17	9	0	0	0	15	0	0	0	0	0	12	17	0	0	70
07:30 AM	0	25	8	0	0	0	15	0	0	0	0	0	6	13	0	0	67
07:45 AM	0	24	15	0	0	0	17	0	0	0	0	0	15	16	0	0	87
Total	0	87	40	0	0	1	69	0	0	0	0	0	39	63	0	0	299
08:00 AM	0	22	11	0	0	0	16	0	0	0	0	0	21	23	0	0	93
08:15 AM	0	31	8	0	0	0	12	0	0	0	0	0	7	21	0	0	79
08:30 AM	0	32	14	0	0	0	23	0	0	0	0	0	9	22	0	0	100
08:45 AM	0	33	23	0	0	0	27	0	0	0	0	0	9	28	0	0	120
Total	0	118	56	0	0	0	78	0	0	0	0	0	46	94	0	0	392
Grand Total	0	205	96	0	0	1	147	0	0	0	0	0	85	157	0	0	691
Apprch %	0	68.1	31.9	0	0	0.7	99.3	0	0	0	0	0	35.1	64.9	0	0	
Total %	0	29.7	13.9	0	0	0.1	21.3	0	0	0	0	0	12.3	22.7	0	0	

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	22	11	0	33	0	0	16	0	16	0	0	0	0	0	21	23	0	0	44	93
08:15 AM	0	31	8	0	39	0	0	12	0	12	0	0	0	0	0	7	21	0	0	28	79
08:30 AM	0	32	14	0	46	0	0	23	0	23	0	0	0	0	0	9	22	0	0	31	100
08:45 AM	0	33	23	0	56	0	0	27	0	27	0	0	0	0	0	9	28	0	0	37	120
Total Volume	0	118	56	0	174	0	0	78	0	78	0	0	0	0	0	46	94	0	0	140	392
% App. Total	0	67.8	32.2	0		0	0	100	0		0	0	0	0		32.9	67.1	0	0		
PHF	.000	.894	.609	.000	.777	.000	.000	.722	.000	.722	.000	.000	.000	.000	.000	.548	.839	.000	.000	.795	.817

N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 D
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Otis Street From North				Summer Street From East				Kingston Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	5	2	0	0	0	0	0	0	0	0	0	2	2	0	0	11
07:15 AM	0	5	7	0	0	0	0	0	0	0	0	0	6	2	0	0	20
07:30 AM	0	9	3	0	0	0	0	0	0	0	0	0	5	3	0	0	20
07:45 AM	0	5	6	0	0	0	2	0	0	0	0	0	4	2	0	0	19
Total	0	24	18	0	0	0	2	0	0	0	0	0	17	9	0	0	70
08:00 AM	0	10	4	0	0	0	3	0	0	0	0	0	1	5	0	0	23
08:15 AM	0	6	6	0	0	0	2	0	0	0	0	0	0	3	0	0	17
08:30 AM	0	10	4	0	0	0	2	0	0	0	0	0	2	1	0	0	19
08:45 AM	0	5	4	0	0	0	0	0	0	0	0	0	2	4	0	0	15
Total	0	31	18	0	0	0	7	0	0	0	0	0	5	13	0	0	74
Grand Total	0	55	36	0	0	0	9	0	0	0	0	0	22	22	0	0	144
Apprch %	0	60.4	39.6	0	0	0	100	0	0	0	0	0	50	50	0	0	
Total %	0	38.2	25	0	0	0	6.2	0	0	0	0	0	15.3	15.3	0	0	

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	5	7	0	12	0	0	0	0	0	0	0	0	0	0	6	2	0	0	8	20
07:30 AM	0	9	3	0	12	0	0	0	0	0	0	0	0	0	0	5	3	0	0	8	20
07:45 AM	0	5	6	0	11	0	0	2	0	2	0	0	0	0	0	4	2	0	0	6	19
08:00 AM	0	10	4	0	14	0	0	3	0	3	0	0	0	0	0	1	5	0	0	6	23
Total Volume	0	29	20	0	49	0	0	5	0	5	0	0	0	0	0	16	12	0	0	28	82
% App. Total	0	59.2	40.8	0		0	0	100	0		0	0	0	0		57.1	42.9	0	0		
PHF	.000	.725	.714	.000	.875	.000	.000	.417	.000	.417	.000	.000	.000	.000	.000	.667	.600	.000	.000	.875	.891

N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 D
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	0	59	23	0	0	0	3	2	0	0	0	60	70	0	0	0	13	7	237
07:15 AM	0	0	0	110	40	0	0	0	8	8	0	0	0	80	111	0	2	0	14	9	382
07:30 AM	0	0	0	136	48	0	1	0	14	13	0	0	0	64	139	0	0	0	16	12	443
07:45 AM	0	3	2	172	49	0	2	0	14	12	0	0	0	124	162	2	1	1	18	15	577
Total	0	3	2	477	160	0	3	0	39	35	0	0	0	328	482	2	3	1	61	43	1639
08:00 AM	0	1	0	210	68	0	0	0	24	23	0	0	0	111	211	0	5	0	24	19	696
08:15 AM	0	3	1	236	103	0	2	0	13	17	0	0	0	245	212	0	0	0	35	28	895
08:30 AM	0	4	0	260	78	0	0	0	23	16	0	0	0	150	220	0	3	0	28	28	810
08:45 AM	0	3	3	328	92	0	1	0	24	12	0	0	0	187	331	1	3	0	26	32	1043
Total	0	11	4	1034	341	0	3	0	84	68	0	0	0	693	974	1	11	0	113	107	3444
Grand Total	0	14	6	1511	501	0	6	0	123	103	0	0	0	1021	1456	3	14	1	174	150	5083
Apprch %	0	0.7	0.3	74.4	24.7	0	2.6	0	53	44.4	0	0	0	41.2	58.8	0.9	4.1	0.3	50.9	43.9	
Total %	0	0.3	0.1	29.7	9.9	0	0.1	0	2.4	2	0	0	0	20.1	28.6	0.1	0.3	0	3.4	3	

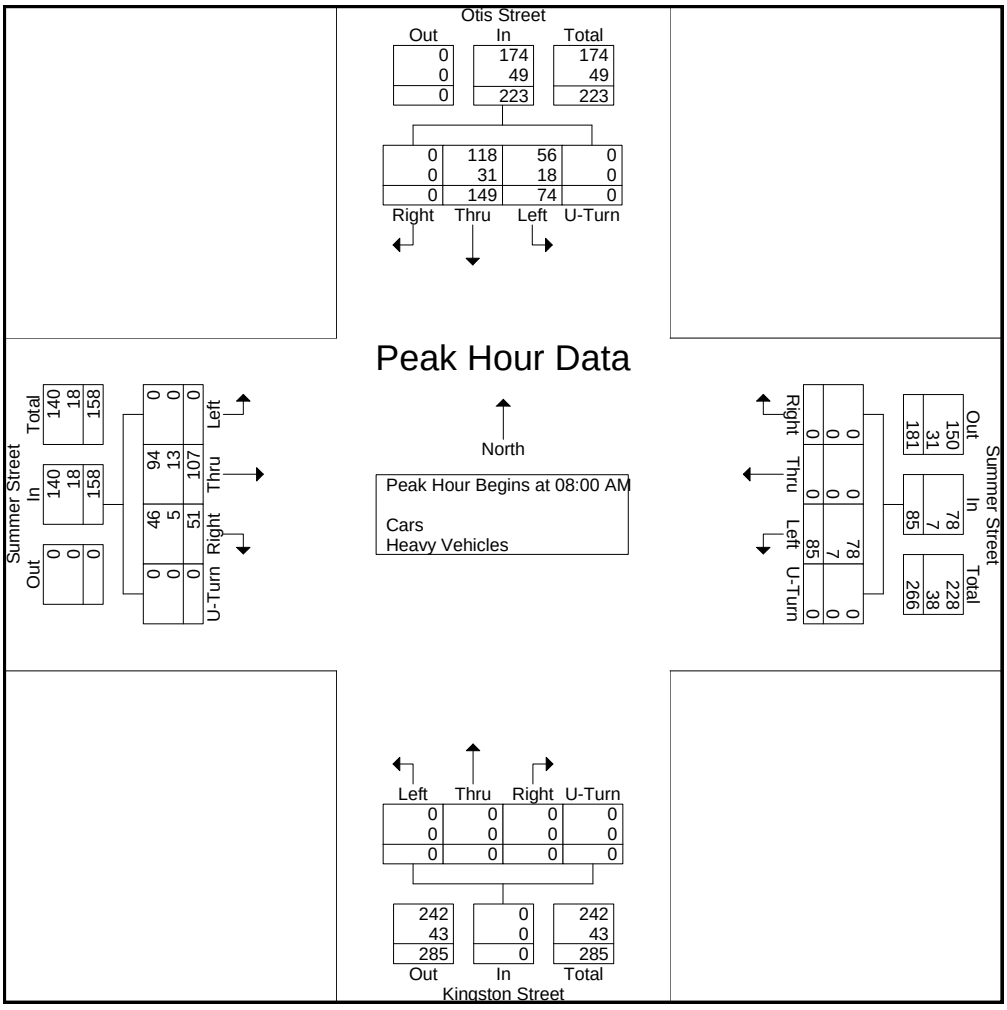
	Otis Street From North						Summer Street From East						Kingston Street From South						Summer Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	0	210	68	279	0	0	0	24	23	47	0	0	0	111	211	322	0	5	0	24	19	48	696
08:15 AM	0	3	1	236	103	343	0	2	0	13	17	32	0	0	0	245	212	457	0	0	0	35	28	63	895
08:30 AM	0	4	0	260	78	342	0	0	0	23	16	39	0	0	0	150	220	370	0	3	0	28	28	59	810
08:45 AM	0	3	3	328	92	426	0	1	0	24	12	37	0	0	0	187	331	518	1	3	0	26	32	62	1043
Total Volume	0	11	4	1034	341	1390	0	3	0	84	68	155	0	0	0	693	974	1667	1	11	0	113	107	232	3444
% App. Total	0	0.8	0.3	74.4	24.5		0	1.9	0	54.2	43.9		0	0	0	41.6	58.4		0.4	4.7	0	48.7	46.1		
PHF	.000	.688	.333	.788	.828	.816	.000	.375	.000	.875	.739	.824	.000	.000	.000	.707	.736	.805	.250	.550	.000	.807	.836	.921	.826

N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 D
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	32	15	0	47	0	0	19	0	19	0	0	0	0	0	22	28	0	0	50	116
08:15 AM	0	37	14	0	51	0	0	14	0	14	0	0	0	0	0	7	24	0	0	31	96
08:30 AM	0	42	18	0	60	0	0	25	0	25	0	0	0	0	0	11	23	0	0	34	119
08:45 AM	0	38	27	0	65	0	0	27	0	27	0	0	0	0	0	11	32	0	0	43	135
Total Volume	0	149	74	0	223	0	0	85	0	85	0	0	0	0	0	51	107	0	0	158	466
% App. Total	0	66.8	33.2	0		0	0	100	0		0	0	0	0		32.3	67.7	0	0		
PHF	.000	.887	.685	.000	.858	.000	.000	.787	.000	.787	.000	.000	.000	.000	.000	.580	.836	.000	.000	.790	.863
Cars	0	118	56	0	174	0	0	78	0	78	0	0	0	0	0	46	94	0	0	140	392
% Cars	0	79.2	75.7	0	78.0	0	0	91.8	0	91.8	0	0	0	0	0	90.2	87.9	0	0	88.6	84.1
Heavy Vehicles	0	31	18	0	49	0	0	7	0	7	0	0	0	0	0	5	13	0	0	18	74
% Heavy Vehicles	0	20.8	24.3	0	22.0	0	0	8.2	0	8.2	0	0	0	0	0	9.8	12.1	0	0	11.4	15.9



N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 DD
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Otis Street From North				Summer Street From East				Kingston Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	49	23	0	0	0	11	1	0	0	0	0	12	31	0	0	127
04:15 PM	0	39	29	0	0	0	19	0	0	0	0	0	22	34	0	0	143
04:30 PM	0	62	33	0	0	0	11	0	0	0	0	0	22	40	0	0	168
04:45 PM	0	40	28	0	0	0	12	0	0	0	0	0	15	48	0	0	143
Total	0	190	113	0	0	0	53	1	0	0	0	0	71	153	0	0	581
05:00 PM	0	28	34	0	0	0	12	1	0	0	0	0	10	36	0	0	121
05:15 PM	0	38	23	0	0	0	12	1	0	0	0	0	16	45	0	0	135
05:30 PM	0	31	32	0	0	0	22	1	0	0	0	0	14	38	0	0	138
05:45 PM	0	32	28	0	0	0	17	1	0	0	0	0	14	39	0	0	131
Total	0	129	117	0	0	0	63	4	0	0	0	0	54	158	0	0	525
Grand Total	0	319	230	0	0	0	116	5	0	0	0	0	125	311	0	0	1106
Apprch %	0	58.1	41.9	0	0	0	95.9	4.1	0	0	0	0	28.7	71.3	0	0	
Total %	0	28.8	20.8	0	0	0	10.5	0.5	0	0	0	0	11.3	28.1	0	0	
Cars	0	282	202	0	0	0	113	5	0	0	0	0	121	291	0	0	1014
% Cars	0	88.4	87.8	0	0	0	97.4	100	0	0	0	0	96.8	93.6	0	0	91.7
Heavy Vehicles	0	37	28	0	0	0	3	0	0	0	0	0	4	20	0	0	92
% Heavy Vehicles	0	11.6	12.2	0	0	0	2.6	0	0	0	0	0	3.2	6.4	0	0	8.3

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	49	23	0	72	0	0	11	1	12	0	0	0	0	0	12	31	0	0	43	127
04:15 PM	0	39	29	0	68	0	0	19	0	19	0	0	0	0	0	22	34	0	0	56	143
04:30 PM	0	62	33	0	95	0	0	11	0	11	0	0	0	0	0	22	40	0	0	62	168
04:45 PM	0	40	28	0	68	0	0	12	0	12	0	0	0	0	0	15	48	0	0	63	143
Total Volume	0	190	113	0	303	0	0	53	1	54	0	0	0	0	0	71	153	0	0	224	581
% App. Total	0	62.7	37.3	0		0	0	98.1	1.9		0	0	0	0		31.7	68.3	0	0		
PHF	.000	.766	.856	.000	.797	.000	.000	.697	.250	.711	.000	.000	.000	.000	.000	.807	.797	.000	.000	.889	.865
Cars	0	170	99	0	269	0	0	52	1	53	0	0	0	0	0	69	145	0	0	214	536
% Cars	0	89.5	87.6	0	88.8	0	0	98.1	100	98.1	0	0	0	0	0	97.2	94.8	0	0	95.5	92.3
Heavy Vehicles	0	20	14	0	34	0	0	1	0	1	0	0	0	0	0	2	8	0	0	10	45
% Heavy Vehicles	0	10.5	12.4	0	11.2	0	0	1.9	0	1.9	0	0	0	0	0	2.8	5.2	0	0	4.5	7.7

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 DD
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Otis Street From North				Summer Street From East				Kingston Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	43	20	0	0	0	11	1	0	0	0	0	12	29	0	0	116
04:15 PM	0	37	27	0	0	0	19	0	0	0	0	0	22	32	0	0	137
04:30 PM	0	53	31	0	0	0	10	0	0	0	0	0	20	38	0	0	152
04:45 PM	0	37	21	0	0	0	12	0	0	0	0	0	15	46	0	0	131
Total	0	170	99	0	0	0	52	1	0	0	0	0	69	145	0	0	536
05:00 PM	0	24	32	0	0	0	11	1	0	0	0	0	10	33	0	0	111
05:15 PM	0	34	22	0	0	0	12	1	0	0	0	0	16	41	0	0	126
05:30 PM	0	23	26	0	0	0	21	1	0	0	0	0	13	35	0	0	119
05:45 PM	0	31	23	0	0	0	17	1	0	0	0	0	13	37	0	0	122
Total	0	112	103	0	0	0	61	4	0	0	0	0	52	146	0	0	478
Grand Total	0	282	202	0	0	0	113	5	0	0	0	0	121	291	0	0	1014
Apprch %	0	58.3	41.7	0	0	0	95.8	4.2	0	0	0	0	29.4	70.6	0	0	
Total %	0	27.8	19.9	0	0	0	11.1	0.5	0	0	0	0	11.9	28.7	0	0	

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	43	20	0	63	0	0	11	1	12	0	0	0	0	0	12	29	0	0	41	116
04:15 PM	0	37	27	0	64	0	0	19	0	19	0	0	0	0	0	22	32	0	0	54	137
04:30 PM	0	53	31	0	84	0	0	10	0	10	0	0	0	0	0	20	38	0	0	58	152
04:45 PM	0	37	21	0	58	0	0	12	0	12	0	0	0	0	0	15	46	0	0	61	131
Total Volume	0	170	99	0	269	0	0	52	1	53	0	0	0	0	0	69	145	0	0	214	536
% App. Total	0	63.2	36.8	0		0	0	98.1	1.9		0	0	0	0		32.2	67.8	0	0		
PHF	.000	.802	.798	.000	.801	.000	.000	.684	.250	.697	.000	.000	.000	.000	.000	.784	.788	.000	.000	.877	.882

N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 DD
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Otis Street From North				Summer Street From East				Kingston Street From South				Summer Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	6	3	0	0	0	0	0	0	0	0	0	0	2	0	0	11
04:15 PM	0	2	2	0	0	0	0	0	0	0	0	0	0	2	0	0	6
04:30 PM	0	9	2	0	0	0	1	0	0	0	0	0	2	2	0	0	16
04:45 PM	0	3	7	0	0	0	0	0	0	0	0	0	0	2	0	0	12
Total	0	20	14	0	0	0	1	0	0	0	0	0	2	8	0	0	45
05:00 PM	0	4	2	0	0	0	1	0	0	0	0	0	0	3	0	0	10
05:15 PM	0	4	1	0	0	0	0	0	0	0	0	0	0	4	0	0	9
05:30 PM	0	8	6	0	0	0	1	0	0	0	0	0	1	3	0	0	19
05:45 PM	0	1	5	0	0	0	0	0	0	0	0	0	1	2	0	0	9
Total	0	17	14	0	0	0	2	0	0	0	0	0	2	12	0	0	47
Grand Total	0	37	28	0	0	0	3	0	0	0	0	0	4	20	0	0	92
Apprch %	0	56.9	43.1	0	0	0	100	0	0	0	0	0	16.7	83.3	0	0	
Total %	0	40.2	30.4	0	0	0	3.3	0	0	0	0	0	4.3	21.7	0	0	

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	3	7	0	10	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	12
05:00 PM	0	4	2	0	6	0	0	1	0	1	0	0	0	0	0	0	3	0	0	3	10
05:15 PM	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	9
05:30 PM	0	8	6	0	14	0	0	1	0	1	0	0	0	0	0	1	3	0	0	4	19
Total Volume	0	19	16	0	35	0	0	2	0	2	0	0	0	0	0	1	12	0	0	13	50
% App. Total	0	54.3	45.7	0		0	0	100	0		0	0	0	0		7.7	92.3	0	0		
PHF	.000	.594	.571	.000	.625	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.250	.750	.000	.000	.813	.658

N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 DD
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	1	1	41	92	0	1	0	12	20	0	0	0	68	137	0	1	0	15	9	398
04:15 PM	1	1	0	43	85	0	2	0	9	9	0	0	0	76	111	0	1	0	12	15	365
04:30 PM	0	1	0	38	113	0	1	0	11	18	0	0	0	89	114	2	1	0	17	19	424
04:45 PM	0	1	0	47	134	0	1	0	10	20	0	0	0	101	147	0	0	0	17	21	499
Total	1	4	1	169	424	0	5	0	42	67	0	0	0	334	509	2	3	0	61	64	1686
05:00 PM	0	2	0	41	223	0	0	0	17	33	0	0	0	138	162	0	1	0	28	29	674
05:15 PM	0	1	1	42	243	0	0	0	19	21	0	0	0	160	150	0	0	0	35	28	700
05:30 PM	0	2	1	44	222	0	2	0	16	14	0	0	0	136	130	0	0	0	28	25	620
05:45 PM	0	2	0	27	203	0	3	0	7	13	0	0	0	108	91	0	1	0	18	27	500
Total	0	7	2	154	891	0	5	0	59	81	0	0	0	542	533	0	2	0	109	109	2494
Grand Total	1	11	3	323	1315	0	10	0	101	148	0	0	0	876	1042	2	5	0	170	173	4180
Apprch %	0.1	0.7	0.2	19.5	79.6	0	3.9	0	39	57.1	0	0	0	45.7	54.3	0.6	1.4	0	48.6	49.4	
Total %	0	0.3	0.1	7.7	31.5	0	0.2	0	2.4	3.5	0	0	0	21	24.9	0	0.1	0	4.1	4.1	

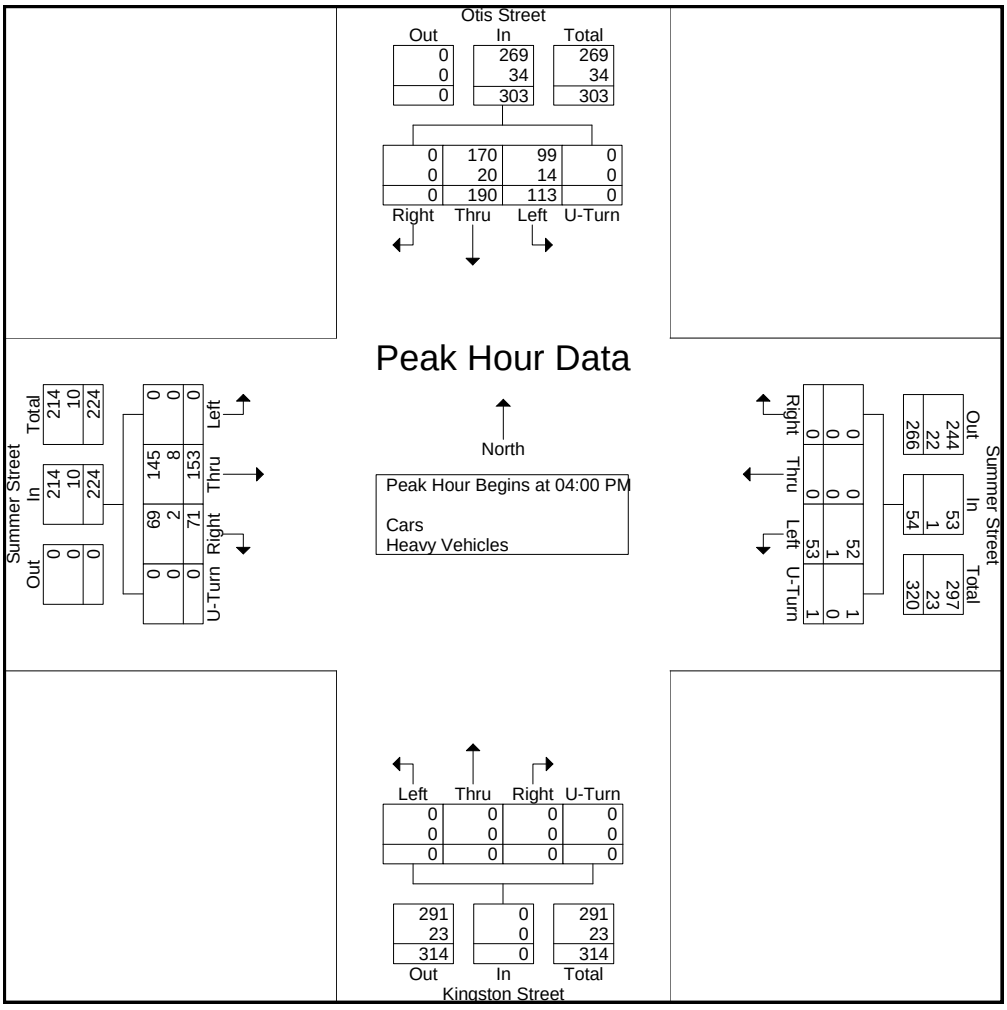
	Otis Street From North						Summer Street From East						Kingston Street From South						Summer Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	0	2	0	41	223	266	0	0	0	17	33	50	0	0	0	138	162	300	0	1	0	28	29	58	674
05:15 PM	0	1	1	42	243	287	0	0	0	19	21	40	0	0	0	160	150	310	0	0	0	35	28	63	700
05:30 PM	0	2	1	44	222	269	0	2	0	16	14	32	0	0	0	136	130	266	0	0	0	28	25	53	620
05:45 PM	0	2	0	27	203	232	0	3	0	7	13	23	0	0	0	108	91	199	0	1	0	18	27	46	500
Total Volume	0	7	2	154	891	1054	0	5	0	59	81	145	0	0	0	542	533	1075	0	2	0	109	109	220	2494
% App. Total	0	0.7	0.2	14.6	84.5		0	3.4	0	40.7	55.9		0	0	0	50.4	49.6		0	0.9	0	49.5	49.5		
PHF	.000	.875	.500	.875	.917	.918	.000	.417	.000	.776	.614	.725	.000	.000	.000	.847	.823	.867	.000	.500	.000	.779	.940	.873	.891

N/S: Otis Street/ Kingston Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 DD
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Otis Street From North					Summer Street From East					Kingston Street From South					Summer Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	49	23	0	72	0	0	11	1	12	0	0	0	0	0	12	31	0	0	43	127
04:15 PM	0	39	29	0	68	0	0	19	0	19	0	0	0	0	0	22	34	0	0	56	143
04:30 PM	0	62	33	0	95	0	0	11	0	11	0	0	0	0	0	22	40	0	0	62	168
04:45 PM	0	40	28	0	68	0	0	12	0	12	0	0	0	0	0	15	48	0	0	63	143
Total Volume	0	190	113	0	303	0	0	53	1	54	0	0	0	0	0	71	153	0	0	224	581
% App. Total	0	62.7	37.3	0		0	0	98.1	1.9		0	0	0	0		31.7	68.3	0	0		
PHF	.000	.766	.856	.000	.797	.000	.000	.697	.250	.711	.000	.000	.000	.000	.000	.807	.797	.000	.000	.889	.865
Cars	0	170	99	0	269	0	0	52	1	53	0	0	0	0	0	69	145	0	0	214	536
% Cars	0	89.5	87.6	0	88.8	0	0	98.1	100	98.1	0	0	0	0	0	97.2	94.8	0	0	95.5	92.3
Heavy Vehicles	0	20	14	0	34	0	0	1	0	1	0	0	0	0	0	2	8	0	0	10	45
% Heavy Vehicles	0	10.5	12.4	0	11.2	0	0	1.9	0	1.9	0	0	0	0	0	2.8	5.2	0	0	4.5	7.7



N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 E
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Devonshire Street From North			Summer Street From East			Summer Street From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	51	24	0	24	5	0	104
07:15 AM	0	0	0	65	16	0	30	5	0	116
07:30 AM	0	0	0	64	12	2	27	1	0	106
07:45 AM	0	0	0	57	21	2	30	3	0	113
Total	0	0	0	237	73	4	111	14	0	439
08:00 AM	0	0	0	54	20	1	42	6	0	123
08:15 AM	0	0	0	66	19	0	31	7	0	123
08:30 AM	0	0	0	49	25	0	38	5	0	117
08:45 AM	0	0	0	71	23	1	56	1	0	152
Total	0	0	0	240	87	2	167	19	0	515
Grand Total	0	0	0	477	160	6	278	33	0	954
Apprch %	0	0	0	74.2	24.9	0.9	89.4	10.6	0	
Total %	0	0	0	50	16.8	0.6	29.1	3.5	0	
Cars	0	0	0	454	149	6	230	24	0	863
% Cars	0	0	0	95.2	93.1	100	82.7	72.7	0	90.5
Heavy Vehicles	0	0	0	23	11	0	48	9	0	91
% Heavy Vehicles	0	0	0	4.8	6.9	0	17.3	27.3	0	9.5

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	0	0	0	54	20	1	75	42	6	0	48	123
08:15 AM	0	0	0	0	66	19	0	85	31	7	0	38	123
08:30 AM	0	0	0	0	49	25	0	74	38	5	0	43	117
08:45 AM	0	0	0	0	71	23	1	95	56	1	0	57	152
Total Volume	0	0	0	0	240	87	2	329	167	19	0	186	515
% App. Total	0	0	0		72.9	26.4	0.6		89.8	10.2	0		
PHF	.000	.000	.000	.000	.845	.870	.500	.866	.746	.679	.000	.816	.847
Cars	0	0	0	0	229	81	2	312	140	15	0	155	467
% Cars	0	0	0	0	95.4	93.1	100	94.8	83.8	78.9	0	83.3	90.7
Heavy Vehicles	0	0	0	0	11	6	0	17	27	4	0	31	48
% Heavy Vehicles	0	0	0	0	4.6	6.9	0	5.2	16.2	21.1	0	16.7	9.3

N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 E
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Devonshire Street From North			Summer Street From East			Summer Street From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	48	24	0	22	3	0	97
07:15 AM	0	0	0	62	16	0	25	2	0	105
07:30 AM	0	0	0	60	12	2	20	1	0	95
07:45 AM	0	0	0	55	16	2	23	3	0	99
Total	0	0	0	225	68	4	90	9	0	396
08:00 AM	0	0	0	50	16	1	36	4	0	107
08:15 AM	0	0	0	62	17	0	22	6	0	107
08:30 AM	0	0	0	47	25	0	33	5	0	110
08:45 AM	0	0	0	70	23	1	49	0	0	143
Total	0	0	0	229	81	2	140	15	0	467
Grand Total	0	0	0	454	149	6	230	24	0	863
Apprch %	0	0	0	74.5	24.5	1	90.6	9.4	0	
Total %	0	0	0	52.6	17.3	0.7	26.7	2.8	0	

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	0	0	0	50	16	1	67	36	4	0	40	107
08:15 AM	0	0	0	0	62	17	0	79	22	6	0	28	107
08:30 AM	0	0	0	0	47	25	0	72	33	5	0	38	110
08:45 AM	0	0	0	0	70	23	1	94	49	0	0	49	143
Total Volume	0	0	0	0	229	81	2	312	140	15	0	155	467
% App. Total	0	0	0		73.4	26	0.6		90.3	9.7	0		
PHF	.000	.000	.000	.000	.818	.810	.500	.830	.714	.625	.000	.791	.816

N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 E
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Devonshire Street From North			Summer Street From East			Summer Street From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	3	0	0	2	2	0	7
07:15 AM	0	0	0	3	0	0	5	3	0	11
07:30 AM	0	0	0	4	0	0	7	0	0	11
07:45 AM	0	0	0	2	5	0	7	0	0	14
Total	0	0	0	12	5	0	21	5	0	43
08:00 AM	0	0	0	4	4	0	6	2	0	16
08:15 AM	0	0	0	4	2	0	9	1	0	16
08:30 AM	0	0	0	2	0	0	5	0	0	7
08:45 AM	0	0	0	1	0	0	7	1	0	9
Total	0	0	0	11	6	0	27	4	0	48
Grand Total	0	0	0	23	11	0	48	9	0	91
Apprch %	0	0	0	67.6	32.4	0	84.2	15.8	0	
Total %	0	0	0	25.3	12.1	0	52.7	9.9	0	

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	0	0	0	0	4	0	0	4	7	0	0	7	11
07:45 AM	0	0	0	0	2	5	0	7	7	0	0	7	14
08:00 AM	0	0	0	0	4	4	0	8	6	2	0	8	16
08:15 AM	0	0	0	0	4	2	0	6	9	1	0	10	16
Total Volume	0	0	0	0	14	11	0	25	29	3	0	32	57
% App. Total	0	0	0		56	44	0		90.6	9.4	0		
PHF	.000	.000	.000	.000	.875	.550	.000	.781	.806	.375	.000	.800	.891

N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 E
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	52	28	1	1	0	1	2	0	4	5	94
07:15 AM	0	0	93	41	1	1	2	3	2	0	7	8	158
07:30 AM	0	0	141	50	0	2	0	1	0	0	3	5	202
07:45 AM	0	0	142	37	1	2	2	1	1	0	4	8	198
Total	0	0	428	156	3	6	4	6	5	0	18	26	652
08:00 AM	0	0	192	62	1	0	0	2	1	1	2	12	273
08:15 AM	0	0	192	112	0	0	0	0	1	0	7	17	329
08:30 AM	0	0	247	87	2	0	1	2	2	0	16	30	387
08:45 AM	0	0	288	99	1	1	0	0	5	0	8	28	430
Total	0	0	919	360	4	1	1	4	9	1	33	87	1419
Grand Total	0	0	1347	516	7	7	5	10	14	1	51	113	2071
Apprch %	0	0	72.3	27.7	24.1	24.1	17.2	34.5	7.8	0.6	28.5	63.1	
Total %	0	0	65	24.9	0.3	0.3	0.2	0.5	0.7	0	2.5	5.5	

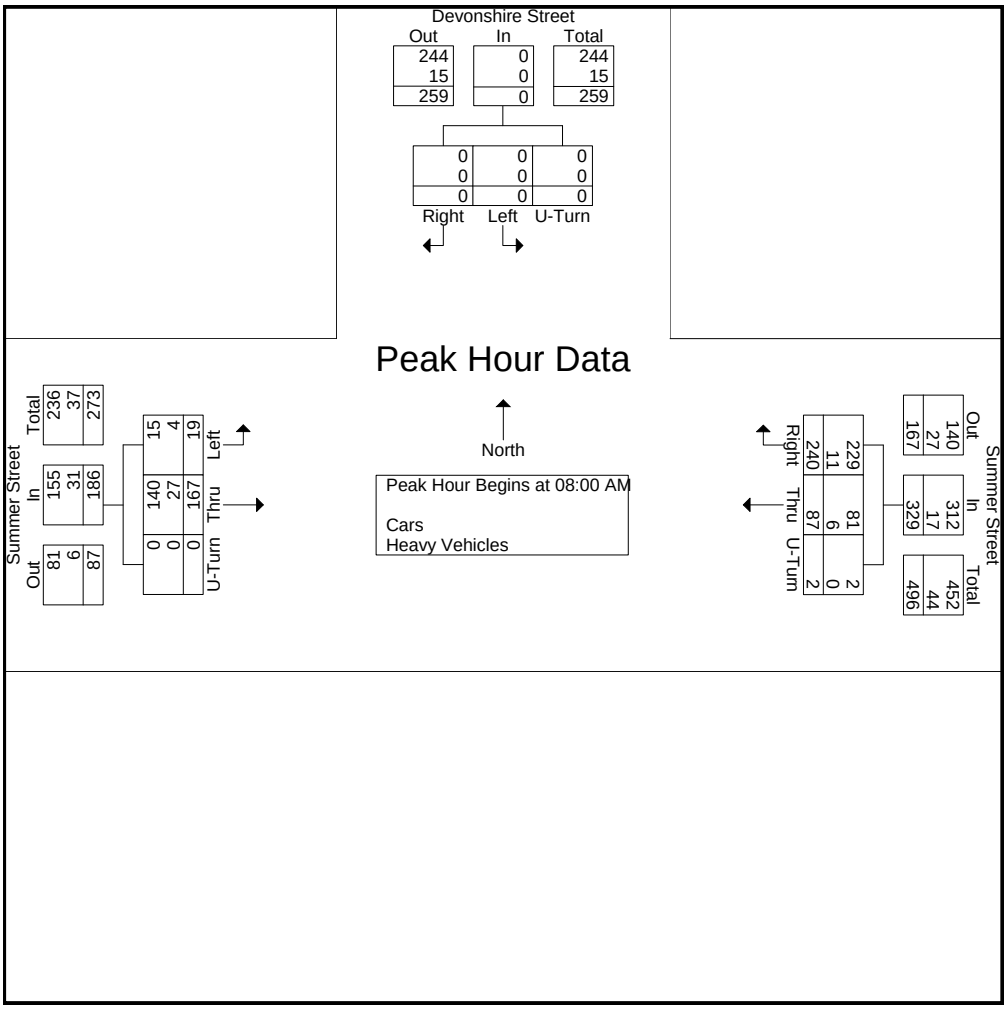
	Devonshire Street From North					Summer Street From East					Summer Street From West					
Start Time	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	0	0	192	62	254	1	0	0	2	3	1	1	2	12	16	273
08:15 AM	0	0	192	112	304	0	0	0	0	0	1	0	7	17	25	329
08:30 AM	0	0	247	87	334	2	0	1	2	5	2	0	16	30	48	387
08:45 AM	0	0	288	99	387	1	1	0	0	2	5	0	8	28	41	430
Total Volume	0	0	919	360	1279	4	1	1	4	10	9	1	33	87	130	1419
% App. Total	0	0	71.9	28.1		40	10	10	40		6.9	0.8	25.4	66.9		
PHF	.000	.000	.798	.804	.826	.500	.250	.250	.500	.500	.450	.250	.516	.725	.677	.825

N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 E
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	0	0	0	54	20	1	75	42	6	0	48	123
08:15 AM	0	0	0	0	66	19	0	85	31	7	0	38	123
08:30 AM	0	0	0	0	49	25	0	74	38	5	0	43	117
08:45 AM	0	0	0	0	71	23	1	95	56	1	0	57	152
Total Volume	0	0	0	0	240	87	2	329	167	19	0	186	515
% App. Total	0	0	0		72.9	26.4	0.6		89.8	10.2	0		
PHF	.000	.000	.000	.000	.845	.870	.500	.866	.746	.679	.000	.816	.847
Cars	0	0	0	0	229	81	2	312	140	15	0	155	467
% Cars	0	0	0	0	95.4	93.1	100	94.8	83.8	78.9	0	83.3	90.7
Heavy Vehicles	0	0	0	0	11	6	0	17	27	4	0	31	48
% Heavy Vehicles	0	0	0	0	4.6	6.9	0	5.2	16.2	21.1	0	16.7	9.3



N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 EE
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Devonshire Street From North			Summer Street From East			Summer Street From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	36	12	0	53	5	1	107
04:15 PM	0	0	0	31	21	0	58	6	0	116
04:30 PM	0	0	0	41	12	0	70	3	0	126
04:45 PM	0	0	0	28	9	0	73	2	0	112
Total	0	0	0	136	54	0	254	16	1	461
05:00 PM	0	0	0	30	19	0	55	8	0	112
05:15 PM	0	0	0	28	17	0	75	4	0	124
05:30 PM	0	0	0	31	25	0	73	3	0	132
05:45 PM	0	0	0	21	14	0	60	5	0	100
Total	0	0	0	110	75	0	263	20	0	468
Grand Total	0	0	0	246	129	0	517	36	1	929
Apprch %	0	0	0	65.6	34.4	0	93.3	6.5	0.2	
Total %	0	0	0	26.5	13.9	0	55.7	3.9	0.1	
Cars	0	0	0	243	126	0	469	35	1	874
% Cars	0	0	0	98.8	97.7	0	90.7	97.2	100	94.1
Heavy Vehicles	0	0	0	3	3	0	48	1	0	55
% Heavy Vehicles	0	0	0	1.2	2.3	0	9.3	2.8	0	5.9

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 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	28	9	0	37	73	2	0	75	112
05:00 PM	0	0	0	0	30	19	0	49	55	8	0	63	112
05:15 PM	0	0	0	0	28	17	0	45	75	4	0	79	124
05:30 PM	0	0	0	0	31	25	0	56	73	3	0	76	132
Total Volume	0	0	0	0	117	70	0	187	276	17	0	293	480
% App. Total	0	0	0		62.6	37.4	0		94.2	5.8	0		
PHF	.000	.000	.000	.000	.944	.700	.000	.835	.920	.531	.000	.927	.909
Cars	0	0	0	0	115	68	0	183	249	16	0	265	448
% Cars	0	0	0	0	98.3	97.1	0	97.9	90.2	94.1	0	90.4	93.3
Heavy Vehicles	0	0	0	0	2	2	0	4	27	1	0	28	32
% Heavy Vehicles	0	0	0	0	1.7	2.9	0	2.1	9.8	5.9	0	9.6	6.7

N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 EE
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Devonshire Street From North			Summer Street From East			Summer Street From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	36	12	0	47	5	1	101
04:15 PM	0	0	0	31	21	0	54	6	0	112
04:30 PM	0	0	0	40	11	0	66	3	0	120
04:45 PM	0	0	0	27	9	0	65	2	0	103
Total	0	0	0	134	53	0	232	16	1	436
05:00 PM	0	0	0	30	18	0	51	8	0	107
05:15 PM	0	0	0	28	17	0	70	3	0	118
05:30 PM	0	0	0	30	24	0	63	3	0	120
05:45 PM	0	0	0	21	14	0	53	5	0	93
Total	0	0	0	109	73	0	237	19	0	438
Grand Total	0	0	0	243	126	0	469	35	1	874
Apprch %	0	0	0	65.9	34.1	0	92.9	6.9	0.2	
Total %	0	0	0	27.8	14.4	0	53.7	4	0.1	

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	0	0	0	0	40	11	0	51	66	3	0	69	120
04:45 PM	0	0	0	0	27	9	0	36	65	2	0	67	103
05:00 PM	0	0	0	0	30	18	0	48	51	8	0	59	107
05:15 PM	0	0	0	0	28	17	0	45	70	3	0	73	118
Total Volume	0	0	0	0	125	55	0	180	252	16	0	268	448
% App. Total	0	0	0		69.4	30.6	0		94	6	0		
PHF	.000	.000	.000	.000	.781	.764	.000	.882	.900	.500	.000	.918	.933

N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 EE
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Devonshire Street From North			Summer Street From East			Summer Street From West			
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	0	0	6	0	0	6
04:15 PM	0	0	0	0	0	0	4	0	0	4
04:30 PM	0	0	0	1	1	0	4	0	0	6
04:45 PM	0	0	0	1	0	0	8	0	0	9
Total	0	0	0	2	1	0	22	0	0	25
05:00 PM	0	0	0	0	1	0	4	0	0	5
05:15 PM	0	0	0	0	0	0	5	1	0	6
05:30 PM	0	0	0	1	1	0	10	0	0	12
05:45 PM	0	0	0	0	0	0	7	0	0	7
Total	0	0	0	1	2	0	26	1	0	30
Grand Total	0	0	0	3	3	0	48	1	0	55
Apprch %	0	0	0	50	50	0	98	2	0	
Total %	0	0	0	5.5	5.5	0	87.3	1.8	0	

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 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	1	0	0	1	8	0	0	8	9
05:00 PM	0	0	0	0	0	1	0	1	4	0	0	4	5
05:15 PM	0	0	0	0	0	0	0	0	5	1	0	6	6
05:30 PM	0	0	0	0	1	1	0	2	10	0	0	10	12
Total Volume	0	0	0	0	2	2	0	4	27	1	0	28	32
% App. Total	0	0	0		50	50	0		96.4	3.6	0		
PHF	.000	.000	.000	.000	.500	.500	.000	.500	.675	.250	.000	.700	.667

N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 EE
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	41	90	0	1	0	0	2	0	9	4	147
04:15 PM	0	0	36	91	0	1	1	1	1	0	2	12	145
04:30 PM	0	0	43	107	2	1	0	4	1	0	6	5	169
04:45 PM	0	0	45	139	1	1	0	2	0	0	5	8	201
Total	0	0	165	427	3	4	1	7	4	0	22	29	662
05:00 PM	0	0	58	290	0	0	2	3	1	0	14	9	377
05:15 PM	0	0	50	279	2	4	0	2	2	0	8	9	356
05:30 PM	0	0	48	291	1	2	2	0	0	0	18	8	370
05:45 PM	0	0	28	214	1	2	0	1	1	0	9	12	268
Total	0	0	184	1074	4	8	4	6	4	0	49	38	1371
Grand Total	0	0	349	1501	7	12	5	13	8	0	71	67	2033
Apprch %	0	0	18.9	81.1	18.9	32.4	13.5	35.1	5.5	0	48.6	45.9	
Total %	0	0	17.2	73.8	0.3	0.6	0.2	0.6	0.4	0	3.5	3.3	

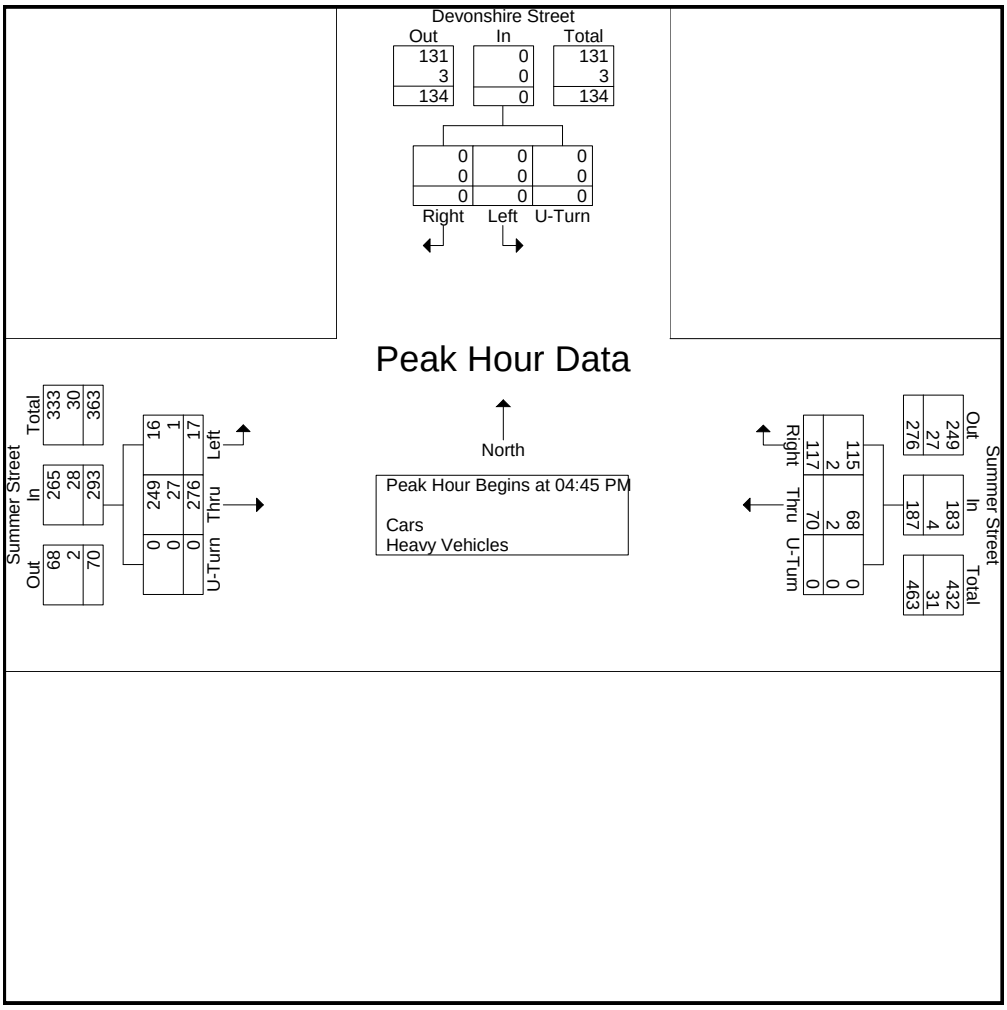
	Devonshire Street From North					Summer Street From East					Summer Street From West					
Start Time	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	0	0	58	290	348	0	0	2	3	5	1	0	14	9	24	377
05:15 PM	0	0	50	279	329	2	4	0	2	8	2	0	8	9	19	356
05:30 PM	0	0	48	291	339	1	2	2	0	5	0	0	18	8	26	370
05:45 PM	0	0	28	214	242	1	2	0	1	4	1	0	9	12	22	268
Total Volume	0	0	184	1074	1258	4	8	4	6	22	4	0	49	38	91	1371
% App. Total	0	0	14.6	85.4		18.2	36.4	18.2	27.3		4.4	0	53.8	41.8		
PHF	.000	.000	.793	.923	.904	.500	.500	.500	.500	.688	.500	.000	.681	.792	.875	.909

N: Devonshire Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 EE
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Devonshire Street From North				Summer Street From East				Summer Street From West				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 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	28	9	0	37	73	2	0	75	112
05:00 PM	0	0	0	0	30	19	0	49	55	8	0	63	112
05:15 PM	0	0	0	0	28	17	0	45	75	4	0	79	124
05:30 PM	0	0	0	0	31	25	0	56	73	3	0	76	132
Total Volume	0	0	0	0	117	70	0	187	276	17	0	293	480
% App. Total	0	0	0		62.6	37.4	0		94.2	5.8	0		
PHF	.000	.000	.000	.000	.944	.700	.000	.835	.920	.531	.000	.927	.909
Cars	0	0	0	0	115	68	0	183	249	16	0	265	448
% Cars	0	0	0	0	98.3	97.1	0	97.9	90.2	94.1	0	90.4	93.3
Heavy Vehicles	0	0	0	0	2	2	0	4	27	1	0	28	32
% Heavy Vehicles	0	0	0	0	1.7	2.9	0	2.1	9.8	5.9	0	9.6	6.7



S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 F
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Summer Street From East					Crosswalk From Southeast					Lincoln Street From South					Bedford Street From Southwest					Summer Street From West					
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	Hard Right	Bear Left	Left	Hard Left	Peds	Hard Right	Right	Left	Hard Left	U-Turn	Hard Right	Right	Bear Right	Hard Left	U-Turn	Hard Right	Right	Bear Right	Thru	U-Turn	Int. Total
07:00 AM	33	25	0	0	0	0	0	0	0	0	0	40	40	24	0	0	0	0	0	0	3	0	0	19	0	184
07:15 AM	34	28	0	0	0	0	0	0	0	0	0	52	49	40	0	0	0	0	0	0	2	0	0	32	0	237
07:30 AM	32	20	0	0	0	0	0	0	0	0	0	49	44	40	0	0	0	0	0	0	2	0	0	27	0	214
07:45 AM	40	24	0	0	0	0	0	0	0	0	0	63	40	39	0	0	0	0	0	0	3	0	0	28	0	237
Total	139	97	0	0	0	0	0	0	0	0	0	204	173	143	0	0	0	0	0	0	10	0	0	106	0	872
08:00 AM	33	25	0	0	0	0	0	0	0	0	0	55	43	44	0	0	0	0	0	0	6	0	0	39	0	245
08:15 AM	32	26	0	0	0	0	0	0	0	0	0	66	53	50	0	0	0	0	0	0	2	0	0	26	0	255
08:30 AM	49	34	0	0	0	0	0	0	0	0	0	50	27	46	0	0	0	0	0	0	2	0	0	40	0	248
08:45 AM	51	32	0	0	0	0	0	0	0	0	0	49	46	38	0	0	0	0	0	0	2	0	0	55	0	273
Total	165	117	0	0	0	0	0	0	0	0	0	220	169	178	0	0	0	0	0	0	12	0	0	160	0	1021
Grand Total	304	214	0	0	0	0	0	0	0	0	0	424	342	321	0	0	0	0	0	0	22	0	0	266	0	1893
Apprch %	58.7	41.3	0	0	0	0	0	0	0	0	0	39	31.5	29.5	0	0	0	0	0	0	7.6	0	0	92.4	0	
Total %	16.1	11.3	0	0	0	0	0	0	0	0	0	22.4	18.1	17	0	0	0	0	0	0	1.2	0	0	14.1	0	
Cars	284	199	0	0	0	0	0	0	0	0	0	370	329	306	0	0	0	0	0	0	18	0	0	225	0	1731
% Cars	93.4	93	0	0	0	0	0	0	0	0	0	87.3	96.2	95.3	0	0	0	0	0	0	81.8	0	0	84.6	0	91.4
Heavy Vehicles	20	15	0	0	0	0	0	0	0	0	0	54	13	15	0	0	0	0	0	0	4	0	0	41	0	162
% Heavy Vehicles	6.6	7	0	0	0	0	0	0	0	0	0	12.7	3.8	4.7	0	0	0	0	0	0	18.2	0	0	15.4	0	8.6

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds	App. Total	Hard Right	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	U-Turn	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	33	25	0	0	0	58	0	0	0	0	0	0	0	55	43	44	0	142	0	0	0	0	0	0	6	0	0	39	0	45	245
08:15 AM	32	26	0	0	0	58	0	0	0	0	0	0	0	66	53	50	0	169	0	0	0	0	0	0	2	0	0	26	0	28	255
08:30 AM	49	34	0	0	0	83	0	0	0	0	0	0	0	50	27	46	0	123	0	0	0	0	0	0	2	0	0	40	0	42	248
08:45 AM	51	32	0	0	0	83	0	0	0	0	0	0	0	49	46	38	0	133	0	0	0	0	0	0	2	0	0	55	0	57	273
Total Volume	165	117	0	0	0	282	0	0	0	0	0	0	0	220	169	178	0	567	0	0	0	0	0	0	12	0	0	160	0	172	1021
% App. Total	58.5	41.5	0	0	0		0	0	0	0	0		0	38.8	29.8	31.4	0		0	0	0	0	0		7	0	0	93	0		
PHF	.809	.860	.000	.000	.000	.849	.000	.000	.000	.000	.000	.000	.000	.833	.797	.890	.000	.839	.000	.000	.000	.000	.000	.000	.500	.000	.000	.727	.000	.754	.935
Cars	153	111	0	0	0	264	0	0	0	0	0	0	0	194	163	169	0	526	0	0	0	0	0	0	9	0	0	136	0	145	935
% Cars	92.7	94.9	0	0	0	93.6	0	0	0	0	0	0	0	88.2	96.4	94.9	0	92.8	0	0	0	0	0	0	75.0	0	0	85.0	0	84.3	91.6
Heavy Vehicles	12	6	0	0	0	18	0	0	0	0	0	0	0	26	6	9	0	41	0	0	0	0	0	0	3	0	0	24	0	27	86
% Heavy Vehicles	7.3	5.1	0	0	0	6.4	0	0	0	0	0	0	0	11.8	3.6	5.1	0	7.2	0	0	0	0	0	0	25.0	0	0	15.0	0	15.7	8.4

S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 F
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Summer Street From East					Crosswalk From Southeast					Lincoln Street From South					Bedford Street From Southwest					Summer Street From West					
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	Hard Right	Bear Left	Left	Hard Left	Peds	Hard Right	Right	Left	Hard Left	U-Turn	Hard Right	Right	Bear Right	Hard Left	U-Turn	Hard Right	Right	Bear Right	Thru	U-Turn	Int. Total
07:00 AM	32	24	0	0	0	0	0	0	0	0	0	37	38	23	0	0	0	0	0	0	3	0	0	17	0	174
07:15 AM	34	25	0	0	0	0	0	0	0	0	0	43	47	40	0	0	0	0	0	0	2	0	0	28	0	219
07:30 AM	29	19	0	0	0	0	0	0	0	0	0	44	43	38	0	0	0	0	0	0	1	0	0	22	0	196
07:45 AM	36	20	0	0	0	0	0	0	0	0	0	52	38	36	0	0	0	0	0	0	3	0	0	22	0	207
Total	131	88	0	0	0	0	0	0	0	0	0	176	166	137	0	0	0	0	0	0	9	0	0	89	0	796
08:00 AM	31	23	0	0	0	0	0	0	0	0	0	48	38	38	0	0	0	0	0	0	4	0	0	34	0	216
08:15 AM	26	25	0	0	0	0	0	0	0	0	0	61	52	49	0	0	0	0	0	0	1	0	0	21	0	235
08:30 AM	46	32	0	0	0	0	0	0	0	0	0	42	27	45	0	0	0	0	0	0	2	0	0	32	0	226
08:45 AM	50	31	0	0	0	0	0	0	0	0	0	43	46	37	0	0	0	0	0	0	2	0	0	49	0	258
Total	153	111	0	0	0	0	0	0	0	0	0	194	163	169	0	0	0	0	0	0	9	0	0	136	0	935
Grand Total	284	199	0	0	0	0	0	0	0	0	0	370	329	306	0	0	0	0	0	0	18	0	0	225	0	1731
Apprch %	58.8	41.2	0	0	0	0	0	0	0	0	0	36.8	32.7	30.4	0	0	0	0	0	0	7.4	0	0	92.6	0	
Total %	16.4	11.5	0	0	0	0	0	0	0	0	0	21.4	19	17.7	0	0	0	0	0	0	1	0	0	13	0	

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds	App. Total	Hard Right	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	U-Turn	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	31	23	0	0	0	54	0	0	0	0	0	0	0	48	38	38	0	124	0	0	0	0	0	0	4	0	0	34	0	38	216
08:15 AM	26	25	0	0	0	51	0	0	0	0	0	0	0	61	52	49	0	162	0	0	0	0	0	0	1	0	0	21	0	22	235
08:30 AM	46	32	0	0	0	78	0	0	0	0	0	0	0	42	27	45	0	114	0	0	0	0	0	0	2	0	0	32	0	34	226
08:45 AM	50	31	0	0	0	81	0	0	0	0	0	0	0	43	46	37	0	126	0	0	0	0	0	0	2	0	0	49	0	51	258
Total Volume	153	111	0	0	0	264	0	0	0	0	0	0	0	194	163	169	0	526	0	0	0	0	0	0	9	0	0	136	0	145	935
% App. Total	58	42	0	0	0		0	0	0	0	0		0	36.9	31	32.1	0		0	0	0	0	0		6.2	0	0	93.8	0		
PHF	.765	.867	.000	.000	.000	.815	.000	.000	.000	.000	.000	.000	.000	.795	.784	.862	.000	.812	.000	.000	.000	.000	.000	.000	.563	.000	.000	.694	.000	.711	.906

S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 F
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Summer Street From East					Crosswalk From Southeast					Lincoln Street From South					Bedford Street From Southwest					Summer Street From West					
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	Hard Right	Bear Left	Left	Hard Left	Peds	Hard Right	Right	Left	Hard Left	U-Turn	Hard Right	Right	Bear Right	Hard Left	U-Turn	Hard Right	Right	Bear Right	Thru	U-Turn	Int. Total
07:00 AM	1	1	0	0	0	0	0	0	0	0	0	3	2	1	0	0	0	0	0	0	0	0	0	2	0	10
07:15 AM	0	3	0	0	0	0	0	0	0	0	0	9	2	0	0	0	0	0	0	0	0	0	0	4	0	18
07:30 AM	3	1	0	0	0	0	0	0	0	0	0	5	1	2	0	0	0	0	0	0	1	0	0	5	0	18
07:45 AM	4	4	0	0	0	0	0	0	0	0	0	11	2	3	0	0	0	0	0	0	0	0	0	6	0	30
Total	8	9	0	0	0	0	0	0	0	0	0	28	7	6	0	0	0	0	0	0	1	0	0	17	0	76
08:00 AM	2	2	0	0	0	0	0	0	0	0	0	7	5	6	0	0	0	0	0	0	2	0	0	5	0	29
08:15 AM	6	1	0	0	0	0	0	0	0	0	0	5	1	1	0	0	0	0	0	0	1	0	0	5	0	20
08:30 AM	3	2	0	0	0	0	0	0	0	0	0	8	0	1	0	0	0	0	0	0	0	0	0	8	0	22
08:45 AM	1	1	0	0	0	0	0	0	0	0	0	6	0	1	0	0	0	0	0	0	0	0	0	6	0	15
Total	12	6	0	0	0	0	0	0	0	0	0	26	6	9	0	0	0	0	0	0	3	0	0	24	0	86
Grand Total	20	15	0	0	0	0	0	0	0	0	0	54	13	15	0	0	0	0	0	0	4	0	0	41	0	162
Apprch %	57.1	42.9	0	0	0	0	0	0	0	0	0	65.9	15.9	18.3	0	0	0	0	0	0	8.9	0	0	91.1	0	
Total %	12.3	9.3	0	0	0	0	0	0	0	0	0	33.3	8	9.3	0	0	0	0	0	0	2.5	0	0	25.3	0	

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds	App. Total	Hard Right	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	U-Turn	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	4	0	0	0	8	0	0	0	0	0	0	0	11	2	3	0	16	0	0	0	0	0	0	0	0	0	6	0	6	30
08:00 AM	2	2	0	0	0	4	0	0	0	0	0	0	0	7	5	6	0	18	0	0	0	0	0	0	2	0	0	5	0	7	29
08:15 AM	6	1	0	0	0	7	0	0	0	0	0	0	0	5	1	1	0	7	0	0	0	0	0	0	1	0	0	5	0	6	20
08:30 AM	3	2	0	0	0	5	0	0	0	0	0	0	0	8	0	1	0	9	0	0	0	0	0	0	0	0	0	8	0	8	22
Total Volume	15	9	0	0	0	24	0	0	0	0	0	0	0	31	8	11	0	50	0	0	0	0	0	0	3	0	0	24	0	27	101
% App. Total	62.5	37.5	0	0	0		0	0	0	0	0		0	62	16	22	0		0	0	0	0	0		11.1	0	0	88.9	0		
PHF	.625	.563	.000	.000	.000	.750	.000	.000	.000	.000	.000	.000	.000	.705	.400	.458	.000	.694	.000	.000	.000	.000	.000	.000	.375	.000	.000	.750	.000	.844	.842

S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 F
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	Hard Right	Bear Left	Left	Hard Left	Peds SEB	Peds NWB	Hard Right	Right	Left	Hard Left	Peds WB	Peds EB	Hard Right	Right	Bear Right	Hard Left	Peds SEB	Peds NWB	Hard Right	Right	Bear Right	Thru	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	0	0	26	21	0	0	0	0	68	43	0	0	1	0	9	11	0	0	0	0	15	18	0	0	0	2	4	0	218
07:15 AM	2	0	0	0	20	53	0	0	0	0	127	96	0	0	0	0	20	14	0	0	0	0	17	18	0	0	0	1	5	1	374
07:30 AM	3	0	0	0	26	46	0	0	0	0	98	102	0	1	0	0	20	18	0	0	0	0	24	31	0	0	0	0	6	0	375
07:45 AM	2	1	0	0	43	54	0	0	0	0	147	135	0	1	2	0	23	15	0	0	0	0	33	43	0	0	0	3	4	1	507
Total	7	1	0	0	115	174	0	0	0	0	440	376	0	2	3	0	72	58	0	0	0	0	89	110	0	0	0	6	19	2	1474
08:00 AM	0	0	0	0	39	62	0	0	0	0	145	166	0	0	0	0	42	38	0	0	0	0	20	37	0	0	0	3	3	0	555
08:15 AM	1	0	0	0	51	96	0	0	0	0	294	151	0	0	0	0	56	27	0	0	0	0	43	56	0	0	0	1	3	1	780
08:30 AM	2	0	0	0	41	90	0	0	0	0	196	147	0	2	0	0	48	30	0	0	0	0	31	46	0	0	0	1	9	3	646
08:45 AM	1	0	0	0	61	119	0	0	0	0	209	208	0	3	1	0	60	25	0	0	0	0	32	72	0	0	0	7	8	3	809
Total	4	0	0	0	192	367	0	0	0	0	844	672	0	5	1	0	206	120	0	0	0	0	126	211	0	0	0	12	23	7	2790
Grand Total	11	1	0	0	307	541	0	0	0	0	1284	1048	0	7	4	0	278	178	0	0	0	0	215	321	0	0	0	18	42	9	4264
Apprch %	1.3	0.1	0	0	35.7	62.9	0	0	0	0	55.1	44.9	0	1.5	0.9	0	59.5	38.1	0	0	0	0	40.1	59.9	0	0	0	26.1	60.9	13	
Total %	0.3	0	0	0	7.2	12.7	0	0	0	0	30.1	24.6	0	0.2	0.1	0	6.5	4.2	0	0	0	0	5	7.5	0	0	0	0.4	1	0.2	

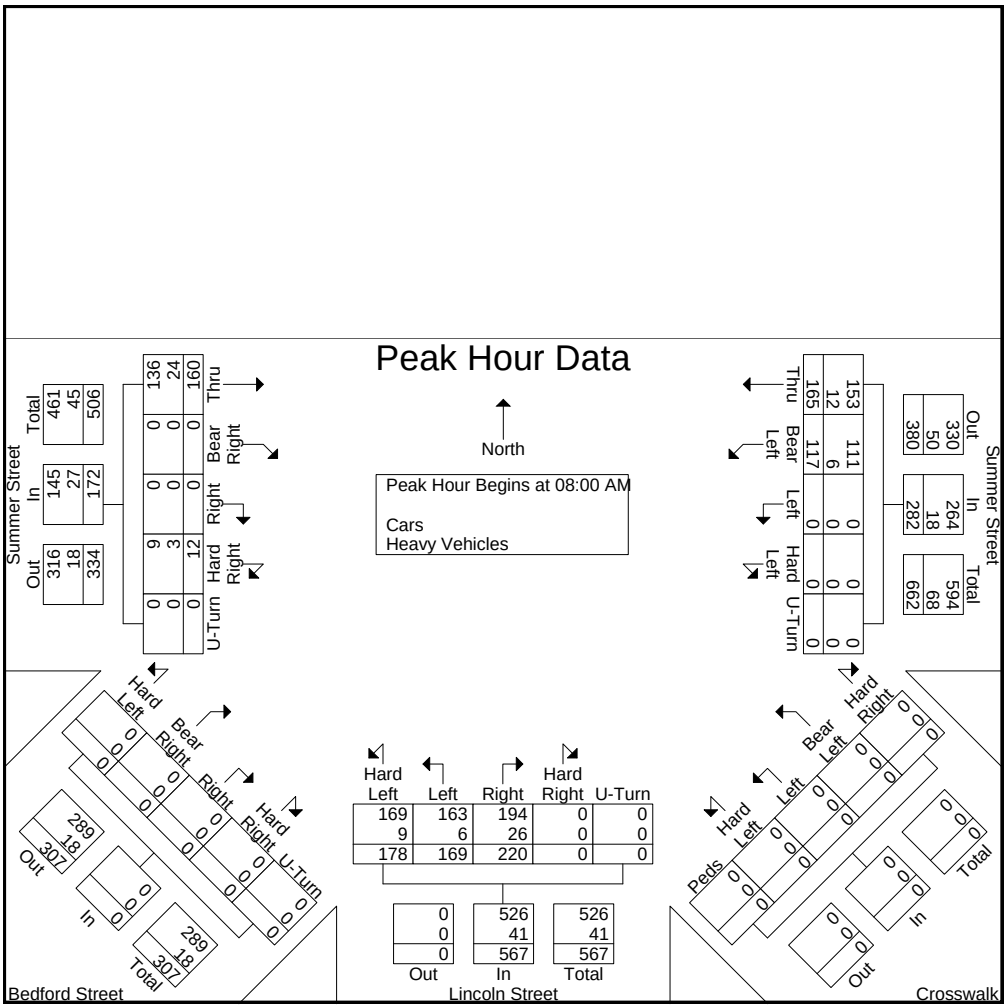
	Summer Street From East							Crosswalk From Southeast							Lincoln Street From South							Bedford Street From Southwest							Summer Street From West							
Start Time	Thru	Bear Left	Left	Har d Le ft	Ped s S B	Ped s N B	App. Total	Har d Ri ght	Bear Left	Left	Har d Le ft	Ped s S EB	Ped s N WB	App. Total	Har d Ri ght	Righ t	Left	Har d Le ft	Ped s W B	Ped s E B	App. Total	Har d Ri ght	Righ t	Bear Righ t	Har d Le ft	Ped s S EB	Ped s N WB	App. Total	Har d Ri ght	Righ t	Bear Righ t	Thru	Ped s N B	Ped s SB	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	0	0	0	39	62	101	0	0	0	0	145	166	311	0	0	0	0	42	38	80	0	0	0	0	20	37	57	0	0	0	3	3	0	6	555
08:15 AM					51	96	148	0	0	0	0	294	151	445					56	27						43	56	99	0	0	0	1	3	1	5	780
08:30 AM					41	90	133	0	0	0	0	196	147	343					48	30						31	46	77	0	0	0	1	9	3	13	646
08:45 AM					61	119	181	0	0	0	0	209	208	417					60	25						32	72	104	0	0	0	7	8	3	18	809
Total Volume					192	367	563	0	0	0	0	844	672	1516					206	120	332	0	0	0	0	126	211	337	0	0	0	12	23	7	42	2790
% App. Total	0.7	0	0	0	34.1	65.2		0	0	0	0	55.7	44.3		0	1.5	0.3		62	36.1						37.4	62.6		0	0	0	28.6	54.8	16.7		
PHF	.500	.000	.000	.000	.787	.771	.778	.000	.000	.000	.000	.718	.808	.852	.000	.417	.250	.000	.858	.789	.933	.000	.000	.000	.000	.733	.733	.810	.000	.000	.000	.429	.639	.583	.583	.862

S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 F
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds	App. Total	Hard Right	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	U-Turn	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	33	25	0	0	0	58	0	0	0	0	0	0	0	55	43	44	0	142	0	0	0	0	0	0	6	0	0	39	0	45	245
08:15 AM	32	26	0	0	0	58	0	0	0	0	0	0	0	66	53	50	0	169	0	0	0	0	0	0	2	0	0	26	0	28	255
08:30 AM	49	34	0	0	0	83	0	0	0	0	0	0	0	50	27	46	0	123	0	0	0	0	0	0	2	0	0	40	0	42	248
08:45 AM	51	32	0	0	0	83	0	0	0	0	0	0	0	49	46	38	0	133	0	0	0	0	0	0	2	0	0	55	0	57	273
Total Volume	165	117	0	0	0	282	0	0	0	0	0	0	0	220	169	178	0	567	0	0	0	0	0	0	12	0	0	160	0	172	1021
% App. Total	58.5	41.5	0	0	0		0	0	0	0	0		0	38.8	29.8	31.4	0		0	0	0	0	0		7	0	0	93	0		
PHF	.809	.860	.000	.000	.000	.849	.000	.000	.000	.000	.000	.000	.000	.833	.797	.890	.000	.839	.000	.000	.000	.000	.000	.000	.500	.000	.000	.727	.000	.754	.935
Cars	153	111	0	0	0	264	0	0	0	0	0	0	0	194	163	169	0	526	0	0	0	0	0	0	9	0	0	136	0	145	935
% Cars	92.7	94.9	0	0	0	93.6	0	0	0	0	0	0	0	88.2	96.4	94.9	0	92.8	0	0	0	0	0	0	75.0	0	0	85.0	0	84.3	91.6
Heavy Vehicles	12	6	0	0	0	18	0	0	0	0	0	0	0	26	6	9	0	41	0	0	0	0	0	0	3	0	0	24	0	27	86
% Heavy Vehicles	7.3	5.1	0	0	0	6.4	0	0	0	0	0	0	0	11.8	3.6	5.1	0	7.2	0	0	0	0	0	0	25.0	0	0	15.0	0	15.7	8.4



S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 FF
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Summer Street From East					Crosswalk From Southeast					Lincoln Street From South					Bedford Street From Southwest					Summer Street From West					
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	Hard Right	Bear Left	Left	Hard Left	Peds	Hard Right	Right	Left	Hard Left	U-Turn	Hard Right	Right	Bear Right	Hard Left	U-Turn	Hard Right	Right	Bear Right	Thru	U-Turn	Int. Total
04:00 PM	24	21	0	0	0	0	0	0	0	0	0	44	26	33	0	0	0	0	0	0	2	0	0	45	0	195
04:15 PM	26	16	0	0	0	0	0	0	0	0	0	45	18	29	0	0	0	0	0	0	9	0	0	50	0	193
04:30 PM	24	19	0	0	0	0	0	0	0	0	0	46	26	22	0	0	0	0	0	0	9	0	0	62	0	208
04:45 PM	20	25	0	0	0	0	0	0	0	0	0	55	19	31	0	0	0	0	0	0	8	0	0	65	0	223
Total	94	81	0	0	0	0	0	0	0	0	0	190	89	115	0	0	0	0	0	0	28	0	0	222	0	819
05:00 PM	29	25	0	0	0	0	0	0	0	0	0	73	19	43	0	0	0	0	0	0	3	0	0	50	0	242
05:15 PM	20	21	0	0	0	0	0	0	0	0	0	50	23	33	0	0	0	0	0	0	9	0	0	73	0	229
05:30 PM	34	21	0	0	0	0	0	0	0	0	0	49	24	31	0	0	0	0	0	0	7	0	0	65	0	231
05:45 PM	13	16	0	0	0	0	0	0	0	0	0	45	18	28	0	0	0	0	0	0	5	0	0	56	0	181
Total	96	83	0	0	0	0	0	0	0	0	0	217	84	135	0	0	0	0	0	0	24	0	0	244	0	883
Grand Total	190	164	0	0	0	0	0	0	0	0	0	407	173	250	0	0	0	0	0	0	52	0	0	466	0	1702
Apprch %	53.7	46.3	0	0	0	0	0	0	0	0	0	49	20.8	30.1	0	0	0	0	0	0	10	0	0	90	0	
Total %	11.2	9.6	0	0	0	0	0	0	0	0	0	23.9	10.2	14.7	0	0	0	0	0	0	3.1	0	0	27.4	0	
Cars	187	159	0	0	0	0	0	0	0	0	0	370	170	236	0	0	0	0	0	0	49	0	0	423	0	1594
% Cars	98.4	97	0	0	0	0	0	0	0	0	0	90.9	98.3	94.4	0	0	0	0	0	0	94.2	0	0	90.8	0	93.7
Heavy Vehicles	3	5	0	0	0	0	0	0	0	0	0	37	3	14	0	0	0	0	0	0	3	0	0	43	0	108
% Heavy Vehicles	1.6	3	0	0	0	0	0	0	0	0	0	9.1	1.7	5.6	0	0	0	0	0	0	5.8	0	0	9.2	0	6.3

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds	App. Total	Hard Right	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	U-Turn	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	20	25	0	0	0	45	0	0	0	0	0	0	0	55	19	31	0	105	0	0	0	0	0	0	8	0	0	65	0	73	223
05:00 PM	29	25	0	0	0	54	0	0	0	0	0	0	0	73	19	43	0	135	0	0	0	0	0	0	3	0	0	50	0	53	242
05:15 PM	20	21	0	0	0	41	0	0	0	0	0	0	0	50	23	33	0	106	0	0	0	0	0	0	9	0	0	73	0	82	229
05:30 PM	34	21	0	0	0	55	0	0	0	0	0	0	0	49	24	31	0	104	0	0	0	0	0	0	7	0	0	65	0	72	231
Total Volume	103	92	0	0	0	195	0	0	0	0	0	0	0	227	85	138	0	450	0	0	0	0	0	0	27	0	0	253	0	280	925
% App. Total	52.8	47.2	0	0	0		0	0	0	0	0		0	50.4	18.9	30.7	0		0	0	0	0	0		9.6	0	0	90.4	0		
PHF	.757	.920	.000	.000	.000	.886	.000	.000	.000	.000	.000	.000	.000	.777	.885	.802	.000	.833	.000	.000	.000	.000	.000	.000	.750	.000	.000	.866	.000	.854	.956
Cars	101	92	0	0	0	193	0	0	0	0	0	0	0	204	83	130	0	417	0	0	0	0	0	0	24	0	0	230	0	254	864
% Cars	98.1	100	0	0	0	99.0	0	0	0	0	0	0	0	89.9	97.6	94.2	0	92.7	0	0	0	0	0	0	88.9	0	0	90.9	0	90.7	93.4
Heavy Vehicles	2	0	0	0	0	2	0	0	0	0	0	0	0	23	2	8	0	33	0	0	0	0	0	0	3	0	0	23	0	26	61
% Heavy Vehicles	1.9	0	0	0	0	1.0	0	0	0	0	0	0	0	10.1	2.4	5.8	0	7.3	0	0	0	0	0	0	11.1	0	0	9.1	0	9.3	6.6

S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 FF
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Summer Street From East					Crosswalk From Southeast					Lincoln Street From South					Bedford Street From Southwest					Summer Street From West					
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	Hard Right	Bear Left	Left	Hard Left	Peds	Hard Right	Right	Left	Hard Left	U-Turn	Hard Right	Right	Bear Right	Hard Left	U-Turn	Hard Right	Right	Bear Right	Thru	U-Turn	Int. Total
04:00 PM	24	19	0	0	0	0	0	0	0	0	0	42	26	33	0	0	0	0	0	0	2	0	0	41	0	187
04:15 PM	26	15	0	0	0	0	0	0	0	0	0	40	18	26	0	0	0	0	0	0	9	0	0	44	0	178
04:30 PM	23	17	0	0	0	0	0	0	0	0	0	41	25	19	0	0	0	0	0	0	9	0	0	58	0	192
04:45 PM	20	25	0	0	0	0	0	0	0	0	0	51	18	29	0	0	0	0	0	0	7	0	0	58	0	208
Total	93	76	0	0	0	0	0	0	0	0	0	174	87	107	0	0	0	0	0	0	27	0	0	201	0	765
05:00 PM	29	25	0	0	0	0	0	0	0	0	0	64	18	42	0	0	0	0	0	0	3	0	0	46	0	227
05:15 PM	20	21	0	0	0	0	0	0	0	0	0	44	23	29	0	0	0	0	0	0	9	0	0	69	0	215
05:30 PM	32	21	0	0	0	0	0	0	0	0	0	45	24	30	0	0	0	0	0	0	5	0	0	57	0	214
05:45 PM	13	16	0	0	0	0	0	0	0	0	0	43	18	28	0	0	0	0	0	0	5	0	0	50	0	173
Total	94	83	0	0	0	0	0	0	0	0	0	196	83	129	0	0	0	0	0	0	22	0	0	222	0	829
Grand Total	187	159	0	0	0	0	0	0	0	0	0	370	170	236	0	0	0	0	0	0	49	0	0	423	0	1594
Apprch %	54	46	0	0	0	0	0	0	0	0	0	47.7	21.9	30.4	0	0	0	0	0	0	10.4	0	0	89.6	0	
Total %	11.7	10	0	0	0	0	0	0	0	0	0	23.2	10.7	14.8	0	0	0	0	0	0	3.1	0	0	26.5	0	

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds	App. Total	Hard Right	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	U-Turn	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	20	25	0	0	0	45	0	0	0	0	0	0	0	51	18	29	0	98	0	0	0	0	0	0	7	0	0	58	0	65	208
05:00 PM	29	25	0	0	0	54	0	0	0	0	0	0	0	64	18	42	0	124	0	0	0	0	0	0	3	0	0	46	0	49	227
05:15 PM	20	21	0	0	0	41	0	0	0	0	0	0	0	44	23	29	0	96	0	0	0	0	0	0	9	0	0	69	0	78	215
05:30 PM	32	21	0	0	0	53	0	0	0	0	0	0	0	45	24	30	0	99	0	0	0	0	0	0	5	0	0	57	0	62	214
Total Volume	101	92	0	0	0	193	0	0	0	0	0	0	0	204	83	130	0	417	0	0	0	0	0	0	24	0	0	230	0	254	864
% App. Total	52.3	47.7	0	0	0		0	0	0	0	0		0	48.9	19.9	31.2	0		0	0	0	0	0		9.4	0	0	90.6	0		
PHF	.789	.920	.000	.000	.000	.894	.000	.000	.000	.000	.000	.000	.000	.797	.865	.774	.000	.841	.000	.000	.000	.000	.000	.000	.667	.000	.000	.833	.000	.814	.952

S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 FF
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Summer Street From East					Crosswalk From Southeast					Lincoln Street From South					Bedford Street From Southwest					Summer Street From West					
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	Hard Right	Bear Left	Left	Hard Left	Peds	Hard Right	Right	Left	Hard Left	U-Turn	Hard Right	Right	Bear Right	Hard Left	U-Turn	Hard Right	Right	Bear Right	Thru	U-Turn	Int. Total
04:00 PM	0	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	4	0	8
04:15 PM	0	1	0	0	0	0	0	0	0	0	0	5	0	3	0	0	0	0	0	0	0	0	0	6	0	15
04:30 PM	1	2	0	0	0	0	0	0	0	0	0	5	1	3	0	0	0	0	0	0	0	0	0	4	0	16
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	4	1	2	0	0	0	0	0	0	1	0	0	7	0	15
Total	1	5	0	0	0	0	0	0	0	0	0	16	2	8	0	0	0	0	0	0	1	0	0	21	0	54
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	9	1	1	0	0	0	0	0	0	0	0	0	4	0	15
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	6	0	4	0	0	0	0	0	0	0	0	0	4	0	14
05:30 PM	2	0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	0	0	0	0	2	0	0	8	0	17
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	6	0	8
Total	2	0	0	0	0	0	0	0	0	0	0	21	1	6	0	0	0	0	0	0	2	0	0	22	0	54
Grand Total	3	5	0	0	0	0	0	0	0	0	0	37	3	14	0	0	0	0	0	0	3	0	0	43	0	108
Apprch %	37.5	62.5	0	0	0	0	0	0	0	0	0	68.5	5.6	25.9	0	0	0	0	0	0	6.5	0	0	93.5	0	
Total %	2.8	4.6	0	0	0	0	0	0	0	0	0	34.3	2.8	13	0	0	0	0	0	0	2.8	0	0	39.8	0	

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds	App. Total	Hard Right	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	U-Turn	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	1	0	0	0	1	0	0	0	0	0	0	0	5	0	3	0	8	0	0	0	0	0	0	0	0	0	6	0	6	15
04:30 PM	1	2	0	0	0	3	0	0	0	0	0	0	0	5	1	3	0	9	0	0	0	0	0	0	0	0	0	4	0	4	16
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	2	0	7	0	0	0	0	0	0	1	0	0	7	0	8	15
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1	1	0	11	0	0	0	0	0	0	0	0	0	4	0	4	15
Total Volume	1	3	0	0	0	4	0	0	0	0	0	0	0	23	3	9	0	35	0	0	0	0	0	0	1	0	0	21	0	22	61
% App. Total	25	75	0	0	0		0	0	0	0	0		0	65.7	8.6	25.7	0		0	0	0	0	0		4.5	0	0	95.5	0		
PHF	.250	.375	.000	.000	.000	.333	.000	.000	.000	.000	.000	.000	.000	.639	.750	.750	.000	.795	.000	.000	.000	.000	.000	.000	.250	.000	.000	.750	.000	.688	.953

S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 FF
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	Hard Right	Bear Left	Left	Hard Left	Peds SEB	Peds NWB	Hard Right	Right	Left	Hard Left	Peds WB	Peds EB	Hard Right	Right	Bear Right	Hard Left	Peds SEB	Peds NWB	Hard Right	Right	Bear Right	Thru	Peds NB	Peds SB	Int. Total
04:00 PM	2	0	0	0	59	16	0	0	0	0	56	161	0	0	0	0	30	48	0	0	0	0	29	16	0	0	0	2	7	0	426
04:15 PM	1	0	0	0	32	21	0	0	0	0	42	129	0	0	0	0	12	27	0	0	0	0	19	11	0	0	0	2	2	1	299
04:30 PM	1	0	0	0	64	18	0	0	0	0	51	158	0	0	0	0	26	45	0	0	0	0	26	16	0	0	0	1	0	0	406
04:45 PM	0	0	0	0	53	21	0	0	0	0	80	203	0	0	0	0	24	44	0	0	0	0	25	14	0	0	0	0	1	1	466
Total	4	0	0	0	208	76	0	0	0	0	229	651	0	0	0	0	92	164	0	0	0	0	99	57	0	0	0	5	10	2	1597
05:00 PM	1	0	0	0	90	36	0	0	0	0	131	196	0	0	0	0	24	36	0	0	0	0	42	17	0	0	0	1	2	1	577
05:15 PM	4	0	0	0	62	27	0	0	0	0	124	227	0	0	2	0	23	35	0	0	0	0	35	18	0	0	0	3	1	0	561
05:30 PM	4	0	0	0	82	23	0	0	0	0	129	227	0	0	0	0	26	31	0	0	0	0	33	12	0	0	0	1	1	0	569
05:45 PM	2	2	0	0	53	19	0	0	0	0	79	104	0	0	1	0	27	17	0	0	0	0	26	11	0	0	0	1	0	4	346
Total	11	2	0	0	287	105	0	0	0	0	463	754	0	0	3	0	100	119	0	0	0	0	136	58	0	0	0	6	4	5	2053
Grand Total	15	2	0	0	495	181	0	0	0	0	692	1405	0	0	3	0	192	283	0	0	0	0	235	115	0	0	0	11	14	7	3650
Apprch %	2.2	0.3	0	0	71.4	26.1	0	0	0	0	33	67	0	0	0.6	0	40.2	59.2	0	0	0	0	67.1	32.9	0	0	0	34.4	43.8	21.9	
Total %	0.4	0.1	0	0	13.6	5	0	0	0	0	19	38.5	0	0	0.1	0	5.3	7.8	0	0	0	0	6.4	3.2	0	0	0	0.3	0.4	0.2	

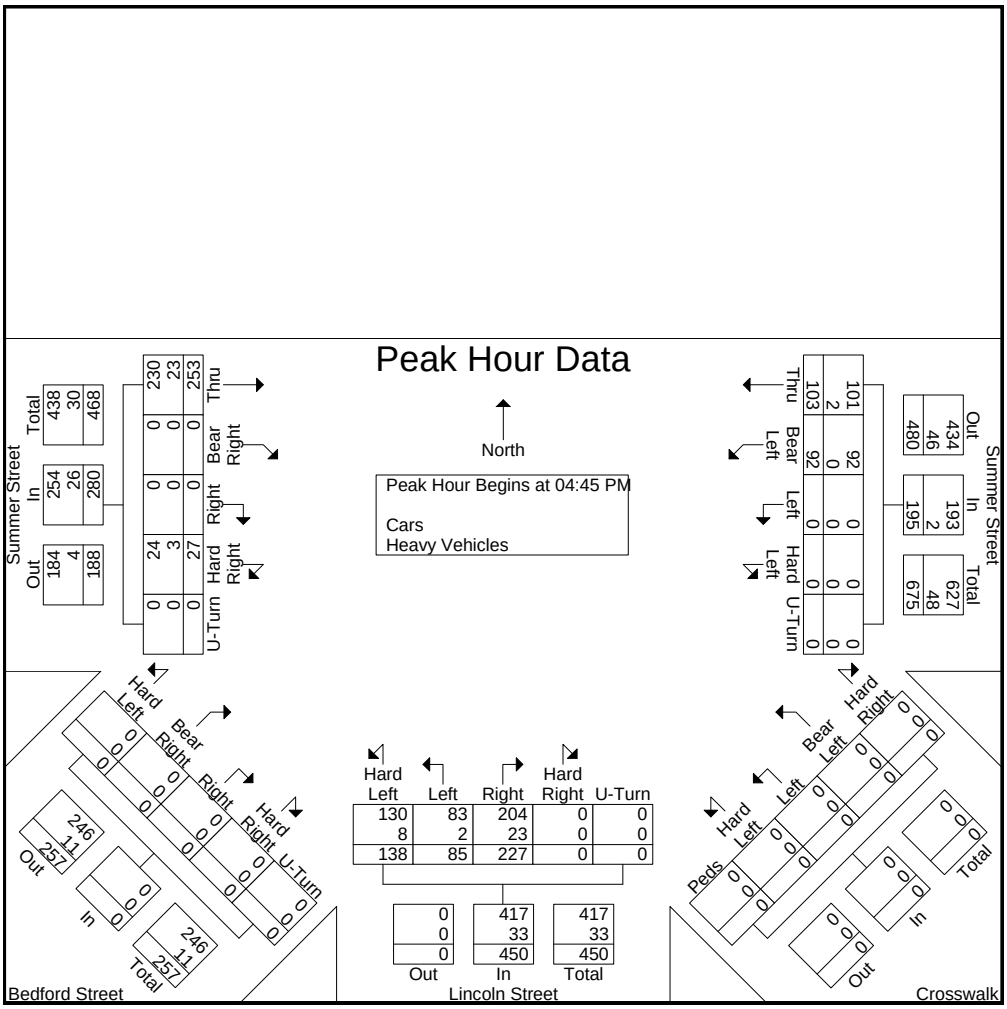
	Summer Street From East							Crosswalk From Southeast							Lincoln Street From South							Bedford Street From Southwest							Summer Street From West							
Start Time	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds SEB	Peds NWB	App. Total	Hard Right	Right	Left	Hard Left	Peds WB	Peds EB	App. Total	Hard Right	Right	Bear Right	Hard Left	Peds SEB	Peds NWB	App. Total	Hard Right	Right	Bear Right	Thru	Peds NB	Peds SB	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	53	21	74	0	0	0	0	80	203	283	0	0	0	0	24	44	68	0	0	0	0	25	14	39	0	0	0	0	1	1	2	466
05:00 PM					90	36	127	0	0	0	0	131	196	327					24	36						42	17	59	0	0	0	1	2	1	4	577
05:15 PM					62	27	93	0	0	0	0	124	227	351					23	35						35	18	53	0	0	0	3	1	0	4	561
05:30 PM					82	23	109	0	0	0	0	129	227	356					26	31						33	12	45	0	0	0	1	1	0	2	569
Total Volume					287	107	403	0	0	0	0	464	853	1317					97	146	245	0	0	0	0	135	61	196	0	0	0	5	5	2	12	2173
% App. Total	2.2	0	0	0	71.2	26.6		0	0	0	0	35.2	64.8		0	0	0.8		39.6	59.6						68.9	31.1		0	0	0	41.7	41.7	16.7		
PHF	.563	.000	.000	.000	.797	.743	.793	.000	.000	.000	.000	.885	.939	.925	.000	.000	.250	.000	.933	.830	.901	.000	.000	.000	.000	.804	.847	.831	.000	.000	.000	.417	.625	.500	.750	.942

S/SW: Lincoln Street/ Bedford Street
E/W: Summer Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 FF
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Summer Street From East						Crosswalk From Southeast						Lincoln Street From South						Bedford Street From Southwest						Summer Street From West						
Start Time	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Left	Left	Hard Left	Peds	App. Total	Hard Right	Right	Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Hard Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	U-Turn	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	20	25	0	0	0	45	0	0	0	0	0	0	0	55	19	31	0	105	0	0	0	0	0	0	8	0	0	65	0	73	223
05:00 PM	29	25	0	0	0	54	0	0	0	0	0	0	0	73	19	43	0	135	0	0	0	0	0	0	3	0	0	50	0	53	242
05:15 PM	20	21	0	0	0	41	0	0	0	0	0	0	0	50	23	33	0	106	0	0	0	0	0	0	9	0	0	73	0	82	229
05:30 PM	34	21	0	0	0	55	0	0	0	0	0	0	0	49	24	31	0	104	0	0	0	0	0	0	7	0	0	65	0	72	231
Total Volume	103	92	0	0	0	195	0	0	0	0	0	0	0	227	85	138	0	450	0	0	0	0	0	0	27	0	0	253	0	280	925
% App. Total	52.8	47.2	0	0	0		0	0	0	0	0		0	50.4	18.9	30.7	0		0	0	0	0	0		9.6	0	0	90.4	0		
PHF	.757	.920	.000	.000	.000	.886	.000	.000	.000	.000	.000	.000	.000	.777	.885	.802	.000	.833	.000	.000	.000	.000	.000	.000	.750	.000	.000	.866	.000	.854	.956
Cars	101	92	0	0	0	193	0	0	0	0	0	0	0	204	83	130	0	417	0	0	0	0	0	0	24	0	0	230	0	254	864
% Cars	98.1	100	0	0	0	99.0	0	0	0	0	0	0	0	89.9	97.6	94.2	0	92.7	0	0	0	0	0	0	88.9	0	0	90.9	0	90.7	93.4
Heavy Vehicles	2	0	0	0	0	2	0	0	0	0	0	0	0	23	2	8	0	33	0	0	0	0	0	0	3	0	0	23	0	26	61
% Heavy Vehicles	1.9	0	0	0	0	1.0	0	0	0	0	0	0	0	10.1	2.4	5.8	0	7.3	0	0	0	0	0	0	11.1	0	0	9.1	0	9.3	6.6



N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 G
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Summer Street From North			High Street From East			Summer Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	14	42	0	0	0	0	54	59	0	169
07:15 AM	24	60	0	0	0	0	83	61	0	228
07:30 AM	30	54	0	0	0	0	92	51	0	227
07:45 AM	24	60	0	0	0	0	77	64	0	225
Total	92	216	0	0	0	0	306	235	0	849
08:00 AM	31	67	0	0	0	0	101	60	0	259
08:15 AM	22	62	0	0	0	0	101	60	0	245
08:30 AM	33	59	0	0	0	0	78	78	0	248
08:45 AM	43	63	0	0	0	0	100	82	0	288
Total	129	251	0	0	0	0	380	280	0	1040
Grand Total	221	467	0	0	0	0	686	515	0	1889
Apprch %	32.1	67.9	0	0	0	0	57.1	42.9	0	
Total %	11.7	24.7	0	0	0	0	36.3	27.3	0	
Cars	190	403	0	0	0	0	628	480	0	1701
% Cars	86	86.3	0	0	0	0	91.5	93.2	0	90
Heavy Vehicles	31	64	0	0	0	0	58	35	0	188
% Heavy Vehicles	14	13.7	0	0	0	0	8.5	6.8	0	10

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	31	67	0	98	0	0	0	0	101	60	0	161	259
08:15 AM	22	62	0	84	0	0	0	0	101	60	0	161	245
08:30 AM	33	59	0	92	0	0	0	0	78	78	0	156	248
08:45 AM	43	63	0	106	0	0	0	0	100	82	0	182	288
Total Volume	129	251	0	380	0	0	0	0	380	280	0	660	1040
% App. Total	33.9	66.1	0		0	0	0		57.6	42.4	0		
PHF	.750	.937	.000	.896	.000	.000	.000	.000	.941	.854	.000	.907	.903
Cars	112	219	0	331	0	0	0	0	349	262	0	611	942
% Cars	86.8	87.3	0	87.1	0	0	0	0	91.8	93.6	0	92.6	90.6
Heavy Vehicles	17	32	0	49	0	0	0	0	31	18	0	49	98
% Heavy Vehicles	13.2	12.7	0	12.9	0	0	0	0	8.2	6.4	0	7.4	9.4

N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 G
Site Code : TBA
Start Date : 11/30/2016

Groups Printed- Cars

	Summer Street From North			High Street From East			Summer Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	12	38	0	0	0	0	48	57	0	155
07:15 AM	20	49	0	0	0	0	72	58	0	199
07:30 AM	26	48	0	0	0	0	88	47	0	209
07:45 AM	20	49	0	0	0	0	71	56	0	196
Total	78	184	0	0	0	0	279	218	0	759
08:00 AM	27	57	0	0	0	0	94	56	0	234
08:15 AM	19	55	0	0	0	0	94	53	0	221
08:30 AM	27	51	0	0	0	0	69	74	0	221
08:45 AM	39	56	0	0	0	0	92	79	0	266
Total	112	219	0	0	0	0	349	262	0	942
Grand Total	190	403	0	0	0	0	628	480	0	1701
Apprch %	32	68	0	0	0	0	56.7	43.3	0	
Total %	11.2	23.7	0	0	0	0	36.9	28.2	0	

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	27	57	0	84	0	0	0	0	94	56	0	150	234
08:15 AM	19	55	0	74	0	0	0	0	94	53	0	147	221
08:30 AM	27	51	0	78	0	0	0	0	69	74	0	143	221
08:45 AM	39	56	0	95	0	0	0	0	92	79	0	171	266
Total Volume	112	219	0	331	0	0	0	0	349	262	0	611	942
% App. Total	33.8	66.2	0		0	0	0		57.1	42.9	0		
PHF	.718	.961	.000	.871	.000	.000	.000	.000	.928	.829	.000	.893	.885

N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 G
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Summer Street From North			High Street From East			Summer Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	2	4	0	0	0	0	6	2	0	14
07:15 AM	4	11	0	0	0	0	11	3	0	29
07:30 AM	4	6	0	0	0	0	4	4	0	18
07:45 AM	4	11	0	0	0	0	6	8	0	29
Total	14	32	0	0	0	0	27	17	0	90
08:00 AM	4	10	0	0	0	0	7	4	0	25
08:15 AM	3	7	0	0	0	0	7	7	0	24
08:30 AM	6	8	0	0	0	0	9	4	0	27
08:45 AM	4	7	0	0	0	0	8	3	0	22
Total	17	32	0	0	0	0	31	18	0	98
Grand Total	31	64	0	0	0	0	58	35	0	188
Apprch %	32.6	67.4	0	0	0	0	62.4	37.6	0	
Total %	16.5	34	0	0	0	0	30.9	18.6	0	

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	11	0	15	0	0	0	0	6	8	0	14	29
08:00 AM	4	10	0	14	0	0	0	0	7	4	0	11	25
08:15 AM	3	7	0	10	0	0	0	0	7	7	0	14	24
08:30 AM	6	8	0	14	0	0	0	0	9	4	0	13	27
Total Volume	17	36	0	53	0	0	0	0	29	23	0	52	105
% App. Total	32.1	67.9	0		0	0	0		55.8	44.2	0		
PHF	.708	.818	.000	.883	.000	.000	.000	.000	.806	.719	.000	.929	.905

N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 G
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
07:00 AM	2	0	21	2	0	0	25	28	0	0	4	4	86
07:15 AM	1	0	39	10	0	0	36	27	0	1	9	11	134
07:30 AM	0	1	45	11	0	0	38	44	0	2	8	15	164
07:45 AM	2	2	37	6	0	0	40	55	0	2	19	16	179
Total	5	3	142	29	0	0	139	154	0	5	40	46	563
08:00 AM	2	0	60	17	0	0	65	54	0	1	20	14	233
08:15 AM	0	0	129	28	0	0	69	96	2	3	23	38	388
08:30 AM	1	1	129	40	0	0	71	79	3	3	23	30	380
08:45 AM	4	4	112	49	1	0	72	90	0	3	18	35	388
Total	7	5	430	134	1	0	277	319	5	10	84	117	1389
Grand Total	12	8	572	163	1	0	416	473	5	15	124	163	1952
Apprch %	1.6	1.1	75.8	21.6	0.1	0	46.7	53.1	1.6	4.9	40.4	53.1	
Total %	0.6	0.4	29.3	8.4	0.1	0	21.3	24.2	0.3	0.8	6.4	8.4	

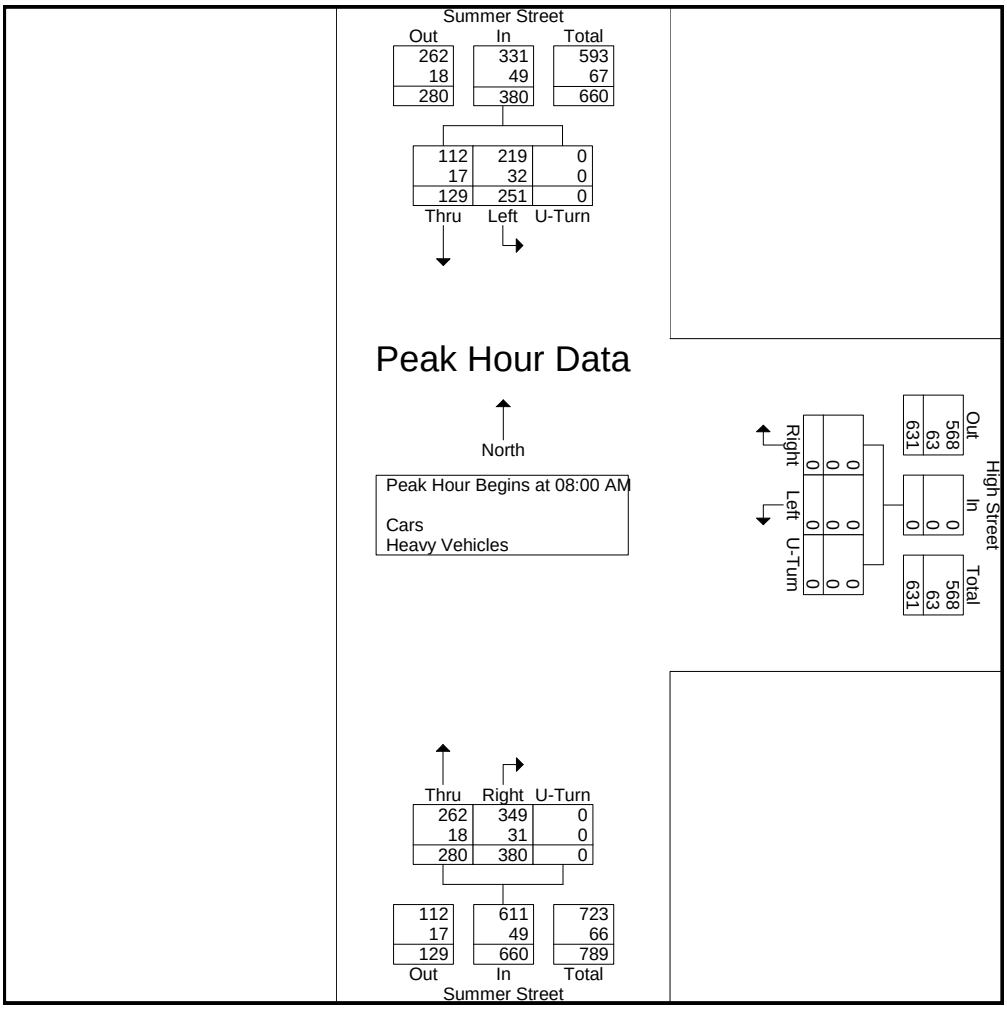
	Summer Street From North					High Street From East					Summer Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	2	0	60	17	79	0	0	65	54	119	0	1	20	14	35	233
08:15 AM	0	0	129	28	157	0	0	69	96	165	2	3	23	38	66	388
08:30 AM	1	1	129	40	171	0	0	71	79	150	3	3	23	30	59	380
08:45 AM	4	4	112	49	169	1	0	72	90	163	0	3	18	35	56	388
Total Volume	7	5	430	134	576	1	0	277	319	597	5	10	84	117	216	1389
% App. Total	1.2	0.9	74.7	23.3		0.2	0	46.4	53.4		2.3	4.6	38.9	54.2		
PHF	.438	.313	.833	.684	.842	.250	.000	.962	.831	.905	.417	.833	.913	.770	.818	.895

N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 G
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	31	67	0	98	0	0	0	0	101	60	0	161	259
08:15 AM	22	62	0	84	0	0	0	0	101	60	0	161	245
08:30 AM	33	59	0	92	0	0	0	0	78	78	0	156	248
08:45 AM	43	63	0	106	0	0	0	0	100	82	0	182	288
Total Volume	129	251	0	380	0	0	0	0	380	280	0	660	1040
% App. Total	33.9	66.1	0		0	0	0		57.6	42.4	0		
PHF	.750	.937	.000	.896	.000	.000	.000	.000	.941	.854	.000	.907	.903
Cars	112	219	0	331	0	0	0	0	349	262	0	611	942
% Cars	86.8	87.3	0	87.1	0	0	0	0	91.8	93.6	0	92.6	90.6
Heavy Vehicles	17	32	0	49	0	0	0	0	31	18	0	49	98
% Heavy Vehicles	13.2	12.7	0	12.9	0	0	0	0	8.2	6.4	0	7.4	9.4



N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 GG
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Summer Street From North			High Street From East			Summer Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	36	50	0	0	0	0	30	46	0	162
04:15 PM	45	51	0	0	0	0	36	41	0	173
04:30 PM	52	50	0	0	0	0	43	45	0	190
04:45 PM	49	58	0	0	0	0	38	41	0	186
Total	182	209	0	0	0	0	147	173	0	711
05:00 PM	61	64	0	0	0	0	42	56	0	223
05:15 PM	83	65	0	0	0	0	42	39	0	229
05:30 PM	63	56	0	0	0	0	42	59	0	220
05:45 PM	57	45	0	0	0	0	40	27	0	169
Total	264	230	0	0	0	0	166	181	0	841
Grand Total	446	439	0	0	0	0	313	354	0	1552
Apprch %	50.4	49.6	0	0	0	0	46.9	53.1	0	
Total %	28.7	28.3	0	0	0	0	20.2	22.8	0	
Cars	409	397	0	0	0	0	281	348	0	1435
% Cars	91.7	90.4	0	0	0	0	89.8	98.3	0	92.5
Heavy Vehicles	37	42	0	0	0	0	32	6	0	117
% Heavy Vehicles	8.3	9.6	0	0	0	0	10.2	1.7	0	7.5

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	49	58	0	107	0	0	0	0	38	41	0	79	186
05:00 PM	61	64	0	125	0	0	0	0	42	56	0	98	223
05:15 PM	83	65	0	148	0	0	0	0	42	39	0	81	229
05:30 PM	63	56	0	119	0	0	0	0	42	59	0	101	220
Total Volume	256	243	0	499	0	0	0	0	164	195	0	359	858
% App. Total	51.3	48.7	0		0	0	0		45.7	54.3	0		
PHF	.771	.935	.000	.843	.000	.000	.000	.000	.976	.826	.000	.889	.937
Cars	237	215	0	452	0	0	0	0	146	193	0	339	791
% Cars	92.6	88.5	0	90.6	0	0	0	0	89.0	99.0	0	94.4	92.2
Heavy Vehicles	19	28	0	47	0	0	0	0	18	2	0	20	67
% Heavy Vehicles	7.4	11.5	0	9.4	0	0	0	0	11.0	1.0	0	5.6	7.8

N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 GG
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Summer Street From North			High Street From East			Summer Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	34	46	0	0	0	0	28	45	0	153
04:15 PM	40	45	0	0	0	0	32	40	0	157
04:30 PM	47	47	0	0	0	0	39	43	0	176
04:45 PM	42	53	0	0	0	0	34	41	0	170
Total	163	191	0	0	0	0	133	169	0	656
05:00 PM	58	54	0	0	0	0	39	56	0	207
05:15 PM	80	57	0	0	0	0	38	39	0	214
05:30 PM	57	51	0	0	0	0	35	57	0	200
05:45 PM	51	44	0	0	0	0	36	27	0	158
Total	246	206	0	0	0	0	148	179	0	779
Grand Total	409	397	0	0	0	0	281	348	0	1435
Apprch %	50.7	49.3	0	0	0	0	44.7	55.3	0	
Total %	28.5	27.7	0	0	0	0	19.6	24.3	0	

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	42	53	0	95	0	0	0	0	34	41	0	75	170
05:00 PM	58	54	0	112	0	0	0	0	39	56	0	95	207
05:15 PM	80	57	0	137	0	0	0	0	38	39	0	77	214
05:30 PM	57	51	0	108	0	0	0	0	35	57	0	92	200
Total Volume	237	215	0	452	0	0	0	0	146	193	0	339	791
% App. Total	52.4	47.6	0		0	0	0		43.1	56.9	0		
PHF	.741	.943	.000	.825	.000	.000	.000	.000	.936	.846	.000	.892	.924

N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 GG
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Summer Street From North			High Street From East			Summer Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	2	4	0	0	0	0	2	1	0	9
04:15 PM	5	6	0	0	0	0	4	1	0	16
04:30 PM	5	3	0	0	0	0	4	2	0	14
04:45 PM	7	5	0	0	0	0	4	0	0	16
Total	19	18	0	0	0	0	14	4	0	55
05:00 PM	3	10	0	0	0	0	3	0	0	16
05:15 PM	3	8	0	0	0	0	4	0	0	15
05:30 PM	6	5	0	0	0	0	7	2	0	20
05:45 PM	6	1	0	0	0	0	4	0	0	11
Total	18	24	0	0	0	0	18	2	0	62
Grand Total	37	42	0	0	0	0	32	6	0	117
Apprch %	46.8	53.2	0	0	0	0	84.2	15.8	0	
Total %	31.6	35.9	0	0	0	0	27.4	5.1	0	

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	7	5	0	12	0	0	0	0	4	0	0	4	16
05:00 PM	3	10	0	13	0	0	0	0	3	0	0	3	16
05:15 PM	3	8	0	11	0	0	0	0	4	0	0	4	15
05:30 PM	6	5	0	11	0	0	0	0	7	2	0	9	20
Total Volume	19	28	0	47	0	0	0	0	18	2	0	20	67
% App. Total	40.4	59.6	0		0	0	0		90	10	0		
PHF	.679	.700	.000	.904	.000	.000	.000	.000	.643	.250	.000	.556	.838

N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 GG
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
04:00 PM	0	0	32	44	0	0	26	24	0	3	10	5	144
04:15 PM	2	0	22	44	0	0	21	22	0	1	6	8	126
04:30 PM	1	0	39	33	0	0	22	21	0	1	11	7	135
04:45 PM	1	0	32	58	0	0	32	22	0	0	13	4	162
Total	4	0	125	179	0	0	101	89	0	5	40	24	567
05:00 PM	0	0	53	84	0	0	41	62	1	1	5	11	258
05:15 PM	0	0	55	71	0	0	47	68	1	4	11	6	263
05:30 PM	3	1	52	87	0	0	42	56	0	5	16	3	265
05:45 PM	0	1	30	34	0	0	39	46	0	9	10	9	178
Total	3	2	190	276	0	0	169	232	2	19	42	29	964
Grand Total	7	2	315	455	0	0	270	321	2	24	82	53	1531
Apprch %	0.9	0.3	40.4	58.4	0	0	45.7	54.3	1.2	14.9	50.9	32.9	
Total %	0.5	0.1	20.6	29.7	0	0	17.6	21	0.1	1.6	5.4	3.5	

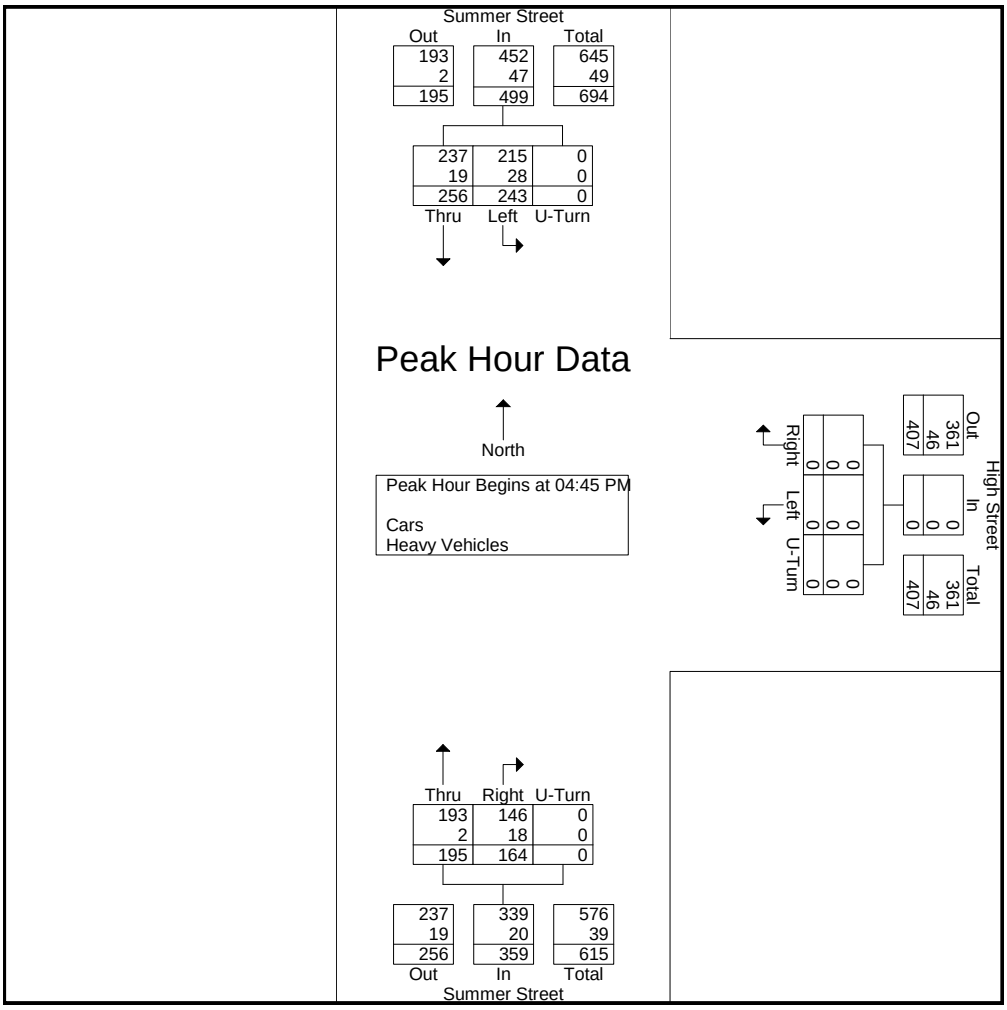
	Summer Street From North					High Street From East					Summer Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 05:00 PM																
05:00 PM	0	0	53	84	137	0	0	41	62	103	1	1	5	11	18	258
05:15 PM	0	0	55	71	126	0	0	47	68	115	1	4	11	6	22	263
05:30 PM	3	1	52	87	143	0	0	42	56	98	0	5	16	3	24	265
05:45 PM	0	1	30	34	65	0	0	39	46	85	0	9	10	9	28	178
Total Volume	3	2	190	276	471	0	0	169	232	401	2	19	42	29	92	964
% App. Total	0.6	0.4	40.3	58.6		0	0	42.1	57.9		2.2	20.7	45.7	31.5		
PHF	.250	.500	.864	.793	.823	.000	.000	.899	.853	.872	.500	.528	.656	.659	.821	.909

N/S: Summer Street
E: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 GG
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Summer Street From North				High Street From East				Summer Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	49	58	0	107	0	0	0	0	38	41	0	79	186
05:00 PM	61	64	0	125	0	0	0	0	42	56	0	98	223
05:15 PM	83	65	0	148	0	0	0	0	42	39	0	81	229
05:30 PM	63	56	0	119	0	0	0	0	42	59	0	101	220
Total Volume	256	243	0	499	0	0	0	0	164	195	0	359	858
% App. Total	51.3	48.7	0		0	0	0		45.7	54.3	0		
PHF	.771	.935	.000	.843	.000	.000	.000	.000	.976	.826	.000	.889	.937
Cars	237	215	0	452	0	0	0	0	146	193	0	339	791
% Cars	92.6	88.5	0	90.6	0	0	0	0	89.0	99.0	0	94.4	92.2
Heavy Vehicles	19	28	0	47	0	0	0	0	18	2	0	20	67
% Heavy Vehicles	7.4	11.5	0	9.4	0	0	0	0	11.0	1.0	0	5.6	7.8



N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 H
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Federal Street From North				High Street From East				Walkway From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	49	48	0	97
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	68	70	0	138
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	79	70	0	149
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	75	62	0	137
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	271	250	0	521
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	89	76	0	165
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	99	60	0	159
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	77	58	0	135
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	77	83	0	160
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	342	277	0	619
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	613	527	0	1140
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	53.8	46.2	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	53.8	46.2	0	
Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	595	423	0	1018
% Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	97.1	80.3	0	89.3
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	18	104	0	122
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	2.9	19.7	0	10.7

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89	76	0	165	165
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	60	0	159	159
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	58	0	135	135
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	83	0	160	160
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	342	277	0	619	619
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	55.3	44.7	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.864	.834	.000	.938	.938
Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	334	221	0	555	555
% Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97.7	79.8	0	89.7	89.7
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	56	0	64	64
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3	20.2	0	10.3	10.3

N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 H
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Federal Street From North				High Street From East				Walkway From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	48	39	0	87
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	62	54	0	116
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	78	61	0	139
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	73	48	0	121
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	261	202	0	463
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	86	61	0	147
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	97	48	0	145
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	77	40	0	117
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	74	72	0	146
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	334	221	0	555
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	595	423	0	1018
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	58.4	41.6	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	58.4	41.6	0	

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	86	61	0	147	147
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97	48	0	145	145
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	40	0	117	117
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74	72	0	146	146
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	334	221	0	555	555
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	60.2	39.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.861	.767	.000	.944	.944

N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 H
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Federal Street From North				High Street From East				Walkway From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	0	10
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	6	16	0	22
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	0	10
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	14	0	16
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	10	48	0	58
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	15	0	18
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	12	0	14
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	18
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	11	0	14
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	8	56	0	64
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	18	104	0	122
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	14.8	85.2	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	14.8	85.2	0	

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	6	16	0	22	22
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9	0	10	10
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	14	0	16	16
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	15	0	18	18
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	54	0	66	66
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	18.2	81.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.844	.000	.750	.750

N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 H
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	0	20	12	0	0	0	14	139	0	0	0	8	9	0	0	0	78	17	297
07:15 AM	0	0	0	26	12	0	0	0	38	245	0	0	0	6	12	0	0	0	144	21	504
07:30 AM	0	0	0	26	9	0	0	0	42	262	0	0	0	1	16	0	0	0	132	29	517
07:45 AM	0	0	0	28	24	0	0	0	53	299	0	0	0	7	16	0	2	1	170	44	644
Total	0	0	0	100	57	0	0	0	147	945	0	0	0	22	53	0	2	1	524	111	1962
08:00 AM	0	0	0	63	24	0	0	0	40	216	0	0	0	5	17	0	0	0	44	20	429
08:15 AM	0	0	0	82	15	0	0	0	31	621	0	0	0	3	40	0	0	0	105	32	929
08:30 AM	0	0	1	84	35	0	0	0	33	235	0	1	0	8	41	0	5	0	86	27	556
08:45 AM	0	0	0	91	48	0	0	0	68	274	0	0	0	12	35	0	6	0	97	35	666
Total	0	0	1	320	122	0	0	0	172	1346	0	1	0	28	133	0	11	0	332	114	2580
Grand Total	0	0	1	420	179	0	0	0	319	2291	0	1	0	50	186	0	13	1	856	225	4542
Apprch %	0	0	0.2	70	29.8	0	0	0	12.2	87.8	0	0.4	0	21.1	78.5	0	1.2	0.1	78.2	20.5	
Total %	0	0	0	9.2	3.9	0	0	0	7	50.4	0	0	0	1.1	4.1	0	0.3	0	18.8	5	

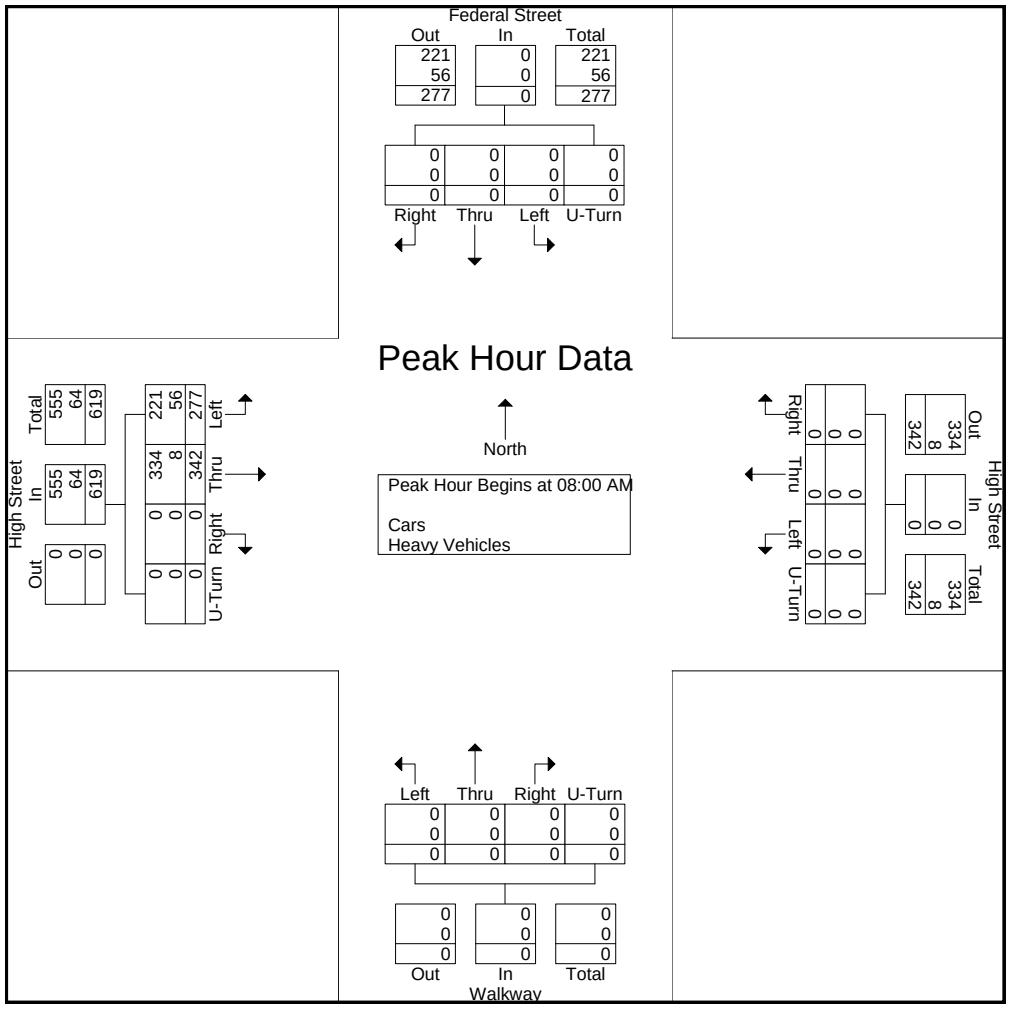
	Federal Street From North						High Street From East						Walkway From South						High Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
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	0	0	63	24	87	0	0	0	40	216	256	0	0	0	5	17	22	0	0	0	44	20	64	429
08:15 AM	0	0	0	82	15	97	0	0	0	31	621	652	0	0	0	3	40	43	0	0	0	105	32	137	929
08:30 AM	0	0	1	84	35	120	0	0	0	33	235	268	0	1	0	8	41	50	0	5	0	86	27	118	556
08:45 AM	0	0	0	91	48	139	0	0	0	68	274	342	0	0	0	12	35	47	0	6	0	97	35	138	666
Total Volume	0	0	1	320	122	443	0	0	0	172	1346	1518	0	1	0	28	133	162	0	11	0	332	114	457	2580
% App. Total	0	0	0.2	72.2	27.5		0	0	0	11.3	88.7		0	0.6	0	17.3	82.1		0	2.4	0	72.6	24.9		
PHF	.000	.000	.250	.879	.635	.797	.000	.000	.000	.632	.542	.582	.000	.250	.000	.583	.811	.810	.000	.458	.000	.790	.814	.828	.694

N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 H
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	89	76	0	165	165
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	99	60	0	159	159
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	58	0	135	135
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	83	0	160	160
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	342	277	0	619	619
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	55.3	44.7	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.864	.834	.000	.938	.938
Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	334	221	0	555	555
% Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97.7	79.8	0	89.7	89.7
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	56	0	64	64
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.3	20.2	0	10.3	10.3



N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 HH
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Federal Street From North				High Street From East				Walkway From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	48	33	0	81
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	41	44	0	85
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	55	40	0	95
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	67	33	0	100
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	211	150	0	361
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	68	34	0	102
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	67	35	0	102
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	64	37	0	101
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	52	29	0	81
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	251	135	0	386
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	462	285	0	747
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	61.8	38.2	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	61.8	38.2	0	
Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	444	230	0	674
% Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	96.1	80.7	0	90.2
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	18	55	0	73
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	3.9	19.3	0	9.8

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	0	0	67	33	0	100	100
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68	34	0	102	102
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	35	0	102	102
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	37	0	101	101
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	266	139	0	405	405
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	65.7	34.3	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.978	.939	.000	.993	.993
Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254	106	0	360	360
% Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95.5	76.3	0	88.9	88.9
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	33	0	45	45
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.5	23.7	0	11.1	11.1

N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 HH
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Federal Street From North				High Street From East				Walkway From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	47	28	0	75
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	39	37	0	76
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	53	34	0	87
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	65	26	0	91
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	204	125	0	329
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	65	26	0	91
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	65	25	0	90
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	59	29	0	88
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	51	25	0	76
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	240	105	0	345
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	444	230	0	674
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	65.9	34.1	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	65.9	34.1	0	

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	0	0	65	26	0	91	91
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	26	0	91	91
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	25	0	90	90
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	29	0	88	88
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254	106	0	360	360
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	70.6	29.4	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.977	.914	.000	.989	.989

N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 HH
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Federal Street From North				High Street From East				Walkway From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	6
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7	0	9
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6	0	8
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	7	0	9
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	7	25	0	32
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	0	11
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	10	0	12
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	0	13
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4	0	5
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	11	30	0	41
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	18	55	0	73
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	24.7	75.3	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	24.7	75.3	0	

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	0	0	2	7	0	9	9
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	8	0	11	11
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	10	0	12	12
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	8	0	13	13
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	33	0	45	45
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	26.7	73.3	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.600	.825	.000	.865	.865

N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 HH
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	0	21	28	0	0	0	238	49	0	0	0	8	8	0	1	2	7	6	368
04:15 PM	0	0	0	19	24	0	1	0	225	29	0	0	0	6	3	0	0	0	6	5	318
04:30 PM	0	0	0	35	36	0	0	0	305	34	0	0	0	7	6	0	1	0	10	7	441
04:45 PM	0	0	0	25	34	0	0	0	360	45	0	0	0	12	4	0	0	1	10	11	502
Total	0	0	0	100	122	0	1	0	1128	157	0	0	0	33	21	0	2	3	33	29	1629
05:00 PM	0	0	0	27	103	0	0	0	534	78	0	0	0	12	10	0	0	0	18	12	794
05:15 PM	0	0	0	19	83	0	0	0	518	71	0	0	0	23	11	0	2	1	16	15	759
05:30 PM	0	0	0	32	74	0	0	0	534	56	0	0	0	14	4	0	0	1	12	10	737
05:45 PM	0	0	0	9	60	0	0	0	195	42	0	0	0	8	5	0	0	0	8	2	329
Total	0	0	0	87	320	0	0	0	1781	247	0	0	0	57	30	0	2	2	54	39	2619
Grand Total	0	0	0	187	442	0	1	0	2909	404	0	0	0	90	51	0	4	5	87	68	4248
Apprch %	0	0	0	29.7	70.3	0	0	0	87.8	12.2	0	0	0	63.8	36.2	0	2.4	3	53	41.5	
Total %	0	0	0	4.4	10.4	0	0	0	68.5	9.5	0	0	0	2.1	1.2	0	0.1	0.1	2	1.6	

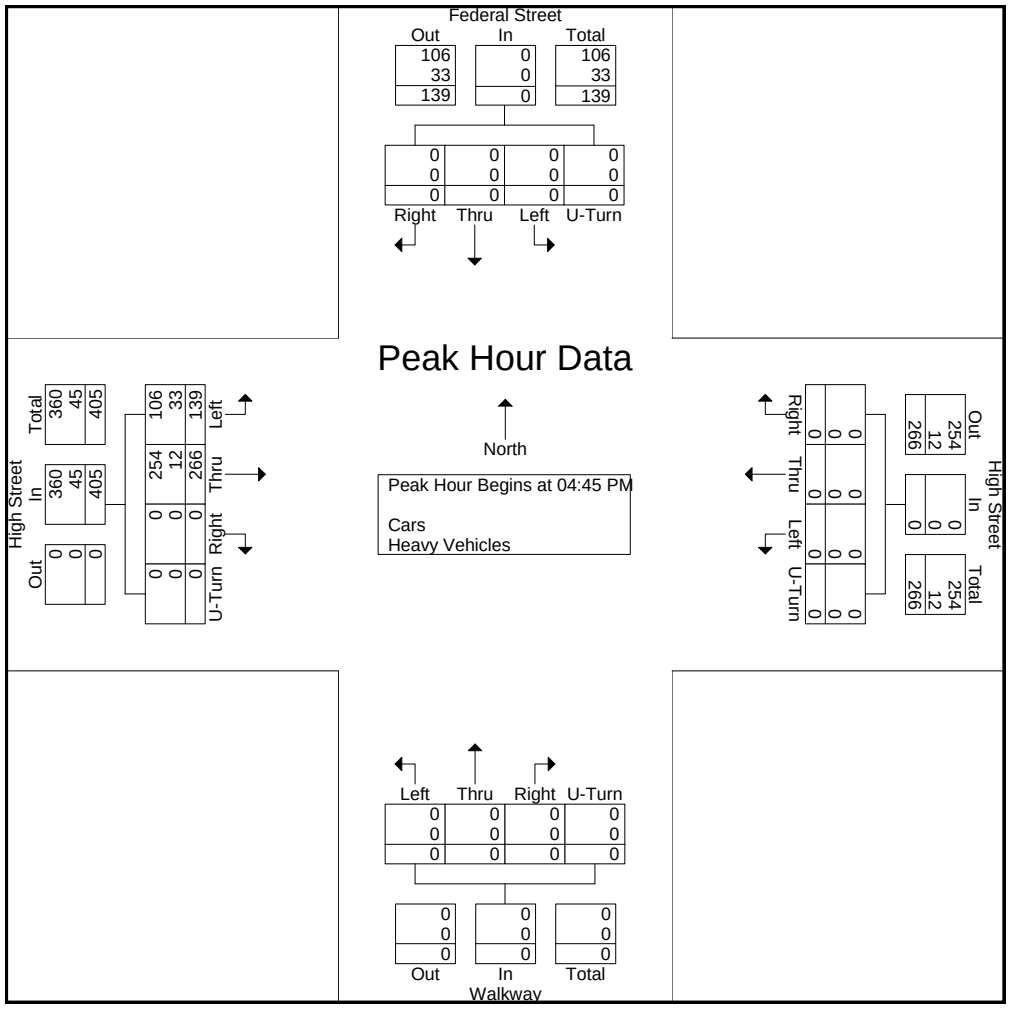
	Federal Street From North						High Street From East						Walkway From South						High Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
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	25	34	59	0	0	0	360	45	405	0	0	0	12	4	16	0	0	1	10	11	22	502
05:00 PM	0	0	0	27	103	130	0	0	0	534	78	612	0	0	0	12	10	22	0	0	0	18	12	30	794
05:15 PM	0	0	0	19	83	102	0	0	0	518	71	589	0	0	0	23	11	34	0	2	1	16	15	34	759
05:30 PM	0	0	0	32	74	106	0	0	0	534	56	590	0	0	0	14	4	18	0	0	1	12	10	23	737
Total Volume	0	0	0	103	294	397	0	0	0	1946	250	2196	0	0	0	61	29	90	0	2	3	56	48	109	2792
% App. Total	0	0	0	25.9	74.1		0	0	0	88.6	11.4		0	0	0	67.8	32.2		0	1.8	2.8	51.4	44		
PHF	.000	.000	.000	.805	.714	.763	.000	.000	.000	.911	.801	.897	.000	.000	.000	.663	.659	.662	.000	.250	.750	.778	.800	.801	.879

N/S: Federal Street/ Walkway
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 HH
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Federal Street From North					High Street From East					Walkway From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	0	0	67	33	0	100	100
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68	34	0	102	102
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	35	0	102	102
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	37	0	101	101
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	266	139	0	405	405
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	65.7	34.3	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.978	.939	.000	.993	.993
Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	254	106	0	360	360
% Cars	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95.5	76.3	0	88.9	88.9
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	33	0	45	45
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.5	23.7	0	11.1	11.1



N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 I
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North				High Street From East				Congress Street From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	138	10	0	0	0	0	0	0	0	0	0	10	31	0	0	189
07:15 AM	0	133	16	0	0	0	0	0	0	0	0	0	10	37	0	0	196
07:30 AM	0	184	18	0	0	0	0	0	0	0	0	0	12	37	0	0	251
07:45 AM	0	192	15	0	0	0	0	0	0	0	0	0	11	42	0	0	260
Total	0	647	59	0	0	0	0	0	0	0	0	0	43	147	0	0	896
08:00 AM	0	206	24	0	0	0	0	0	0	0	0	0	23	43	0	0	296
08:15 AM	0	239	19	0	0	0	0	0	0	0	0	0	24	49	0	0	331
08:30 AM	0	214	30	0	0	0	0	0	0	0	0	0	18	32	0	0	294
08:45 AM	0	214	19	0	0	0	0	0	0	0	0	0	18	39	0	0	290
Total	0	873	92	0	0	0	0	0	0	0	0	0	83	163	0	0	1211
Grand Total	0	1520	151	0	0	0	0	0	0	0	0	0	126	310	0	0	2107
Apprch %	0	91	9	0	0	0	0	0	0	0	0	0	28.9	71.1	0	0	
Total %	0	72.1	7.2	0	0	0	0	0	0	0	0	0	6	14.7	0	0	
Cars	0	1392	136	0	0	0	0	0	0	0	0	0	124	297	0	0	1949
% Cars	0	91.6	90.1	0	0	0	0	0	0	0	0	0	98.4	95.8	0	0	92.5
Heavy Vehicles	0	128	15	0	0	0	0	0	0	0	0	0	2	13	0	0	158
% Heavy Vehicles	0	8.4	9.9	0	0	0	0	0	0	0	0	0	1.6	4.2	0	0	7.5

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	206	24	0	230	0	0	0	0	0	0	0	0	0	0	23	43	0	0	66	296
08:15 AM	0	239	19	0	258	0	0	0	0	0	0	0	0	0	0	24	49	0	0	73	331
08:30 AM	0	214	30	0	244	0	0	0	0	0	0	0	0	0	0	18	32	0	0	50	294
08:45 AM	0	214	19	0	233	0	0	0	0	0	0	0	0	0	0	18	39	0	0	57	290
Total Volume	0	873	92	0	965	0	0	0	0	0	0	0	0	0	0	83	163	0	0	246	1211
% App. Total	0	90.5	9.5	0		0	0	0	0		0	0	0	0		33.7	66.3	0	0		
PHF	.000	.913	.767	.000	.935	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.865	.832	.000	.000	.842	.915
Cars	0	811	84	0	895	0	0	0	0	0	0	0	0	0	0	83	157	0	0	240	1135
% Cars	0	92.9	91.3	0	92.7	0	0	0	0	0	0	0	0	0	0	100	96.3	0	0	97.6	93.7
Heavy Vehicles	0	62	8	0	70	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	76
% Heavy Vehicles	0	7.1	8.7	0	7.3	0	0	0	0	0	0	0	0	0	0	0	3.7	0	0	2.4	6.3

N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 I
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North				High Street From East				Congress Street From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	119	9	0	0	0	0	0	0	0	0	0	10	30	0	0	168
07:15 AM	0	117	15	0	0	0	0	0	0	0	0	0	10	36	0	0	178
07:30 AM	0	167	16	0	0	0	0	0	0	0	0	0	10	34	0	0	227
07:45 AM	0	178	12	0	0	0	0	0	0	0	0	0	11	40	0	0	241
Total	0	581	52	0	0	0	0	0	0	0	0	0	41	140	0	0	814
08:00 AM	0	191	23	0	0	0	0	0	0	0	0	0	23	41	0	0	278
08:15 AM	0	222	17	0	0	0	0	0	0	0	0	0	24	47	0	0	310
08:30 AM	0	201	29	0	0	0	0	0	0	0	0	0	18	32	0	0	280
08:45 AM	0	197	15	0	0	0	0	0	0	0	0	0	18	37	0	0	267
Total	0	811	84	0	0	0	0	0	0	0	0	0	83	157	0	0	1135
Grand Total	0	1392	136	0	0	0	0	0	0	0	0	0	124	297	0	0	1949
Apprch %	0	91.1	8.9	0	0	0	0	0	0	0	0	0	29.5	70.5	0	0	
Total %	0	71.4	7	0	0	0	0	0	0	0	0	0	6.4	15.2	0	0	

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	191	23	0	214	0	0	0	0	0	0	0	0	0	0	23	41	0	0	64	278
08:15 AM	0	222	17	0	239	0	0	0	0	0	0	0	0	0	0	24	47	0	0	71	310
08:30 AM	0	201	29	0	230	0	0	0	0	0	0	0	0	0	0	18	32	0	0	50	280
08:45 AM	0	197	15	0	212	0	0	0	0	0	0	0	0	0	0	18	37	0	0	55	267
Total Volume	0	811	84	0	895	0	0	0	0	0	0	0	0	0	0	83	157	0	0	240	1135
% App. Total	0	90.6	9.4	0		0	0	0	0		0	0	0	0		34.6	65.4	0	0		
PHF	.000	.913	.724	.000	.936	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.865	.835	.000	.000	.845	.915

N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 I
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North				High Street From East				Congress Street From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	19	1	0	0	0	0	0	0	0	0	0	0	1	0	0	21
07:15 AM	0	16	1	0	0	0	0	0	0	0	0	0	0	1	0	0	18
07:30 AM	0	17	2	0	0	0	0	0	0	0	0	0	2	3	0	0	24
07:45 AM	0	14	3	0	0	0	0	0	0	0	0	0	0	2	0	0	19
Total	0	66	7	0	0	0	0	0	0	0	0	0	2	7	0	0	82
08:00 AM	0	15	1	0	0	0	0	0	0	0	0	0	0	2	0	0	18
08:15 AM	0	17	2	0	0	0	0	0	0	0	0	0	0	2	0	0	21
08:30 AM	0	13	1	0	0	0	0	0	0	0	0	0	0	0	0	0	14
08:45 AM	0	17	4	0	0	0	0	0	0	0	0	0	0	2	0	0	23
Total	0	62	8	0	0	0	0	0	0	0	0	0	0	6	0	0	76
Grand Total	0	128	15	0	0	0	0	0	0	0	0	0	2	13	0	0	158
Apprch %	0	89.5	10.5	0	0	0	0	0	0	0	0	0	13.3	86.7	0	0	
Total %	0	81	9.5	0	0	0	0	0	0	0	0	0	1.3	8.2	0	0	

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	19	1	0	20	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	21
07:15 AM	0	16	1	0	17	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	18
07:30 AM	0	17	2	0	19	0	0	0	0	0	0	0	0	0	0	2	3	0	0	5	24
07:45 AM	0	14	3	0	17	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	19
Total Volume	0	66	7	0	73	0	0	0	0	0	0	0	0	0	0	2	7	0	0	9	82
% App. Total	0	90.4	9.6	0		0	0	0	0		0	0	0	0		22.2	77.8	0	0		
PHF	.000	.868	.583	.000	.913	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.583	.000	.000	.450	.854

N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 I
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	2	0	40	17	0	0	0	19	18	0	0	0	5	4	0	0	0	22	26	153
07:15 AM	0	2	0	52	27	0	0	0	33	23	0	0	0	9	10	0	1	0	30	60	247
07:30 AM	0	4	0	70	33	0	0	0	41	34	0	0	0	3	8	0	0	0	35	54	282
07:45 AM	0	3	0	96	32	0	0	0	53	46	0	0	0	9	20	0	0	0	38	91	388
Total	0	11	0	258	109	0	0	0	146	121	0	0	0	26	42	0	1	0	125	231	1070
08:00 AM	0	6	0	100	36	0	0	0	57	42	0	0	0	11	19	0	0	0	40	77	388
08:15 AM	0	6	1	158	43	0	0	0	47	72	0	0	0	22	40	0	0	0	78	99	566
08:30 AM	0	10	2	158	55	0	0	0	81	78	0	0	0	25	34	0	4	0	73	120	640
08:45 AM	0	5	3	130	70	0	0	0	83	68	0	0	0	29	21	0	4	0	57	119	589
Total	0	27	6	546	204	0	0	0	268	260	0	0	0	87	114	0	8	0	248	415	2183
Grand Total	0	38	6	804	313	0	0	0	414	381	0	0	0	113	156	0	9	0	373	646	3253
Apprch %	0	3.3	0.5	69.3	27	0	0	0	52.1	47.9	0	0	0	42	58	0	0.9	0	36.3	62.8	
Total %	0	1.2	0.2	24.7	9.6	0	0	0	12.7	11.7	0	0	0	3.5	4.8	0	0.3	0	11.5	19.9	

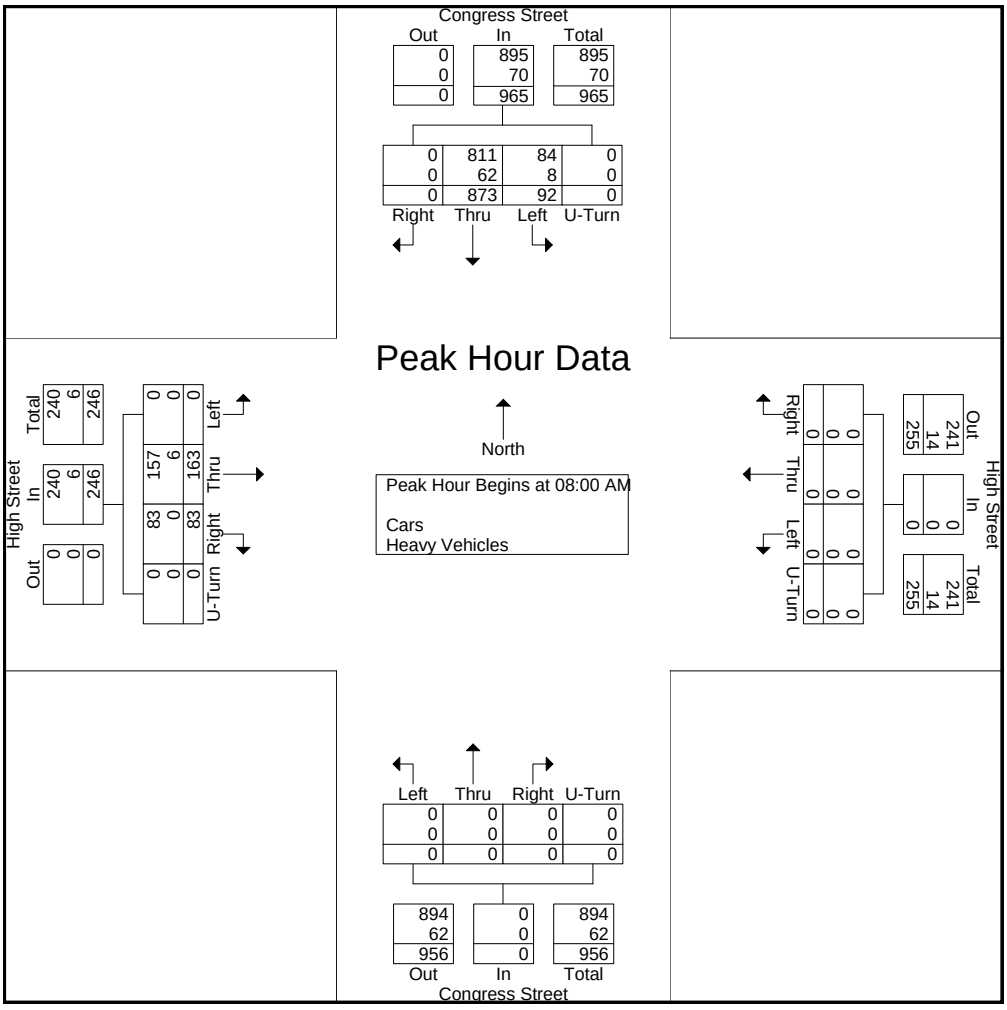
	Congress Street From North						High Street From East						Congress Street From South						High Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	6	0	100	36	142	0	0	0	57	42	99	0	0	0	11	19	30	0	0	0	40	77	117	388
08:15 AM	0	6	1	158	43	208	0	0	0	47	72	119	0	0	0	22	40	62	0	0	0	78	99	177	566
08:30 AM	0	10	2	158	55	225	0	0	0	81	78	159	0	0	0	25	34	59	0	4	0	73	120	197	640
08:45 AM	0	5	3	130	70	208	0	0	0	83	68	151	0	0	0	29	21	50	0	4	0	57	119	180	589
Total Volume	0	27	6	546	204	783	0	0	0	268	260	528	0	0	0	87	114	201	0	8	0	248	415	671	2183
% App. Total	0	3.4	0.8	69.7	26.1		0	0	0	50.8	49.2		0	0	0	43.3	56.7		0	1.2	0	37	61.8		
PHF	.000	.675	.500	.864	.729	.870	.000	.000	.000	.807	.833	.830	.000	.000	.000	.750	.713	.810	.000	.500	.000	.795	.865	.852	.853

N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 I
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	206	24	0	230	0	0	0	0	0	0	0	0	0	0	23	43	0	0	66	296
08:15 AM	0	239	19	0	258	0	0	0	0	0	0	0	0	0	0	24	49	0	0	73	331
08:30 AM	0	214	30	0	244	0	0	0	0	0	0	0	0	0	0	18	32	0	0	50	294
08:45 AM	0	214	19	0	233	0	0	0	0	0	0	0	0	0	0	18	39	0	0	57	290
Total Volume	0	873	92	0	965	0	0	0	0	0	0	0	0	0	0	83	163	0	0	246	1211
% App. Total	0	90.5	9.5	0		0	0	0	0		0	0	0	0		33.7	66.3	0	0		
PHF	.000	.913	.767	.000	.935	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.865	.832	.000	.000	.842	.915
Cars	0	811	84	0	895	0	0	0	0	0	0	0	0	0	0	83	157	0	0	240	1135
% Cars	0	92.9	91.3	0	92.7	0	0	0	0	0	0	0	0	0	0	100	96.3	0	0	97.6	93.7
Heavy Vehicles	0	62	8	0	70	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6	76
% Heavy Vehicles	0	7.1	8.7	0	7.3	0	0	0	0	0	0	0	0	0	0	0	3.7	0	0	2.4	6.3



N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 II
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North				High Street From East				Congress Street From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	313	13	0	0	0	0	0	0	0	0	0	12	41	0	0	379
04:15 PM	0	248	16	0	0	0	0	0	0	0	0	0	16	31	0	0	311
04:30 PM	0	286	16	0	0	0	0	0	0	0	0	0	18	38	0	0	358
04:45 PM	0	294	19	0	0	0	0	0	0	0	0	0	24	51	0	0	388
Total	0	1141	64	0	0	0	0	0	0	0	0	0	70	161	0	0	1436
05:00 PM	0	333	23	0	0	0	0	0	0	0	0	0	28	46	0	0	430
05:15 PM	0	277	13	0	0	0	0	0	0	0	0	0	21	50	0	0	361
05:30 PM	0	263	16	0	0	0	0	0	0	0	0	0	24	51	0	0	354
05:45 PM	0	267	12	0	0	0	0	0	0	0	0	0	30	44	0	0	353
Total	0	1140	64	0	0	0	0	0	0	0	0	0	103	191	0	0	1498
Grand Total	0	2281	128	0	0	0	0	0	0	0	0	0	173	352	0	0	2934
Apprch %	0	94.7	5.3	0	0	0	0	0	0	0	0	0	33	67	0	0	
Total %	0	77.7	4.4	0	0	0	0	0	0	0	0	0	5.9	12	0	0	
Cars	0	2239	124	0	0	0	0	0	0	0	0	0	167	339	0	0	2869
% Cars	0	98.2	96.9	0	0	0	0	0	0	0	0	0	96.5	96.3	0	0	97.8
Heavy Vehicles	0	42	4	0	0	0	0	0	0	0	0	0	6	13	0	0	65
% Heavy Vehicles	0	1.8	3.1	0	0	0	0	0	0	0	0	0	3.5	3.7	0	0	2.2

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	286	16	0	302	0	0	0	0	0	0	0	0	0	0	18	38	0	0	56	358
04:45 PM	0	294	19	0	313	0	0	0	0	0	0	0	0	0	0	24	51	0	0	75	388
05:00 PM	0	333	23	0	356	0	0	0	0	0	0	0	0	0	0	28	46	0	0	74	430
05:15 PM	0	277	13	0	290	0	0	0	0	0	0	0	0	0	0	21	50	0	0	71	361
Total Volume	0	1190	71	0	1261	0	0	0	0	0	0	0	0	0	0	91	185	0	0	276	1537
% App. Total	0	94.4	5.6	0		0	0	0	0		0	0	0	0		33	67	0	0		
PHF	.000	.893	.772	.000	.886	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.813	.907	.000	.000	.920	.894
Cars	0	1168	69	0	1237	0	0	0	0	0	0	0	0	0	0	89	179	0	0	268	1505
% Cars	0	98.2	97.2	0	98.1	0	0	0	0	0	0	0	0	0	0	97.8	96.8	0	0	97.1	97.9
Heavy Vehicles	0	22	2	0	24	0	0	0	0	0	0	0	0	0	0	2	6	0	0	8	32
% Heavy Vehicles	0	1.8	2.8	0	1.9	0	0	0	0	0	0	0	0	0	0	2.2	3.2	0	0	2.9	2.1

N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 II
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North				High Street From East				Congress Street From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	307	13	0	0	0	0	0	0	0	0	0	12	40	0	0	372
04:15 PM	0	241	15	0	0	0	0	0	0	0	0	0	14	30	0	0	300
04:30 PM	0	281	15	0	0	0	0	0	0	0	0	0	17	36	0	0	349
04:45 PM	0	287	19	0	0	0	0	0	0	0	0	0	23	50	0	0	379
Total	0	1116	62	0	0	0	0	0	0	0	0	0	66	156	0	0	1400
05:00 PM	0	325	22	0	0	0	0	0	0	0	0	0	28	44	0	0	419
05:15 PM	0	275	13	0	0	0	0	0	0	0	0	0	21	49	0	0	358
05:30 PM	0	261	16	0	0	0	0	0	0	0	0	0	23	47	0	0	347
05:45 PM	0	262	11	0	0	0	0	0	0	0	0	0	29	43	0	0	345
Total	0	1123	62	0	0	0	0	0	0	0	0	0	101	183	0	0	1469
Grand Total	0	2239	124	0	0	0	0	0	0	0	0	0	167	339	0	0	2869
Apprch %	0	94.8	5.2	0	0	0	0	0	0	0	0	0	33	67	0	0	
Total %	0	78	4.3	0	0	0	0	0	0	0	0	0	5.8	11.8	0	0	

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	281	15	0	296	0	0	0	0	0	0	0	0	0	0	17	36	0	0	53	349
04:45 PM	0	287	19	0	306	0	0	0	0	0	0	0	0	0	0	23	50	0	0	73	379
05:00 PM	0	325	22	0	347	0	0	0	0	0	0	0	0	0	0	28	44	0	0	72	419
05:15 PM	0	275	13	0	288	0	0	0	0	0	0	0	0	0	0	21	49	0	0	70	358
Total Volume	0	1168	69	0	1237	0	0	0	0	0	0	0	0	0	0	89	179	0	0	268	1505
% App. Total	0	94.4	5.6	0		0	0	0	0		0	0	0	0		33.2	66.8	0	0		
PHF	.000	.898	.784	.000	.891	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.795	.895	.000	.000	.918	.898

N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 II
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North				High Street From East				Congress Street From South				High Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	6	0	0	0	0	0	0	0	0	0	0	0	1	0	0	7
04:15 PM	0	7	1	0	0	0	0	0	0	0	0	0	2	1	0	0	11
04:30 PM	0	5	1	0	0	0	0	0	0	0	0	0	1	2	0	0	9
04:45 PM	0	7	0	0	0	0	0	0	0	0	0	0	1	1	0	0	9
Total	0	25	2	0	0	0	0	0	0	0	0	0	4	5	0	0	36
05:00 PM	0	8	1	0	0	0	0	0	0	0	0	0	0	2	0	0	11
05:15 PM	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3
05:30 PM	0	2	0	0	0	0	0	0	0	0	0	0	1	4	0	0	7
05:45 PM	0	5	1	0	0	0	0	0	0	0	0	0	1	1	0	0	8
Total	0	17	2	0	0	0	0	0	0	0	0	0	2	8	0	0	29
Grand Total	0	42	4	0	0	0	0	0	0	0	0	0	6	13	0	0	65
Apprch %	0	91.3	8.7	0	0	0	0	0	0	0	0	0	31.6	68.4	0	0	
Total %	0	64.6	6.2	0	0	0	0	0	0	0	0	0	9.2	20	0	0	

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	7	1	0	8	0	0	0	0	0	0	0	0	0	0	2	1	0	0	3	11
04:30 PM	0	5	1	0	6	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	9
04:45 PM	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	9
05:00 PM	0	8	1	0	9	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	11
Total Volume	0	27	3	0	30	0	0	0	0	0	0	0	0	0	0	4	6	0	0	10	40
% App. Total	0	90	10	0		0	0	0	0		0	0	0	0		40	60	0	0		
PHF	.000	.844	.750	.000	.833	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.500	.750	.000	.000	.833	.909

N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 II
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	0	31	50	0	0	0	22	16	0	0	0	15	4	0	0	0	25	28	191
04:15 PM	0	1	0	17	60	0	0	0	18	26	0	0	0	24	5	0	0	0	16	30	197
04:30 PM	0	2	0	20	61	0	0	0	26	32	0	0	0	30	1	0	0	0	22	42	236
04:45 PM	0	1	0	24	73	0	0	0	28	27	0	0	0	26	2	0	0	0	36	39	256
Total	0	4	0	92	244	0	0	0	94	101	0	0	0	95	12	0	0	0	99	139	880
05:00 PM	0	0	0	44	93	0	1	0	41	65	0	0	0	55	3	0	0	0	60	35	397
05:15 PM	0	1	0	36	82	0	0	0	49	66	0	0	0	38	3	0	3	0	51	36	365
05:30 PM	0	0	0	36	78	0	0	0	30	53	0	0	0	39	5	0	0	0	38	31	310
05:45 PM	0	0	0	30	63	0	0	0	26	31	0	0	0	24	14	0	0	0	35	19	242
Total	0	1	0	146	316	0	1	0	146	215	0	0	0	156	25	0	3	0	184	121	1314
Grand Total	0	5	0	238	560	0	1	0	240	316	0	0	0	251	37	0	3	0	283	260	2194
Apprch %	0	0.6	0	29.6	69.7	0	0.2	0	43.1	56.7	0	0	0	87.2	12.8	0	0.5	0	51.8	47.6	
Total %	0	0.2	0	10.8	25.5	0	0	0	10.9	14.4	0	0	0	11.4	1.7	0	0.1	0	12.9	11.9	

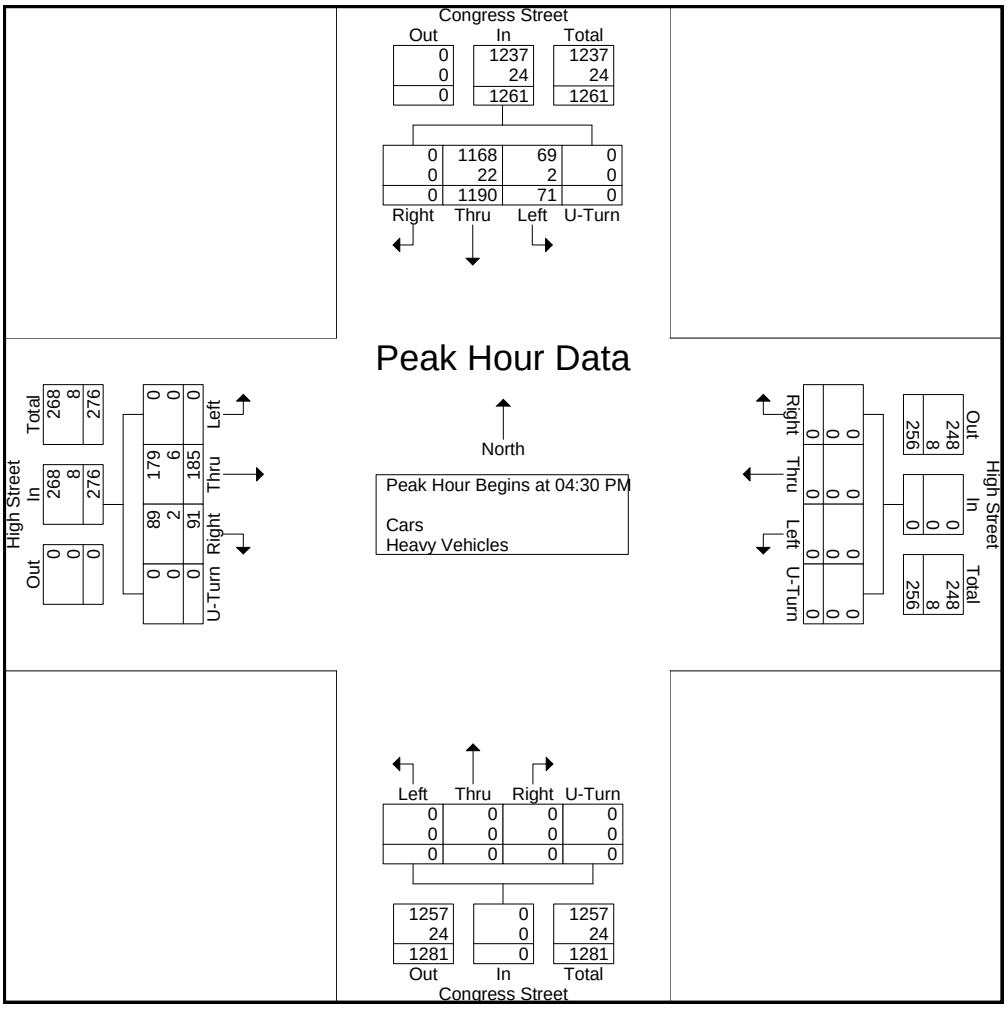
	Congress Street From North						High Street From East						Congress Street From South						High Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	1	0	24	73	98	0	0	0	28	27	55	0	0	0	26	2	28	0	0	0	36	39	75	256
05:00 PM	0	0	0	44	93	137	0	1	0	41	65	107	0	0	0	55	3	58	0	0	0	60	35	95	397
05:15 PM	0	1	0	36	82	119	0	0	0	49	66	115	0	0	0	38	3	41	0	3	0	51	36	90	365
05:30 PM	0	0	0	36	78	114	0	0	0	30	53	83	0	0	0	39	5	44	0	0	0	38	31	69	310
Total Volume	0	2	0	140	326	468	0	1	0	148	211	360	0	0	0	158	13	171	0	3	0	185	141	329	1328
% App. Total	0	0.4	0	29.9	69.7		0	0.3	0	41.1	58.6		0	0	0	92.4	7.6		0	0.9	0	56.2	42.9		
PHF	.000	.500	.000	.795	.876	.854	.000	.250	.000	.755	.799	.783	.000	.000	.000	.718	.650	.737	.000	.250	.000	.771	.904	.866	.836

N/S: Congress Street
E/W: High Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 II
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North					High Street From East					Congress Street From South					High Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	286	16	0	302	0	0	0	0	0	0	0	0	0	0	18	38	0	0	56	358
04:45 PM	0	294	19	0	313	0	0	0	0	0	0	0	0	0	0	24	51	0	0	75	388
05:00 PM	0	333	23	0	356	0	0	0	0	0	0	0	0	0	0	28	46	0	0	74	430
05:15 PM	0	277	13	0	290	0	0	0	0	0	0	0	0	0	0	21	50	0	0	71	361
Total Volume	0	1190	71	0	1261	0	0	0	0	0	0	0	0	0	0	91	185	0	0	276	1537
% App. Total	0	94.4	5.6	0		0	0	0	0		0	0	0	0		33	67	0	0		
PHF	.000	.893	.772	.000	.886	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.813	.907	.000	.000	.920	.894
Cars	0	1168	69	0	1237	0	0	0	0	0	0	0	0	0	0	89	179	0	0	268	1505
% Cars	0	98.2	97.2	0	98.1	0	0	0	0	0	0	0	0	0	0	97.8	96.8	0	0	97.1	97.9
Heavy Vehicles	0	22	2	0	24	0	0	0	0	0	0	0	0	0	0	2	6	0	0	8	32
% Heavy Vehicles	0	1.8	2.8	0	1.9	0	0	0	0	0	0	0	0	0	0	2.2	3.2	0	0	2.9	2.1



PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 J
Site Code : TBA
Start Date : 11/30/2016

Groups Printed- Cars - Heavy Vehicles

	Federal Street From North			Matthews Street From East			Federal Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	0	5	31	0	36
07:15 AM	0	0	0	0	0	0	1	70	0	71
07:30 AM	0	0	0	0	0	0	4	61	0	65
07:45 AM	0	0	0	0	0	0	2	56	0	58
Total	0	0	0	0	0	0	12	218	0	230
08:00 AM	0	0	0	0	0	0	7	63	0	70
08:15 AM	0	0	0	0	0	0	3	51	0	54
08:30 AM	0	0	0	0	0	0	3	55	0	58
08:45 AM	0	0	0	0	0	0	4	78	0	82
Total	0	0	0	0	0	0	17	247	0	264
Grand Total	0	0	0	0	0	0	29	465	0	494
Apprch %	0	0	0	0	0	0	5.9	94.1	0	
Total %	0	0	0	0	0	0	5.9	94.1	0	
Cars	0	0	0	0	0	0	16	377	0	393
% Cars	0	0	0	0	0	0	55.2	81.1	0	79.6
Heavy Vehicles	0	0	0	0	0	0	13	88	0	101
% Heavy Vehicles	0	0	0	0	0	0	44.8	18.9	0	20.4

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	0	1	70	0	71	71
07:30 AM	0	0	0	0	0	0	0	0	4	61	0	65	65
07:45 AM	0	0	0	0	0	0	0	0	2	56	0	58	58
08:00 AM	0	0	0	0	0	0	0	0	7	63	0	70	70
Total Volume	0	0	0	0	0	0	0	0	14	250	0	264	264
% App. Total	0	0	0		0	0	0		5.3	94.7	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.500	.893	.000	.930	.930
Cars	0	0	0	0	0	0	0	0	6	202	0	208	208
% Cars	0	0	0	0	0	0	0	0	42.9	80.8	0	78.8	78.8
Heavy Vehicles	0	0	0	0	0	0	0	0	8	48	0	56	56
% Heavy Vehicles	0	0	0	0	0	0	0	0	57.1	19.2	0	21.2	21.2

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 J
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Federal Street From North			Matthews Street From East			Federal Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	0	3	27	0	30
07:15 AM	0	0	0	0	0	0	1	52	0	53
07:30 AM	0	0	0	0	0	0	1	55	0	56
07:45 AM	0	0	0	0	0	0	0	45	0	45
Total	0	0	0	0	0	0	5	179	0	184
08:00 AM	0	0	0	0	0	0	4	50	0	54
08:15 AM	0	0	0	0	0	0	2	44	0	46
08:30 AM	0	0	0	0	0	0	1	36	0	37
08:45 AM	0	0	0	0	0	0	4	68	0	72
Total	0	0	0	0	0	0	11	198	0	209
Grand Total	0	0	0	0	0	0	16	377	0	393
Apprch %	0	0	0	0	0	0	4.1	95.9	0	
Total %	0	0	0	0	0	0	4.1	95.9	0	

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	0	0	0	0	0	0	0	4	50	0	54	54
08:15 AM	0	0	0	0	0	0	0	0	2	44	0	46	46
08:30 AM	0	0	0	0	0	0	0	0	1	36	0	37	37
08:45 AM	0	0	0	0	0	0	0	0	4	68	0	72	72
Total Volume	0	0	0	0	0	0	0	0	11	198	0	209	209
% App. Total	0	0	0		0	0	0		5.3	94.7	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.688	.728	.000	.726	.726

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 J
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Federal Street From North			Matthews Street From East			Federal Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	0	2	4	0	6
07:15 AM	0	0	0	0	0	0	0	18	0	18
07:30 AM	0	0	0	0	0	0	3	6	0	9
07:45 AM	0	0	0	0	0	0	2	11	0	13
Total	0	0	0	0	0	0	7	39	0	46
08:00 AM	0	0	0	0	0	0	3	13	0	16
08:15 AM	0	0	0	0	0	0	1	7	0	8
08:30 AM	0	0	0	0	0	0	2	19	0	21
08:45 AM	0	0	0	0	0	0	0	10	0	10
Total	0	0	0	0	0	0	6	49	0	55
Grand Total	0	0	0	0	0	0	13	88	0	101
Apprch %	0	0	0	0	0	0	12.9	87.1	0	
Total %	0	0	0	0	0	0	12.9	87.1	0	

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	2	11	0	13	13
08:00 AM	0	0	0	0	0	0	0	0	3	13	0	16	16
08:15 AM	0	0	0	0	0	0	0	0	1	7	0	8	8
08:30 AM	0	0	0	0	0	0	0	0	2	19	0	21	21
Total Volume	0	0	0	0	0	0	0	0	8	50	0	58	58
% App. Total	0	0	0		0	0	0		13.8	86.2	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.667	.658	.000	.690	.690

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 J
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
07:00 AM	0	0	4	6	0	0	18	108	0	1	0	0	137
07:15 AM	0	0	7	3	0	0	50	236	0	0	1	3	300
07:30 AM	0	0	3	5	0	0	51	243	0	1	1	2	306
07:45 AM	1	0	7	2	0	1	68	259	0	0	2	5	345
Total	1	0	21	16	0	1	187	846	0	2	4	10	1088
08:00 AM	0	0	4	8	0	0	76	226	0	0	7	4	325
08:15 AM	0	0	7	6	0	0	57	449	0	2	9	10	540
08:30 AM	0	0	20	14	0	0	105	328	0	0	6	6	479
08:45 AM	0	0	8	11	0	0	145	323	0	0	8	7	502
Total	0	0	39	39	0	0	383	1326	0	2	30	27	1846
Grand Total	1	0	60	55	0	1	570	2172	0	4	34	37	2934
Apprch %	0.9	0	51.7	47.4	0	0	20.8	79.2	0	5.3	45.3	49.3	
Total %	0	0	2	1.9	0	0	19.4	74	0	0.1	1.2	1.3	

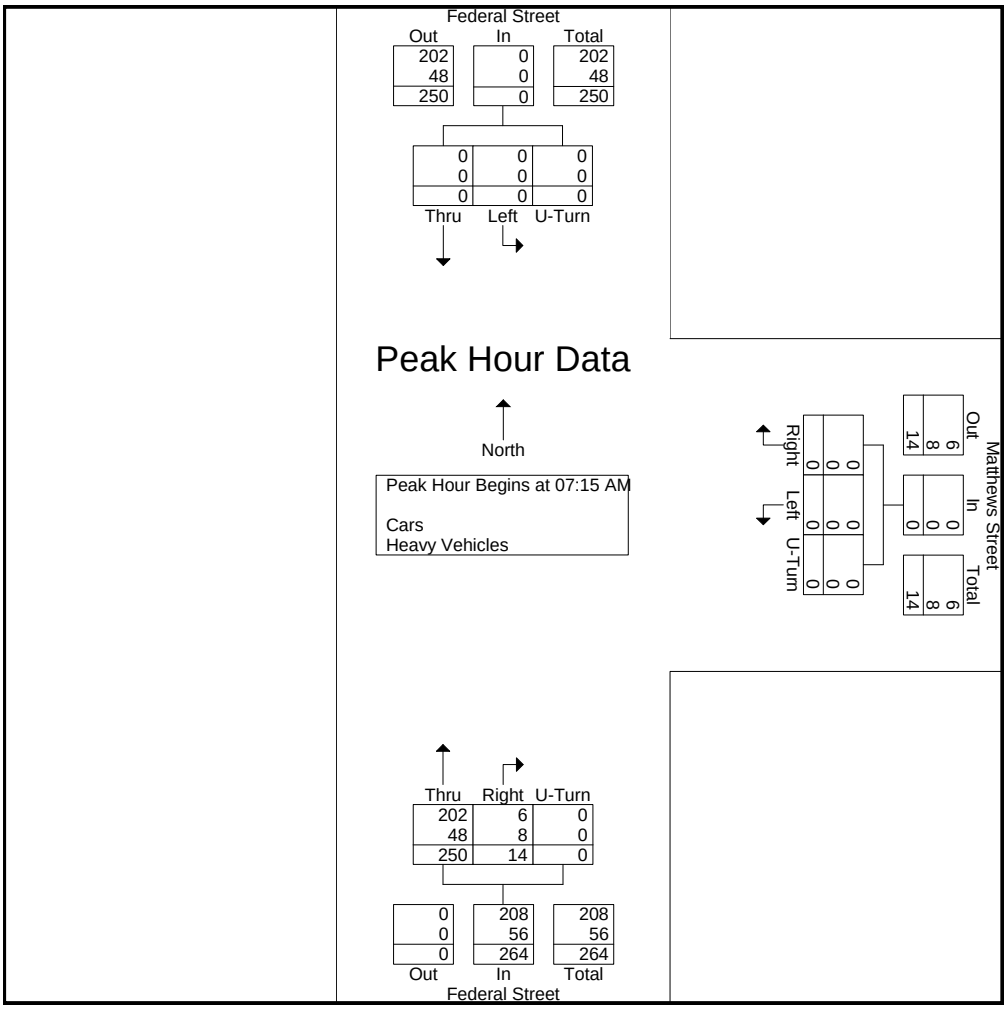
	Federal Street From North					Matthews Street From East					Federal Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	0	0	4	8	12	0	0	76	226	302	0	0	7	4	11	325
08:15 AM	0	0	7	6	13	0	0	57	449	506	0	2	9	10	21	540
08:30 AM	0	0	20	14	34	0	0	105	328	433	0	0	6	6	12	479
08:45 AM	0	0	8	11	19	0	0	145	323	468	0	0	8	7	15	502
Total Volume	0	0	39	39	78	0	0	383	1326	1709	0	2	30	27	59	1846
% App. Total	0	0	50	50		0	0	22.4	77.6		0	3.4	50.8	45.8		
PHF	.000	.000	.488	.696	.574	.000	.000	.660	.738	.844	.000	.250	.833	.675	.702	.855

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 J
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	0	1	70	0	71	71
07:30 AM	0	0	0	0	0	0	0	0	4	61	0	65	65
07:45 AM	0	0	0	0	0	0	0	0	2	56	0	58	58
08:00 AM	0	0	0	0	0	0	0	0	7	63	0	70	70
Total Volume	0	0	0	0	0	0	0	0	14	250	0	264	264
% App. Total	0	0	0		0	0	0		5.3	94.7	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.500	.893	.000	.930	.930
Cars	0	0	0	0	0	0	0	0	6	202	0	208	208
% Cars	0	0	0	0	0	0	0	0	42.9	80.8	0	78.8	78.8
Heavy Vehicles	0	0	0	0	0	0	0	0	8	48	0	56	56
% Heavy Vehicles	0	0	0	0	0	0	0	0	57.1	19.2	0	21.2	21.2



PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 JJ
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Federal Street From North			Matthews Street From East			Federal Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	0	0	0	1	0	0	5	26	0	32
04:15 PM	0	0	0	0	0	0	4	39	0	43
04:30 PM	0	0	0	0	0	0	4	34	0	38
04:45 PM	0	0	0	1	0	0	3	30	0	34
Total	0	0	0	2	0	0	16	129	0	147
05:00 PM	0	0	0	1	0	0	2	36	0	39
05:15 PM	0	0	0	1	0	0	4	36	0	41
05:30 PM	0	0	0	1	0	0	4	34	0	39
05:45 PM	0	0	0	0	0	0	4	27	0	31
Total	0	0	0	3	0	0	14	133	0	150
Grand Total	0	0	0	5	0	0	30	262	0	297
Apprch %	0	0	0	100	0	0	10.3	89.7	0	
Total %	0	0	0	1.7	0	0	10.1	88.2	0	
Cars	0	0	0	5	0	0	29	205	0	239
% Cars	0	0	0	100	0	0	96.7	78.2	0	80.5
Heavy Vehicles	0	0	0	0	0	0	1	57	0	58
% Heavy Vehicles	0	0	0	0	0	0	3.3	21.8	0	19.5

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	0	0	0	4	39	0	43	43
04:30 PM	0	0	0	0	0	0	0	0	4	34	0	38	38
04:45 PM	0	0	0	0	1	0	0	1	3	30	0	33	34
05:00 PM	0	0	0	0	1	0	0	1	2	36	0	38	39
Total Volume	0	0	0	0	2	0	0	2	13	139	0	152	154
% App. Total	0	0	0		100	0	0		8.6	91.4	0		
PHF	.000	.000	.000	.000	.500	.000	.000	.500	.813	.891	.000	.884	.895
Cars	0	0	0	0	2	0	0	2	13	110	0	123	125
% Cars	0	0	0	0	100	0	0	100	100	79.1	0	80.9	81.2
Heavy Vehicles	0	0	0	0	0	0	0	0	0	29	0	29	29
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	20.9	0	19.1	18.8

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 JJ
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Federal Street From North			Matthews Street From East			Federal Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	0	0	0	1	0	0	4	21	0	26
04:15 PM	0	0	0	0	0	0	4	32	0	36
04:30 PM	0	0	0	0	0	0	4	28	0	32
04:45 PM	0	0	0	1	0	0	3	22	0	26
Total	0	0	0	2	0	0	15	103	0	120
05:00 PM	0	0	0	1	0	0	2	28	0	31
05:15 PM	0	0	0	1	0	0	4	25	0	30
05:30 PM	0	0	0	1	0	0	4	26	0	31
05:45 PM	0	0	0	0	0	0	4	23	0	27
Total	0	0	0	3	0	0	14	102	0	119
Grand Total	0	0	0	5	0	0	29	205	0	239
Apprch %	0	0	0	100	0	0	12.4	87.6	0	
Total %	0	0	0	2.1	0	0	12.1	85.8	0	

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	0	0	0	4	32	0	36	36
04:30 PM	0	0	0	0	0	0	0	0	4	28	0	32	32
04:45 PM	0	0	0	0	1	0	0	1	3	22	0	25	26
05:00 PM	0	0	0	0	1	0	0	1	2	28	0	30	31
Total Volume	0	0	0	0	2	0	0	2	13	110	0	123	125
% App. Total	0	0	0		100	0	0		10.6	89.4	0		
PHF	.000	.000	.000	.000	.500	.000	.000	.500	.813	.859	.000	.854	.868

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 JJ
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Federal Street From North			Matthews Street From East			Federal Street From South			
Start Time	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	Int. Total
04:00 PM	0	0	0	0	0	0	1	5	0	6
04:15 PM	0	0	0	0	0	0	0	7	0	7
04:30 PM	0	0	0	0	0	0	0	6	0	6
04:45 PM	0	0	0	0	0	0	0	8	0	8
Total	0	0	0	0	0	0	1	26	0	27
05:00 PM	0	0	0	0	0	0	0	8	0	8
05:15 PM	0	0	0	0	0	0	0	11	0	11
05:30 PM	0	0	0	0	0	0	0	8	0	8
05:45 PM	0	0	0	0	0	0	0	4	0	4
Total	0	0	0	0	0	0	0	31	0	31
Grand Total	0	0	0	0	0	0	1	57	0	58
Apprch %	0	0	0	0	0	0	1.7	98.3	0	
Total %	0	0	0	0	0	0	1.7	98.3	0	

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	0	0	0	0	8	0	8	8
05:00 PM	0	0	0	0	0	0	0	0	0	8	0	8	8
05:15 PM	0	0	0	0	0	0	0	0	0	11	0	11	11
05:30 PM	0	0	0	0	0	0	0	0	0	8	0	8	8
Total Volume	0	0	0	0	0	0	0	0	0	35	0	35	35
% App. Total	0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.795	.000	.795	.795

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 JJ
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	Peds EB	Peds WB	Right	Left	Peds SB	Peds NB	Right	Thru	Peds WB	Peds EB	Int. Total
04:00 PM	0	0	4	7	0	0	230	54	0	1	7	2	305
04:15 PM	0	1	12	11	0	0	220	44	0	1	5	4	298
04:30 PM	0	0	8	15	0	0	323	56	0	0	10	3	415
04:45 PM	0	0	6	12	0	0	401	81	0	1	7	4	512
Total	0	1	30	45	0	0	1174	235	0	3	29	13	1530
05:00 PM	0	0	7	20	0	0	476	89	0	0	2	3	597
05:15 PM	0	0	6	19	0	0	421	113	0	1	9	2	571
05:30 PM	0	0	9	12	1	0	467	74	0	2	2	2	569
05:45 PM	0	0	3	6	0	0	154	77	0	1	2	0	243
Total	0	0	25	57	1	0	1518	353	0	4	15	7	1980
Grand Total	0	1	55	102	1	0	2692	588	0	7	44	20	3510
Apprch %	0	0.6	34.8	64.6	0	0	82	17.9	0	9.9	62	28.2	
Total %	0	0	1.6	2.9	0	0	76.7	16.8	0	0.2	1.3	0.6	

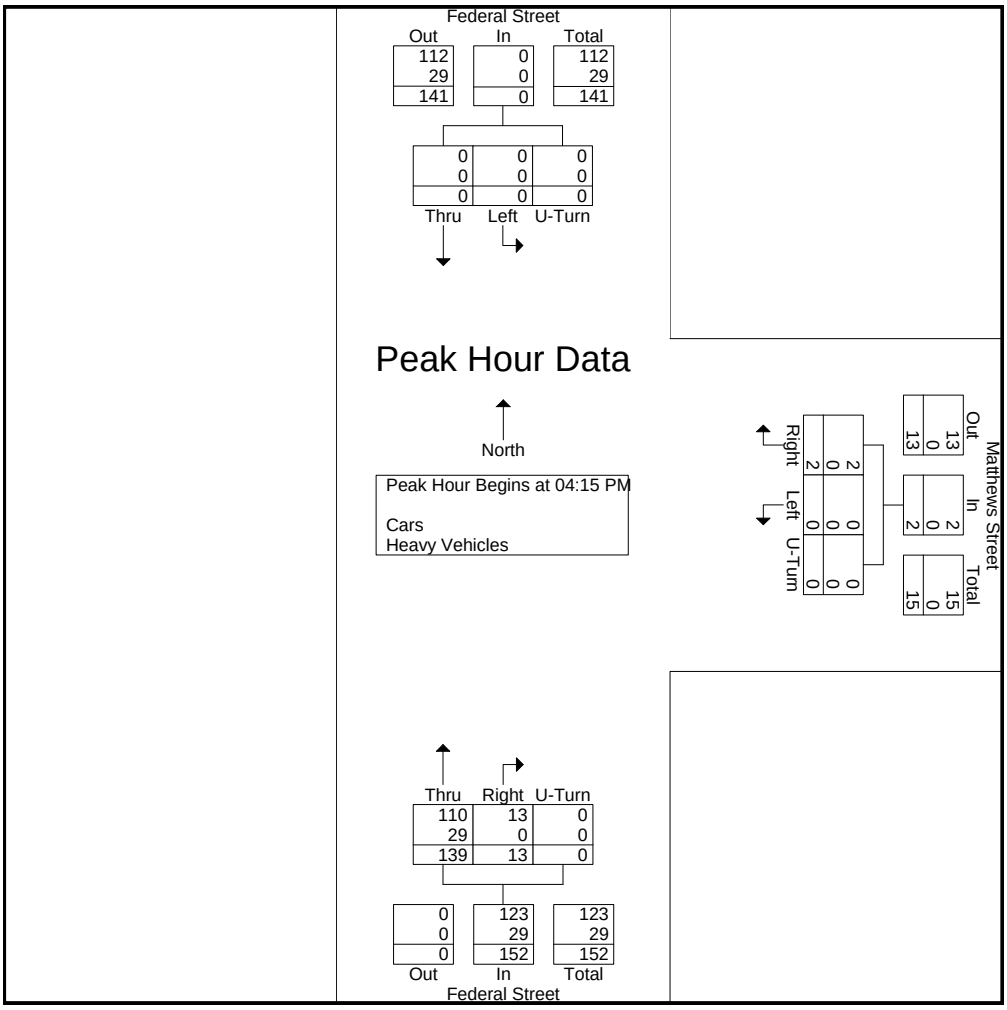
	Federal Street From North					Matthews Street From East					Federal Street From South					
Start Time	Thru	Left	Peds EB	Peds WB	App. Total	Right	Left	Peds SB	Peds NB	App. Total	Right	Thru	Peds WB	Peds EB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 04:45 PM																
04:45 PM	0	0	6	12	18	0	0	401	81	482	0	1	7	4	12	512
05:00 PM	0	0	7	20	27	0	0	476	89	565	0	0	2	3	5	597
05:15 PM	0	0	6	19	25	0	0	421	113	534	0	1	9	2	12	571
05:30 PM	0	0	9	12	21	1	0	467	74	542	0	2	2	2	6	569
Total Volume	0	0	28	63	91	1	0	1765	357	2123	0	4	20	11	35	2249
% App. Total	0	0	30.8	69.2		0	0	83.1	16.8		0	11.4	57.1	31.4		
PHF	.000	.000	.778	.788	.843	.250	.000	.927	.790	.939	.000	.500	.556	.688	.729	.942

N/S: Federal Street
E: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 JJ
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Federal Street From North				Matthews Street From East				Federal Street From South				
Start Time	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	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	0	0	0	4	39	0	43	43
04:30 PM	0	0	0	0	0	0	0	0	4	34	0	38	38
04:45 PM	0	0	0	0	1	0	0	1	3	30	0	33	34
05:00 PM	0	0	0	0	1	0	0	1	2	36	0	38	39
Total Volume	0	0	0	0	2	0	0	2	13	139	0	152	154
% App. Total	0	0	0		100	0	0		8.6	91.4	0		
PHF	.000	.000	.000	.000	.500	.000	.000	.500	.813	.891	.000	.884	.895
Cars	0	0	0	0	2	0	0	2	13	110	0	123	125
% Cars	0	0	0	0	100	0	0	100	100	79.1	0	80.9	81.2
Heavy Vehicles	0	0	0	0	0	0	0	0	0	29	0	29	29
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	20.9	0	19.1	18.8



N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 K
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North			Congress Street From South			Matthews Street From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
07:00 AM	0	136	0	0	0	0	4	0	0	140
07:15 AM	0	156	0	0	0	0	0	0	0	156
07:30 AM	0	192	0	0	0	0	3	0	0	195
07:45 AM	0	220	0	0	0	0	1	0	0	221
Total	0	704	0	0	0	0	8	0	0	712
08:00 AM	0	235	0	0	0	0	7	0	0	242
08:15 AM	0	265	0	0	0	0	5	0	0	270
08:30 AM	0	213	0	0	0	0	7	0	0	220
08:45 AM	0	216	0	0	0	0	5	0	0	221
Total	0	929	0	0	0	0	24	0	0	953
Grand Total	0	1633	0	0	0	0	32	0	0	1665
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	98.1	0	0	0	0	1.9	0	0	
Cars	0	1503	0	0	0	0	22	0	0	1525
% Cars	0	92	0	0	0	0	68.8	0	0	91.6
Heavy Vehicles	0	130	0	0	0	0	10	0	0	140
% Heavy Vehicles	0	8	0	0	0	0	31.2	0	0	8.4

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	220	0	220	0	0	0	0	1	0	0	1	221
08:00 AM	0	235	0	235	0	0	0	0	7	0	0	7	242
08:15 AM	0	265	0	265	0	0	0	0	5	0	0	5	270
08:30 AM	0	213	0	213	0	0	0	0	7	0	0	7	220
Total Volume	0	933	0	933	0	0	0	0	20	0	0	20	953
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.880	.000	.880	.000	.000	.000	.000	.714	.000	.000	.714	.882
Cars	0	872	0	872	0	0	0	0	12	0	0	12	884
% Cars	0	93.5	0	93.5	0	0	0	0	60.0	0	0	60.0	92.8
Heavy Vehicles	0	61	0	61	0	0	0	0	8	0	0	8	69
% Heavy Vehicles	0	6.5	0	6.5	0	0	0	0	40.0	0	0	40.0	7.2

N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 K
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North			Congress Street From South			Matthews Street From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
07:00 AM	0	119	0	0	0	0	4	0	0	123
07:15 AM	0	137	0	0	0	0	0	0	0	137
07:30 AM	0	177	0	0	0	0	2	0	0	179
07:45 AM	0	201	0	0	0	0	1	0	0	202
Total	0	634	0	0	0	0	7	0	0	641
08:00 AM	0	223	0	0	0	0	5	0	0	228
08:15 AM	0	245	0	0	0	0	3	0	0	248
08:30 AM	0	203	0	0	0	0	3	0	0	206
08:45 AM	0	198	0	0	0	0	4	0	0	202
Total	0	869	0	0	0	0	15	0	0	884
Grand Total	0	1503	0	0	0	0	22	0	0	1525
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	98.6	0	0	0	0	1.4	0	0	

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	201	0	201	0	0	0	0	1	0	0	1	202
08:00 AM	0	223	0	223	0	0	0	0	5	0	0	5	228
08:15 AM	0	245	0	245	0	0	0	0	3	0	0	3	248
08:30 AM	0	203	0	203	0	0	0	0	3	0	0	3	206
Total Volume	0	872	0	872	0	0	0	0	12	0	0	12	884
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.890	.000	.890	.000	.000	.000	.000	.600	.000	.000	.600	.891

N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 K
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North			Congress Street From South			Matthews Street From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
07:00 AM	0	17	0	0	0	0	0	0	0	17
07:15 AM	0	19	0	0	0	0	0	0	0	19
07:30 AM	0	15	0	0	0	0	1	0	0	16
07:45 AM	0	19	0	0	0	0	0	0	0	19
Total	0	70	0	0	0	0	1	0	0	71
08:00 AM	0	12	0	0	0	0	2	0	0	14
08:15 AM	0	20	0	0	0	0	2	0	0	22
08:30 AM	0	10	0	0	0	0	4	0	0	14
08:45 AM	0	18	0	0	0	0	1	0	0	19
Total	0	60	0	0	0	0	9	0	0	69
Grand Total	0	130	0	0	0	0	10	0	0	140
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	92.9	0	0	0	0	7.1	0	0	

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	17	0	17	0	0	0	0	0	0	0	0	17
07:15 AM	0	19	0	19	0	0	0	0	0	0	0	0	19
07:30 AM	0	15	0	15	0	0	0	0	1	0	0	1	16
07:45 AM	0	19	0	19	0	0	0	0	0	0	0	0	19
Total Volume	0	70	0	70	0	0	0	0	1	0	0	1	71
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.921	.000	.921	.000	.000	.000	.000	.250	.000	.000	.250	.934

N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 K
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	2	2	0	0	0	3	3	0	0	14	19	43
07:15 AM	0	3	2	2	0	0	0	0	0	0	24	60	91
07:30 AM	0	6	6	1	0	0	1	0	0	0	25	52	91
07:45 AM	0	4	1	1	0	0	4	6	0	0	27	56	99
Total	0	15	11	4	0	0	8	9	0	0	90	187	324
08:00 AM	0	8	3	3	0	0	5	13	0	0	28	70	130
08:15 AM	0	4	6	1	0	0	2	8	0	0	62	86	169
08:30 AM	1	14	1	3	0	0	3	1	0	0	41	100	164
08:45 AM	0	7	6	1	0	0	3	15	0	0	37	100	169
Total	1	33	16	8	0	0	13	37	0	0	168	356	632
Grand Total	1	48	27	12	0	0	21	46	0	0	258	543	956
Apprch %	1.1	54.5	30.7	13.6	0	0	31.3	68.7	0	0	32.2	67.8	
Total %	0.1	5	2.8	1.3	0	0	2.2	4.8	0	0	27	56.8	

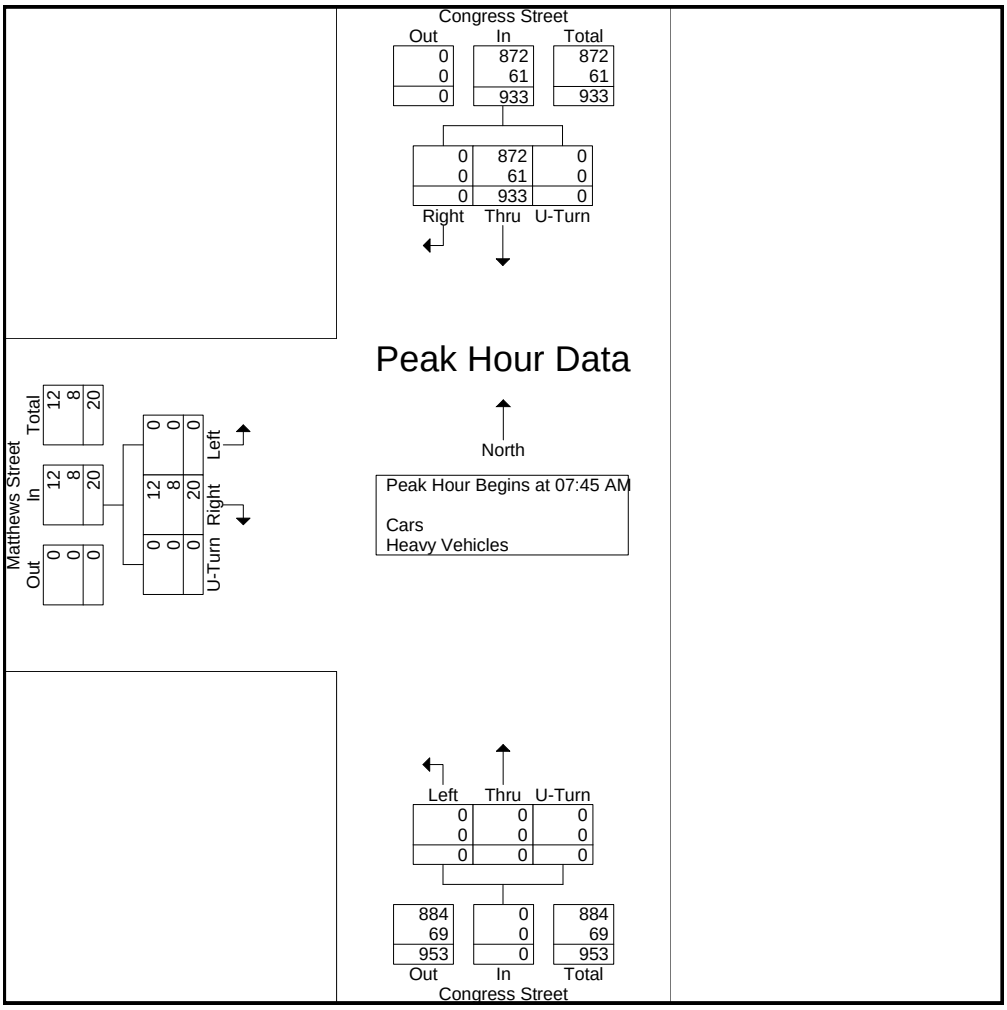
	Congress Street From North					Congress Street From South					Matthews Street From West					
Start Time	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	0	8	3	3	14	0	0	5	13	18	0	0	28	70	98	130
08:15 AM	0	4	6	1	11	0	0	2	8	10	0	0	62	86	148	169
08:30 AM	1	14	1	3	19	0	0	3	1	4	0	0	41	100	141	164
08:45 AM	0	7	6	1	14	0	0	3	15	18	0	0	37	100	137	169
Total Volume	1	33	16	8	58	0	0	13	37	50	0	0	168	356	524	632
% App. Total	1.7	56.9	27.6	13.8		0	0	26	74		0	0	32.1	67.9		
PHF	.250	.589	.667	.667	.763	.000	.000	.650	.617	.694	.000	.000	.677	.890	.885	.935

N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 K
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	220	0	220	0	0	0	0	1	0	0	1	221
08:00 AM	0	235	0	235	0	0	0	0	7	0	0	7	242
08:15 AM	0	265	0	265	0	0	0	0	5	0	0	5	270
08:30 AM	0	213	0	213	0	0	0	0	7	0	0	7	220
Total Volume	0	933	0	933	0	0	0	0	20	0	0	20	953
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.880	.000	.880	.000	.000	.000	.000	.714	.000	.000	.714	.882
Cars	0	872	0	872	0	0	0	0	12	0	0	12	884
% Cars	0	93.5	0	93.5	0	0	0	0	60.0	0	0	60.0	92.8
Heavy Vehicles	0	61	0	61	0	0	0	0	8	0	0	8	69
% Heavy Vehicles	0	6.5	0	6.5	0	0	0	0	40.0	0	0	40.0	7.2



N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 KK
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North			Congress Street From South			Matthews Street From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
04:00 PM	0	322	0	0	0	0	13	0	0	335
04:15 PM	0	269	0	0	0	0	15	0	0	284
04:30 PM	0	300	0	0	0	0	16	0	0	316
04:45 PM	0	298	0	0	0	0	14	0	0	312
Total	0	1189	0	0	0	0	58	0	0	1247
05:00 PM	0	328	0	0	0	0	14	0	0	342
05:15 PM	0	265	0	0	0	0	17	0	0	282
05:30 PM	0	266	0	0	0	0	15	0	0	281
05:45 PM	0	271	0	0	0	0	18	0	0	289
Total	0	1130	0	0	0	0	64	0	0	1194
Grand Total	0	2319	0	0	0	0	122	0	0	2441
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	95	0	0	0	0	5	0	0	
Cars	0	2272	0	0	0	0	120	0	0	2392
% Cars	0	98	0	0	0	0	98.4	0	0	98
Heavy Vehicles	0	47	0	0	0	0	2	0	0	49
% Heavy Vehicles	0	2	0	0	0	0	1.6	0	0	2

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	269	0	269	0	0	0	0	15	0	0	15	284
04:30 PM	0	300	0	300	0	0	0	0	16	0	0	16	316
04:45 PM	0	298	0	298	0	0	0	0	14	0	0	14	312
05:00 PM	0	328	0	328	0	0	0	0	14	0	0	14	342
Total Volume	0	1195	0	1195	0	0	0	0	59	0	0	59	1254
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.911	.000	.911	.000	.000	.000	.000	.922	.000	.000	.922	.917
Cars	0	1165	0	1165	0	0	0	0	57	0	0	57	1222
% Cars	0	97.5	0	97.5	0	0	0	0	96.6	0	0	96.6	97.4
Heavy Vehicles	0	30	0	30	0	0	0	0	2	0	0	2	32
% Heavy Vehicles	0	2.5	0	2.5	0	0	0	0	3.4	0	0	3.4	2.6

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 KK
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North			Congress Street From South			Matthews Street From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
04:00 PM	0	316	0	0	0	0	13	0	0	329
04:15 PM	0	260	0	0	0	0	13	0	0	273
04:30 PM	0	295	0	0	0	0	16	0	0	311
04:45 PM	0	291	0	0	0	0	14	0	0	305
Total	0	1162	0	0	0	0	56	0	0	1218
05:00 PM	0	319	0	0	0	0	14	0	0	333
05:15 PM	0	262	0	0	0	0	17	0	0	279
05:30 PM	0	265	0	0	0	0	15	0	0	280
05:45 PM	0	264	0	0	0	0	18	0	0	282
Total	0	1110	0	0	0	0	64	0	0	1174
Grand Total	0	2272	0	0	0	0	120	0	0	2392
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	95	0	0	0	0	5	0	0	

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	0	295	0	295	0	0	0	0	16	0	0	16	311
04:45 PM	0	291	0	291	0	0	0	0	14	0	0	14	305
05:00 PM	0	319	0	319	0	0	0	0	14	0	0	14	333
05:15 PM	0	262	0	262	0	0	0	0	17	0	0	17	279
Total Volume	0	1167	0	1167	0	0	0	0	61	0	0	61	1228
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.915	.000	.915	.000	.000	.000	.000	.897	.000	.000	.897	.922

N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 KK
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North			Congress Street From South			Matthews Street From West			
Start Time	Right	Thru	U-Turn	Thru	Left	U-Turn	Right	Left	U-Turn	Int. Total
04:00 PM	0	6	0	0	0	0	0	0	0	6
04:15 PM	0	9	0	0	0	0	2	0	0	11
04:30 PM	0	5	0	0	0	0	0	0	0	5
04:45 PM	0	7	0	0	0	0	0	0	0	7
Total	0	27	0	0	0	0	2	0	0	29
05:00 PM	0	9	0	0	0	0	0	0	0	9
05:15 PM	0	3	0	0	0	0	0	0	0	3
05:30 PM	0	1	0	0	0	0	0	0	0	1
05:45 PM	0	7	0	0	0	0	0	0	0	7
Total	0	20	0	0	0	0	0	0	0	20
Grand Total	0	47	0	0	0	0	2	0	0	49
Apprch %	0	100	0	0	0	0	100	0	0	
Total %	0	95.9	0	0	0	0	4.1	0	0	

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	9	0	9	0	0	0	0	2	0	0	2	11
04:30 PM	0	5	0	5	0	0	0	0	0	0	0	0	5
04:45 PM	0	7	0	7	0	0	0	0	0	0	0	0	7
05:00 PM	0	9	0	9	0	0	0	0	0	0	0	0	9
Total Volume	0	30	0	30	0	0	0	0	2	0	0	2	32
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.833	.000	.833	.000	.000	.000	.000	.250	.000	.000	.250	.727

N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 KK
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	Peds EB	Peds WB	Thru	Left	Peds WB	Peds EB	Right	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	1	1	0	0	0	2	1	0	0	28	16	49
04:15 PM	0	0	1	4	0	0	1	0	2	0	28	19	55
04:30 PM	0	3	1	2	0	0	1	1	0	0	43	20	71
04:45 PM	0	3	4	3	0	0	4	1	0	0	64	21	100
Total	0	7	7	9	0	0	8	3	2	0	163	76	275
05:00 PM	0	2	7	4	0	0	1	6	0	0	96	26	142
05:15 PM	0	1	1	5	0	0	3	2	1	0	78	34	125
05:30 PM	0	1	0	4	0	0	6	2	0	0	60	27	100
05:45 PM	0	0	1	0	0	0	3	0	0	0	50	18	72
Total	0	4	9	13	0	0	13	10	1	0	284	105	439
Grand Total	0	11	16	22	0	0	21	13	3	0	447	181	714
Apprch %	0	22.4	32.7	44.9	0	0	61.8	38.2	0.5	0	70.8	28.7	
Total %	0	1.5	2.2	3.1	0	0	2.9	1.8	0.4	0	62.6	25.4	

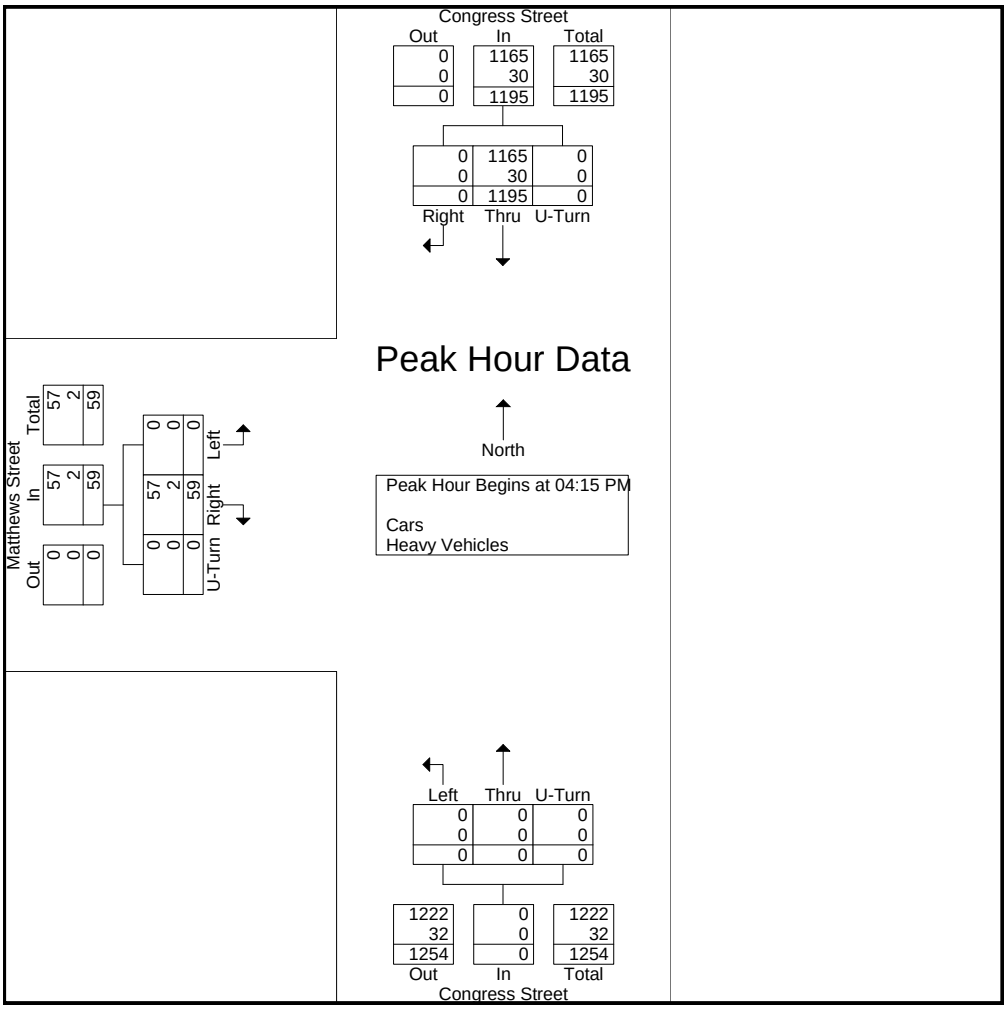
	Congress Street From North					Congress Street From South					Matthews Street From West					
Start Time	Right	Thru	Peds EB	Peds WB	App. Total	Thru	Left	Peds WB	Peds EB	App. Total	Right	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 04:45 PM																
04:45 PM	0	3	4	3	10	0	0	4	1	5	0	0	64	21	85	100
05:00 PM	0	2	7	4	13	0	0	1	6	7	0	0	96	26	122	142
05:15 PM	0	1	1	5	7	0	0	3	2	5	1	0	78	34	113	125
05:30 PM	0	1	0	4	5	0	0	6	2	8	0	0	60	27	87	100
Total Volume	0	7	12	16	35	0	0	14	11	25	1	0	298	108	407	467
% App. Total	0	20	34.3	45.7		0	0	56	44		0.2	0	73.2	26.5		
PHF	.000	.583	.429	.800	.673	.000	.000	.583	.458	.781	.250	.000	.776	.794	.834	.822

N/S: Congress Street
W: Matthews Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 KK
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North				Congress Street From South				Matthews Street From West				
Start Time	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	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	269	0	269	0	0	0	0	15	0	0	15	284
04:30 PM	0	300	0	300	0	0	0	0	16	0	0	16	316
04:45 PM	0	298	0	298	0	0	0	0	14	0	0	14	312
05:00 PM	0	328	0	328	0	0	0	0	14	0	0	14	342
Total Volume	0	1195	0	1195	0	0	0	0	59	0	0	59	1254
% App. Total	0	100	0		0	0	0		100	0	0		
PHF	.000	.911	.000	.911	.000	.000	.000	.000	.922	.000	.000	.922	.917
Cars	0	1165	0	1165	0	0	0	0	57	0	0	57	1222
% Cars	0	97.5	0	97.5	0	0	0	0	96.6	0	0	96.6	97.4
Heavy Vehicles	0	30	0	30	0	0	0	0	2	0	0	2	32
% Heavy Vehicles	0	2.5	0	2.5	0	0	0	0	3.4	0	0	3.4	2.6



N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 L
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North				Franklin Street From East				Congress Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	16	120	0	0	0	15	27	0	0	0	0	0	0	0	0	0	178
07:15 AM	24	116	0	0	0	27	32	0	0	0	0	0	0	0	0	0	199
07:30 AM	18	158	0	0	0	27	32	0	0	0	0	0	0	0	0	0	235
07:45 AM	20	145	0	0	0	33	46	0	0	0	0	0	0	0	0	0	244
Total	78	539	0	0	0	102	137	0	0	0	0	0	0	0	0	0	856
08:00 AM	21	175	0	0	0	35	48	0	0	0	0	0	0	0	0	0	279
08:15 AM	36	204	0	0	0	36	75	0	0	0	0	0	0	0	0	0	351
08:30 AM	22	169	0	0	0	40	43	0	0	0	0	0	0	0	0	0	274
08:45 AM	26	163	0	0	0	37	54	0	0	0	0	0	0	0	0	0	280
Total	105	711	0	0	0	148	220	0	0	0	0	0	0	0	0	0	1184
Grand Total	183	1250	0	0	0	250	357	0	0	0	0	0	0	0	0	0	2040
Apprch %	12.8	87.2	0	0	0	41.2	58.8	0	0	0	0	0	0	0	0	0	
Total %	9	61.3	0	0	0	12.3	17.5	0	0	0	0	0	0	0	0	0	
Cars	175	1137	0	0	0	234	346	0	0	0	0	0	0	0	0	0	1892
% Cars	95.6	91	0	0	0	93.6	96.9	0	0	0	0	0	0	0	0	0	92.7
Heavy Vehicles	8	113	0	0	0	16	11	0	0	0	0	0	0	0	0	0	148
% Heavy Vehicles	4.4	9	0	0	0	6.4	3.1	0	0	0	0	0	0	0	0	0	7.3

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	21	175	0	0	196	0	35	48	0	83	0	0	0	0	0	0	0	0	0	0	279
08:15 AM	36	204	0	0	240	0	36	75	0	111	0	0	0	0	0	0	0	0	0	0	351
08:30 AM	22	169	0	0	191	0	40	43	0	83	0	0	0	0	0	0	0	0	0	0	274
08:45 AM	26	163	0	0	189	0	37	54	0	91	0	0	0	0	0	0	0	0	0	0	280
Total Volume	105	711	0	0	816	0	148	220	0	368	0	0	0	0	0	0	0	0	0	0	1184
% App. Total	12.9	87.1	0	0		0	40.2	59.8	0		0	0	0	0		0	0	0	0		
PHF	.729	.871	.000	.000	.850	.000	.925	.733	.000	.829	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.843
Cars	99	660	0	0	759	0	142	213	0	355	0	0	0	0	0	0	0	0	0	0	1114
% Cars	94.3	92.8	0	0	93.0	0	95.9	96.8	0	96.5	0	0	0	0	0	0	0	0	0	0	94.1
Heavy Vehicles	6	51	0	0	57	0	6	7	0	13	0	0	0	0	0	0	0	0	0	0	70
% Heavy Vehicles	5.7	7.2	0	0	7.0	0	4.1	3.2	0	3.5	0	0	0	0	0	0	0	0	0	0	5.9

N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 L
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North				Franklin Street From East				Congress Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	15	97	0	0	0	13	26	0	0	0	0	0	0	0	0	0	151
07:15 AM	24	99	0	0	0	26	31	0	0	0	0	0	0	0	0	0	180
07:30 AM	18	147	0	0	0	23	32	0	0	0	0	0	0	0	0	0	220
07:45 AM	19	134	0	0	0	30	44	0	0	0	0	0	0	0	0	0	227
Total	76	477	0	0	0	92	133	0	0	0	0	0	0	0	0	0	778
08:00 AM	20	163	0	0	0	32	47	0	0	0	0	0	0	0	0	0	262
08:15 AM	33	188	0	0	0	34	72	0	0	0	0	0	0	0	0	0	327
08:30 AM	21	159	0	0	0	40	43	0	0	0	0	0	0	0	0	0	263
08:45 AM	25	150	0	0	0	36	51	0	0	0	0	0	0	0	0	0	262
Total	99	660	0	0	0	142	213	0	0	0	0	0	0	0	0	0	1114
Grand Total	175	1137	0	0	0	234	346	0	0	0	0	0	0	0	0	0	1892
Apprch %	13.3	86.7	0	0	0	40.3	59.7	0	0	0	0	0	0	0	0	0	
Total %	9.2	60.1	0	0	0	12.4	18.3	0	0	0	0	0	0	0	0	0	

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	20	163	0	0	183	0	32	47	0	79	0	0	0	0	0	0	0	0	0	0	262
08:15 AM	33	188	0	0	221	0	34	72	0	106	0	0	0	0	0	0	0	0	0	0	327
08:30 AM	21	159	0	0	180	0	40	43	0	83	0	0	0	0	0	0	0	0	0	0	263
08:45 AM	25	150	0	0	175	0	36	51	0	87	0	0	0	0	0	0	0	0	0	0	262
Total Volume	99	660	0	0	759	0	142	213	0	355	0	0	0	0	0	0	0	0	0	0	1114
% App. Total	13	87	0	0		0	40	60	0		0	0	0	0		0	0	0	0		
PHF	.750	.878	.000	.000	.859	.000	.888	.740	.000	.837	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.852

N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 L
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North				Franklin Street From East				Congress Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	1	23	0	0	0	2	1	0	0	0	0	0	0	0	0	0	27
07:15 AM	0	17	0	0	0	1	1	0	0	0	0	0	0	0	0	0	19
07:30 AM	0	11	0	0	0	4	0	0	0	0	0	0	0	0	0	0	15
07:45 AM	1	11	0	0	0	3	2	0	0	0	0	0	0	0	0	0	17
Total	2	62	0	0	0	10	4	0	0	0	0	0	0	0	0	0	78
08:00 AM	1	12	0	0	0	3	1	0	0	0	0	0	0	0	0	0	17
08:15 AM	3	16	0	0	0	2	3	0	0	0	0	0	0	0	0	0	24
08:30 AM	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
08:45 AM	1	13	0	0	0	1	3	0	0	0	0	0	0	0	0	0	18
Total	6	51	0	0	0	6	7	0	0	0	0	0	0	0	0	0	70
Grand Total	8	113	0	0	0	16	11	0	0	0	0	0	0	0	0	0	148
Apprch %	6.6	93.4	0	0	0	59.3	40.7	0	0	0	0	0	0	0	0	0	
Total %	5.4	76.4	0	0	0	10.8	7.4	0	0	0	0	0	0	0	0	0	

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	1	23	0	0	24	0	2	1	0	3	0	0	0	0	0	0	0	0	0	0	27
07:15 AM	0	17	0	0	17	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	19
07:30 AM	0	11	0	0	11	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	15
07:45 AM	1	11	0	0	12	0	3	2	0	5	0	0	0	0	0	0	0	0	0	0	17
Total Volume	2	62	0	0	64	0	10	4	0	14	0	0	0	0	0	0	0	0	0	0	78
% App. Total	3.1	96.9	0	0		0	71.4	28.6	0		0	0	0	0		0	0	0	0		
PHF	.500	.674	.000	.000	.667	.000	.625	.500	.000	.700	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.722

N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 L
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	1	0	30	17	0	0	0	20	3	0	0	0	28	41	0	0	0	7	25	172
07:15 AM	0	5	0	50	27	0	0	0	24	10	0	0	0	34	60	0	0	0	10	66	286
07:30 AM	0	3	0	67	38	0	1	0	41	16	0	0	0	37	79	0	0	0	16	58	356
07:45 AM	0	1	0	84	50	0	0	1	46	22	0	0	0	55	129	0	0	0	34	75	497
Total	0	10	0	231	132	0	1	1	131	51	0	0	0	154	309	0	0	0	67	224	1311
08:00 AM	2	7	0	120	56	0	2	0	42	24	0	0	0	39	168	0	0	0	31	81	572
08:15 AM	2	6	0	165	71	0	0	0	56	52	0	0	0	40	172	0	0	0	54	113	731
08:30 AM	0	11	0	177	70	0	0	1	76	39	0	0	0	43	214	0	0	0	54	142	827
08:45 AM	1	8	0	179	63	0	4	0	73	30	0	0	0	61	272	0	0	0	39	140	870
Total	5	32	0	641	260	0	6	1	247	145	0	0	0	183	826	0	0	0	178	476	3000
Grand Total	5	42	0	872	392	0	7	2	378	196	0	0	0	337	1135	0	0	0	245	700	4311
Apprch %	0.4	3.2	0	66.5	29.9	0	1.2	0.3	64.8	33.6	0	0	0	22.9	77.1	0	0	0	25.9	74.1	
Total %	0.1	1	0	20.2	9.1	0	0.2	0	8.8	4.5	0	0	0	7.8	26.3	0	0	0	5.7	16.2	

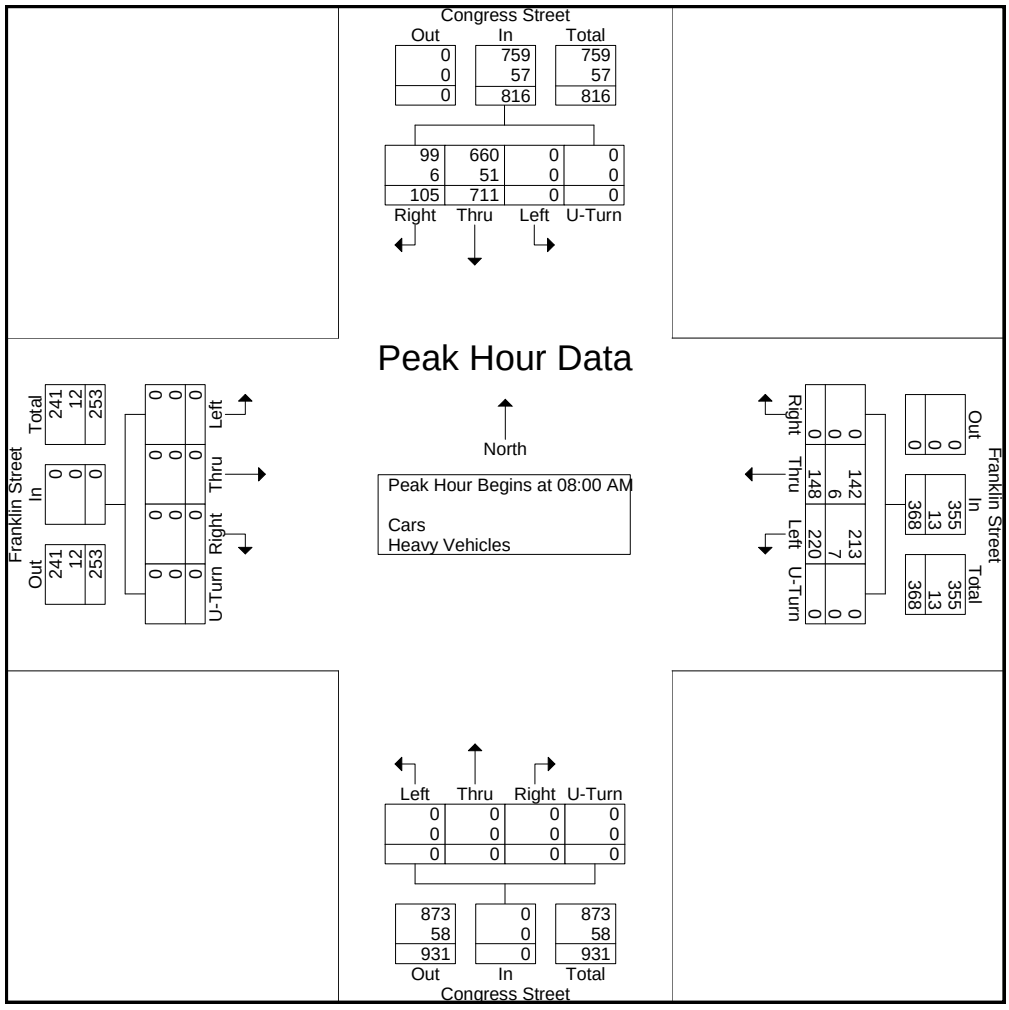
	Congress Street From North						Franklin Street From East						Congress Street From South						Franklin Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	2	7	0	120	56	185	0	2	0	42	24	68	0	0	0	39	168	207	0	0	0	31	81	112	572
08:15 AM	2	6	0	165	71	244	0	0	0	56	52	108	0	0	0	40	172	212	0	0	0	54	113	167	731
08:30 AM	0	11	0	177	70	258	0	0	1	76	39	116	0	0	0	43	214	257	0	0	0	54	142	196	827
08:45 AM	1	8	0	179	63	251	0	4	0	73	30	107	0	0	0	61	272	333	0	0	0	39	140	179	870
Total Volume	5	32	0	641	260	938	0	6	1	247	145	399	0	0	0	183	826	1009	0	0	0	178	476	654	3000
% App. Total	0.5	3.4	0	68.3	27.7		0	1.5	0.3	61.9	36.3		0	0	0	18.1	81.9		0	0	0	27.2	72.8		
PHF	.625	.727	.000	.895	.915	.909	.000	.375	.250	.813	.697	.860	.000	.000	.000	.750	.759	.758	.000	.000	.000	.824	.838	.834	.862

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 L
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	21	175	0	0	196	0	35	48	0	83	0	0	0	0	0	0	0	0	0	0	279
08:15 AM	36	204	0	0	240	0	36	75	0	111	0	0	0	0	0	0	0	0	0	0	351
08:30 AM	22	169	0	0	191	0	40	43	0	83	0	0	0	0	0	0	0	0	0	0	274
08:45 AM	26	163	0	0	189	0	37	54	0	91	0	0	0	0	0	0	0	0	0	0	280
Total Volume	105	711	0	0	816	0	148	220	0	368	0	0	0	0	0	0	0	0	0	0	1184
% App. Total	12.9	87.1	0	0		0	40.2	59.8	0		0	0	0	0		0	0	0	0		
PHF	.729	.871	.000	.000	.850	.000	.925	.733	.000	.829	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.843
Cars	99	660	0	0	759	0	142	213	0	355	0	0	0	0	0	0	0	0	0	0	1114
% Cars	94.3	92.8	0	0	93.0	0	95.9	96.8	0	96.5	0	0	0	0	0	0	0	0	0	0	94.1
Heavy Vehicles	6	51	0	0	57	0	6	7	0	13	0	0	0	0	0	0	0	0	0	0	70
% Heavy Vehicles	5.7	7.2	0	0	7.0	0	4.1	3.2	0	3.5	0	0	0	0	0	0	0	0	0	0	5.9



N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 LL
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North				Franklin Street From East				Congress Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	21	266	0	0	0	27	77	0	0	0	0	0	0	0	0	0	391
04:15 PM	29	212	0	0	0	29	51	0	0	0	0	0	0	0	0	0	321
04:30 PM	32	222	0	0	0	38	70	0	0	0	0	0	0	0	0	0	362
04:45 PM	19	237	0	0	0	39	67	0	0	0	0	0	0	0	0	0	362
Total	101	937	0	0	0	133	265	0	0	0	0	0	0	0	0	0	1436
05:00 PM	26	254	0	0	0	22	70	0	0	0	0	0	0	0	0	0	372
05:15 PM	11	213	0	0	0	38	56	0	0	0	0	0	0	0	0	0	318
05:30 PM	29	204	0	0	0	30	66	0	0	0	0	0	0	0	0	0	329
05:45 PM	17	199	0	0	0	21	70	0	0	0	0	0	0	0	0	0	307
Total	83	870	0	0	0	111	262	0	0	0	0	0	0	0	0	0	1326
Grand Total	184	1807	0	0	0	244	527	0	0	0	0	0	0	0	0	0	2762
Apprch %	9.2	90.8	0	0	0	31.6	68.4	0	0	0	0	0	0	0	0	0	
Total %	6.7	65.4	0	0	0	8.8	19.1	0	0	0	0	0	0	0	0	0	
Cars	179	1770	0	0	0	238	518	0	0	0	0	0	0	0	0	0	2705
% Cars	97.3	98	0	0	0	97.5	98.3	0	0	0	0	0	0	0	0	0	97.9
Heavy Vehicles	5	37	0	0	0	6	9	0	0	0	0	0	0	0	0	0	57
% Heavy Vehicles	2.7	2	0	0	0	2.5	1.7	0	0	0	0	0	0	0	0	0	2.1

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	21	266	0	0	287	0	27	77	0	104	0	0	0	0	0	0	0	0	0	0	391
04:15 PM	29	212	0	0	241	0	29	51	0	80	0	0	0	0	0	0	0	0	0	0	321
04:30 PM	32	222	0	0	254	0	38	70	0	108	0	0	0	0	0	0	0	0	0	0	362
04:45 PM	19	237	0	0	256	0	39	67	0	106	0	0	0	0	0	0	0	0	0	0	362
Total Volume	101	937	0	0	1038	0	133	265	0	398	0	0	0	0	0	0	0	0	0	0	1436
% App. Total	9.7	90.3	0	0		0	33.4	66.6	0		0	0	0	0		0	0	0	0		
PHF	.789	.881	.000	.000	.904	.000	.853	.860	.000	.921	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.918
Cars	97	915	0	0	1012	0	131	260	0	391	0	0	0	0	0	0	0	0	0	0	1403
% Cars	96.0	97.7	0	0	97.5	0	98.5	98.1	0	98.2	0	0	0	0	0	0	0	0	0	0	97.7
Heavy Vehicles	4	22	0	0	26	0	2	5	0	7	0	0	0	0	0	0	0	0	0	0	33
% Heavy Vehicles	4.0	2.3	0	0	2.5	0	1.5	1.9	0	1.8	0	0	0	0	0	0	0	0	0	0	2.3

N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 LL
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North				Franklin Street From East				Congress Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	21	260	0	0	0	27	77	0	0	0	0	0	0	0	0	0	385
04:15 PM	28	206	0	0	0	29	48	0	0	0	0	0	0	0	0	0	311
04:30 PM	30	218	0	0	0	37	69	0	0	0	0	0	0	0	0	0	354
04:45 PM	18	231	0	0	0	38	66	0	0	0	0	0	0	0	0	0	353
Total	97	915	0	0	0	131	260	0	0	0	0	0	0	0	0	0	1403
05:00 PM	26	246	0	0	0	22	69	0	0	0	0	0	0	0	0	0	363
05:15 PM	11	212	0	0	0	37	55	0	0	0	0	0	0	0	0	0	315
05:30 PM	29	202	0	0	0	27	66	0	0	0	0	0	0	0	0	0	324
05:45 PM	16	195	0	0	0	21	68	0	0	0	0	0	0	0	0	0	300
Total	82	855	0	0	0	107	258	0	0	0	0	0	0	0	0	0	1302
Grand Total	179	1770	0	0	0	238	518	0	0	0	0	0	0	0	0	0	2705
Apprch %	9.2	90.8	0	0	0	31.5	68.5	0	0	0	0	0	0	0	0	0	
Total %	6.6	65.4	0	0	0	8.8	19.1	0	0	0	0	0	0	0	0	0	

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	21	260	0	0	281	0	27	77	0	104	0	0	0	0	0	0	0	0	0	0	385
04:15 PM	28	206	0	0	234	0	29	48	0	77	0	0	0	0	0	0	0	0	0	0	311
04:30 PM	30	218	0	0	248	0	37	69	0	106	0	0	0	0	0	0	0	0	0	0	354
04:45 PM	18	231	0	0	249	0	38	66	0	104	0	0	0	0	0	0	0	0	0	0	353
Total Volume	97	915	0	0	1012	0	131	260	0	391	0	0	0	0	0	0	0	0	0	0	1403
% App. Total	9.6	90.4	0	0		0	33.5	66.5	0		0	0	0	0		0	0	0	0		
PHF	.808	.880	.000	.000	.900	.000	.862	.844	.000	.922	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.911

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 LL
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North				Franklin Street From East				Congress Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
04:15 PM	1	6	0	0	0	0	3	0	0	0	0	0	0	0	0	0	10
04:30 PM	2	4	0	0	0	1	1	0	0	0	0	0	0	0	0	0	8
04:45 PM	1	6	0	0	0	1	1	0	0	0	0	0	0	0	0	0	9
Total	4	22	0	0	0	2	5	0	0	0	0	0	0	0	0	0	33
05:00 PM	0	8	0	0	0	0	1	0	0	0	0	0	0	0	0	0	9
05:15 PM	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	3
05:30 PM	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0	0	5
05:45 PM	1	4	0	0	0	0	2	0	0	0	0	0	0	0	0	0	7
Total	1	15	0	0	0	4	4	0	0	0	0	0	0	0	0	0	24
Grand Total	5	37	0	0	0	6	9	0	0	0	0	0	0	0	0	0	57
Apprch %	11.9	88.1	0	0	0	40	60	0	0	0	0	0	0	0	0	0	
Total %	8.8	64.9	0	0	0	10.5	15.8	0	0	0	0	0	0	0	0	0	

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	6	0	0	7	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	10
04:30 PM	2	4	0	0	6	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	8
04:45 PM	1	6	0	0	7	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	9
05:00 PM	0	8	0	0	8	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	9
Total Volume	4	24	0	0	28	0	2	6	0	8	0	0	0	0	0	0	0	0	0	0	36
% App. Total	14.3	85.7	0	0		0	25	75	0		0	0	0	0		0	0	0	0		
PHF	.500	.750	.000	.000	.875	.000	.500	.500	.000	.667	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.900

N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 LL
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	2	0	46	76	0	0	0	32	31	0	0	0	86	31	0	0	0	30	56	390
04:15 PM	0	0	0	59	101	0	2	0	29	20	0	0	0	93	26	0	0	0	31	74	435
04:30 PM	0	1	0	46	110	0	1	0	44	22	0	0	0	125	24	0	0	0	45	102	520
04:45 PM	0	1	0	61	159	0	2	1	43	36	0	0	0	136	41	0	0	0	51	99	630
Total	0	4	0	212	446	0	5	1	148	109	0	0	0	440	122	0	0	0	157	331	1975
05:00 PM	0	0	0	90	181	0	2	0	65	69	0	0	0	205	40	0	0	0	103	107	862
05:15 PM	0	0	0	62	147	0	1	1	64	62	0	0	0	191	54	0	0	0	82	131	795
05:30 PM	0	1	0	70	198	0	7	0	52	72	0	0	0	231	36	0	0	0	72	102	841
05:45 PM	0	1	0	50	103	0	4	0	34	48	0	0	0	116	49	0	0	0	40	58	503
Total	0	2	0	272	629	0	14	1	215	251	0	0	0	743	179	0	0	0	297	398	3001
Grand Total	0	6	0	484	1075	0	19	2	363	360	0	0	0	1183	301	0	0	0	454	729	4976
Apprch %	0	0.4	0	30.9	68.7	0	2.6	0.3	48.8	48.4	0	0	0	79.7	20.3	0	0	0	38.4	61.6	
Total %	0	0.1	0	9.7	21.6	0	0.4	0	7.3	7.2	0	0	0	23.8	6	0	0	0	9.1	14.7	

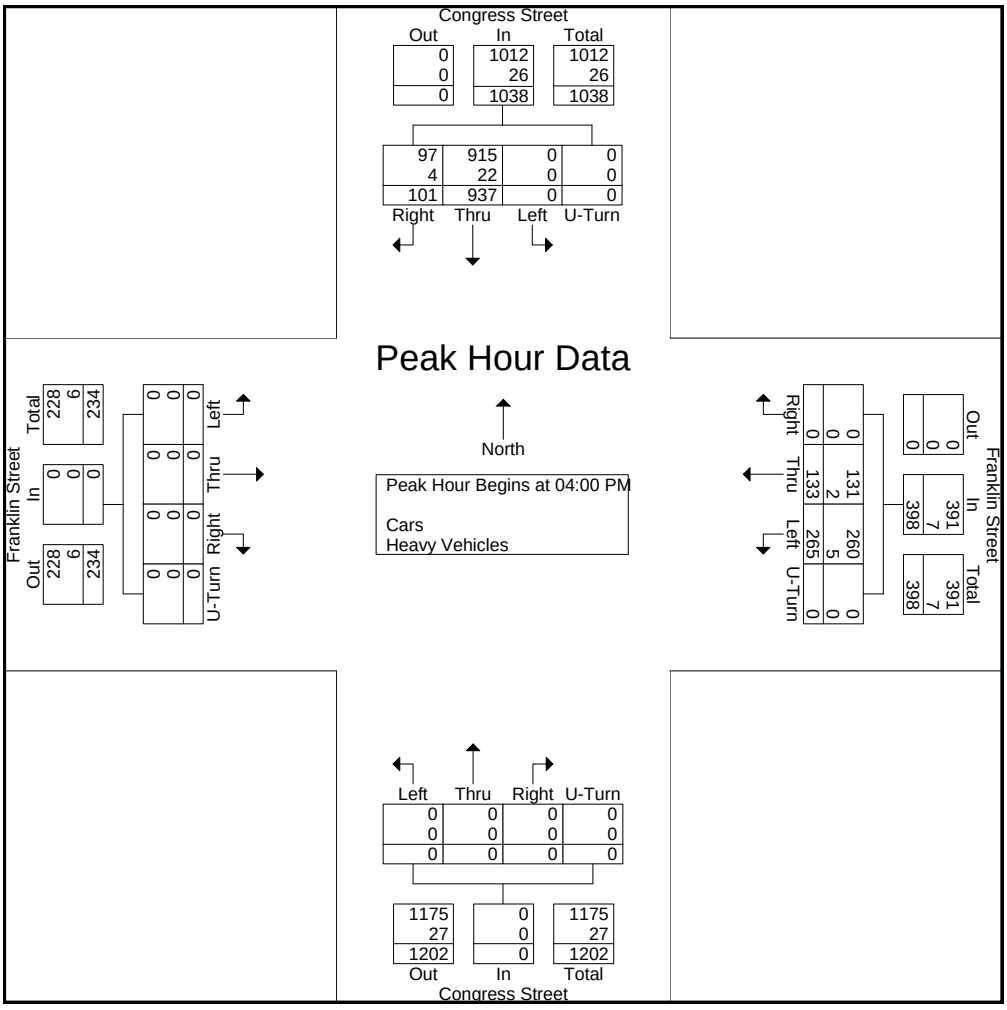
	Congress Street From North						Franklin Street From East						Congress Street From South						Franklin Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	1	0	61	159	221	0	2	1	43	36	82	0	0	0	136	41	177	0	0	0	51	99	150	630
05:00 PM	0	0	0	90	181	271	0	2	0	65	69	136	0	0	0	205	40	245	0	0	0	103	107	210	862
05:15 PM	0	0	0	62	147	209	0	1	1	64	62	128	0	0	0	191	54	245	0	0	0	82	131	213	795
05:30 PM	0	1	0	70	198	269	0	7	0	52	72	131	0	0	0	231	36	267	0	0	0	72	102	174	841
Total Volume	0	2	0	283	685	970	0	12	2	224	239	477	0	0	0	763	171	934	0	0	0	308	439	747	3128
% App. Total	0	0.2	0	29.2	70.6		0	2.5	0.4	47	50.1		0	0	0	81.7	18.3		0	0	0	41.2	58.8		
PHF	.000	.500	.000	.786	.865	.895	.000	.429	.500	.862	.830	.877	.000	.000	.000	.826	.792	.875	.000	.000	.000	.748	.838	.877	.907

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 LL
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North					Franklin Street From East					Congress Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	21	266	0	0	287	0	27	77	0	104	0	0	0	0	0	0	0	0	0	0	391
04:15 PM	29	212	0	0	241	0	29	51	0	80	0	0	0	0	0	0	0	0	0	0	321
04:30 PM	32	222	0	0	254	0	38	70	0	108	0	0	0	0	0	0	0	0	0	0	362
04:45 PM	19	237	0	0	256	0	39	67	0	106	0	0	0	0	0	0	0	0	0	0	362
Total Volume	101	937	0	0	1038	0	133	265	0	398	0	0	0	0	0	0	0	0	0	0	1436
% App. Total	9.7	90.3	0	0		0	33.4	66.6	0		0	0	0	0		0	0	0	0		
PHF	.789	.881	.000	.000	.904	.000	.853	.860	.000	.921	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.918
Cars	97	915	0	0	1012	0	131	260	0	391	0	0	0	0	0	0	0	0	0	0	1403
% Cars	96.0	97.7	0	0	97.5	0	98.5	98.1	0	98.2	0	0	0	0	0	0	0	0	0	0	97.7
Heavy Vehicles	4	22	0	0	26	0	2	5	0	7	0	0	0	0	0	0	0	0	0	0	33
% Heavy Vehicles	4.0	2.3	0	0	2.5	0	1.5	1.9	0	1.8	0	0	0	0	0	0	0	0	0	0	2.3



N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 M
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Federal Street From North				Franklin Street From East				Federal Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	8	24	0	0	0	20	13	0	0	0	0	0	65
07:15 AM	0	0	0	0	10	39	0	0	0	39	19	0	0	0	0	0	107
07:30 AM	0	0	0	0	9	38	0	0	0	34	10	0	0	0	0	0	91
07:45 AM	0	0	0	0	11	41	0	0	0	35	12	0	0	0	0	0	99
Total	0	0	0	0	38	142	0	0	0	128	54	0	0	0	0	0	362
08:00 AM	0	0	0	0	16	39	0	0	0	36	18	0	0	0	0	0	109
08:15 AM	0	0	0	0	16	55	0	0	0	32	14	0	0	0	0	0	117
08:30 AM	0	0	0	0	12	50	0	0	0	26	16	0	0	0	0	0	104
08:45 AM	0	0	0	0	14	48	0	0	0	46	18	0	0	0	0	0	126
Total	0	0	0	0	58	192	0	0	0	140	66	0	0	0	0	0	456
Grand Total	0	0	0	0	96	334	0	0	0	268	120	0	0	0	0	0	818
Apprch %	0	0	0	0	22.3	77.7	0	0	0	69.1	30.9	0	0	0	0	0	
Total %	0	0	0	0	11.7	40.8	0	0	0	32.8	14.7	0	0	0	0	0	
Cars	0	0	0	0	94	314	0	0	0	243	51	0	0	0	0	0	702
% Cars	0	0	0	0	97.9	94	0	0	0	90.7	42.5	0	0	0	0	0	85.8
Heavy Vehicles	0	0	0	0	2	20	0	0	0	25	69	0	0	0	0	0	116
% Heavy Vehicles	0	0	0	0	2.1	6	0	0	0	9.3	57.5	0	0	0	0	0	14.2

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	16	39	0	0	55	0	36	18	0	54	0	0	0	0	0	109
08:15 AM	0	0	0	0	0	16	55	0	0	71	0	32	14	0	46	0	0	0	0	0	117
08:30 AM	0	0	0	0	0	12	50	0	0	62	0	26	16	0	42	0	0	0	0	0	104
08:45 AM	0	0	0	0	0	14	48	0	0	62	0	46	18	0	64	0	0	0	0	0	126
Total Volume	0	0	0	0	0	58	192	0	0	250	0	140	66	0	206	0	0	0	0	0	456
% App. Total	0	0	0	0		23.2	76.8	0	0		0	68	32	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.906	.873	.000	.000	.880	.000	.761	.917	.000	.805	.000	.000	.000	.000	.000	.905
Cars	0	0	0	0	0	58	180	0	0	238	0	124	26	0	150	0	0	0	0	0	388
% Cars	0	0	0	0	0	100	93.8	0	0	95.2	0	88.6	39.4	0	72.8	0	0	0	0	0	85.1
Heavy Vehicles	0	0	0	0	0	0	12	0	0	12	0	16	40	0	56	0	0	0	0	0	68
% Heavy Vehicles	0	0	0	0	0	0	6.3	0	0	4.8	0	11.4	60.6	0	27.2	0	0	0	0	0	14.9

N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 M
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Federal Street From North				Franklin Street From East				Federal Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	7	23	0	0	0	19	7	0	0	0	0	0	56
07:15 AM	0	0	0	0	10	38	0	0	0	34	7	0	0	0	0	0	89
07:30 AM	0	0	0	0	9	34	0	0	0	34	4	0	0	0	0	0	81
07:45 AM	0	0	0	0	10	39	0	0	0	32	7	0	0	0	0	0	88
Total	0	0	0	0	36	134	0	0	0	119	25	0	0	0	0	0	314
08:00 AM	0	0	0	0	16	35	0	0	0	35	6	0	0	0	0	0	92
08:15 AM	0	0	0	0	16	50	0	0	0	29	6	0	0	0	0	0	101
08:30 AM	0	0	0	0	12	49	0	0	0	19	5	0	0	0	0	0	85
08:45 AM	0	0	0	0	14	46	0	0	0	41	9	0	0	0	0	0	110
Total	0	0	0	0	58	180	0	0	0	124	26	0	0	0	0	0	388
Grand Total	0	0	0	0	94	314	0	0	0	243	51	0	0	0	0	0	702
Apprch %	0	0	0	0	23	77	0	0	0	82.7	17.3	0	0	0	0	0	
Total %	0	0	0	0	13.4	44.7	0	0	0	34.6	7.3	0	0	0	0	0	

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	16	35	0	0	51	0	35	6	0	41	0	0	0	0	0	92
08:15 AM	0	0	0	0	0	16	50	0	0	66	0	29	6	0	35	0	0	0	0	0	101
08:30 AM	0	0	0	0	0	12	49	0	0	61	0	19	5	0	24	0	0	0	0	0	85
08:45 AM	0	0	0	0	0	14	46	0	0	60	0	41	9	0	50	0	0	0	0	0	110
Total Volume	0	0	0	0	0	58	180	0	0	238	0	124	26	0	150	0	0	0	0	0	388
% App. Total	0	0	0	0		24.4	75.6	0	0		0	82.7	17.3	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.906	.900	.000	.000	.902	.000	.756	.722	.000	.750	.000	.000	.000	.000	.000	.882

N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 M
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Federal Street From North				Franklin Street From East				Federal Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	1	1	0	0	0	1	6	0	0	0	0	0	9
07:15 AM	0	0	0	0	0	1	0	0	0	5	12	0	0	0	0	0	18
07:30 AM	0	0	0	0	0	4	0	0	0	0	6	0	0	0	0	0	10
07:45 AM	0	0	0	0	1	2	0	0	0	3	5	0	0	0	0	0	11
Total	0	0	0	0	2	8	0	0	0	9	29	0	0	0	0	0	48
08:00 AM	0	0	0	0	0	4	0	0	0	1	12	0	0	0	0	0	17
08:15 AM	0	0	0	0	0	5	0	0	0	3	8	0	0	0	0	0	16
08:30 AM	0	0	0	0	0	1	0	0	0	7	11	0	0	0	0	0	19
08:45 AM	0	0	0	0	0	2	0	0	0	5	9	0	0	0	0	0	16
Total	0	0	0	0	0	12	0	0	0	16	40	0	0	0	0	0	68
Grand Total	0	0	0	0	2	20	0	0	0	25	69	0	0	0	0	0	116
Apprch %	0	0	0	0	9.1	90.9	0	0	0	26.6	73.4	0	0	0	0	0	
Total %	0	0	0	0	1.7	17.2	0	0	0	21.6	59.5	0	0	0	0	0	

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	4	0	0	4	0	1	12	0	13	0	0	0	0	0	17
08:15 AM	0	0	0	0	0	0	5	0	0	5	0	3	8	0	11	0	0	0	0	0	16
08:30 AM	0	0	0	0	0	0	1	0	0	1	0	7	11	0	18	0	0	0	0	0	19
08:45 AM	0	0	0	0	0	0	2	0	0	2	0	5	9	0	14	0	0	0	0	0	16
Total Volume	0	0	0	0	0	0	12	0	0	12	0	16	40	0	56	0	0	0	0	0	68
% App. Total	0	0	0	0		0	100	0	0		0	28.6	71.4	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.600	.000	.000	.600	.000	.571	.833	.000	.778	.000	.000	.000	.000	.000	.895

N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 M
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	0	41	23	0	0	0	32	57	0	0	1	11	37	0	0	0	66	47	315
07:15 AM	0	0	0	30	49	0	0	0	41	120	0	0	0	30	65	0	0	0	135	51	521
07:30 AM	0	0	0	63	46	0	1	0	61	113	0	0	0	37	70	0	0	0	125	45	561
07:45 AM	0	0	0	92	72	0	2	1	60	137	0	0	0	51	120	0	0	0	151	80	766
Total	0	0	0	226	190	0	3	1	194	427	0	0	1	129	292	0	0	0	477	223	2163
08:00 AM	0	0	0	118	58	1	2	1	69	113	0	0	0	48	138	0	0	0	139	70	757
08:15 AM	0	0	0	132	75	0	2	0	69	246	0	2	0	56	177	0	0	0	341	90	1190
08:30 AM	0	0	0	136	74	0	0	0	87	191	0	2	0	66	192	0	0	0	270	90	1108
08:45 AM	0	0	0	156	83	1	4	0	108	180	0	0	0	67	241	0	2	0	234	133	1209
Total	0	0	0	542	290	2	8	1	333	730	0	4	0	237	748	0	2	0	984	383	4264
Grand Total	0	0	0	768	480	2	11	2	527	1157	0	4	1	366	1040	0	2	0	1461	606	6427
Apprch %	0	0	0	61.5	38.5	0.1	0.6	0.1	31	68.1	0	0.3	0.1	25.9	73.7	0	0.1	0	70.6	29.3	
Total %	0	0	0	11.9	7.5	0	0.2	0	8.2	18	0	0.1	0	5.7	16.2	0	0	0	22.7	9.4	

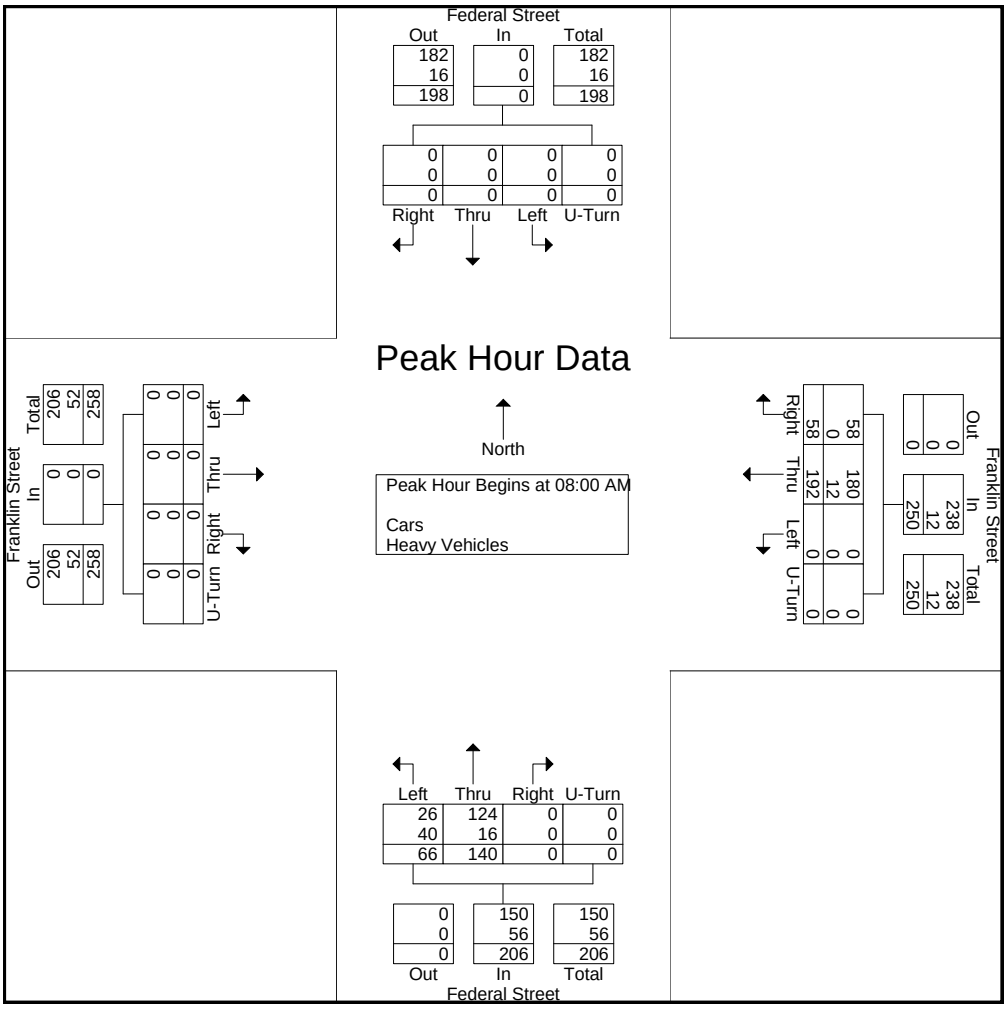
	Federal Street From North						Franklin Street From East						Federal Street From South						Franklin Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	0	0	118	58	176	1	2	1	69	113	186	0	0	0	48	138	186	0	0	0	139	70	209	757
08:15 AM	0	0	0	132	75	207	0	2	0	69	246	317	0	2	0	56	177	235	0	0	0	341	90	431	1190
08:30 AM	0	0	0	136	74	210	0	0	0	87	191	278	0	2	0	66	192	260	0	0	0	270	90	360	1108
08:45 AM	0	0	0	156	83	239	1	4	0	108	180	293	0	0	0	67	241	308	0	2	0	234	133	369	1209
Total Volume	0	0	0	542	290	832	2	8	1	333	730	1074	0	4	0	237	748	989	0	2	0	984	383	1369	4264
% App. Total	0	0	0	65.1	34.9		0.2	0.7	0.1	31	68		0	0.4	0	24	75.6		0	0.1	0	71.9	28		
PHF	.000	.000	.000	.869	.873	.870	.500	.500	.250	.771	.742	.847	.000	.500	.000	.884	.776	.803	.000	.250	.000	.721	.720	.794	.882

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 M
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	16	39	0	0	55	0	36	18	0	54	0	0	0	0	0	109
08:15 AM	0	0	0	0	0	16	55	0	0	71	0	32	14	0	46	0	0	0	0	0	117
08:30 AM	0	0	0	0	0	12	50	0	0	62	0	26	16	0	42	0	0	0	0	0	104
08:45 AM	0	0	0	0	0	14	48	0	0	62	0	46	18	0	64	0	0	0	0	0	126
Total Volume	0	0	0	0	0	58	192	0	0	250	0	140	66	0	206	0	0	0	0	0	456
% App. Total	0	0	0	0		23.2	76.8	0	0		0	68	32	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.906	.873	.000	.000	.880	.000	.761	.917	.000	.805	.000	.000	.000	.000	.000	.905
Cars	0	0	0	0	0	58	180	0	0	238	0	124	26	0	150	0	0	0	0	0	388
% Cars	0	0	0	0	0	100	93.8	0	0	95.2	0	88.6	39.4	0	72.8	0	0	0	0	0	85.1
Heavy Vehicles	0	0	0	0	0	0	12	0	0	12	0	16	40	0	56	0	0	0	0	0	68
% Heavy Vehicles	0	0	0	0	0	0	6.3	0	0	4.8	0	11.4	60.6	0	27.2	0	0	0	0	0	14.9



N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 MM
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Federal Street From North				Franklin Street From East				Federal Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	13	40	0	0	0	15	17	0	0	0	0	0	85
04:15 PM	0	0	0	0	8	47	0	0	0	23	16	0	0	0	0	0	94
04:30 PM	0	0	0	0	21	54	0	0	0	31	16	0	0	0	0	0	122
04:45 PM	0	0	0	0	11	48	0	0	0	21	22	0	0	0	0	0	102
Total	0	0	0	0	53	189	0	0	0	90	71	0	0	0	0	0	403
05:00 PM	0	0	0	0	11	33	0	0	0	33	11	0	0	0	0	0	88
05:15 PM	0	0	0	0	12	37	0	0	0	20	24	0	0	0	0	0	93
05:30 PM	0	0	0	0	11	47	0	0	0	24	21	0	0	0	0	0	103
05:45 PM	0	0	0	0	10	33	0	0	0	34	5	0	0	0	0	0	82
Total	0	0	0	0	44	150	0	0	0	111	61	0	0	0	0	0	366
Grand Total	0	0	0	0	97	339	0	0	0	201	132	0	0	0	0	0	769
Apprch %	0	0	0	0	22.2	77.8	0	0	0	60.4	39.6	0	0	0	0	0	
Total %	0	0	0	0	12.6	44.1	0	0	0	26.1	17.2	0	0	0	0	0	
Cars	0	0	0	0	95	330	0	0	0	195	76	0	0	0	0	0	696
% Cars	0	0	0	0	97.9	97.3	0	0	0	97	57.6	0	0	0	0	0	90.5
Heavy Vehicles	0	0	0	0	2	9	0	0	0	6	56	0	0	0	0	0	73
% Heavy Vehicles	0	0	0	0	2.1	2.7	0	0	0	3	42.4	0	0	0	0	0	9.5

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	8	47	0	0	55	0	23	16	0	39	0	0	0	0	0	94
04:30 PM	0	0	0	0	0	21	54	0	0	75	0	31	16	0	47	0	0	0	0	0	122
04:45 PM	0	0	0	0	0	11	48	0	0	59	0	21	22	0	43	0	0	0	0	0	102
05:00 PM	0	0	0	0	0	11	33	0	0	44	0	33	11	0	44	0	0	0	0	0	88
Total Volume	0	0	0	0	0	51	182	0	0	233	0	108	65	0	173	0	0	0	0	0	406
% App. Total	0	0	0	0		21.9	78.1	0	0		0	62.4	37.6	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.607	.843	.000	.000	.777	.000	.818	.739	.000	.920	.000	.000	.000	.000	.000	.832
Cars	0	0	0	0	0	49	178	0	0	227	0	108	37	0	145	0	0	0	0	0	372
% Cars	0	0	0	0	0	96.1	97.8	0	0	97.4	0	100	56.9	0	83.8	0	0	0	0	0	91.6
Heavy Vehicles	0	0	0	0	0	2	4	0	0	6	0	0	28	0	28	0	0	0	0	0	34
% Heavy Vehicles	0	0	0	0	0	3.9	2.2	0	0	2.6	0	0	43.1	0	16.2	0	0	0	0	0	8.4

N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 MM
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Federal Street From North				Franklin Street From East				Federal Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	13	40	0	0	0	12	11	0	0	0	0	0	76
04:15 PM	0	0	0	0	8	46	0	0	0	23	8	0	0	0	0	0	85
04:30 PM	0	0	0	0	19	53	0	0	0	31	10	0	0	0	0	0	113
04:45 PM	0	0	0	0	11	46	0	0	0	21	13	0	0	0	0	0	91
Total	0	0	0	0	51	185	0	0	0	87	42	0	0	0	0	0	365
05:00 PM	0	0	0	0	11	33	0	0	0	33	6	0	0	0	0	0	83
05:15 PM	0	0	0	0	12	36	0	0	0	19	12	0	0	0	0	0	79
05:30 PM	0	0	0	0	11	44	0	0	0	23	13	0	0	0	0	0	91
05:45 PM	0	0	0	0	10	32	0	0	0	33	3	0	0	0	0	0	78
Total	0	0	0	0	44	145	0	0	0	108	34	0	0	0	0	0	331
Grand Total	0	0	0	0	95	330	0	0	0	195	76	0	0	0	0	0	696
Apprch %	0	0	0	0	22.4	77.6	0	0	0	72	28	0	0	0	0	0	
Total %	0	0	0	0	13.6	47.4	0	0	0	28	10.9	0	0	0	0	0	

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	8	46	0	0	54	0	23	8	0	31	0	0	0	0	0	85
04:30 PM	0	0	0	0	0	19	53	0	0	72	0	31	10	0	41	0	0	0	0	0	113
04:45 PM	0	0	0	0	0	11	46	0	0	57	0	21	13	0	34	0	0	0	0	0	91
05:00 PM	0	0	0	0	0	11	33	0	0	44	0	33	6	0	39	0	0	0	0	0	83
Total Volume	0	0	0	0	0	49	178	0	0	227	0	108	37	0	145	0	0	0	0	0	372
% App. Total	0	0	0	0		21.6	78.4	0	0		0	74.5	25.5	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.645	.840	.000	.000	.788	.000	.818	.712	.000	.884	.000	.000	.000	.000	.000	.823

N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 MM
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Federal Street From North				Franklin Street From East				Federal Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	3	6	0	0	0	0	0	9
04:15 PM	0	0	0	0	0	1	0	0	0	0	8	0	0	0	0	0	9
04:30 PM	0	0	0	0	2	1	0	0	0	0	6	0	0	0	0	0	9
04:45 PM	0	0	0	0	0	2	0	0	0	0	9	0	0	0	0	0	11
Total	0	0	0	0	2	4	0	0	0	3	29	0	0	0	0	0	38
05:00 PM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	5
05:15 PM	0	0	0	0	0	1	0	0	0	1	12	0	0	0	0	0	14
05:30 PM	0	0	0	0	0	3	0	0	0	1	8	0	0	0	0	0	12
05:45 PM	0	0	0	0	0	1	0	0	0	1	2	0	0	0	0	0	4
Total	0	0	0	0	0	5	0	0	0	3	27	0	0	0	0	0	35
Grand Total	0	0	0	0	2	9	0	0	0	6	56	0	0	0	0	0	73
Apprch %	0	0	0	0	18.2	81.8	0	0	0	9.7	90.3	0	0	0	0	0	
Total %	0	0	0	0	2.7	12.3	0	0	0	8.2	76.7	0	0	0	0	0	

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	2	0	0	2	0	0	9	0	9	0	0	0	0	0	11
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	5
05:15 PM	0	0	0	0	0	0	1	0	0	1	0	1	12	0	13	0	0	0	0	0	14
05:30 PM	0	0	0	0	0	0	3	0	0	3	0	1	8	0	9	0	0	0	0	0	12
Total Volume	0	0	0	0	0	0	6	0	0	6	0	2	34	0	36	0	0	0	0	0	42
% App. Total	0	0	0	0		0	100	0	0		0	5.6	94.4	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.000	.500	.708	.000	.692	.000	.000	.000	.000	.000	.750

N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 MM
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	0	42	45	0	0	0	87	30	0	1	1	65	44	0	0	0	49	122	486
04:15 PM	0	0	0	45	50	0	3	0	99	20	0	0	0	61	24	0	0	0	29	111	442
04:30 PM	0	0	0	36	71	0	2	0	148	38	0	0	0	78	29	0	0	0	27	159	588
04:45 PM	0	0	0	43	77	0	0	0	160	48	0	1	1	72	36	0	0	0	50	164	652
Total	0	0	0	166	243	0	5	0	494	136	0	2	2	276	133	0	0	0	155	556	2168
05:00 PM	0	0	0	74	148	0	5	0	183	76	0	3	0	171	44	0	0	0	52	171	927
05:15 PM	0	0	0	45	103	0	5	0	161	60	0	0	0	169	40	0	0	0	46	179	808
05:30 PM	0	0	0	60	167	0	5	0	171	55	0	2	0	161	38	0	0	0	40	128	827
05:45 PM	0	0	0	44	91	0	5	0	77	37	0	1	0	120	44	0	0	0	23	63	505
Total	0	0	0	223	509	0	20	0	592	228	0	6	0	621	166	0	0	0	161	541	3067
Grand Total	0	0	0	389	752	0	25	0	1086	364	0	8	2	897	299	0	0	0	316	1097	5235
Apprch %	0	0	0	34.1	65.9	0	1.7	0	73.6	24.7	0	0.7	0.2	74.4	24.8	0	0	0	22.4	77.6	
Total %	0	0	0	7.4	14.4	0	0.5	0	20.7	7	0	0.2	0	17.1	5.7	0	0	0	6	21	

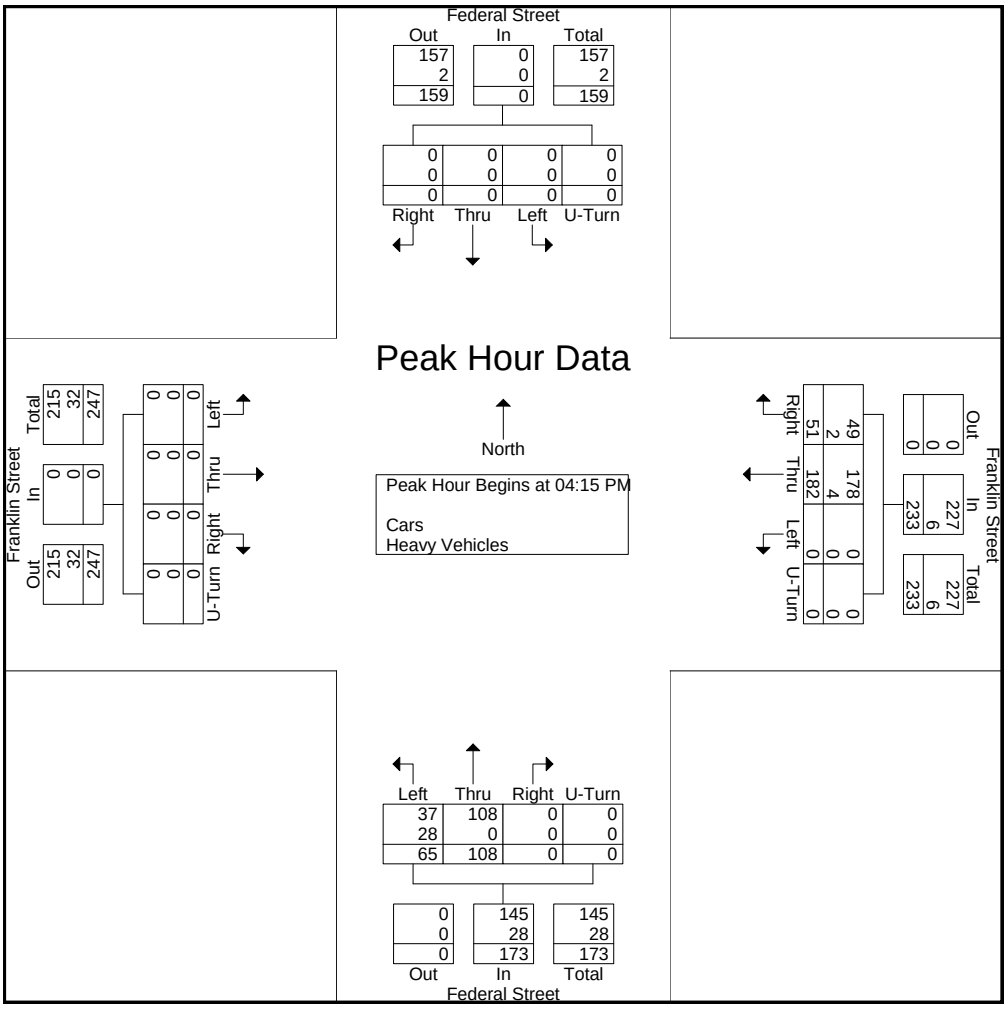
	Federal Street From North						Franklin Street From East						Federal Street From South						Franklin Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	43	77	120	0	0	0	160	48	208	0	1	1	72	36	110	0	0	0	50	164	214	652
05:00 PM	0	0	0	74	148	222	0	5	0	183	76	264	0	3	0	171	44	218	0	0	0	52	171	223	927
05:15 PM	0	0	0	45	103	148	0	5	0	161	60	226	0	0	0	169	40	209	0	0	0	46	179	225	808
05:30 PM	0	0	0	60	167	227	0	5	0	171	55	231	0	2	0	161	38	201	0	0	0	40	128	168	827
Total Volume	0	0	0	222	495	717	0	15	0	675	239	929	0	6	1	573	158	738	0	0	0	188	642	830	3214
% App. Total	0	0	0	31	69		0	1.6	0	72.7	25.7		0	0.8	0.1	77.6	21.4		0	0	0	22.7	77.3		
PHF	.000	.000	.000	.750	.741	.790	.000	.750	.000	.922	.786	.880	.000	.500	.250	.838	.898	.846	.000	.000	.000	.904	.897	.922	.867

N/S: Federal Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 MM
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Federal Street From North					Franklin Street From East					Federal Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	8	47	0	0	55	0	23	16	0	39	0	0	0	0	0	94
04:30 PM	0	0	0	0	0	21	54	0	0	75	0	31	16	0	47	0	0	0	0	0	122
04:45 PM	0	0	0	0	0	11	48	0	0	59	0	21	22	0	43	0	0	0	0	0	102
05:00 PM	0	0	0	0	0	11	33	0	0	44	0	33	11	0	44	0	0	0	0	0	88
Total Volume	0	0	0	0	0	51	182	0	0	233	0	108	65	0	173	0	0	0	0	0	406
% App. Total	0	0	0	0		21.9	78.1	0	0		0	62.4	37.6	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.607	.843	.000	.000	.777	.000	.818	.739	.000	.920	.000	.000	.000	.000	.000	.832
Cars	0	0	0	0	0	49	178	0	0	227	0	108	37	0	145	0	0	0	0	0	372
% Cars	0	0	0	0	0	96.1	97.8	0	0	97.4	0	100	56.9	0	83.8	0	0	0	0	0	91.6
Heavy Vehicles	0	0	0	0	0	2	4	0	0	6	0	0	28	0	28	0	0	0	0	0	34
% Heavy Vehicles	0	0	0	0	0	3.9	2.2	0	0	2.6	0	0	43.1	0	16.2	0	0	0	0	0	8.4



N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 N
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Devonshire Street From North				Franklin Street From East				Devonshire Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	8	14	0	0	0	22	13	0	0	0	41	0	0	0	0	0	98
07:15 AM	17	14	0	0	0	35	25	0	0	0	61	0	0	0	0	0	152
07:30 AM	18	16	0	0	0	23	26	0	2	0	58	0	0	0	0	0	143
07:45 AM	17	16	0	0	0	28	21	0	0	0	46	0	0	0	0	0	128
Total	60	60	0	0	0	108	85	0	2	0	206	0	0	0	0	0	521
08:00 AM	15	14	0	0	0	33	25	0	0	0	54	0	0	0	0	0	141
08:15 AM	10	16	0	0	0	32	34	0	0	0	57	0	0	0	0	0	149
08:30 AM	4	14	0	0	0	35	33	0	0	0	52	0	0	0	0	0	138
08:45 AM	10	21	0	0	0	37	30	0	0	0	54	0	0	0	0	0	152
Total	39	65	0	0	0	137	122	0	0	0	217	0	0	0	0	0	580
Grand Total	99	125	0	0	0	245	207	0	2	0	423	0	0	0	0	0	1101
Apprch %	44.2	55.8	0	0	0	54.2	45.8	0	0.5	0	99.5	0	0	0	0	0	
Total %	9	11.4	0	0	0	22.3	18.8	0	0.2	0	38.4	0	0	0	0	0	
Cars	91	111	0	0	0	228	135	0	2	0	398	0	0	0	0	0	965
% Cars	91.9	88.8	0	0	0	93.1	65.2	0	100	0	94.1	0	0	0	0	0	87.6
Heavy Vehicles	8	14	0	0	0	17	72	0	0	0	25	0	0	0	0	0	136
% Heavy Vehicles	8.1	11.2	0	0	0	6.9	34.8	0	0	0	5.9	0	0	0	0	0	12.4

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	15	14	0	0	29	0	33	25	0	58	0	0	54	0	54	0	0	0	0	0	141
08:15 AM	10	16	0	0	26	0	32	34	0	66	0	0	57	0	57	0	0	0	0	0	149
08:30 AM	4	14	0	0	18	0	35	33	0	68	0	0	52	0	52	0	0	0	0	0	138
08:45 AM	10	21	0	0	31	0	37	30	0	67	0	0	54	0	54	0	0	0	0	0	152
Total Volume	39	65	0	0	104	0	137	122	0	259	0	0	217	0	217	0	0	0	0	0	580
% App. Total	37.5	62.5	0	0		0	52.9	47.1	0		0	0	100	0		0	0	0	0		
PHF	.650	.774	.000	.000	.839	.000	.926	.897	.000	.952	.000	.000	.952	.000	.952	.000	.000	.000	.000	.000	.954
Cars	35	58	0	0	93	0	127	80	0	207	0	0	205	0	205	0	0	0	0	0	505
% Cars	89.7	89.2	0	0	89.4	0	92.7	65.6	0	79.9	0	0	94.5	0	94.5	0	0	0	0	0	87.1
Heavy Vehicles	4	7	0	0	11	0	10	42	0	52	0	0	12	0	12	0	0	0	0	0	75
% Heavy Vehicles	10.3	10.8	0	0	10.6	0	7.3	34.4	0	20.1	0	0	5.5	0	5.5	0	0	0	0	0	12.9

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 N
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Devonshire Street From North				Franklin Street From East				Devonshire Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	8	13	0	0	0	20	9	0	0	0	37	0	0	0	0	0	87
07:15 AM	15	11	0	0	0	33	14	0	0	0	57	0	0	0	0	0	130
07:30 AM	17	14	0	0	0	21	16	0	2	0	55	0	0	0	0	0	125
07:45 AM	16	15	0	0	0	27	16	0	0	0	44	0	0	0	0	0	118
Total	56	53	0	0	0	101	55	0	2	0	193	0	0	0	0	0	460
08:00 AM	13	13	0	0	0	32	10	0	0	0	50	0	0	0	0	0	118
08:15 AM	9	14	0	0	0	29	24	0	0	0	54	0	0	0	0	0	130
08:30 AM	4	12	0	0	0	34	23	0	0	0	49	0	0	0	0	0	122
08:45 AM	9	19	0	0	0	32	23	0	0	0	52	0	0	0	0	0	135
Total	35	58	0	0	0	127	80	0	0	0	205	0	0	0	0	0	505
Grand Total	91	111	0	0	0	228	135	0	2	0	398	0	0	0	0	0	965
Apprch %	45	55	0	0	0	62.8	37.2	0	0.5	0	99.5	0	0	0	0	0	
Total %	9.4	11.5	0	0	0	23.6	14	0	0.2	0	41.2	0	0	0	0	0	

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	13	13	0	0	26	0	32	10	0	42	0	0	50	0	50	0	0	0	0	0	118
08:15 AM	9	14	0	0	23	0	29	24	0	53	0	0	54	0	54	0	0	0	0	0	130
08:30 AM	4	12	0	0	16	0	34	23	0	57	0	0	49	0	49	0	0	0	0	0	122
08:45 AM	9	19	0	0	28	0	32	23	0	55	0	0	52	0	52	0	0	0	0	0	135
Total Volume	35	58	0	0	93	0	127	80	0	207	0	0	205	0	205	0	0	0	0	0	505
% App. Total	37.6	62.4	0	0		0	61.4	38.6	0		0	0	100	0		0	0	0	0		
PHF	.673	.763	.000	.000	.830	.000	.934	.833	.000	.908	.000	.000	.949	.000	.949	.000	.000	.000	.000	.000	.935

N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 N
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Devonshire Street From North				Franklin Street From East				Devonshire Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	1	0	0	0	2	4	0	0	0	4	0	0	0	0	0	11
07:15 AM	2	3	0	0	0	2	11	0	0	0	4	0	0	0	0	0	22
07:30 AM	1	2	0	0	0	2	10	0	0	0	3	0	0	0	0	0	18
07:45 AM	1	1	0	0	0	1	5	0	0	0	2	0	0	0	0	0	10
Total	4	7	0	0	0	7	30	0	0	0	13	0	0	0	0	0	61
08:00 AM	2	1	0	0	0	1	15	0	0	0	4	0	0	0	0	0	23
08:15 AM	1	2	0	0	0	3	10	0	0	0	3	0	0	0	0	0	19
08:30 AM	0	2	0	0	0	1	10	0	0	0	3	0	0	0	0	0	16
08:45 AM	1	2	0	0	0	5	7	0	0	0	2	0	0	0	0	0	17
Total	4	7	0	0	0	10	42	0	0	0	12	0	0	0	0	0	75
Grand Total	8	14	0	0	0	17	72	0	0	0	25	0	0	0	0	0	136
Apprch %	36.4	63.6	0	0	0	19.1	80.9	0	0	0	100	0	0	0	0	0	
Total %	5.9	10.3	0	0	0	12.5	52.9	0	0	0	18.4	0	0	0	0	0	

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	2	1	0	0	3	0	1	15	0	16	0	0	4	0	4	0	0	0	0	0	23
08:15 AM	1	2	0	0	3	0	3	10	0	13	0	0	3	0	3	0	0	0	0	0	19
08:30 AM	0	2	0	0	2	0	1	10	0	11	0	0	3	0	3	0	0	0	0	0	16
08:45 AM	1	2	0	0	3	0	5	7	0	12	0	0	2	0	2	0	0	0	0	0	17
Total Volume	4	7	0	0	11	0	10	42	0	52	0	0	12	0	12	0	0	0	0	0	75
% App. Total	36.4	63.6	0	0		0	19.2	80.8	0		0	0	100	0		0	0	0	0		
PHF	.500	.875	.000	.000	.917	.000	.500	.700	.000	.813	.000	.000	.750	.000	.750	.000	.000	.000	.000	.000	.815

N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 N
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	0	33	14	0	1	0	46	12	0	0	1	12	24	0	0	0	15	15	173
07:15 AM	1	1	0	30	41	0	0	0	48	33	0	0	1	17	36	0	0	0	9	21	238
07:30 AM	0	0	0	49	47	0	1	0	50	33	0	0	1	24	53	0	0	0	15	43	316
07:45 AM	2	5	0	82	39	0	2	0	116	38	0	0	3	30	83	0	0	0	27	47	474
Total	3	6	0	194	141	0	4	0	260	116	0	0	6	83	196	0	0	0	66	126	1201
08:00 AM	0	0	0	98	37	0	2	0	94	35	0	0	2	25	101	0	1	0	18	38	451
08:15 AM	2	5	0	105	54	0	2	0	116	57	0	0	0	29	133	0	0	0	28	49	580
08:30 AM	2	5	0	123	79	0	0	0	132	64	0	0	1	40	156	0	0	0	57	59	718
08:45 AM	0	6	0	143	67	0	2	1	203	58	0	0	2	43	153	0	1	0	37	59	775
Total	4	16	0	469	237	0	6	1	545	214	0	0	5	137	543	0	2	0	140	205	2524
Grand Total	7	22	0	663	378	0	10	1	805	330	0	0	11	220	739	0	2	0	206	331	3725
Apprch %	0.7	2.1	0	62	35.3	0	0.9	0.1	70.2	28.8	0	0	1.1	22.7	76.2	0	0.4	0	38.2	61.4	
Total %	0.2	0.6	0	17.8	10.1	0	0.3	0	21.6	8.9	0	0	0.3	5.9	19.8	0	0.1	0	5.5	8.9	

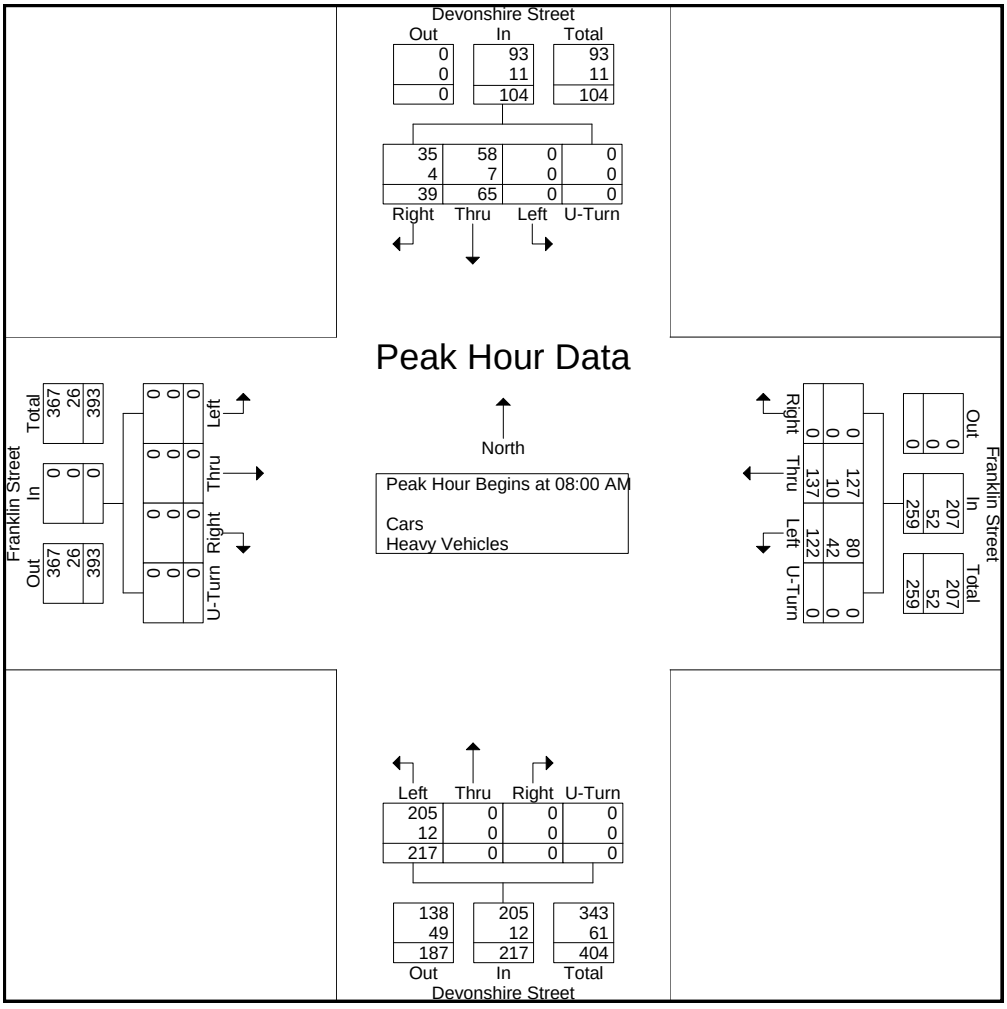
	Devonshire Street From North						Franklin Street From East						Devonshire Street From South						Franklin Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	0	0	98	37	135	0	2	0	94	35	131	0	0	2	25	101	128	0	1	0	18	38	57	451
08:15 AM	2	5	0	105	54	166	0	2	0	116	57	175	0	0	0	29	133	162	0	0	0	28	49	77	580
08:30 AM	2	5	0	123	79	209	0	0	0	132	64	196	0	0	1	40	156	197	0	0	0	57	59	116	718
08:45 AM	0	6	0	143	67	216	0	2	1	203	58	264	0	0	2	43	153	198	0	1	0	37	59	97	775
Total Volume	4	16	0	469	237	726	0	6	1	545	214	766	0	0	5	137	543	685	0	2	0	140	205	347	2524
% App. Total	0.6	2.2	0	64.6	32.6		0	0.8	0.1	71.1	27.9		0	0	0.7	20	79.3		0	0.6	0	40.3	59.1		
PHF	.500	.667	.000	.820	.750	.840	.000	.750	.250	.671	.836	.725	.000	.000	.625	.797	.870	.865	.000	.500	.000	.614	.869	.748	.814

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 N
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	15	14	0	0	29	0	33	25	0	58	0	0	54	0	54	0	0	0	0	0	141
08:15 AM	10	16	0	0	26	0	32	34	0	66	0	0	57	0	57	0	0	0	0	0	149
08:30 AM	4	14	0	0	18	0	35	33	0	68	0	0	52	0	52	0	0	0	0	0	138
08:45 AM	10	21	0	0	31	0	37	30	0	67	0	0	54	0	54	0	0	0	0	0	152
Total Volume	39	65	0	0	104	0	137	122	0	259	0	0	217	0	217	0	0	0	0	0	580
% App. Total	37.5	62.5	0	0		0	52.9	47.1	0		0	0	100	0		0	0	0	0		
PHF	.650	.774	.000	.000	.839	.000	.926	.897	.000	.952	.000	.000	.952	.000	.952	.000	.000	.000	.000	.000	.954
Cars	35	58	0	0	93	0	127	80	0	207	0	0	205	0	205	0	0	0	0	0	505
% Cars	89.7	89.2	0	0	89.4	0	92.7	65.6	0	79.9	0	0	94.5	0	94.5	0	0	0	0	0	87.1
Heavy Vehicles	4	7	0	0	11	0	10	42	0	52	0	0	12	0	12	0	0	0	0	0	75
% Heavy Vehicles	10.3	10.8	0	0	10.6	0	7.3	34.4	0	20.1	0	0	5.5	0	5.5	0	0	0	0	0	12.9



N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 NN
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Devonshire Street From North				Franklin Street From East				Devonshire Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	19	30	0	0	0	19	32	0	0	0	51	0	0	0	0	0	151
04:15 PM	15	33	0	0	0	21	37	0	0	0	30	0	0	0	0	0	136
04:30 PM	24	28	0	0	0	30	46	0	0	0	39	0	0	0	0	0	167
04:45 PM	15	29	0	0	0	22	47	0	0	0	26	0	0	0	0	0	139
Total	73	120	0	0	0	92	162	0	0	0	146	0	0	0	0	0	593
05:00 PM	18	36	0	0	0	17	30	0	0	0	35	0	0	0	0	0	136
05:15 PM	19	24	0	0	0	21	27	0	0	0	28	0	0	0	0	0	119
05:30 PM	16	20	0	0	0	26	40	0	0	0	35	0	0	0	0	0	137
05:45 PM	15	26	0	0	0	20	23	0	0	0	23	0	0	0	0	0	107
Total	68	106	0	0	0	84	120	0	0	0	121	0	0	0	0	0	499
Grand Total	141	226	0	0	0	176	282	0	0	0	267	0	0	0	0	0	1092
Apprch %	38.4	61.6	0	0	0	38.4	61.6	0	0	0	100	0	0	0	0	0	
Total %	12.9	20.7	0	0	0	16.1	25.8	0	0	0	24.5	0	0	0	0	0	
Cars	136	221	0	0	0	170	222	0	0	0	265	0	0	0	0	0	1014
% Cars	96.5	97.8	0	0	0	96.6	78.7	0	0	0	99.3	0	0	0	0	0	92.9
Heavy Vehicles	5	5	0	0	0	6	60	0	0	0	2	0	0	0	0	0	78
% Heavy Vehicles	3.5	2.2	0	0	0	3.4	21.3	0	0	0	0.7	0	0	0	0	0	7.1

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	19	30	0	0	49	0	19	32	0	51	0	0	51	0	51	0	0	0	0	0	151
04:15 PM	15	33	0	0	48	0	21	37	0	58	0	0	30	0	30	0	0	0	0	0	136
04:30 PM	24	28	0	0	52	0	30	46	0	76	0	0	39	0	39	0	0	0	0	0	167
04:45 PM	15	29	0	0	44	0	22	47	0	69	0	0	26	0	26	0	0	0	0	0	139
Total Volume	73	120	0	0	193	0	92	162	0	254	0	0	146	0	146	0	0	0	0	0	593
% App. Total	37.8	62.2	0	0		0	36.2	63.8	0		0	0	100	0		0	0	0	0		
PHF	.760	.909	.000	.000	.928	.000	.767	.862	.000	.836	.000	.000	.716	.000	.716	.000	.000	.000	.000	.000	.888
Cars	73	117	0	0	190	0	90	130	0	220	0	0	145	0	145	0	0	0	0	0	555
% Cars	100	97.5	0	0	98.4	0	97.8	80.2	0	86.6	0	0	99.3	0	99.3	0	0	0	0	0	93.6
Heavy Vehicles	0	3	0	0	3	0	2	32	0	34	0	0	1	0	1	0	0	0	0	0	38
% Heavy Vehicles	0	2.5	0	0	1.6	0	2.2	19.8	0	13.4	0	0	0.7	0	0.7	0	0	0	0	0	6.4

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 NN
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Devonshire Street From North				Franklin Street From East				Devonshire Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	19	28	0	0	0	19	25	0	0	0	51	0	0	0	0	0	142
04:15 PM	15	32	0	0	0	21	30	0	0	0	30	0	0	0	0	0	128
04:30 PM	24	28	0	0	0	29	39	0	0	0	39	0	0	0	0	0	159
04:45 PM	15	29	0	0	0	21	36	0	0	0	25	0	0	0	0	0	126
Total	73	117	0	0	0	90	130	0	0	0	145	0	0	0	0	0	555
05:00 PM	18	36	0	0	0	17	25	0	0	0	35	0	0	0	0	0	131
05:15 PM	17	24	0	0	0	21	17	0	0	0	28	0	0	0	0	0	107
05:30 PM	15	18	0	0	0	22	30	0	0	0	34	0	0	0	0	0	119
05:45 PM	13	26	0	0	0	20	20	0	0	0	23	0	0	0	0	0	102
Total	63	104	0	0	0	80	92	0	0	0	120	0	0	0	0	0	459
Grand Total	136	221	0	0	0	170	222	0	0	0	265	0	0	0	0	0	1014
Apprch %	38.1	61.9	0	0	0	43.4	56.6	0	0	0	100	0	0	0	0	0	
Total %	13.4	21.8	0	0	0	16.8	21.9	0	0	0	26.1	0	0	0	0	0	

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	19	28	0	0	47	0	19	25	0	44	0	0	51	0	51	0	0	0	0	0	142
04:15 PM	15	32	0	0	47	0	21	30	0	51	0	0	30	0	30	0	0	0	0	0	128
04:30 PM	24	28	0	0	52	0	29	39	0	68	0	0	39	0	39	0	0	0	0	0	159
04:45 PM	15	29	0	0	44	0	21	36	0	57	0	0	25	0	25	0	0	0	0	0	126
Total Volume	73	117	0	0	190	0	90	130	0	220	0	0	145	0	145	0	0	0	0	0	555
% App. Total	38.4	61.6	0	0		0	40.9	59.1	0		0	0	100	0		0	0	0	0		
PHF	.760	.914	.000	.000	.913	.000	.776	.833	.000	.809	.000	.000	.711	.000	.711	.000	.000	.000	.000	.000	.873

N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 NN
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Devonshire Street From North				Franklin Street From East				Devonshire Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	2	0	0	0	0	7	0	0	0	0	0	0	0	0	0	9
04:15 PM	0	1	0	0	0	0	7	0	0	0	0	0	0	0	0	0	8
04:30 PM	0	0	0	0	0	1	7	0	0	0	0	0	0	0	0	0	8
04:45 PM	0	0	0	0	0	1	11	0	0	0	1	0	0	0	0	0	13
Total	0	3	0	0	0	2	32	0	0	0	1	0	0	0	0	0	38
05:00 PM	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	5
05:15 PM	2	0	0	0	0	0	10	0	0	0	0	0	0	0	0	0	12
05:30 PM	1	2	0	0	0	4	10	0	0	0	1	0	0	0	0	0	18
05:45 PM	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	5
Total	5	2	0	0	0	4	28	0	0	0	1	0	0	0	0	0	40
Grand Total	5	5	0	0	0	6	60	0	0	0	2	0	0	0	0	0	78
Apprch %	50	50	0	0	0	9.1	90.9	0	0	0	100	0	0	0	0	0	
Total %	6.4	6.4	0	0	0	7.7	76.9	0	0	0	2.6	0	0	0	0	0	

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	1	11	0	12	0	0	1	0	1	0	0	0	0	0	13
05:00 PM	0	0	0	0	0	0	0	5	0	5	0	0	0	0	0	0	0	0	0	0	5
05:15 PM	2	0	0	0	2	0	0	10	0	10	0	0	0	0	0	0	0	0	0	0	12
05:30 PM	1	2	0	0	3	0	4	10	0	14	0	0	1	0	1	0	0	0	0	0	18
Total Volume	3	2	0	0	5	0	5	36	0	41	0	0	2	0	2	0	0	0	0	0	48
% App. Total	60	40	0	0		0	12.2	87.8	0		0	0	100	0		0	0	0	0		
PHF	.375	.250	.000	.000	.417	.000	.313	.818	.000	.732	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.667

N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 NN
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	2	0	47	44	0	1	0	52	44	0	0	0	62	22	0	0	0	22	27	323
04:15 PM	0	1	0	43	49	0	2	1	36	37	0	0	0	62	25	0	0	0	14	24	294
04:30 PM	0	4	0	40	57	0	2	0	52	59	0	0	0	80	36	0	0	0	25	39	394
04:45 PM	0	2	0	49	88	0	1	1	49	56	0	0	0	80	17	0	0	0	29	59	431
Total	0	9	0	179	238	0	6	2	189	196	0	0	0	284	100	0	0	0	90	149	1442
05:00 PM	0	1	0	46	91	0	5	0	109	145	0	0	0	165	25	0	0	0	34	49	670
05:15 PM	0	0	0	47	94	0	4	0	62	83	0	0	1	177	34	0	0	0	29	45	576
05:30 PM	0	2	0	48	118	0	6	0	57	84	0	0	1	133	47	0	0	0	38	44	578
05:45 PM	1	1	0	32	81	0	4	1	40	55	0	0	2	117	35	0	0	0	22	31	422
Total	1	4	0	173	384	0	19	1	268	367	0	0	4	592	141	0	0	0	123	169	2246
Grand Total	1	13	0	352	622	0	25	3	457	563	0	0	4	876	241	0	0	0	213	318	3688
Apprch %	0.1	1.3	0	35.6	63	0	2.4	0.3	43.6	53.7	0	0	0.4	78.1	21.5	0	0	0	40.1	59.9	
Total %	0	0.4	0	9.5	16.9	0	0.7	0.1	12.4	15.3	0	0	0.1	23.8	6.5	0	0	0	5.8	8.6	

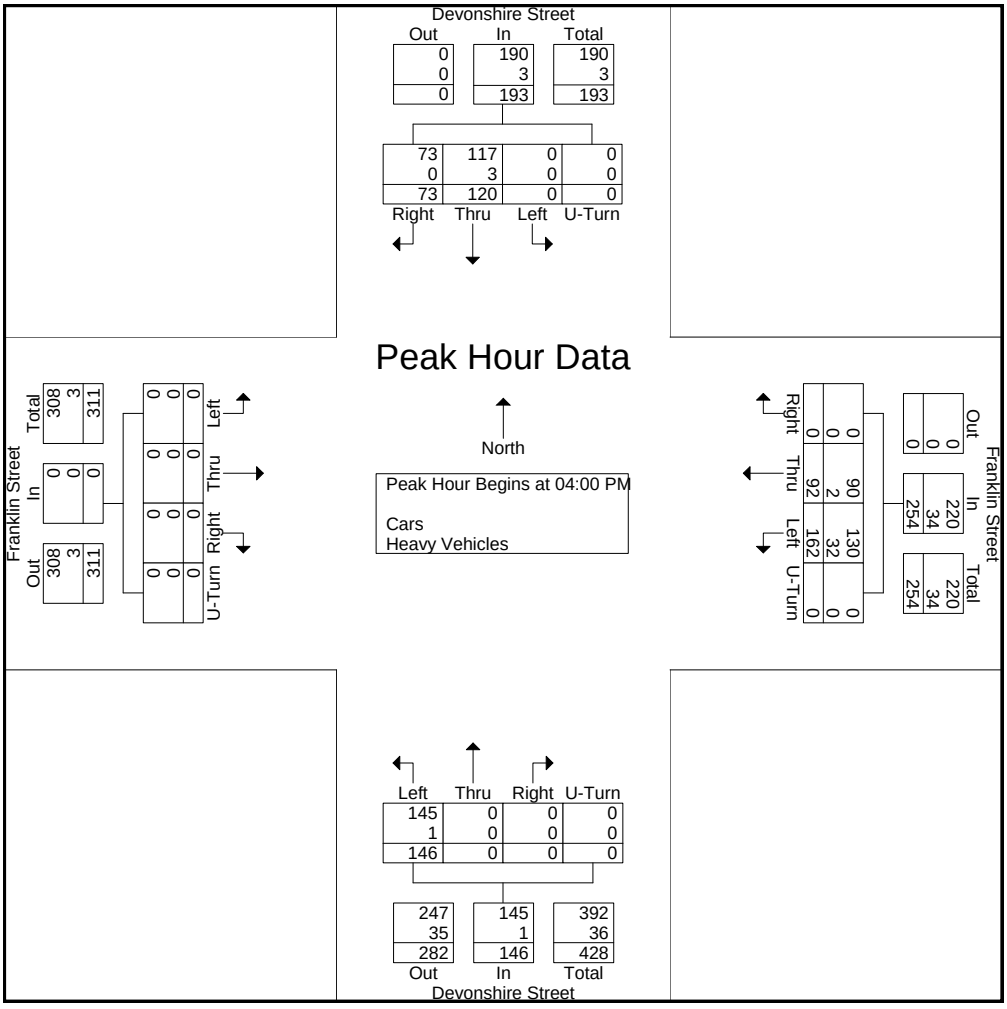
	Devonshire Street From North						Franklin Street From East						Devonshire Street From South						Franklin Street From West						
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	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	2	0	49	88	139	0	1	1	49	56	107	0	0	0	80	17	97	0	0	0	29	59	88	431
05:00 PM	0	1	0	46	91	138	0	5	0	109	145	259	0	0	0	165	25	190	0	0	0	34	49	83	670
05:15 PM	0	0	0	47	94	141	0	4	0	62	83	149	0	0	1	177	34	212	0	0	0	29	45	74	576
05:30 PM	0	2	0	48	118	168	0	6	0	57	84	147	0	0	1	133	47	181	0	0	0	38	44	82	578
Total Volume	0	5	0	190	391	586	0	16	1	277	368	662	0	0	2	555	123	680	0	0	0	130	197	327	2255
% App. Total	0	0.9	0	32.4	66.7		0	2.4	0.2	41.8	55.6		0	0	0.3	81.6	18.1		0	0	0	39.8	60.2		
PHF	.000	.625	.000	.969	.828	.872	.000	.667	.250	.635	.634	.639	.000	.000	.500	.784	.654	.802	.000	.000	.000	.855	.835	.929	.841

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Devonshire Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 NN
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Devonshire Street From North					Franklin Street From East					Devonshire Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	19	30	0	0	49	0	19	32	0	51	0	0	51	0	51	0	0	0	0	0	151
04:15 PM	15	33	0	0	48	0	21	37	0	58	0	0	30	0	30	0	0	0	0	0	136
04:30 PM	24	28	0	0	52	0	30	46	0	76	0	0	39	0	39	0	0	0	0	0	167
04:45 PM	15	29	0	0	44	0	22	47	0	69	0	0	26	0	26	0	0	0	0	0	139
Total Volume	73	120	0	0	193	0	92	162	0	254	0	0	146	0	146	0	0	0	0	0	593
% App. Total	37.8	62.2	0	0		0	36.2	63.8	0		0	0	100	0		0	0	0	0		
PHF	.760	.909	.000	.000	.928	.000	.767	.862	.000	.836	.000	.000	.716	.000	.716	.000	.000	.000	.000	.000	.888
Cars	73	117	0	0	190	0	90	130	0	220	0	0	145	0	145	0	0	0	0	0	555
% Cars	100	97.5	0	0	98.4	0	97.8	80.2	0	86.6	0	0	99.3	0	99.3	0	0	0	0	0	93.6
Heavy Vehicles	0	3	0	0	3	0	2	32	0	34	0	0	1	0	1	0	0	0	0	0	38
% Heavy Vehicles	0	2.5	0	0	1.6	0	2.2	19.8	0	13.4	0	0	0.7	0	0.7	0	0	0	0	0	6.4



N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 O
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Hawley Street From North				Franklin Street From East				Hawley Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	42	1	19	0	0	0	3	0	0	0	4	0	69
07:15 AM	0	0	0	0	46	0	15	0	0	0	5	0	0	0	3	0	69
07:30 AM	0	0	0	0	53	2	13	0	0	1	7	0	2	0	5	0	83
07:45 AM	0	0	0	0	45	2	19	0	0	0	3	0	0	0	6	0	75
Total	0	0	0	0	186	5	66	0	0	1	18	0	2	0	18	0	296
08:00 AM	0	0	0	0	43	3	23	0	0	0	2	0	5	0	2	0	78
08:15 AM	0	0	0	0	42	5	23	0	0	2	2	0	5	0	5	0	84
08:30 AM	0	0	0	0	40	3	16	0	0	0	1	0	3	0	0	0	63
08:45 AM	0	0	0	0	55	6	24	0	0	0	1	0	4	0	1	0	91
Total	0	0	0	0	180	17	86	0	0	2	6	0	17	0	8	0	316
Grand Total	0	0	0	0	366	22	152	0	0	3	24	0	19	0	26	0	612
Apprch %	0	0	0	0	67.8	4.1	28.1	0	0	11.1	88.9	0	42.2	0	57.8	0	
Total %	0	0	0	0	59.8	3.6	24.8	0	0	0.5	3.9	0	3.1	0	4.2	0	
Cars	0	0	0	0	358	22	121	0	0	3	24	0	19	0	26	0	573
% Cars	0	0	0	0	97.8	100	79.6	0	0	100	100	0	100	0	100	0	93.6
Heavy Vehicles	0	0	0	0	8	0	31	0	0	0	0	0	0	0	0	0	39
% Heavy Vehicles	0	0	0	0	2.2	0	20.4	0	0	0	0	0	0	0	0	0	6.4

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	53	2	13	0	68	0	1	7	0	8	2	0	5	0	7	83
07:45 AM	0	0	0	0	0	45	2	19	0	66	0	0	3	0	3	0	0	6	0	6	75
08:00 AM	0	0	0	0	0	43	3	23	0	69	0	0	2	0	2	5	0	2	0	7	78
08:15 AM	0	0	0	0	0	42	5	23	0	70	0	2	2	0	4	5	0	5	0	10	84
Total Volume	0	0	0	0	0	183	12	78	0	273	0	3	14	0	17	12	0	18	0	30	320
% App. Total	0	0	0	0		67	4.4	28.6	0		0	17.6	82.4	0		40	0	60	0		
PHF	.000	.000	.000	.000	.000	.863	.600	.848	.000	.975	.000	.375	.500	.000	.531	.600	.000	.750	.000	.750	.952
Cars	0	0	0	0	0	178	12	64	0	254	0	3	14	0	17	12	0	18	0	30	301
% Cars	0	0	0	0	0	97.3	100	82.1	0	93.0	0	100	100	0	100	100	0	100	0	100	94.1
Heavy Vehicles	0	0	0	0	0	5	0	14	0	19	0	0	0	0	0	0	0	0	0	0	19
% Heavy Vehicles	0	0	0	0	0	2.7	0	17.9	0	7.0	0	0	0	0	0	0	0	0	0	0	5.9

N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 O
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Hawley Street From North				Franklin Street From East				Hawley Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	40	1	15	0	0	0	3	0	0	0	4	0	63
07:15 AM	0	0	0	0	46	0	12	0	0	0	5	0	0	0	3	0	66
07:30 AM	0	0	0	0	51	2	9	0	0	1	7	0	2	0	5	0	77
07:45 AM	0	0	0	0	43	2	16	0	0	0	3	0	0	0	6	0	70
Total	0	0	0	0	180	5	52	0	0	1	18	0	2	0	18	0	276
08:00 AM	0	0	0	0	43	3	19	0	0	0	2	0	5	0	2	0	74
08:15 AM	0	0	0	0	41	5	20	0	0	2	2	0	5	0	5	0	80
08:30 AM	0	0	0	0	40	3	13	0	0	0	1	0	3	0	0	0	60
08:45 AM	0	0	0	0	54	6	17	0	0	0	1	0	4	0	1	0	83
Total	0	0	0	0	178	17	69	0	0	2	6	0	17	0	8	0	297
Grand Total	0	0	0	0	358	22	121	0	0	3	24	0	19	0	26	0	573
Apprch %	0	0	0	0	71.5	4.4	24.2	0	0	11.1	88.9	0	42.2	0	57.8	0	
Total %	0	0	0	0	62.5	3.8	21.1	0	0	0.5	4.2	0	3.3	0	4.5	0	

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	51	2	9	0	62	0	1	7	0	8	2	0	5	0	7	77
07:45 AM	0	0	0	0	0	43	2	16	0	61	0	0	3	0	3	0	0	6	0	6	70
08:00 AM	0	0	0	0	0	43	3	19	0	65	0	0	2	0	2	5	0	2	0	7	74
08:15 AM	0	0	0	0	0	41	5	20	0	66	0	2	2	0	4	5	0	5	0	10	80
Total Volume	0	0	0	0	0	178	12	64	0	254	0	3	14	0	17	12	0	18	0	30	301
% App. Total	0	0	0	0		70.1	4.7	25.2	0		0	17.6	82.4	0		40	0	60	0		
PHF	.000	.000	.000	.000	.000	.873	.600	.800	.000	.962	.000	.375	.500	.000	.531	.600	.000	.750	.000	.750	.941

N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 O
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Hawley Street From North				Franklin Street From East				Hawley Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	2	0	4	0	0	0	0	0	0	0	0	0	6
07:15 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
07:30 AM	0	0	0	0	2	0	4	0	0	0	0	0	0	0	0	0	6
07:45 AM	0	0	0	0	2	0	3	0	0	0	0	0	0	0	0	0	5
Total	0	0	0	0	6	0	14	0	0	0	0	0	0	0	0	0	20
08:00 AM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	4
08:15 AM	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	4
08:30 AM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
08:45 AM	0	0	0	0	1	0	7	0	0	0	0	0	0	0	0	0	8
Total	0	0	0	0	2	0	17	0	0	0	0	0	0	0	0	0	19
Grand Total	0	0	0	0	8	0	31	0	0	0	0	0	0	0	0	0	39
Apprch %	0	0	0	0	20.5	0	79.5	0	0	0	0	0	0	0	0	0	
Total %	0	0	0	0	20.5	0	79.5	0	0	0	0	0	0	0	0	0	

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	6
07:15 AM	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	3
07:30 AM	0	0	0	0	0	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	6
07:45 AM	0	0	0	0	0	2	0	3	0	5	0	0	0	0	0	0	0	0	0	0	5
Total Volume	0	0	0	0	0	6	0	14	0	20	0	0	0	0	0	0	0	0	0	0	20
% App. Total	0	0	0	0		30	0	70	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.750	.000	.875	.000	.833	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.833

N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 O
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Right	Thru	Left	Peds EB	Peds WB	Int. Total
07:00 AM	0	0	0	20	9	0	0	0	4	30	0	0	0	12	18	0	0	0	25	6	124
07:15 AM	0	0	0	22	26	0	0	0	7	36	0	0	0	25	24	0	0	0	22	16	178
07:30 AM	0	0	0	32	23	0	0	0	13	50	0	0	0	30	43	0	0	0	34	17	242
07:45 AM	0	0	0	52	20	0	0	1	14	83	0	0	0	35	54	0	0	0	36	23	318
Total	0	0	0	126	78	0	0	1	38	199	0	0	0	102	139	0	0	0	117	62	862
08:00 AM	0	0	0	56	15	0	0	0	12	90	0	0	0	35	62	1	0	0	60	22	353
08:15 AM	0	0	0	80	21	0	0	0	8	107	0	0	0	36	87	0	0	0	55	31	425
08:30 AM	0	0	0	70	25	0	2	0	11	91	0	0	0	40	86	0	0	0	64	33	422
08:45 AM	0	0	0	92	25	0	2	0	15	121	0	0	0	43	120	0	0	0	45	31	494
Total	0	0	0	298	86	0	4	0	46	409	0	0	0	154	355	1	0	0	224	117	1694
Grand Total	0	0	0	424	164	0	4	1	84	608	0	0	0	256	494	1	0	0	341	179	2556
Apprch %	0	0	0	72.1	27.9	0	0.6	0.1	12.1	87.2	0	0	0	34.1	65.9	0.2	0	0	65.5	34.4	
Total %	0	0	0	16.6	6.4	0	0.2	0	3.3	23.8	0	0	0	10	19.3	0	0	0	13.3	7	

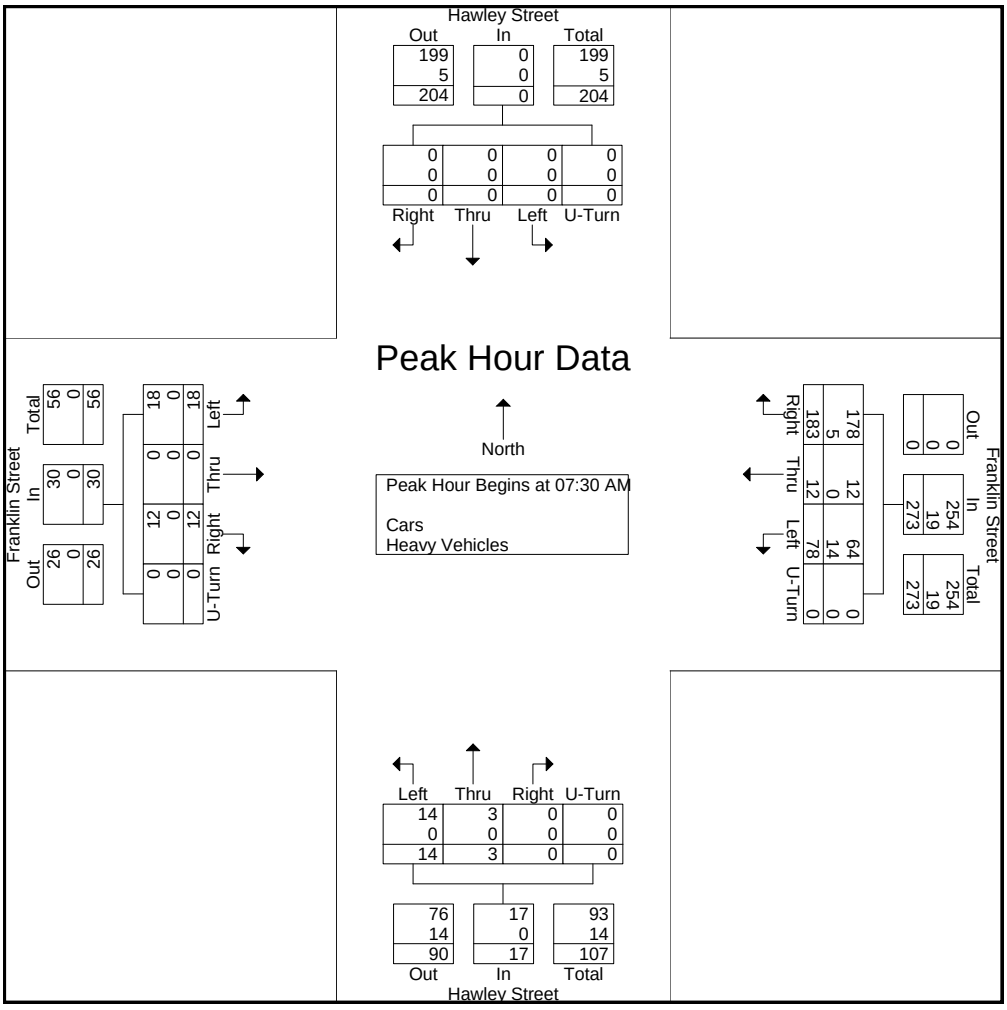
	Hawley Street From North						Franklin Street From East						Hawley Street From South						Franklin Street From West						
Start Time	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Right	Thru	Left	Peds EB	Peds WB	App. Total	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	0	0	56	15	71	0	0	0	12	90	102	0	0	0	35	62	97	1	0	0	60	22	83	353
08:15 AM	0	0	0	80	21	101	0	0	0	8	107	115	0	0	0	36	87	123	0	0	0	55	31	86	425
08:30 AM	0	0	0	70	25	95	0	2	0	11	91	104	0	0	0	40	86	126	0	0	0	64	33	97	422
08:45 AM	0	0	0	92	25	117	0	2	0	15	121	138	0	0	0	43	120	163	0	0	0	45	31	76	494
Total Volume	0	0	0	298	86	384	0	4	0	46	409	459	0	0	0	154	355	509	1	0	0	224	117	342	1694
% App. Total	0	0	0	77.6	22.4		0	0.9	0	10	89.1		0	0	0	30.3	69.7		0.3	0	0	65.5	34.2		
PHF	.000	.000	.000	.810	.860	.821	.000	.500	.000	.767	.845	.832	.000	.000	.000	.895	.740	.781	.250	.000	.000	.875	.886	.881	.857

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 O
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	53	2	13	0	68	0	1	7	0	8	2	0	5	0	7	83
07:45 AM	0	0	0	0	0	45	2	19	0	66	0	0	3	0	3	0	0	6	0	6	75
08:00 AM	0	0	0	0	0	43	3	23	0	69	0	0	2	0	2	5	0	2	0	7	78
08:15 AM	0	0	0	0	0	42	5	23	0	70	0	2	2	0	4	5	0	5	0	10	84
Total Volume	0	0	0	0	0	183	12	78	0	273	0	3	14	0	17	12	0	18	0	30	320
% App. Total	0	0	0	0		67	4.4	28.6	0		0	17.6	82.4	0		40	0	60	0		
PHF	.000	.000	.000	.000	.000	.863	.600	.848	.000	.975	.000	.375	.500	.000	.531	.600	.000	.750	.000	.750	.952
Cars	0	0	0	0	0	178	12	64	0	254	0	3	14	0	17	12	0	18	0	30	301
% Cars	0	0	0	0	0	97.3	100	82.1	0	93.0	0	100	100	0	100	100	0	100	0	100	94.1
Heavy Vehicles	0	0	0	0	0	5	0	14	0	19	0	0	0	0	0	0	0	0	0	0	19
% Heavy Vehicles	0	0	0	0	0	2.7	0	17.9	0	7.0	0	0	0	0	0	0	0	0	0	0	5.9



N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 OO
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Hawley Street From North				Franklin Street From East				Hawley Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	29	8	23	0	0	1	2	0	6	0	3	0	72
04:15 PM	0	0	0	0	22	7	23	0	0	0	0	0	6	0	2	0	60
04:30 PM	0	0	0	0	21	7	24	0	0	1	0	0	2	0	1	0	56
04:45 PM	0	0	0	0	15	6	21	0	0	1	0	0	6	0	2	0	51
Total	0	0	0	0	87	28	91	0	0	3	2	0	20	0	8	0	239
05:00 PM	0	1	0	0	19	5	21	0	0	2	3	0	2	0	2	0	55
05:15 PM	0	0	0	0	21	5	23	0	0	1	2	0	6	0	5	0	63
05:30 PM	0	0	0	0	15	6	25	0	0	3	1	0	4	0	1	0	55
05:45 PM	0	0	0	0	9	4	16	0	0	1	1	0	2	0	2	0	35
Total	0	1	0	0	64	20	85	0	0	7	7	0	14	0	10	0	208
Grand Total	0	1	0	0	151	48	176	0	0	10	9	0	34	0	18	0	447
Apprch %	0	100	0	0	40.3	12.8	46.9	0	0	52.6	47.4	0	65.4	0	34.6	0	
Total %	0	0.2	0	0	33.8	10.7	39.4	0	0	2.2	2	0	7.6	0	4	0	
Cars	0	1	0	0	149	48	167	0	0	10	9	0	34	0	18	0	436
% Cars	0	100	0	0	98.7	100	94.9	0	0	100	100	0	100	0	100	0	97.5
Heavy Vehicles	0	0	0	0	2	0	9	0	0	0	0	0	0	0	0	0	11
% Heavy Vehicles	0	0	0	0	1.3	0	5.1	0	0	0	0	0	0	0	0	0	2.5

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	29	8	23	0	60	0	1	2	0	3	6	0	3	0	9	72
04:15 PM	0	0	0	0	0	22	7	23	0	52	0	0	0	0	0	6	0	2	0	8	60
04:30 PM	0	0	0	0	0	21	7	24	0	52	0	1	0	0	1	2	0	1	0	3	56
04:45 PM	0	0	0	0	0	15	6	21	0	42	0	1	0	0	1	6	0	2	0	8	51
Total Volume	0	0	0	0	0	87	28	91	0	206	0	3	2	0	5	20	0	8	0	28	239
% App. Total	0	0	0	0		42.2	13.6	44.2	0		0	60	40	0		71.4	0	28.6	0		
PHF	.000	.000	.000	.000	.000	.750	.875	.948	.000	.858	.000	.750	.250	.000	.417	.833	.000	.667	.000	.778	.830
Cars	0	0	0	0	0	86	28	90	0	204	0	3	2	0	5	20	0	8	0	28	237
% Cars	0	0	0	0	0	98.9	100	98.9	0	99.0	0	100	100	0	100	100	0	100	0	100	99.2
Heavy Vehicles	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	2
% Heavy Vehicles	0	0	0	0	0	1.1	0	1.1	0	1.0	0	0	0	0	0	0	0	0	0	0	0.8

N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 OO
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Hawley Street From North				Franklin Street From East				Hawley Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	29	8	23	0	0	1	2	0	6	0	3	0	72
04:15 PM	0	0	0	0	21	7	23	0	0	0	0	0	6	0	2	0	59
04:30 PM	0	0	0	0	21	7	23	0	0	1	0	0	2	0	1	0	55
04:45 PM	0	0	0	0	15	6	21	0	0	1	0	0	6	0	2	0	51
Total	0	0	0	0	86	28	90	0	0	3	2	0	20	0	8	0	237
05:00 PM	0	1	0	0	19	5	21	0	0	2	3	0	2	0	2	0	55
05:15 PM	0	0	0	0	21	5	20	0	0	1	2	0	6	0	5	0	60
05:30 PM	0	0	0	0	14	6	21	0	0	3	1	0	4	0	1	0	50
05:45 PM	0	0	0	0	9	4	15	0	0	1	1	0	2	0	2	0	34
Total	0	1	0	0	63	20	77	0	0	7	7	0	14	0	10	0	199
Grand Total	0	1	0	0	149	48	167	0	0	10	9	0	34	0	18	0	436
Apprch %	0	100	0	0	40.9	13.2	45.9	0	0	52.6	47.4	0	65.4	0	34.6	0	
Total %	0	0.2	0	0	34.2	11	38.3	0	0	2.3	2.1	0	7.8	0	4.1	0	

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	29	8	23	0	60	0	1	2	0	3	6	0	3	0	9	72
04:15 PM	0	0	0	0	0	21	7	23	0	51	0	0	0	0	0	6	0	2	0	8	59
04:30 PM	0	0	0	0	0	21	7	23	0	51	0	1	0	0	1	2	0	1	0	3	55
04:45 PM	0	0	0	0	0	15	6	21	0	42	0	1	0	0	1	6	0	2	0	8	51
Total Volume	0	0	0	0	0	86	28	90	0	204	0	3	2	0	5	20	0	8	0	28	237
% App. Total	0	0	0	0		42.2	13.7	44.1	0		0	60	40	0		71.4	0	28.6	0		
PHF	.000	.000	.000	.000	.000	.741	.875	.978	.000	.850	.000	.750	.250	.000	.417	.833	.000	.667	.000	.778	.823

N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 OO
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Hawley Street From North				Franklin Street From East				Hawley Street From South				Franklin Street From West				
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	3
05:30 PM	0	0	0	0	1	0	4	0	0	0	0	0	0	0	0	0	5
05:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	1	0	8	0	0	0	0	0	0	0	0	0	9
Grand Total	0	0	0	0	2	0	9	0	0	0	0	0	0	0	0	0	11
Apprch %	0	0	0	0	18.2	0	81.8	0	0	0	0	0	0	0	0	0	
Total %	0	0	0	0	18.2	0	81.8	0	0	0	0	0	0	0	0	0	

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	3
05:30 PM	0	0	0	0	0	1	0	4	0	5	0	0	0	0	0	0	0	0	0	0	5
05:45 PM	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	0	8	0	9	0	0	0	0	0	0	0	0	0	0	9
% App. Total	0	0	0	0		11.1	0	88.9	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.500	.000	.450	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.450

N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 OO
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Right	Thru	Left	Peds EB	Peds WB	Int. Total
04:00 PM	0	0	0	20	39	0	1	0	26	23	0	0	0	41	23	0	0	0	15	20	208
04:15 PM	0	0	0	12	38	0	1	0	22	10	0	0	0	30	27	0	0	0	12	36	188
04:30 PM	0	0	0	19	42	0	0	0	19	22	0	0	0	50	35	0	0	0	26	34	247
04:45 PM	0	0	0	15	60	0	2	0	30	15	0	0	0	55	24	0	0	0	20	25	246
Total	0	0	0	66	179	0	4	0	97	70	0	0	0	176	109	0	0	0	73	115	889
05:00 PM	0	0	0	20	94	0	1	0	57	10	0	0	0	93	23	0	0	0	38	28	364
05:15 PM	0	0	0	19	99	1	4	0	53	14	0	0	0	93	25	0	0	0	35	34	377
05:30 PM	0	0	0	23	86	0	4	1	54	10	0	0	0	83	31	0	0	0	31	25	348
05:45 PM	0	0	0	11	65	0	3	2	44	8	0	0	0	63	16	0	0	0	34	27	273
Total	0	0	0	73	344	1	12	3	208	42	0	0	0	332	95	0	0	0	138	114	1362
Grand Total	0	0	0	139	523	1	16	3	305	112	0	0	0	508	204	0	0	0	211	229	2251
Apprch %	0	0	0	21	79	0.2	3.7	0.7	69.8	25.6	0	0	0	71.3	28.7	0	0	0	48	52	
Total %	0	0	0	6.2	23.2	0	0.7	0.1	13.5	5	0	0	0	22.6	9.1	0	0	0	9.4	10.2	

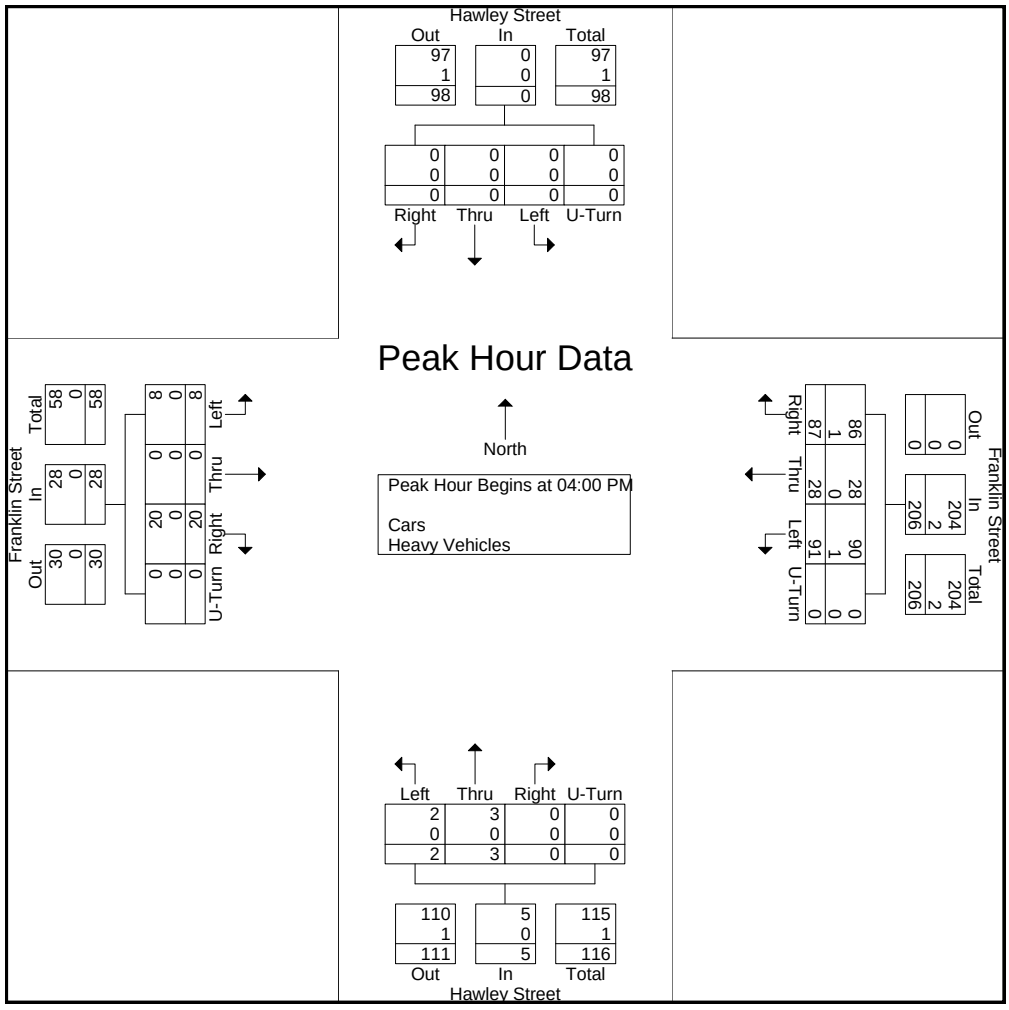
	Hawley Street From North						Franklin Street From East						Hawley Street From South						Franklin Street From West						
Start Time	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Right	Thru	Left	Peds EB	Peds WB	App. Total	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	0	0	0	20	94	114	0	1	0	57	10	68	0	0	0	93	23	116	0	0	0	38	28	66	364
05:15 PM	0	0	0	19	99	118	1	4	0	53	14	72	0	0	0	93	25	118	0	0	0	35	34	69	377
05:30 PM	0	0	0	23	86	109	0	4	1	54	10	69	0	0	0	83	31	114	0	0	0	31	25	56	348
05:45 PM	0	0	0	11	65	76	0	3	2	44	8	57	0	0	0	63	16	79	0	0	0	34	27	61	273
Total Volume	0	0	0	73	344	417	1	12	3	208	42	266	0	0	0	332	95	427	0	0	0	138	114	252	1362
% App. Total	0	0	0	17.5	82.5		0.4	4.5	1.1	78.2	15.8		0	0	0	77.8	22.2		0	0	0	54.8	45.2		
PHF	.000	.000	.000	.793	.869	.883	.250	.750	.375	.912	.750	.924	.000	.000	.000	.892	.766	.905	.000	.000	.000	.908	.838	.913	.903

N/S: Hawley Street
E/W: Franklin Street
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 OO
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Hawley Street From North					Franklin Street From East					Hawley Street From South					Franklin Street From West					
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	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	29	8	23	0	60	0	1	2	0	3	6	0	3	0	9	72
04:15 PM	0	0	0	0	0	22	7	23	0	52	0	0	0	0	0	6	0	2	0	8	60
04:30 PM	0	0	0	0	0	21	7	24	0	52	0	1	0	0	1	2	0	1	0	3	56
04:45 PM	0	0	0	0	0	15	6	21	0	42	0	1	0	0	1	6	0	2	0	8	51
Total Volume	0	0	0	0	0	87	28	91	0	206	0	3	2	0	5	20	0	8	0	28	239
% App. Total	0	0	0	0		42.2	13.6	44.2	0		0	60	40	0		71.4	0	28.6	0		
PHF	.000	.000	.000	.000	.000	.750	.875	.948	.000	.858	.000	.750	.250	.000	.417	.833	.000	.667	.000	.778	.830
Cars	0	0	0	0	0	86	28	90	0	204	0	3	2	0	5	20	0	8	0	28	237
% Cars	0	0	0	0	0	98.9	100	98.9	0	99.0	0	100	100	0	100	100	0	100	0	100	99.2
Heavy Vehicles	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	2
% Heavy Vehicles	0	0	0	0	0	1.1	0	1.1	0	1.0	0	0	0	0	0	0	0	0	0	0	0.8



PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North					Surface Road From East					Congress Street From South					I-93 SB/ I90 WB Onramp From Southwest					Surface Road From West					
Start Time	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	38	44	68	0	0	0	56	62	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	332
07:15 AM	26	44	84	0	0	0	68	55	86	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	363
07:30 AM	35	55	109	0	0	0	65	79	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	433
07:45 AM	28	64	112	0	0	0	64	66	103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	437
Total	127	207	373	0	0	0	253	262	343	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1565
08:00 AM	28	70	123	0	0	0	100	90	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	521
08:15 AM	38	89	145	0	0	0	94	68	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	533
08:30 AM	24	69	131	0	0	0	94	86	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	519
08:45 AM	28	59	138	0	0	0	91	63	105	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	484
Total	118	287	537	0	0	0	379	307	429	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2057
Grand Total	245	494	910	0	0	0	632	569	772	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3622
Apprch %	14.9	30	55.2	0	0	0	32	28.8	39.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %	6.8	13.6	25.1	0	0	0	17.4	15.7	21.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cars	219	472	835	0	0	0	577	548	712	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3363
% Cars	89.4	95.5	91.8	0	0	0	91.3	96.3	92.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92.8
Heavy Vehicles	26	22	75	0	0	0	55	21	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	259
% Heavy Vehicles	10.6	4.5	8.2	0	0	0	8.7	3.7	7.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.2

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	U-Turn	App. Total	Right	Thru	Bear Left	Left	U-Turn	App. Total	Right	Thru	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	Left	U-Turn	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	28	70	123	0	0	221	0	100	90	110	0	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	521
08:15 AM	38	89	145	0	0	272	0	94	68	99	0	261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	533
08:30 AM	24	69	131	0	0	224	0	94	86	115	0	295	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	519
08:45 AM	28	59	138	0	0	225	0	91	63	105	0	259	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	484
Total Volume	118	287	537	0	0	942	0	379	307	429	0	1115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2057
% App. Total	12.5	30.5	57	0	0		0	34	27.5	38.5	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.776	.806	.926	.000	.000	.866	.000	.948	.853	.933	.000	.929	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.965
Cars	103	278	502	0	0	883	0	350	296	395	0	1041	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1924
% Cars	87.3	96.9	93.5	0	0	93.7	0	92.3	96.4	92.1	0	93.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93.5
Heavy Vehicles	15	9	35	0	0	59	0	29	11	34	0	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	133
% Heavy Vehicles	12.7	3.1	6.5	0	0	6.3	0	7.7	3.6	7.9	0	6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.5

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North					Surface Road From East					Congress Street From South					I-93 SB/ I90 WB Onramp From Southwest					Surface Road From West					
Start Time	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	35	39	58	0	0	0	50	60	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	300
07:15 AM	24	41	72	0	0	0	60	55	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	334
07:30 AM	31	54	97	0	0	0	57	72	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	393
07:45 AM	26	60	106	0	0	0	60	65	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	412
Total	116	194	333	0	0	0	227	252	317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1439
08:00 AM	25	67	115	0	0	0	91	88	98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	484
08:15 AM	32	88	135	0	0	0	87	66	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	498
08:30 AM	22	67	123	0	0	0	85	82	108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
08:45 AM	24	56	129	0	0	0	87	60	99	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	455
Total	103	278	502	0	0	0	350	296	395	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1924
Grand Total	219	472	835	0	0	0	577	548	712	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3363
Apprch %	14.4	30.9	54.7	0	0	0	31.4	29.8	38.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %	6.5	14	24.8	0	0	0	17.2	16.3	21.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	U-Turn	App. Total	Right	Thru	Bear Left	Left	U-Turn	App. Total	Right	Thru	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	Left	U-Turn	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	25	67	115	0	0	207	0	91	88	98	0	277	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	484
08:15 AM	32	88	135	0	0	255	0	87	66	90	0	243	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	498
08:30 AM	22	67	123	0	0	212	0	85	82	108	0	275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	487
08:45 AM	24	56	129	0	0	209	0	87	60	99	0	246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	455
Total Volume	103	278	502	0	0	883	0	350	296	395	0	1041	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1924
% App. Total	11.7	31.5	56.9	0	0		0	33.6	28.4	37.9	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.805	.790	.930	.000	.000	.866	.000	.962	.841	.914	.000	.940	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.966

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North					Surface Road From East					Congress Street From South					I-93 SB/ I90 WB Onramp From Southwest					Surface Road From West					
Start Time	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Int. Total
07:00 AM	3	5	10	0	0	0	6	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
07:15 AM	2	3	12	0	0	0	8	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
07:30 AM	4	1	12	0	0	0	8	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
07:45 AM	2	4	6	0	0	0	4	1	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
Total	11	13	40	0	0	0	26	10	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	126
08:00 AM	3	3	8	0	0	0	9	2	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
08:15 AM	6	1	10	0	0	0	7	2	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
08:30 AM	2	2	8	0	0	0	9	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32
08:45 AM	4	3	9	0	0	0	4	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
Total	15	9	35	0	0	0	29	11	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	133
Grand Total	26	22	75	0	0	0	55	21	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	259
Apprch %	21.1	17.9	61	0	0	0	40.4	15.4	44.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %	10	8.5	29	0	0	0	21.2	8.1	23.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	U-Turn	App. Total	Right	Thru	Bear Left	Left	U-Turn	App. Total	Right	Thru	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	Left	U-Turn	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 07:30 AM																															
07:30 AM	4	1	12	0	0	17	0	8	7	8	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40
07:45 AM	2	4	6	0	0	12	0	4	1	8	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
08:00 AM	3	3	8	0	0	14	0	9	2	12	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37
08:15 AM	6	1	10	0	0	17	0	7	2	9	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	35
Total Volume	15	9	36	0	0	60	0	28	12	37	0	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	137
% App. Total	25	15	60	0	0		0	36.4	15.6	48.1	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.625	.563	.750	.000	.000	.882	.000	.778	.429	.771	.000	.837	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.856

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Bear Left	Left	Peds SB	Peds NB	Right	Thru	Left	Hard Left	Peds WB	Peds EB	Hard Right	Bear Right	Bear Left	Hard Left	Peds NB	Peds SB	Hard Right	Right	Thru	Left	Peds NB	Peds SB	Int. Total
07:00 AM	0	0	1	0	34	7	0	1	0	0	21	23	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	6	6	106
07:15 AM	0	0	3	0	54	23	0	0	0	0	24	57	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	19	20	227
07:30 AM	0	0	5	0	66	20	0	0	0	0	44	32	0	0	0	0	2	21	0	0	0	0	0	0	0	0	0	0	21	13	224
07:45 AM	0	0	5	0	88	19	0	3	0	0	43	38	0	0	0	0	3	35	0	0	0	0	0	0	0	0	0	0	41	18	293
Total	0	0	14	0	242	69	0	4	0	0	132	150	0	0	0	0	5	90	0	0	0	0	0	0	0	0	0	0	87	57	850
08:00 AM	0	0	6	0	119	18	0	0	0	1	50	45	0	0	0	0	5	12	0	0	0	0	0	0	0	0	0	0	43	21	320
08:15 AM	1	0	3	0	207	16	0	0	0	2	51	61	0	0	0	0	0	51	0	0	0	0	0	0	0	0	0	0	98	31	521
08:30 AM	1	0	6	0	161	21	0	0	0	1	56	61	0	0	0	0	5	21	0	0	0	0	0	0	0	0	0	0	47	36	416
08:45 AM	0	0	4	0	180	17	0	2	0	1	61	70	0	0	0	0	1	21	0	0	0	0	0	0	0	0	0	0	38	44	439
Total	2	0	19	0	667	72	0	2	0	5	218	237	0	0	0	0	11	105	0	0	0	0	0	0	0	0	0	0	226	132	1696
Grand Total	2	0	33	0	909	141	0	6	0	5	350	387	0	0	0	0	16	195	0	0	0	0	0	0	0	0	0	0	313	189	2546
Apprch %	0.2	0	3	0	83.8	13	0	0.8	0	0.7	46.8	51.7	0	0	0	0	7.6	92.4	0	0	0	0	0	0	0	0	0	0	62.4	37.6	
Total %	0.1	0	1.3	0	35.7	5.5	0	0.2	0	0.2	13.7	15.2	0	0	0	0	0.6	7.7	0	0	0	0	0	0	0	0	0	0	12.3	7.4	

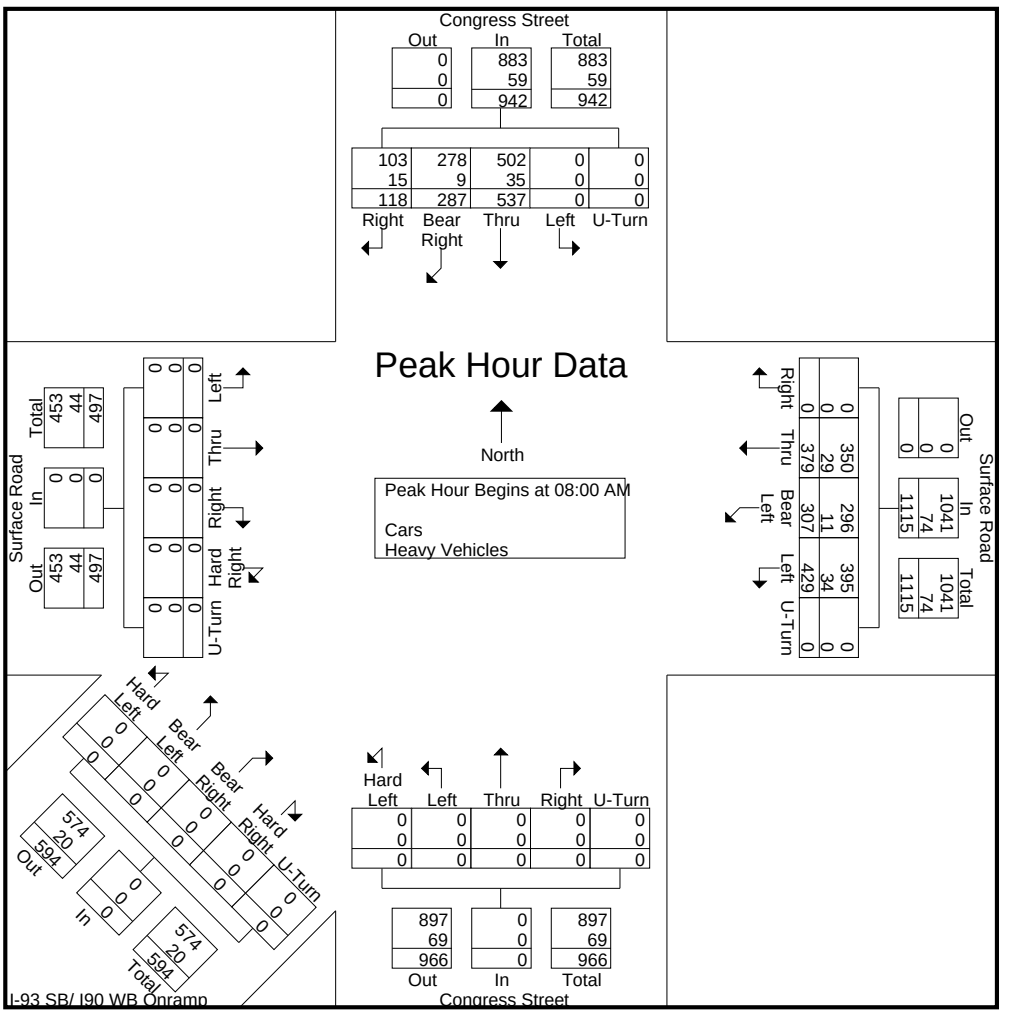
	Congress Street From North							Surface Road From East							Congress Street From South							I-93 SB/ I90 WB Onramp From Southwest							Surface Road From West							
Start Time	Right	Bear Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Bear Left	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Hard Left	Peds WB	Peds EB	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	Peds NB	Peds SB	App. Total	Hard Right	Right	Thru	Left	Peds NB	Peds SB	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	0	6	0	119	18	143	0	0	0	1	50	45	96	0	0	0	0	5	12	17	0	0	0	0	0	0	0	0	0	0	43	21	64	320
08:15 AM	1	0	3	0	207	16	227	0	0	0	2	51	61	114	0	0	0	0	0	51	51	0	0	0	0	0	0	0	0	0	0	98	31	129	521
08:30 AM	1	0	6	0	161	21	189	0	0	0	1	56	61	118	0	0	0	0	5	21	26	0	0	0	0	0	0	0	0	0	0	47	36	83	416
08:45 AM	0	0	4	0	180	17	201	0	2	0	1	61	70	134	0	0	0	0	1	21	22	0	0	0	0	0	0	0	0	0	0	38	44	82	439
Total Volume	2	0	19	0	667	72	760	0	2	0	5	218	237	462	0	0	0	0	11	105	116	0	0	0	0	0	0	0	0	0	0	226	132	358	1696
% App. Total	0.3	0	2.5	0	87.8	9.5		0	0.4	0	1.1	47.2	51.3		0	0	0	0	9.5	90.5		0	0	0	0	0	0		0	0	0	0	63.1	36.9		
PHF	.500	.000	.792	.000	.806	.857	.837	.000	.250	.000	.625	.893	.846	.862	.000	.000	.000	.000	.550	.515	.569	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.577	.750	.694	.814

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 C
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	U-Turn	App. Total	Right	Thru	Bear Left	Left	U-Turn	App. Total	Right	Thru	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	Left	U-Turn	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	28	70	123	0	0	221	0	100	90	110	0	300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	521
08:15 AM	38	89	145	0	0	272	0	94	68	99	0	261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	533
08:30 AM	24	69	131	0	0	224	0	94	86	115	0	295	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	519
08:45 AM	28	59	138	0	0	225	0	91	63	105	0	259	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	484
Total Volume	118	287	537	0	0	942	0	379	307	429	0	1115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2057
% App. Total	12.5	30.5	57	0	0		0	34	27.5	38.5	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.776	.806	.926	.000	.000	.866	.000	.948	.853	.933	.000	.929	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.965
Cars	103	278	502	0	0	883	0	350	296	395	0	1041	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1924
% Cars	87.3	96.9	93.5	0	0	93.7	0	92.3	96.4	92.1	0	93.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93.5
Heavy Vehicles	15	9	35	0	0	59	0	29	11	34	0	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	133
% Heavy Vehicles	12.7	3.1	6.5	0	0	6.3	0	7.7	3.6	7.9	0	6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.5



PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Congress Street From North					Surface Road From East					Congress Street From South					I-93 SB/ I-90 WB Onramp From Southwest					Surface Road From West					
Start Time	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	52	92	178	0	0	0	105	84	78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	589
04:15 PM	45	87	128	0	0	0	76	91	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	490
04:30 PM	55	92	151	0	0	0	90	94	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	544
04:45 PM	54	120	155	0	0	0	75	98	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	574
Total	206	391	612	0	0	0	346	367	275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2197
05:00 PM	34	147	176	0	0	0	64	108	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	592
05:15 PM	30	125	130	0	0	0	66	117	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	545
05:30 PM	32	123	128	0	0	0	69	70	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	482
05:45 PM	30	112	160	0	0	0	59	104	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	535
Total	126	507	594	0	0	0	258	399	270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2154
Grand Total	332	898	1206	0	0	0	604	766	545	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4351
Apprch %	13.6	36.9	49.5	0	0	0	31.5	40	28.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %	7.6	20.6	27.7	0	0	0	13.9	17.6	12.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Cars	318	892	1176	0	0	0	568	757	518	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4229
% Cars	95.8	99.3	97.5	0	0	0	94	98.8	95	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97.2
Heavy Vehicles	14	6	30	0	0	0	36	9	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	122
% Heavy Vehicles	4.2	0.7	2.5	0	0	0	6	1.2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.8

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I-90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	U-Turn	App. Total	Right	Thru	Bear Left	Left	U-Turn	App. Total	Right	Thru	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	Left	U-Turn	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	55	92	151	0	0	298	0	90	94	62	0	246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	544
04:45 PM	54	120	155	0	0	329	0	75	98	72	0	245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	574
05:00 PM	34	147	176	0	0	357	0	64	108	63	0	235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	592
05:15 PM	30	125	130	0	0	285	0	66	117	77	0	260	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	545
Total Volume	173	484	612	0	0	1269	0	295	417	274	0	986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2255
% App. Total	13.6	38.1	48.2	0	0		0	29.9	42.3	27.8	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.786	.823	.869	.000	.000	.889	.000	.819	.891	.890	.000	.948	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.952
Cars	163	479	597	0	0	1239	0	272	410	258	0	940	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2179
% Cars	94.2	99.0	97.5	0	0	97.6	0	92.2	98.3	94.2	0	95.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96.6
Heavy Vehicles	10	5	15	0	0	30	0	23	7	16	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76
% Heavy Vehicles	5.8	1.0	2.5	0	0	2.4	0	7.8	1.7	5.8	0	4.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Congress Street From North					Surface Road From East					Congress Street From South					I-93 SB/ I-90 WB Onramp From Southwest					Surface Road From West					
Start Time	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	51	92	174	0	0	0	98	83	73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	571
04:15 PM	43	87	123	0	0	0	72	90	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	475
04:30 PM	50	91	148	0	0	0	87	89	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	523
04:45 PM	49	118	150	0	0	0	67	97	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	547
Total	193	388	595	0	0	0	324	359	257	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2116
05:00 PM	34	145	171	0	0	0	55	107	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	571
05:15 PM	30	125	128	0	0	0	63	117	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	538
05:30 PM	32	123	126	0	0	0	67	70	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	476
05:45 PM	29	111	156	0	0	0	59	104	69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	528
Total	125	504	581	0	0	0	244	398	261	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2113
Grand Total	318	892	1176	0	0	0	568	757	518	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4229
Apprch %	13.3	37.4	49.3	0	0	0	30.8	41.1	28.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %	7.5	21.1	27.8	0	0	0	13.4	17.9	12.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I-90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	U-Turn	App. Total	Right	Thru	Bear Left	Left	U-Turn	App. Total	Right	Thru	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	Left	U-Turn	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	50	91	148	0	0	289	0	87	89	58	0	234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	523
04:45 PM	49	118	150	0	0	317	0	67	97	66	0	230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	547
05:00 PM	34	145	171	0	0	350	0	55	107	59	0	221	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	571
05:15 PM	30	125	128	0	0	283	0	63	117	75	0	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	538
Total Volume	163	479	597	0	0	1239	0	272	410	258	0	940	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2179
% App. Total	13.2	38.7	48.2	0	0		0	28.9	43.6	27.4	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.815	.826	.873	.000	.000	.885	.000	.782	.876	.860	.000	.922	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.954

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Congress Street From North					Surface Road From East					Congress Street From South					I-93 SB/ I-90 WB Onramp From Southwest					Surface Road From West					
Start Time	Right	Bear Right	Thru	Left	U-Turn	Right	Thru	Bear Left	Left	U-Turn	Right	Thru	Left	Hard Left	U-Turn	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Int. Total
04:00 PM	1	0	4	0	0	0	7	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
04:15 PM	2	0	5	0	0	0	4	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
04:30 PM	5	1	3	0	0	0	3	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
04:45 PM	5	2	5	0	0	0	8	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
Total	13	3	17	0	0	0	22	8	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81
05:00 PM	0	2	5	0	0	0	9	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
05:15 PM	0	0	2	0	0	0	3	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
05:30 PM	0	0	2	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
05:45 PM	1	1	4	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
Total	1	3	13	0	0	0	14	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41
Grand Total	14	6	30	0	0	0	36	9	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	122
Apprch %	28	12	60	0	0	0	50	12.5	37.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %	11.5	4.9	24.6	0	0	0	29.5	7.4	22.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I-90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	U-Turn	App. Total	Right	Thru	Bear Left	Left	U-Turn	App. Total	Right	Thru	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	Left	U-Turn	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	2	0	5	0	0	7	0	4	1	3	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
04:30 PM	5	1	3	0	0	9	0	3	5	4	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
04:45 PM	5	2	5	0	0	12	0	8	1	6	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27
05:00 PM	0	2	5	0	0	7	0	9	1	4	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
Total Volume	12	5	18	0	0	35	0	24	8	17	0	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84
% App. Total	34.3	14.3	51.4	0	0		0	49	16.3	34.7	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.600	.625	.900	.000	.000	.729	.000	.667	.400	.708	.000	.817	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.778

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I-90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Bear Left	Left	Peds SB	Peds NB	Right	Thru	Left	Hard Left	Peds WB	Peds EB	Hard Right	Bear Right	Bear Left	Hard Left	Peds NB	Peds SB	Hard Right	Right	Thru	Left	Peds NB	Peds SB	Int. Total
04:00 PM	0	0	0	0	11	51	0	1	0	1	50	10	0	0	0	0	10	1	0	0	0	0	0	0	0	0	0	0	9	10	154
04:15 PM	0	0	1	0	10	45	0	3	0	0	29	20	0	0	0	0	13	6	0	0	0	0	0	0	0	0	0	0	6	7	140
04:30 PM	0	0	2	0	13	58	0	1	0	0	48	16	0	0	0	0	10	2	0	0	0	0	0	0	0	0	0	0	11	15	176
04:45 PM	0	0	0	0	11	85	0	2	0	0	71	27	0	0	0	0	12	3	0	0	0	0	0	0	0	0	0	0	11	18	240
Total	0	0	3	0	45	239	0	7	0	1	198	73	0	0	0	0	45	12	0	0	0	0	0	0	0	0	0	0	37	50	710
05:00 PM	0	0	1	0	24	109	0	0	0	0	122	57	0	0	0	0	26	7	0	0	0	0	0	0	0	0	0	0	30	29	405
05:15 PM	0	0	1	0	25	97	0	0	0	1	72	64	0	0	0	0	17	2	0	0	0	0	0	0	0	0	0	0	40	20	339
05:30 PM	0	0	0	0	19	124	0	0	0	0	81	50	0	0	0	0	12	4	0	0	0	0	0	0	0	0	0	0	27	29	346
05:45 PM	0	0	2	0	14	85	0	0	0	0	38	31	0	0	0	0	3	6	0	0	0	0	0	0	0	0	0	0	25	28	232
Total	0	0	4	0	82	415	0	0	0	1	313	202	0	0	0	0	58	19	0	0	0	0	0	0	0	0	0	0	122	106	1322
Grand Total	0	0	7	0	127	654	0	7	0	2	511	275	0	0	0	0	103	31	0	0	0	0	0	0	0	0	0	0	159	156	2032
Apprch %	0	0	0.9	0	16.1	83	0	0.9	0	0.3	64.3	34.6	0	0	0	0	76.9	23.1	0	0	0	0	0	0	0	0	0	0	50.5	49.5	
Total %	0	0	0.3	0	6.2	32.2	0	0.3	0	0.1	25.1	13.5	0	0	0	0	5.1	1.5	0	0	0	0	0	0	0	0	0	0	7.8	7.7	

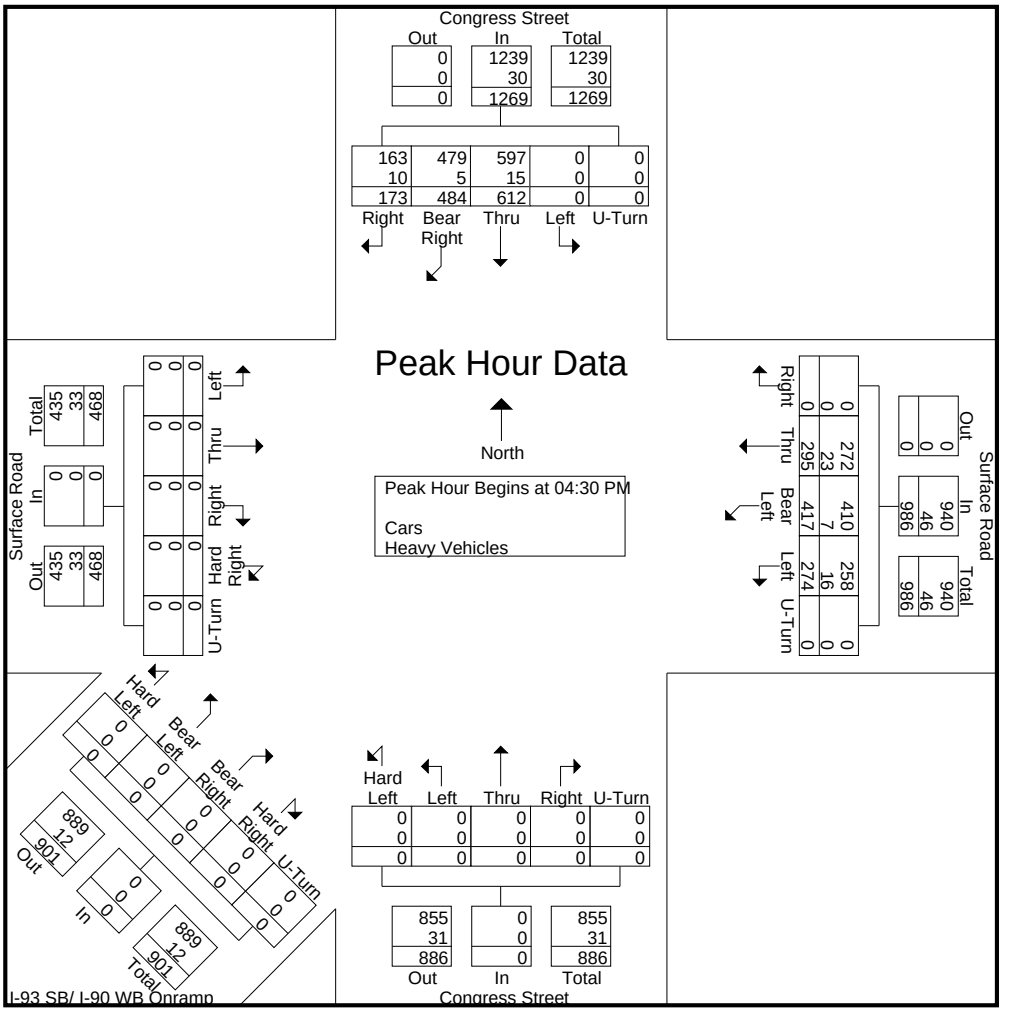
	Congress Street From North							Surface Road From East							Congress Street From South							I-93 SB/ I-90 WB Onramp From Southwest							Surface Road From West							
Start Time	Right	Bear Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Bear Left	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Hard Left	Peds WB	Peds EB	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	Peds NB	Peds SB	App. Total	Hard Right	Right	Thru	Left	Peds NB	Peds SB	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	11	85	96	0	2	0	0	71	27	100	0	0	0	0	12	3	15	0	0	0	0	0	0	0	0	0	0	11	18	29	240
05:00 PM	0	0	1	0	24	109	134	0	0	0	0	122	57	179	0	0	0	0	26	7	33	0	0	0	0	0	0	0	0	0	0	30	29	59	405
05:15 PM	0	0	1	0	25	97	123	0	0	0	1	72	64	137	0	0	0	0	17	2	19	0	0	0	0	0	0	0	0	0	0	40	20	60	339
05:30 PM	0	0	0	0	19	124	143	0	0	0	0	81	50	131	0	0	0	0	12	4	16	0	0	0	0	0	0	0	0	0	0	27	29	56	346
Total Volume	0	0	2	0	79	415	496	0	2	0	1	346	198	547	0	0	0	0	67	16	83	0	0	0	0	0	0	0	0	0	0	108	96	204	1330
% App. Total	0	0	0.4	0	15.9	83.7		0	0.4	0	0.2	63.3	36.2		0	0	0	0	80.7	19.3		0	0	0	0	0	0		0	0	0	0	52.9	47.1		
PHF	.000	.000	.500	.000	.790	.837	.867	.000	.250	.000	.250	.709	.773	.764	.000	.000	.000	.000	.644	.571	.629	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.675	.828	.850	.821

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S: Congress Street
E/W/SW: Surface Road/ I-93/I-90 Onramp
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 CC
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Congress Street From North						Surface Road From East						Congress Street From South						I-93 SB/ I-90 WB Onramp From Southwest						Surface Road From West						
Start Time	Right	Bear Right	Thru	Left	U-Turn	App. Total	Right	Thru	Bear Left	Left	U-Turn	App. Total	Right	Thru	Left	Hard Left	U-Turn	App. Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	App. Total	Hard Right	Right	Thru	Left	U-Turn	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	55	92	151	0	0	298	0	90	94	62	0	246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	544
04:45 PM	54	120	155	0	0	329	0	75	98	72	0	245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	574
05:00 PM	34	147	176	0	0	357	0	64	108	63	0	235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	592
05:15 PM	30	125	130	0	0	285	0	66	117	77	0	260	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	545
Total Volume	173	484	612	0	0	1269	0	295	417	274	0	986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2255
% App. Total	13.6	38.1	48.2	0	0		0	29.9	42.3	27.8	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.786	.823	.869	.000	.000	.889	.000	.819	.891	.890	.000	.948	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.952
Cars	163	479	597	0	0	1239	0	272	410	258	0	940	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2179
% Cars	94.2	99.0	97.5	0	0	97.6	0	92.2	98.3	94.2	0	95.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	96.6
Heavy Vehicles	10	5	15	0	0	30	0	23	7	16	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76
% Heavy Vehicles	5.8	1.0	2.5	0	0	2.4	0	7.8	1.7	5.8	0	4.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3.4



N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South							I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	15	0	104	13	0	18	0	0	0	0	0	0	6	16	124	0	1	0	0	0	0	0	0	0	0	0	0	0	0	20	23	0	40	27	21	0	428
07:15 AM	0	0	0	0	25	0	94	12	0	30	0	0	0	0	0	0	7	10	135	0	0	2	0	0	0	0	0	0	0	0	0	0	0	20	25	0	50	21	20	0	451
07:30 AM	0	0	0	0	24	0	98	16	0	30	0	0	0	0	0	0	5	24	121	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	33	0	54	28	30	0	487
07:45 AM	0	0	0	0	32	0	96	29	0	44	1	0	0	0	0	0	5	15	112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	6	0	50	21	30	0	457
Total	0	0	0	0	96	0	392	70	0	122	1	0	0	0	0	0	23	65	492	0	1	2	0	0	0	0	0	0	0	0	0	0	0	80	87	0	194	97	101	0	1823
08:00 AM	0	0	0	0	30	0	105	16	0	38	2	0	0	0	0	0	8	16	140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	26	0	56	34	19	0	510
08:15 AM	0	0	0	0	31	0	99	15	0	31	0	0	0	0	0	0	8	20	166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	16	0	44	21	36	0	506
08:30 AM	0	0	0	0	15	0	70	21	0	35	0	0	0	0	0	0	6	21	113	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	14	0	62	36	26	0	446
08:45 AM	0	0	0	0	44	0	95	27	0	41	1	0	0	0	0	0	24	12	120	0	1	0	0	0	0	0	0	0	0	0	0	0	0	31	18	0	68	22	22	0	526
Total	0	0	0	0	120	0	369	79	0	145	3	0	0	0	0	0	46	69	539	0	1	0	0	0	0	0	0	0	0	0	0	0	0	97	74	0	230	113	103	0	1988
Grand Total	0	0	0	0	216	0	761	149	0	267	4	0	0	0	0	0	69	134	1031	0	2	2	0	0	0	0	0	0	0	0	0	0	0	177	161	0	424	210	204	0	3811
Apprch %	0	0	0	0	15.5	0	54.5	10.7	0	19.1	0.3	0	0	0	0	0	5.6	10.8	83.3	0	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	15.1	13.7	0	36.1	17.9	17.3	0	
Total %	0	0	0	0	5.7	0	20	3.9	0	7	0.1	0	0	0	0	0	1.8	3.5	27.1	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	4.6	4.2	0	11.1	5.5	5.4	0	
Cars	0	0	0	0	213		672	142		255								128	961															128	146		374	182	193		3464
% Cars	0	0	0	0	98.6	0	88.3	95.3	0	95.5	100	0	0	0	0	0	89.9	95.5	93.2	0	100	100	0	0	0	0	0	0	0	0	0	0	0	72.3	90.7	0	88.2	86.7	94.6	0	90.9
Heavy Vehicles	0	0	0	0	3	0	89	7	0	12	0	0	0	0	0	0	7	6	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	15	0	50	28	11	0	347
% Heavy Vehicles	0	0	0	0	1.4	0	11.7	4.7	0	4.5	0	0	0	0	0	0	10.1	4.5	6.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27.7	9.3	0	11.8	13.3	5.4	0	9.1

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South							I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	0	0	0	0	30	0	105	16	0	38	2	191	0	0	0	0	0	0	8	16	140	0	0	0	0	164	0	0	0	0	0	0	0	0	0	0	0	20	26	0	56	34	19	0	155	510
08:15 AM	0	0	0	0	0	31	0	99	15	0	31	0	176	0	0	0	0	0	0	8	20	166	0	0	0	0	194	0	0	0	0	0	0	0	0	0	0	0	19	16	0	44	21	36	0	136	506
08:30 AM	0	0	0	0	0	15	0	70	21	0	35	0	141	0	0	0	0	0	0	6	21	113	0	0	0	0	140	0	0	0	0	0	0	0	0	0	0	0	27	14	0	62	36	26	0	165	446
08:45 AM	0	0	0	0	0	44	0	95	27	0	41	1	208	0	0	0	0	0	0	24	12	120	0	1	0	0	157	0	0	0	0	0	0	0	0	0	0	0	31	18	0	68	22	22	0	161	526
Total Volume	0	0	0	0	0	120	0	369	79	0	145	3	716	0	0	0	0	0	0	46	69	539	0	1	0	0	655	0	0	0	0	0	0	0	0	0	0	0	97	74	0	230	113	103	0	617	1988
% App. Total	0	0	0	0		16.8	0	51.5	11	0	20.3	0.4		0	0	0	0	0		7	10.5	82.3	0	0.2	0	0		0	0	0	0		0	0	0	0	0		15.7	12	0	37.3	18.3	16.7	0		
PHF	.000	.000	.000	.000	.000	.682	.000	.879	.731	.000	.884	.375	.861	.000	.000	.000	.000	.000	.000	.479	.821	.812	.000	.250	.000	.000	.844	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.782	.712	.000	.846	.785	.715	.000	.935	.945
Cars	0	0	0	0	0	119	0	327	76	0	139	3	664	0	0	0	0	0	0	43	65	504	0	1	0	0	613	0	0	0	0	0	0	0	0	0	0	0	72	70	0	200	94	97	0	533	1810
% Cars	0	0	0	0	0	99.2	0	88.6	96.2	0	95.9	100	92.7	0	0	0	0	0	0	93.5	94.2	93.5	0	100	0	0	93.6	0	0	0	0	0	0	0	0	0	0	0	74.2	94.6	0	87.0	83.2	94.2	0	86.4	91.0
Heavy Vehicles	0	0	0	0	0	1	0	42	3	0	6	0	52	0	0	0	0	0	0	3	4	35	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	25	4	0	30	19	6	0	84	178
% Heavy Vehicles	0	0	0	0	0	0.8	0	11.4	3.8	0	4.1	0	7.3	0	0	0	0	0	0	6.5	5.8	6.5	0	0	0	0	6.4	0	0	0	0	0	0	0	0	0	0	0	25.8	5.4	0	13.0	16.8	5.8	0	13.6	9.0

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast					Lincoln Street From South							I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	15	0	93	12	0	17	0	0	0	0	0	0	5	15	120	0	1	0	0	0	0	0	0	0	0	0	0	0	0	14	19	0	34	26	19	0	390
07:15 AM	0	0	0	0	25	0	81	10	0	30	0	0	0	0	0	0	6	10	125	0	0	2	0	0	0	0	0	0	0	0	0	0	0	10	23	0	43	18	19	0	402
07:30 AM	0	0	0	0	23	0	86	16	0	25	0	0	0	0	0	0	4	23	115	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	28	0	50	25	29	0	444
07:45 AM	0	0	0	0	31	0	85	28	0	44	1	0	0	0	0	0	4	15	97	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	6	0	47	19	29	0	418
Total	0	0	0	0	94	0	345	66	0	116	1	0	0	0	0	0	19	63	457	0	1	2	0	0	0	0	0	0	0	0	0	0	0	56	76	0	174	88	96	0	1654
08:00 AM	0	0	0	0	30	0	95	16	0	36	2	0	0	0	0	0	6	15	124	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	25	0	51	30	18	0	459
08:15 AM	0	0	0	0	31	0	89	14	0	30	0	0	0	0	0	0	7	18	160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	15	0	40	12	34	0	462
08:30 AM	0	0	0	0	15	0	57	20	0	34	0	0	0	0	0	0	6	20	104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	14	0	49	32	24	0	398
08:45 AM	0	0	0	0	43	0	86	26	0	39	1	0	0	0	0	0	24	12	116	0	1	0	0	0	0	0	0	0	0	0	0	0	0	26	16	0	60	20	21	0	491
Total	0	0	0	0	119	0	327	76	0	139	3	0	0	0	0	0	43	65	504	0	1	0	0	0	0	0	0	0	0	0	0	0	0	72	70	0	200	94	97	0	1810
Grand Total	0	0	0	0	213	0	672	142	0	255	4	0	0	0	0	0	62	128	961	0	2	2	0	0	0	0	0	0	0	0	0	0	0	128	146	0	374	182	193	0	3464
Apprch %	0	0	0	0	16.6	0	52.3	11	0	19.8	0.3	0	0	0	0	0	5.4	11.1	83.2	0	0.2	0.2	0	0	0	0	0	0	0	0	0	0	0	12.5	14.3	0	36.6	17.8	18.9	0	
Total %	0	0	0	0	6.1	0	19.4	4.1	0	7.4	0.1	0	0	0	0	0	1.8	3.7	27.7	0	0.1	0.1	0	0	0	0	0	0	0	0	0	0	0	3.7	4.2	0	10.8	5.3	5.6	0	

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	0	0	0	0	30	0	95	16	0	36	2	179	0	0	0	0	0	0	6	15	124	0	0	0	0	145	0	0	0	0	0	0	0	0	0	0	0	11	25	0	51	30	18	0	135	459
08:15 AM	0	0	0	0	0	31	0	89	14	0	30	0	164	0	0	0	0	0	0	7	18	160	0	0	0	0	185	0	0	0	0	0	0	0	0	0	0	0	12	15	0	40	12	34	0	113	462
08:30 AM	0	0	0	0	0	15	0	57	20	0	34	0	126	0	0	0	0	0	0	6	20	104	0	0	0	0	130	0	0	0	0	0	0	0	0	0	0	0	23	14	0	49	32	24	0	142	398
08:45 AM	0	0	0	0	0	43	0	86	26	0	39	1	195	0	0	0	0	0	0	24	12	116	0	1	0	0	153	0	0	0	0	0	0	0	0	0	0	0	26	16	0	60	20	21	0	143	491
Total Volume	0	0	0	0	0	119	0	327	76	0	139	3	664	0	0	0	0	0	0	43	65	504	0	1	0	0	613	0	0	0	0	0	0	0	0	0	0	0	72	70	0	200	94	97	0	533	1810
% App. Total	0	0	0	0		17.9	0	49.2	11.4	0	20.9	0.5		0	0	0	0	0		7	10.6	82.2	0	0.2	0	0		0	0	0	0		0	0	0	0	0		13.5	13.1	0	37.5	17.6	18.2	0		
PHF	.000	.000	.000	.000	.000	.692	.000	.861	.731	.000	.891	.375	.851	.000	.000	.000	.000	.000	.000	.448	.813	.788	.000	.250	.000	.000	.828	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.692	.700	.000	.833	.734	.713	.000	.932	.922

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast					Lincoln Street From South							I-93 Onramp From Southwest				Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
07:00 AM	0	0	0	0	0	0	11	1	0	1	0	0	0	0	0	0	1	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	6	4	0	6	1	2	0	38
07:15 AM	0	0	0	0	0	0	13	2	0	0	0	0	0	0	0	0	1	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10	2	0	7	3	1	0	49
07:30 AM	0	0	0	0	1	0	12	0	0	5	0	0	0	0	0	0	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5	0	4	3	1	0	43
07:45 AM	0	0	0	0	1	0	11	1	0	0	0	0	0	0	0	0	1	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	3	2	1	0	39
Total	0	0	0	0	2	0	47	4	0	6	0	0	0	0	0	0	4	2	35	0	0	0	0	0	0	0	0	0	0	0	0	0	24	11	0	20	9	5	0	169
08:00 AM	0	0	0	0	0	0	10	0	0	2	0	0	0	0	0	0	2	1	16	0	0	0	0	0	0	0	0	0	0	0	0	0	9	1	0	5	4	1	0	51
08:15 AM	0	0	0	0	0	0	10	1	0	1	0	0	0	0	0	0	1	2	6	0	0	0	0	0	0	0	0	0	0	0	0	0	7	1	0	4	9	2	0	44
08:30 AM	0	0	0	0	0	0	13	1	0	1	0	0	0	0	0	0	0	1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	13	4	2	0	48
08:45 AM	0	0	0	0	1	0	9	1	0	2	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	5	2	0	8	2	1	0	35
Total	0	0	0	0	1	0	42	3	0	6	0	0	0	0	0	0	3	4	35	0	0	0	0	0	0	0	0	0	0	0	0	0	25	4	0	30	19	6	0	178
Grand Total	0	0	0	0	3	0	89	7	0	12	0	0	0	0	0	0	7	6	70	0	0	0	0	0	0	0	0	0	0	0	0	0	49	15	0	50	28	11	0	347
Apprch %	0	0	0	0	2.7	0	80.2	6.3	0	10.8	0	0	0	0	0	0	8.4	7.2	84.3	0	0	0	0	0	0	0	0	0	0	0	0	0	32	9.8	0	32.7	18.3	7.2	0	
Total %	0	0	0	0	0.9	0	25.6	2	0	3.5	0	0	0	0	0	0	2	1.7	20.2	0	0	0	0	0	0	0	0	0	0	0	0	0	14.1	4.3	0	14.4	8.1	3.2	0	

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	13	2	0	0	0	15	0	0	0	0	0	0	1	0	10	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	10	2	0	7	3	1	0	23	49
07:30 AM	0	0	0	0	0	1	0	12	0	0	5	0	18	0	0	0	0	0	0	1	1	6	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	4	5	0	4	3	1	0	17	43
07:45 AM	0	0	0	0	0	1	0	11	1	0	0	0	13	0	0	0	0	0	0	1	0	15	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	4	0	0	3	2	1	0	10	39
08:00 AM	0	0	0	0	0	0	0	10	0	0	2	0	12	0	0	0	0	0	0	2	1	16	0	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	9	1	0	5	4	1	0	20	51
Total Volume	0	0	0	0	0	2	0	46	3	0	7	0	58	0	0	0	0	0	0	5	2	47	0	0	0	0	54	0	0	0	0	0	0	0	0	0	0	0	27	8	0	19	12	4	0	70	182
% App. Total	0	0	0	0		3.4	0	79.3	5.2	0	12.1	0		0	0	0	0	0		9.3	3.7	87	0	0	0	0		0	0	0	0		0	0	0	0	0		38.6	11.4	0	27.1	17.1	5.7	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.885	.375	.000	.350	.000	.806	.000	.000	.000	.000	.000	.000	.625	.500	.734	.000	.000	.000	.000	.711	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.675	.400	.000	.679	.750	1.00	.000	.761	.892

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest								
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Bear Right	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	Bear Right	Thru	Bear Left	Left	Peds SWB	Peds NEB	Hard Right	Right	Thru	Bear Left	Left	Hard Left	Peds WB	Peds EB	Right	Bear Left	Left	Peds NWB	Peds SEB	Right	Thru	Left	Peds NB	Peds SB	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	Peds NEB	Peds SWB	Int. Total
07:00 AM	0	0	0	13	49	0	0	0	0	0	0	15	45	0	0	0	0	3	16	0	0	0	0	0	0	14	16	0	0	0	11	16	0	0	0	13	12	0	0	0	1	0	1	11	11	247
07:15 AM	0	0	0	17	81	0	0	1	0	0	0	17	64	0	0	0	0	2	25	0	0	0	0	0	0	23	16	0	0	0	22	17	0	0	0	21	15	0	0	0	3	0	1	13	23	361
07:30 AM	1	0	0	26	101	0	0	1	0	0	0	31	80	0	0	0	0	8	31	0	0	0	0	0	0	22	26	0	0	0	31	31	0	0	0	32	27	1	0	0	4	0	0	13	32	498
07:45 AM	0	0	0	35	108	0	0	1	0	0	0	34	90	0	0	0	0	13	80	0	0	1	0	0	0	24	31	0	0	0	32	31	0	0	0	29	28	0	0	0	7	0	6	20	19	589
Total	1	0	0	91	339	0	0	3	0	0	0	97	279	0	0	0	0	26	152	0	0	1	0	0	0	83	89	0	0	0	96	95	0	0	0	95	82	1	0	0	15	0	8	57	85	1695
08:00 AM	0	0	0	49	97	0	0	0	0	0	0	54	62	0	0	0	0	14	27	0	0	0	0	0	0	41	47	0	0	0	40	52	0	0	0	44	59	0	0	0	4	0	0	8	58	656
08:15 AM	0	0	0	78	161	0	0	0	0	0	1	82	200	0	0	0	0	15	65	0	0	0	0	0	0	52	43	0	0	0	65	43	0	0	0	64	40	0	0	0	3	1	0	36	45	994
08:30 AM	0	0	0	98	152	0	0	0	0	0	0	70	148	0	0	0	0	13	76	0	0	1	0	0	0	61	36	0	0	0	46	38	0	0	0	49	38	0	0	0	4	0	0	24	29	883
08:45 AM	0	0	0	75	165	1	0	0	0	0	0	77	116	0	0	0	0	30	44	0	0	1	0	0	0	49	36	0	0	0	49	49	0	0	0	59	42	0	0	0	9	0	0	38	33	873
Total	0	0	0	300	575	1	0	0	0	0	1	283	526	0	0	0	0	72	212	0	0	2	0	0	0	203	162	0	0	0	200	182	0	0	0	216	179	0	0	0	20	1	0	106	165	3406
Grand Total	1	0	0	391	914	1	0	3	0	0	1	380	805	0	0	0	0	98	364	0	0	3	0	0	0	286	251	0	0	0	296	277	0	0	0	311	261	1	0	0	35	1	8	163	250	5101
Apprch %	0.1	0	0	29.9	70	0.1	0	0.3	0	0	0.1	31.9	67.6	0	0	0	0	21.2	78.8	0	0	0.6	0	0	0	53	46.5	0	0	0	51.7	48.3	0	0	0	54.4	45.6	0.2	0	0	7.6	0.2	1.7	35.6	54.6	
Total %	0	0	0	7.7	17.9	0	0	0.1	0	0	0	7.4	15.8	0	0	0	0	1.9	7.1	0	0	0.1	0	0	0	5.6	4.9	0	0	0	5.8	5.4	0	0	0	6.1	5.1	0	0	0	0.7	0	0.2	3.2	4.9	

	Lincoln Street From North						Surface Road/I-93 Onramp From East								Essex Street From Southeast							Lincoln Street From South									I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest									
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	App. Total	Bear Right	Thru	Bear Left	Left	Peds SWB	Peds NEB	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	Peds WB	Peds EB	App. Total	Right	Bear Left	Left	Peds NWB	Peds SEB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	Peds NEB	Peds SWB	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	0	0	49	97	146	0	0	0	0	0	0	54	62	116	0	0	0	0	14	27	41	0	0	0	0	0	0	41	47	88	0	0	0	40	52	92	0	0	0	44	59	103	0	0	0	4	0	0	8	58	70	656
08:15 AM	0	0	0	78	161	239	0	0	0	0	0	1	82	200	283	0	0	0	0	15	65	80	0	0	0	0	0	0	52	43	95	0	0	0	65	43	108	0	0	0	64	40	104	0	0	0	3	1	0	36	45	85	994
08:30 AM	0	0	0	98	152	250	0	0	0	0	0	0	70	148	218	0	0	0	0	13	76	89	0	0	1	0	0	0	61	36	98	0	0	0	46	38	84	0	0	0	49	38	87	0	0	0	4	0	0	24	29	57	883
08:45 AM	0	0	0	75	165	240	1	0	0	0	0	0	77	116	194	0	0	0	0	30	44	74	0	0	1	0	0	0	49	36	86	0	0	0	49	49	98	0	0	0	59	42	101	0	0	0	9	0	0	38	33	80	873
Total Volume	0	0	0	300	575	875	1	0	0	0	0	1	283	526	811	0	0	0	0	72	212	284	0	0	2	0	0	0	203	162	367	0	0	0	200	182	382	0	0	0	216	179	395	0	0	0	20	1	0	106	165	292	3406
% App. Total	0	0	0	34.3	65.7		0.1	0	0	0	0	0.1	34.9	64.9		0	0	0	0	25.4	74.6		0	0	0.5	0	0	0	55.3	44.1		0	0	0	52.4	47.6		0	0	0	54.7	45.3		0	0	0	6.8	0.3	0	36.3	56.5		
PHF	.000	.000	.000	.765	.871	.875	.250	.000	.000	.000	.000	.250	.863	.658	.716	.000	.000	.000	.000	.600	.697	.798	.000	.000	.500	.000	.000	.000	.832	.862	.936	.000	.000	.000	.769	.875	.884	.000	.000	.000	.844	.754	.950	.000	.000	.000	.556	.250	.000	.697	.711	.859	.857

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

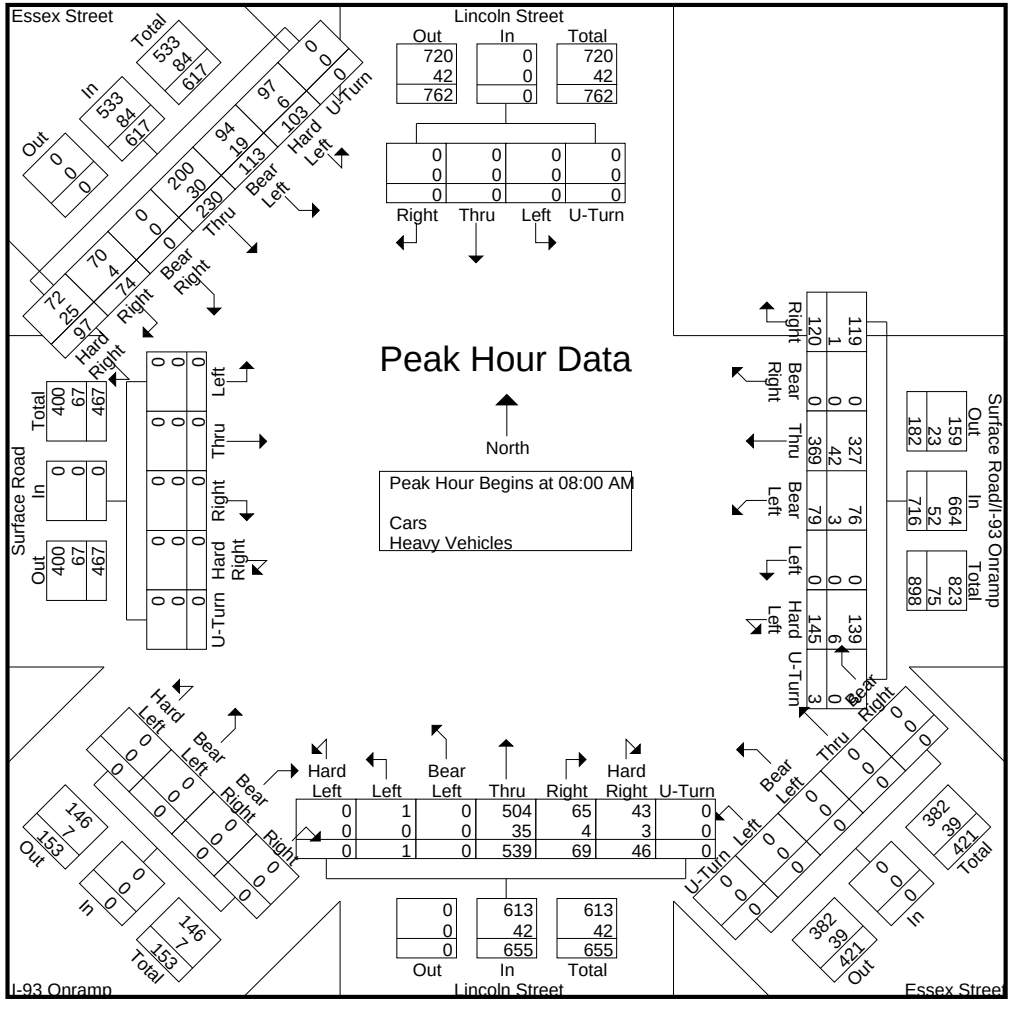
File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South							I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	0	0	0	0	30	0	105	16	0	38	2	191	0	0	0	0	0	0	8	16	140	0	0	0	0	164	0	0	0	0	0	0	0	0	0	0	0	20	26	0	56	34	19	0	155	510
08:15 AM	0	0	0	0	0	31	0	99	15	0	31	0	176	0	0	0	0	0	0	8	20	166	0	0	0	0	194	0	0	0	0	0	0	0	0	0	0	0	19	16	0	44	21	36	0	136	506
08:30 AM	0	0	0	0	0	15	0	70	21	0	35	0	141	0	0	0	0	0	0	6	21	113	0	0	0	0	140	0	0	0	0	0	0	0	0	0	0	0	27	14	0	62	36	26	0	165	446
08:45 AM	0	0	0	0	0	44	0	95	27	0	41	1	208	0	0	0	0	0	0	24	12	120	0	1	0	0	157	0	0	0	0	0	0	0	0	0	0	0	31	18	0	68	22	22	0	161	526
Total Volume	0	0	0	0	0	120	0	369	79	0	145	3	716	0	0	0	0	0	0	46	69	539	0	1	0	0	655	0	0	0	0	0	0	0	0	0	0	0	97	74	0	230	113	103	0	617	1988
% App. Total	0	0	0	0		16.8	0	51.5	11	0	20.3	0.4		0	0	0	0	0		7	10.5	82.3	0	0.2	0	0		0	0	0	0		0	0	0	0	0		15.7	12	0	37.3	18.3	16.7	0		
PHF	.000	.000	.000	.000	.000	.682	.000	.879	.731	.000	.884	.375	.861	.000	.000	.000	.000	.000	.000	.479	.821	.812	.000	.250	.000	.000	.844	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.782	.712	.000	.846	.785	.715	.000	.935	.945
Cars	0	0	0	0	0	119	0	327	76	0	139	3	664	0	0	0	0	0	0	43	65	504	0	1	0	0	613	0	0	0	0	0	0	0	0	0	0	0	72	70	0	200	94	97	0	533	1810
% Cars	0	0	0	0	0	99.2	0	88.6	96.2	0	95.9	100	92.7	0	0	0	0	0	0	93.5	94.2	93.5	0	100	0	0	93.6	0	0	0	0	0	0	0	0	0	0	0	74.2	94.6	0	87.0	83.2	94.2	0	86.4	91.0
Heavy Vehicles	0	0	0	0	0	1	0	42	3	0	6	0	52	0	0	0	0	0	0	3	4	35	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	25	4	0	30	19	6	0	84	178
% Heavy Vehicles	0	0	0	0	0	0.8	0	11.4	3.8	0	4.1	0	7.3	0	0	0	0	0	0	6.5	5.8	6.5	0	0	0	0	6.4	0	0	0	0	0	0	0	0	0	0	0	25.8	5.4	0	13.0	16.8	5.8	0	13.6	9.0

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 A
Site Code : TBA
Start Date : 11/30/2016
Page No : 2



N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars - Heavy Vehicles

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast						Lincoln Street From South							I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	U-Turn	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	8	0	148	48	0	19	0	0	0	0	0	0	8	47	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36	25	0	34	43	9	0	492
04:15 PM	0	0	0	0	5	0	144	36	0	21	0	0	0	0	0	0	4	47	57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	40	0	22	44	10	0	470
04:30 PM	0	0	0	0	3	0	149	39	0	19	1	0	0	0	0	0	1	64	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	22	0	42	47	13	0	516
04:45 PM	0	0	0	0	9	0	135	28	0	21	0	0	0	0	0	0	4	39	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	20	0	38	57	11	0	439
Total	0	0	0	0	25	0	576	151	0	80	1	0	0	0	0	0	17	197	244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	149	107	0	136	191	43	0	1917
05:00 PM	0	0	0	0	4	0	114	35	0	22	0	0	0	0	0	0	2	40	72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	28	26	0	27	45	8	0	423
05:15 PM	0	0	0	0	7	0	137	45	0	20	0	0	0	0	0	0	4	51	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	32	0	27	43	6	0	462
05:30 PM	0	0	0	0	3	0	112	24	0	25	1	0	0	0	0	0	2	49	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	28	0	20	41	13	0	403
05:45 PM	0	0	0	0	4	0	89	49	0	23	0	0	0	0	0	0	0	44	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	15	0	18	23	2	0	335
Total	0	0	0	0	18	0	452	153	0	90	1	0	0	0	0	0	8	184	234	0	0	0	0	0	0	0	0	0	0	0	0	0	0	109	101	0	92	152	29	0	1623
Grand Total	0	0	0	0	43	0	1028	304	0	170	2	0	0	0	0	0	25	381	478	0	0	0	0	0	0	0	0	0	0	0	0	0	0	258	208	0	228	343	72	0	3540
Apprch %	0	0	0	0	2.8	0	66.5	19.7	0	11	0.1	0	0	0	0	0	2.8	43.1	54.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23.3	18.8	0	20.6	30.9	6.5	0	
Total %	0	0	0	0	1.2	0	29	8.6	0	4.8	0.1	0	0	0	0	0	0.7	10.8	13.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7.3	5.9	0	6.4	9.7	2	0	
Cars	0	0	0	0	41	0	970	294		165								366	428															225	206		215	332			3335
% Cars	0	0	0	0	95.3	0	94.4	96.7	0	97.1	100	0	0	0	0	0	96	96.1	89.5	0	0	0	0	0	0	0	0	0	0	0	0	0	87.2	99	0	94.3	96.8	93.1	0	94.2
Heavy Vehicles	0	0	0	0	2	0	58	10	0	5	0	0	0	0	0	0	1	15	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33	2	0	13	11	5	0	205
% Heavy Vehicles	0	0	0	0	4.7	0	5.6	3.3	0	2.9	0	0	0	0	0	0	4	3.9	10.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12.8	1	0	5.7	3.2	6.9	0	5.8

	Lincoln Street From North					Surface Road/I-93 Onramp From East							Essex Street From Southeast							Lincoln Street From South							I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	8	0	148	48	0	19	0	223	0	0	0	0	0	0	0	8	47	67	0	0	0	0	122	0	0	0	0	0	0	0	0	0	0	0	36	25	0	34	43	9	0	147	492
04:15 PM	0	0	0	0	0	5	0	144	36	0	21	0	206	0	0	0	0	0	0	0	4	47	57	0	0	0	0	108	0	0	0	0	0	0	0	0	0	0	0	40	40	0	22	44	10	0	156	470
04:30 PM	0	0	0	0	0	3	0	149	39	0	19	1	211	0	0	0	0	0	0	0	1	64	72	0	0	0	0	137	0	0	0	0	0	0	0	0	0	0	0	44	22	0	42	47	13	0	168	516
04:45 PM	0	0	0	0	0	9	0	135	28	0	21	0	193	0	0	0	0	0	0	0	4	39	48	0	0	0	0	91	0	0	0	0	0	0	0	0	0	0	0	29	20	0	38	57	11	0	155	439
Total Volume	0	0	0	0	0	25	0	576	151	0	80	1	833	0	0	0	0	0	0	0	17	197	244	0	0	0	0	458	0	0	0	0	0	0	0	0	0	0	0	149	107	0	136	191	43	0	626	1917
% App. Total	0	0	0	0		3	0	69.1	18.1	0	9.6	0.1		0	0	0	0	0		3.7	43	53.3	0	0	0	0		0	0	0	0		0	0	0	0	0		0	0	0	0	0	0		23.8	17.1	0	21.7	30.5	6.9	0	
PHF	.000	.000	.000	.000	.000	.694	.000	.966	.786	.000	.952	.250	.934	.000	.000	.000	.000	.000	.000	.531	.770	.847	.000	.000	.000	.000	.836	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.847	.669	.000	.810	.838	.827	.000	.932	.929
Cars	0	0	0	0	0	24	0	540	145	0	77	1	787	0	0	0	0	0	0	16	185	220	0	0	0	0	421	0	0	0	0	0	0	0	0	0	0	0	134	107	0	128	185	41	0	595	1803
% Cars	0	0	0	0	0	96.0	0	93.8	96.0	0	96.3	100	94.5	0	0	0	0	0	0	94.1	93.9	90.2	0	0	0	0	91.9	0	0	0	0	0	0	0	0	0	0	0	89.9	100	0	94.1	96.9	95.3	0	95.0	94.1
Heavy Vehicles	0	0	0	0	0	1	0	36	6	0	3	0	46	0	0	0	0	0	0	1	12	24	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	15	0	0	8	6	2	0	31	114
% Heavy Vehicles	0	0	0	0	0	4.0	0	6.3	4.0	0	3.8	0	5.5	0	0	0	0	0	0	5.9	6.1	9.8	0	0	0	0	8.1	0	0	0	0	0	0	0	0	0	0	0	10.1	0	0	5.9	3.1	4.7	0	5.0	5.9

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Cars

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast					Lincoln Street From South							I-93 Onramp From Southwest				Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	7	0	138	47	0	19	0	0	0	0	0	0	8	41	64	0	0	0	0	0	0	0	0	0	0	0	0	0	33	25	0	34	42	9	0	467
04:15 PM	0	0	0	0	5	0	137	34	0	20	0	0	0	0	0	0	4	44	49	0	0	0	0	0	0	0	0	0	0	0	0	0	37	40	0	19	40	10	0	439
04:30 PM	0	0	0	0	3	0	141	39	0	17	1	0	0	0	0	0	1	62	65	0	0	0	0	0	0	0	0	0	0	0	0	0	38	22	0	39	46	13	0	487
04:45 PM	0	0	0	0	9	0	124	25	0	21	0	0	0	0	0	0	3	38	42	0	0	0	0	0	0	0	0	0	0	0	0	0	26	20	0	36	57	9	0	410
Total	0	0	0	0	24	0	540	145	0	77	1	0	0	0	0	0	16	185	220	0	0	0	0	0	0	0	0	0	0	0	0	0	134	107	0	128	185	41	0	1803
05:00 PM	0	0	0	0	4	0	109	32	0	21	0	0	0	0	0	0	2	40	61	0	0	0	0	0	0	0	0	0	0	0	0	0	25	26	0	27	42	7	0	396
05:15 PM	0	0	0	0	6	0	129	44	0	20	0	0	0	0	0	0	4	50	51	0	0	0	0	0	0	0	0	0	0	0	0	0	24	31	0	24	42	5	0	430
05:30 PM	0	0	0	0	3	0	107	24	0	24	1	0	0	0	0	0	2	48	46	0	0	0	0	0	0	0	0	0	0	0	0	0	33	27	0	18	40	12	0	385
05:45 PM	0	0	0	0	4	0	85	49	0	23	0	0	0	0	0	0	0	43	50	0	0	0	0	0	0	0	0	0	0	0	0	0	9	15	0	18	23	2	0	321
Total	0	0	0	0	17	0	430	149	0	88	1	0	0	0	0	0	8	181	208	0	0	0	0	0	0	0	0	0	0	0	0	0	91	99	0	87	147	26	0	1532
Grand Total	0	0	0	0	41	0	970	294	0	165	2	0	0	0	0	0	24	366	428	0	0	0	0	0	0	0	0	0	0	0	0	0	225	206	0	215	332	67	0	3335
Apprch %	0	0	0	0	2.8	0	65.9	20	0	11.2	0.1	0	0	0	0	0	2.9	44.7	52.3	0	0	0	0	0	0	0	0	0	0	0	0	0	21.5	19.7	0	20.6	31.8	6.4	0	
Total %	0	0	0	0	1.2	0	29.1	8.8	0	4.9	0.1	0	0	0	0	0	0.7	11	12.8	0	0	0	0	0	0	0	0	0	0	0	0	0	6.7	6.2	0	6.4	10	2	0	

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	7	0	138	47	0	19	0	211	0	0	0	0	0	0	8	41	64	0	0	0	0	113	0	0	0	0	0	0	0	0	0	0	0	33	25	0	34	42	9	0	143	467
04:15 PM	0	0	0	0	0	5	0	137	34	0	20	0	196	0	0	0	0	0	0	4	44	49	0	0	0	0	97	0	0	0	0	0	0	0	0	0	0	0	37	40	0	19	40	10	0	146	439
04:30 PM	0	0	0	0	0	3	0	141	39	0	17	1	201	0	0	0	0	0	0	1	62	65	0	0	0	0	128	0	0	0	0	0	0	0	0	0	0	0	38	22	0	39	46	13	0	158	487
04:45 PM	0	0	0	0	0	9	0	124	25	0	21	0	179	0	0	0	0	0	0	3	38	42	0	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	26	20	0	36	57	9	0	148	410
Total Volume	0	0	0	0	0	24	0	540	145	0	77	1	787	0	0	0	0	0	0	16	185	220	0	0	0	0	421	0	0	0	0	0	0	0	0	0	0	0	134	107	0	128	185	41	0	595	1803
% App. Total	0	0	0	0		3	0	68.6	18.4	0	9.8	0.1		0	0	0	0	0		3.8	43.9	52.3	0	0	0	0		0	0	0	0		0	0	0	0	0		22.5	18	0	21.5	31.1	6.9	0		
PHF	.000	.000	.000	.000	.000	.667	.000	.957	.771	.000	.917	.250	.932	.000	.000	.000	.000	.000	.000	.500	.746	.846	.000	.000	.000	.000	.822	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.882	.669	.000	.821	.811	.788	.000	.941	.926

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Heavy Vehicles

	Lincoln Street From North				Surface Road/I-93 Onramp From East							Essex Street From Southeast					Lincoln Street From South							I-93 Onramp From Southwest				Surface Road From West					Essex Street From Northwest							
Start Time	Right	Thru	Left	U-Turn	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	Bear Right	Thru	Bear Left	Left	U-Turn	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Right	Bear Right	Bear Left	Hard Left	Hard Right	Right	Thru	Left	U-Turn	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	Int. Total
04:00 PM	0	0	0	0	1	0	10	1	0	0	0	0	0	0	0	0	0	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	25
04:15 PM	0	0	0	0	0	0	7	2	0	1	0	0	0	0	0	0	0	3	8	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3	4	0	0	31
04:30 PM	0	0	0	0	0	0	8	0	0	2	0	0	0	0	0	0	0	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	3	1	0	0	29
04:45 PM	0	0	0	0	0	0	11	3	0	0	0	0	0	0	0	0	1	1	6	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	0	2	0	29
Total	0	0	0	0	1	0	36	6	0	3	0	0	0	0	0	0	1	12	24	0	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	8	6	2	0	114
05:00 PM	0	0	0	0	0	0	5	3	0	1	0	0	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	0	27
05:15 PM	0	0	0	0	1	0	8	1	0	0	0	0	0	0	0	0	0	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	5	1	0	3	1	1	0	32
05:30 PM	0	0	0	0	0	0	5	0	0	1	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	2	1	1	0	18
05:45 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	0	0	14
Total	0	0	0	0	1	0	22	4	0	2	0	0	0	0	0	0	0	3	26	0	0	0	0	0	0	0	0	0	0	0	0	0	18	2	0	5	5	3	0	91
Grand Total	0	0	0	0	2	0	58	10	0	5	0	0	0	0	0	0	1	15	50	0	0	0	0	0	0	0	0	0	0	0	0	0	33	2	0	13	11	5	0	205
Apprch %	0	0	0	0	2.7	0	77.3	13.3	0	6.7	0	0	0	0	0	0	1.5	22.7	75.8	0	0	0	0	0	0	0	0	0	0	0	0	0	51.6	3.1	0	20.3	17.2	7.8	0	
Total %	0	0	0	0	1	0	28.3	4.9	0	2.4	0	0	0	0	0	0	0.5	7.3	24.4	0	0	0	0	0	0	0	0	0	0	0	0	0	16.1	1	0	6.3	5.4	2.4	0	

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	0	0	0	0	0	0	0	8	0	0	2	0	10	0	0	0	0	0	0	0	2	7	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	6	0	0	3	1	0	0	10	29
04:45 PM	0	0	0	0	0	0	0	11	3	0	0	0	14	0	0	0	0	0	0	1	1	6	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	3	0	0	2	0	2	0	7	29
05:00 PM	0	0	0	0	0	0	0	5	3	0	1	0	9	0	0	0	0	0	0	0	0	11	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	3	1	0	7	27
05:15 PM	0	0	0	0	0	1	0	8	1	0	0	0	10	0	0	0	0	0	0	0	1	10	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	5	1	0	3	1	1	0	11	32
Total Volume	0	0	0	0	0	1	0	32	7	0	3	0	43	0	0	0	0	0	0	1	4	34	0	0	0	0	39	0	0	0	0	0	0	0	0	0	0	0	17	1	0	8	5	4	0	35	117
% App. Total	0	0	0	0		2.3	0	74.4	16.3	0	7	0		0	0	0	0	0		2.6	10.3	87.2	0	0	0	0		0	0	0	0		0	0	0	0	0		48.6	2.9	0	22.9	14.3	11.4	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.727	.583	.000	.375	.000	.768	.000	.000	.000	.000	.000	.000	.250	.500	.773	.000	.000	.000	.000	.886	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.708	.250	.000	.667	.417	.500	.000	.795	.914

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 1

Groups Printed- Peds and Bikes

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast						Lincoln Street From South								I-93 Onramp From Southwest					Surface Road From West					Essex Street From Northwest								
Start Time	Right	Thru	Left	Peds EB	Peds WB	Right	Bear Right	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	Bear Right	Thru	Bear Left	Left	Peds SWB	Peds NEB	Hard Right	Right	Thru	Bear Left	Left	Hard Left	Peds WB	Peds EB	Right	Bear Left	Left	Peds NWB	Peds SEB	Right	Thru	Left	Peds NB	Peds SB	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	Peds NEB	Peds SWB	Int. Total
04:00 PM	1	0	0	69	11	0	0	0	0	0	0	78	16	0	0	0	0	14	23	1	0	0	0	0	0	21	51	0	0	0	22	38	0	0	0	24	38	0	0	0	1	0	0	5	9	422
04:15 PM	0	0	0	65	13	0	0	0	0	0	0	58	17	0	0	0	0	9	19	0	0	0	0	0	0	20	51	0	0	0	21	41	0	0	0	27	37	0	0	0	0	0	0	6	15	399
04:30 PM	0	0	0	87	22	0	0	0	0	0	0	89	23	0	0	0	0	8	20	0	0	1	0	0	0	19	44	0	0	0	21	41	0	0	0	22	36	0	0	0	0	0	0	22	18	473
04:45 PM	0	0	0	102	37	0	0	0	0	0	0	151	23	0	0	0	0	13	19	0	0	0	0	0	0	22	62	0	0	0	23	35	0	0	0	22	33	0	0	0	0	0	0	6	32	580
Total	1	0	0	323	83	0	0	0	0	0	0	376	79	0	0	0	0	44	81	1	0	1	0	0	0	82	208	0	0	0	87	155	0	0	0	95	144	0	0	0	1	0	0	39	74	1874
05:00 PM	0	0	0	171	61	0	0	0	0	0	0	120	38	0	0	0	0	8	32	0	0	0	0	0	0	22	49	0	0	0	38	40	0	0	0	47	50	0	0	0	0	0	0	9	23	708
05:15 PM	0	0	0	145	56	0	0	0	0	0	0	85	24	0	0	0	0	10	21	0	0	0	0	0	0	34	44	0	0	0	39	36	0	0	0	47	52	1	0	0	0	0	0	5	34	633
05:30 PM	0	0	0	133	64	0	0	0	0	0	0	106	22	0	0	0	0	27	27	0	0	1	0	0	0	29	40	0	0	0	53	41	0	0	0	58	38	0	0	0	0	0	0	22	48	709
05:45 PM	0	0	0	64	63	0	0	0	0	0	0	46	23	0	0	0	0	12	30	0	0	0	0	0	0	15	29	0	0	0	37	28	0	0	0	25	34	0	0	0	0	0	0	5	28	439
Total	0	0	0	513	244	0	0	0	0	0	0	357	107	0	0	0	0	57	110	0	0	1	0	0	0	100	162	0	0	0	167	145	0	0	0	177	174	1	0	0	0	0	0	41	133	2489
Grand Total	1	0	0	836	327	0	0	0	0	0	0	733	186	0	0	0	0	101	191	1	0	2	0	0	0	182	370	0	0	0	254	300	0	0	0	272	318	1	0	0	1	0	0	80	207	4363
Apprch %	0.1	0	0	71.8	28.1	0	0	0	0	0	0	79.8	20.2	0	0	0	0	34.6	65.4	0.2	0	0.4	0	0	0	32.8	66.7	0	0	0	45.8	54.2	0	0	0	46.1	53.9	0.3	0	0	0.3	0	0	27.7	71.6	
Total %	0	0	0	19.2	7.5	0	0	0	0	0	0	16.8	4.3	0	0	0	0	2.3	4.4	0	0	0	0	0	0	4.2	8.5	0	0	0	5.8	6.9	0	0	0	6.2	7.3	0	0	0	0	0	0	1.8	4.7	

	Lincoln Street From North						Surface Road/I-93 Onramp From East							Essex Street From Southeast							Lincoln Street From South								I-93 Onramp From Southwest						Surface Road From West						Essex Street From Northwest								
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	Peds SB	Peds NB	App. Total	Bear Right	Thru	Bear Left	Left	Peds SWB	Peds NEB	App. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	Peds WB	Peds EB	App. Total	Right	Bear Left	Left	Peds NWB	Peds SEB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	Peds NEB	Peds SWB	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	102	37	139	0	0	0	0	0	0	151	23	174	0	0	0	0	13	19	32	0	0	0	0	0	0	22	62	84	0	0	0	23	35	58	0	0	0	22	33	55	0	0	0	0	0	0	6	32	38	580
05:00 PM	0	0	0	171	61	232	0	0	0	0	0	0	120	38	158	0	0	0	0	8	32	40	0	0	0	0	0	0	22	49	71	0	0	0	38	40	78	0	0	0	47	50	97	0	0	0	0	0	0	9	23	32	708
05:15 PM	0	0	0	145	56	201	0	0	0	0	0	0	85	24	109	0	0	0	0	10	21	31	0	0	0	0	0	0	34	44	78	0	0	0	39	36	75	0	0	0	47	52	99	1	0	0	0	0	0	5	34	40	633
05:30 PM	0	0	0	133	64	197	0	0	0	0	0	0	106	22	128	0	0	0	0	27	27	54	0	0	1	0	0	0	29	40	70	0	0	0	53	41	94	0	0	0	58	38	96	0	0	0	0	0	0	22	48	70	709
Total Volume	0	0	0	551	218	769	0	0	0	0	0	0	462	107	569	0	0	0	0	58	99	157	0	0	1	0	0	0	107	195	303	0	0	0	153	152	305	0	0	0	174	173	347	1	0	0	0	0	0	42	137	180	2630
% App. Total	0	0	0	71.7	28.3		0	0	0	0	0	0	81.2	18.8		0	0	0	0	36.9	63.1		0	0	0.3	0	0	0	35.3	64.4		0	0	0	50.2	49.8		0	0	0	50.1	49.9		0.6	0	0	0	0	0	23.3	76.7		
PHF	.000	.000	.000	.806	.852	.829	.000	.000	.000	.000	.000	.000	.765	.704	.818	.000	.000	.000	.000	.537	.773	.727	.000	.000	.250	.000	.000	.000	.787	.786	.902	.000	.000	.000	.722	.927	.811	.000	.000	.000	.750	.839	.876	.250	.000	.000	.000	.000	.000	.477	.714	.643	.927

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

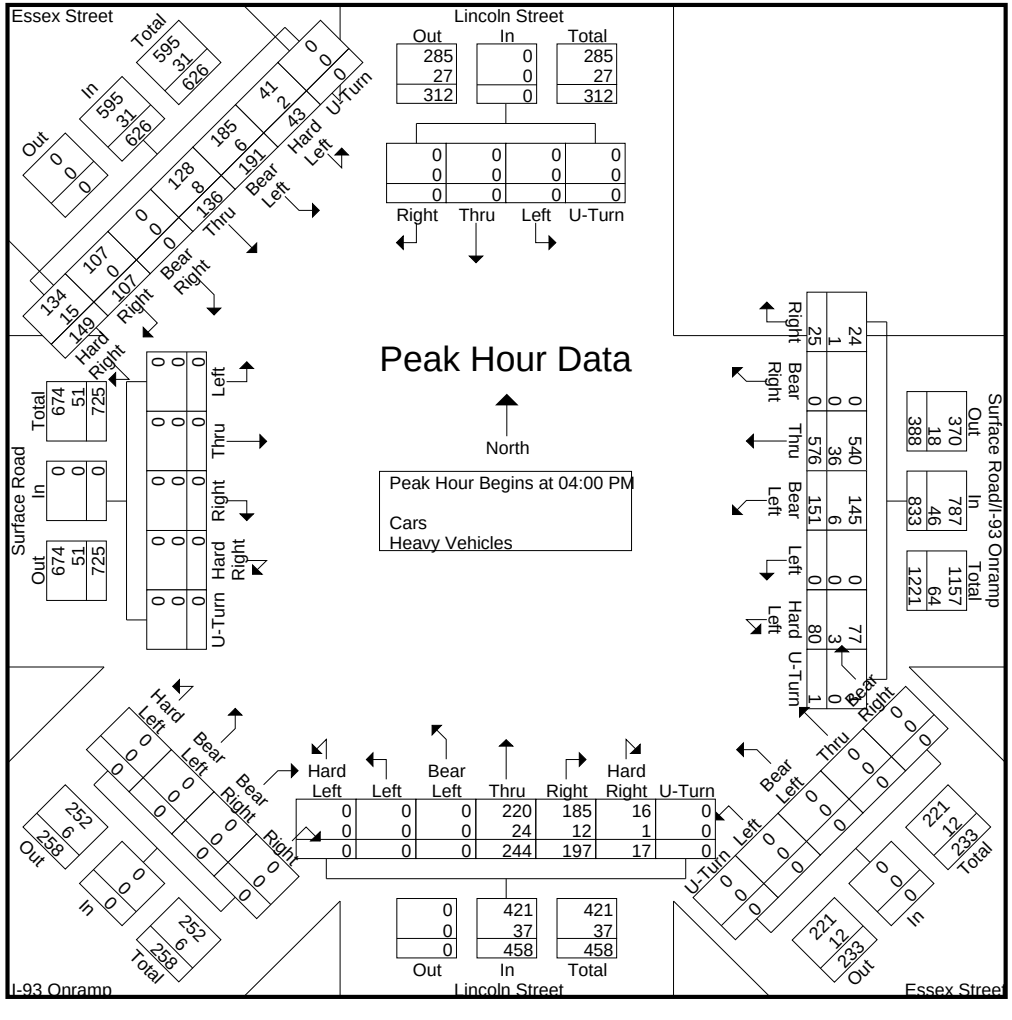
File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016

	Lincoln Street From North					Surface Road/I-93 Onramp From East								Essex Street From Southeast							Lincoln Street From South								I-93 Onramp From Southwest						Surface Road From West								Essex Street From Northwest								
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Bear Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Bear Right	Thru	Bear Left	Left	U-Turn	App. Total	Int. Total	Hard Right	Right	Thru	Bear Left	Left	Hard Left	U-Turn	App. Total	Right	Bear Right	Bear Left	Hard Left	App. Total	Hard Right	Right	Thru	Left	U-Turn	App. Total	Hard Right	Right	Bear Right	Thru	Bear Left	Hard Left	U-Turn	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	8	0	148	48	0	19	0	223	0	0	0	0	0	0		8	47	67	0	0	0	0	122	0	0	0	0	0	0	0	0	0	0	0	36	25	0	34	43	9	0	147	492
04:15 PM	0	0	0	0	0	5	0	144	36	0	21	0	206	0	0	0	0	0	0		4	47	57	0	0	0	0	108	0	0	0	0	0	0	0	0	0	0	0	40	40	0	22	44	10	0	156	470
04:30 PM	0	0	0	0	0	3	0	149	39	0	19	1	211	0	0	0	0	0	0		1	64	72	0	0	0	0	137	0	0	0	0	0	0	0	0	0	0	0	44	22	0	42	47	13	0	168	516
04:45 PM	0	0	0	0	0	9	0	135	28	0	21	0	193	0	0	0	0	0	0		4	39	48	0	0	0	0	91	0	0	0	0	0	0	0	0	0	0	0	29	20	0	38	57	11	0	155	439
Total Volume	0	0	0	0	0	25	0	576	151	0	80	1	833	0	0	0	0	0	0		17	197	244	0	0	0	0	458	0	0	0	0	0	0	0	0	0	0	0	149	107	0	136	191	43	0	626	1917
% App. Total	0	0	0	0		3	0	69.1	18.1	0	9.6	0.1		0	0	0	0	0			3.7	43	53.3	0	0	0	0		0	0	0	0		0	0	0	0	0		23.8	17.1	0	21.7	30.5	6.9	0		
PHF	.000	.000	.000	.000	.000	.694	.000	.966	.786	.000	.952	.250	.934	.000	.000	.000	.000	.000	.000		.531	.770	.847	.000	.000	.000	.000	.836	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.847	.669	.000	.810	.838	.827	.000	.932	.929
Cars	0	0	0	0	0	24	0	540	145	0	77	1	787	0	0	0	0	0	0		16	185	220	0	0	0	0	421	0	0	0	0	0	0	0	0	0	0	0	134	107	0	128	185	41	0	595	1803
% Cars	0	0	0	0	0	96.0	0	93.8	96.0	0	96.3	100	94.5	0	0	0	0	0	0		94.1	93.9	90.2	0	0	0	0	91.9	0	0	0	0	0	0	0	0	0	0	0	89.9	100	0	94.1	96.9	95.3	0	95.0	94.1
Heavy Vehicles	0	0	0	0	0	1	0	36	6	0	3	0	46	0	0	0	0	0	0		1	12	24	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	15	0	0	8	6	2	0	31	114
% Heavy Vehicles	0	0	0	0	0	4.0	0	6.3	4.0	0	3.8	0	5.5	0	0	0	0	0	0		5.9	6.1	9.8	0	0	0	0	8.1	0	0	0	0	0	0	0	0	0	0	0	10.1	0	0	5.9	3.1	4.7	0	5.0	5.9

PRECISION
D A T A
INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

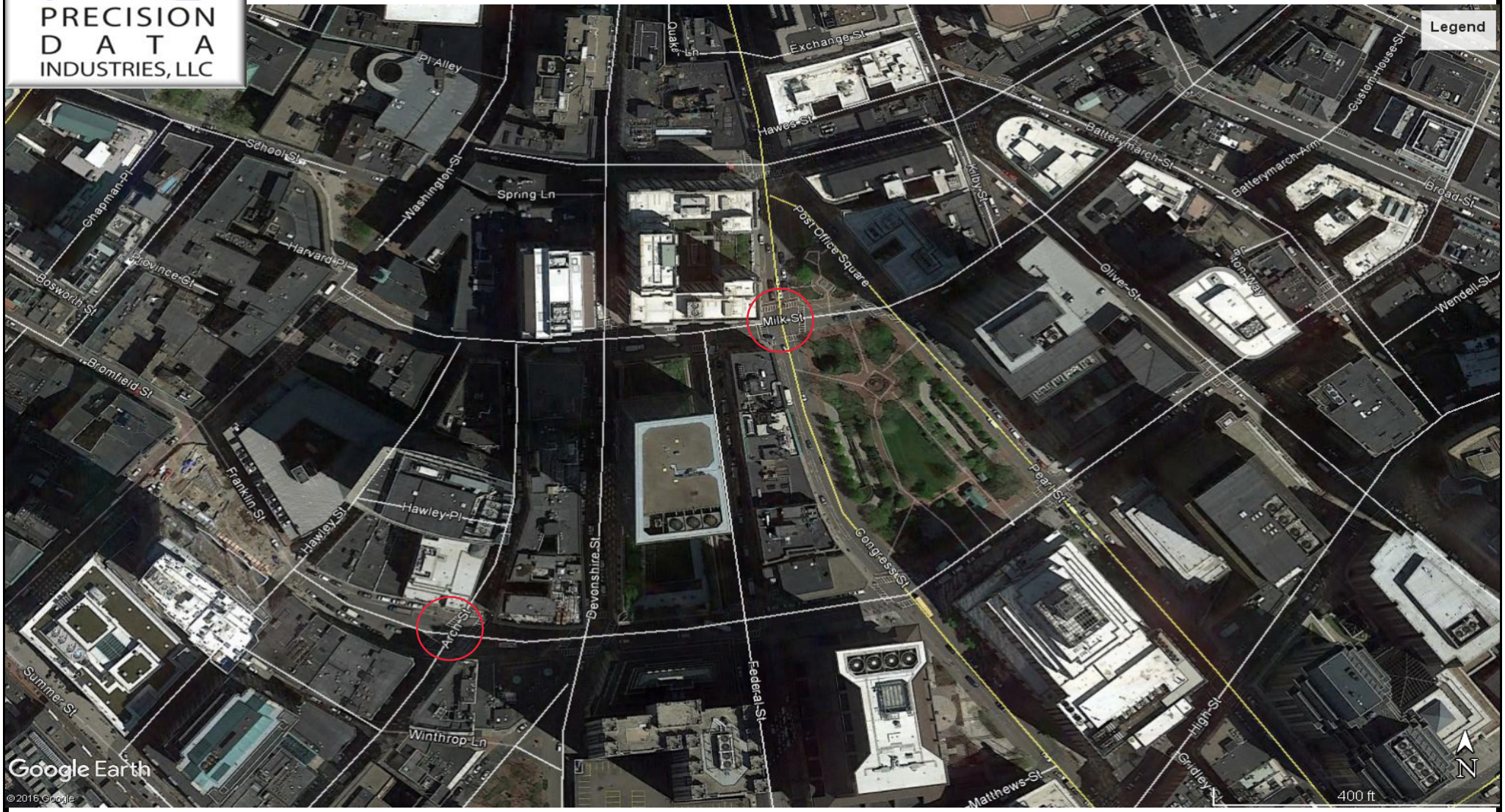
N/S/SE/NW:Linclon St/Essex St
E/W/SW: Surface Road/I-93 Ramps
City, State: Boston, MA
Client: VHB/ S. Wetmore

File Name : 165369 AA
Site Code : TBA
Start Date : 11/30/2016
Page No : 2



PRECISION DATA INDUSTRIES, LLC
Office: 508.875.0100 Fax: 508.875.0118
Email: datarequests@pdillc.com

Traffic Counts with Precision



Client:	Engineer:	Site Code:	Date:	PDI Job Number:	City, State:
VHB	A. Santiago	13706.00	Wed 5/3/17	175645	Boston, MA

PDI File #: **175645 A**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles

	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	98	16	0	114	0	0	0	0	0	0	0	0	0	0	30	31	0	0	61	175
7:15 AM	0	125	13	0	138	0	0	0	0	0	0	0	0	0	0	31	37	0	0	68	206
7:30 AM	0	124	8	0	132	0	0	0	0	0	0	0	0	0	0	40	39	0	0	79	211
7:45 AM	0	148	15	0	163	0	0	0	0	0	0	0	0	0	0	34	46	0	0	80	243
Total	0	495	52	0	547	0	0	0	0	0	0	0	0	0	0	135	153	0	0	288	835
8:00 AM	0	160	16	0	176	0	0	0	0	0	0	0	0	0	0	43	62	0	0	105	281
8:15 AM	0	192	17	0	209	0	0	0	0	0	0	0	0	0	0	54	59	0	0	113	322
8:30 AM	0	210	22	0	232	0	0	0	0	0	0	0	0	0	0	51	59	0	0	110	342
8:45 AM	0	217	18	0	235	0	0	0	0	0	0	0	0	0	0	65	43	0	0	108	343
Total	0	779	73	0	852	0	0	0	0	0	0	0	0	0	0	213	223	0	0	436	1288
Grand Total	0	1274	125	0	1399	0	0	0	0	0	0	0	0	0	0	348	376	0	0	724	2123
Approach %	0.0	91.1	8.9	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		48.1	51.9	0.0	0.0		
Total %	0.0	60.0	5.9	0.0	65.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.4	17.7	0.0	0.0	34.1	
Exiting Leg Total					0					501					1622					0	2123
Cars	0	1204	110	0	1314	0	0	0	0	0	0	0	0	0	0	295	335	0	0	630	1944
% Cars	0.0	94.5	88.0	0.0	93.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	84.8	89.1	0.0	0.0	87.0	91.6
Exiting Leg Total					0					445					1499					0	1944
Heavy Vehicles	0	70	15	0	85	0	0	0	0	0	0	0	0	0	0	53	41	0	0	94	179
% Heavy Vehicles	0.0	5.5	12.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.2	10.9	0.0	0.0	13.0	8.4
Exiting Leg Total					0					56					123					0	179

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	160	16	0	176	0	0	0	0	0	0	0	0	0	0	43	62	0	0	105	281
8:15 AM	0	192	17	0	209	0	0	0	0	0	0	0	0	0	0	54	59	0	0	113	322
8:30 AM	0	210	22	0	232	0	0	0	0	0	0	0	0	0	0	51	59	0	0	110	342
8:45 AM	0	217	18	0	235	0	0	0	0	0	0	0	0	0	0	65	43	0	0	108	343
Total Volume	0	779	73	0	852	0	0	0	0	0	0	0	0	0	0	213	223	0	0	436	1288
% Approach Total	0.0	91.4	8.6	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		48.9	51.1	0.0	0.0		
PHF	0.000	0.897	0.830	0.000	0.906	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.819	0.899	0.000	0.000	0.965	0.939
Cars	0	743	66	0	809	0	0	0	0	0	0	0	0	0	0	182	200	0	0	382	1191
Cars %	0.0	95.4	90.4	0.0	95.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	85.4	89.7	0.0	0.0	87.6	92.5
Heavy Vehicles	0	36	7	0	43	0	0	0	0	0	0	0	0	0	0	31	23	0	0	54	97
Heavy Vehicles %	0.0	4.6	9.6	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.6	10.3	0.0	0.0	12.4	7.5
Cars Enter Leg	0	743	66	0	809	0	0	0	0	0	0	0	0	0	0	182	200	0	0	382	1191
Heavy Enter Leg	0	36	7	0	43	0	0	0	0	0	0	0	0	0	0	31	23	0	0	54	97
Total Entering Leg	0	779	73	0	852	0	0	0	0	0	0	0	0	0	0	213	223	0	0	436	1288
Cars Exiting Leg					0					266					925					0	1191
Heavy Exit Leg					0					30					67					0	97
Total Exiting Leg					0					296					992					0	1288

PDI File #: **175645 A**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	86	14	0	100	0	0	0	0	0	0	0	0	0	0	25	27	0	0	52	152
7:15 AM	0	117	11	0	128	0	0	0	0	0	0	0	0	0	0	27	32	0	0	59	187
7:30 AM	0	119	6	0	125	0	0	0	0	0	0	0	0	0	0	33	33	0	0	66	191
7:45 AM	0	139	13	0	152	0	0	0	0	0	0	0	0	0	0	28	43	0	0	71	223
Total	0	461	44	0	505	0	0	0	0	0	0	0	0	0	0	113	135	0	0	248	753
8:00 AM	0	153	14	0	167	0	0	0	0	0	0	0	0	0	0	36	56	0	0	92	259
8:15 AM	0	184	15	0	199	0	0	0	0	0	0	0	0	0	0	45	56	0	0	101	300
8:30 AM	0	200	21	0	221	0	0	0	0	0	0	0	0	0	0	45	51	0	0	96	317
8:45 AM	0	206	16	0	222	0	0	0	0	0	0	0	0	0	0	56	37	0	0	93	315
Total	0	743	66	0	809	0	0	0	0	0	0	0	0	0	0	182	200	0	0	382	1191
Grand Total	0	1204	110	0	1314	0	0	0	0	0	0	0	0	0	0	295	335	0	0	630	1944
Approach %	0.0	91.6	8.4	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		46.8	53.2	0.0	0.0		
Total %	0.0	61.9	5.7	0.0	67.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.2	17.2	0.0	0.0	32.4	
Exiting Leg Total					0					445					1499					0	1944

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	153	14	0	167	0	0	0	0	0	0	0	0	0	0	36	56	0	0	92	259
8:15 AM	0	184	15	0	199	0	0	0	0	0	0	0	0	0	0	45	56	0	0	101	300
8:30 AM	0	200	21	0	221	0	0	0	0	0	0	0	0	0	0	45	51	0	0	96	317
8:45 AM	0	206	16	0	222	0	0	0	0	0	0	0	0	0	0	56	37	0	0	93	315
Total Volume	0	743	66	0	809	0	0	0	0	0	0	0	0	0	0	182	200	0	0	382	1191
% Approach Total	0.0	91.8	8.2	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		47.6	52.4	0.0	0.0		
PHF	0.000	0.902	0.786	0.000	0.911	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.813	0.893	0.000	0.000	0.946	0.939
Entering Leg	0	743	66	0	809	0	0	0	0	0	0	0	0	0	0	182	200	0	0	382	1191
Exiting Leg					0					266					925					0	1191
Total					809					266					925					382	2382

PDI File #: **175645 A**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Heavy Vehicles

	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	12	2	0	14	0	0	0	0	0	0	0	0	0	0	5	4	0	0	9	23
7:15 AM	0	8	2	0	10	0	0	0	0	0	0	0	0	0	0	4	5	0	0	9	19
7:30 AM	0	5	2	0	7	0	0	0	0	0	0	0	0	0	0	7	6	0	0	13	20
7:45 AM	0	9	2	0	11	0	0	0	0	0	0	0	0	0	0	6	3	0	0	9	20
Total	0	34	8	0	42	0	0	0	0	0	0	0	0	0	0	22	18	0	0	40	82
8:00 AM	0	7	2	0	9	0	0	0	0	0	0	0	0	0	0	7	6	0	0	13	22
8:15 AM	0	8	2	0	10	0	0	0	0	0	0	0	0	0	0	9	3	0	0	12	22
8:30 AM	0	10	1	0	11	0	0	0	0	0	0	0	0	0	0	6	8	0	0	14	25
8:45 AM	0	11	2	0	13	0	0	0	0	0	0	0	0	0	0	9	6	0	0	15	28
Total	0	36	7	0	43	0	0	0	0	0	0	0	0	0	0	31	23	0	0	54	97
Grand Total	0	70	15	0	85	0	0	0	0	0	0	0	0	0	0	53	41	0	0	94	179
Approach %	0.0	82.4	17.6	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		56.4	43.6	0.0	0.0		
Total %	0.0	39.1	8.4	0.0	47.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.6	22.9	0.0	0.0	52.5	
Exiting Leg Total					0					56					123					0	179

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	7	2	0	9	0	0	0	0	0	0	0	0	0	0	7	6	0	0	13	22
8:15 AM	0	8	2	0	10	0	0	0	0	0	0	0	0	0	0	9	3	0	0	12	22
8:30 AM	0	10	1	0	11	0	0	0	0	0	0	0	0	0	0	6	8	0	0	14	25
8:45 AM	0	11	2	0	13	0	0	0	0	0	0	0	0	0	0	9	6	0	0	15	28
Total Volume	0	36	7	0	43	0	0	0	0	0	0	0	0	0	0	31	23	0	0	54	97
% Approach Total	0.0	83.7	16.3	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		57.4	42.6	0.0	0.0		
PHF	0.000	0.818	0.875	0.000	0.827	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.861	0.719	0.000	0.000	0.900	0.866
Entering Leg	0	36	7	0	43	0	0	0	0	0	0	0	0	0	0	31	23	0	0	54	97
Exiting Leg					0					30					67					0	97
Total					43					30					67					54	194

PDI File #: **175645 A**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Congress Street							Milk Street							Congress Street							Milk Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	7
7:15 AM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2	4
7:30 AM	0	5	0	0	1	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	7	13
7:45 AM	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	6	0	0	0	0	9	15
Total	0	17	0	0	1	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	16	0	0	0	0	21	39
8:00 AM	0	8	0	0	1	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	10	19
8:15 AM	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	12	0	0	0	0	13	21
8:30 AM	0	14	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	21	0	0	0	0	22	36
8:45 AM	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	16	0	0	0	0	19	32
Total	0	42	0	0	1	0	43	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5	59	0	0	0	0	64	108
Grand Total	0	59	0	0	2	0	61	0	0	0	0	0	0	0	0	0	0	0	1	0	1	10	75	0	0	0	0	85	147
Approach %	0.0	96.7	0.0	0.0	3.3	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		11.8	88.2	0.0	0.0	0.0	0.0		
Total %	0.0	40.1	0.0	0.0	1.4	0.0	41.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.7	6.8	51.0	0.0	0.0	0.0	0.0	57.8	
Exiting Leg Total							2							75							70							0	147

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Congress Street							Milk Street							Congress Street							Milk Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	8	0	0	1	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	10	19
8:15 AM	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	12	0	0	0	0	13	21
8:30 AM	0	14	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	21	0	0	0	0	22	36
8:45 AM	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	16	0	0	0	0	19	32
Total Volume	0	42	0	0	1	0	43	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5	59	0	0	0	0	64	108
% Approach Total	0.0	97.7	0.0	0.0	2.3	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	100.0	0.0		7.8	92.2	0.0	0.0	0.0	0.0		
PHF	0.000	0.750	0.000	0.000	0.250	0.000	0.768	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.417	0.702	0.000	0.000	0.000	0.000	0.727	0.750
Entering Leg	0	42	0	0	1	0	43	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5	59	0	0	0	0	64	108
Exiting Leg							1							59							48							0	108
Total							44							59							49							64	216

PDI File #: **175645 A**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Congress Street							Milk Street							Congress Street							Milk Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	22	4	26	0	0	0	0	6	3	9	0	0	0	0	14	47	61	0	0	0	0	35	37	72	168
7:15 AM	0	0	0	0	25	10	35	0	0	0	0	9	7	16	0	0	0	0	14	76	90	0	0	0	0	44	71	115	256
7:30 AM	0	0	0	0	22	14	36	0	0	0	0	4	6	10	0	0	0	0	24	89	113	0	0	0	0	55	81	136	295
7:45 AM	0	0	0	0	37	7	44	0	0	0	0	4	9	13	0	0	0	0	26	112	138	0	0	0	0	62	139	201	396
Total	0	0	0	0	106	35	141	0	0	0	0	23	25	48	0	0	0	0	78	324	402	0	0	0	0	196	328	524	1115
8:00 AM	0	0	0	0	57	9	66	0	0	0	0	5	12	17	0	0	0	0	30	145	175	0	0	0	0	67	107	174	432
8:15 AM	0	0	0	0	64	12	76	0	0	0	0	16	27	43	0	0	0	0	31	154	185	0	0	0	0	118	137	255	559
8:30 AM	0	0	0	0	66	24	90	0	0	0	0	19	29	48	0	0	0	0	38	144	182	0	0	0	0	107	149	256	576
8:45 AM	0	0	0	0	79	18	97	0	0	0	0	13	17	30	0	0	0	0	43	162	205	0	0	0	0	74	125	199	531
Total	0	0	0	0	266	63	329	0	0	0	0	53	85	138	0	0	0	0	142	605	747	0	0	0	0	366	518	884	2098
Grand Total	0	0	0	0	372	98	470	0	0	0	0	76	110	186	0	0	0	0	220	929	1149	0	0	0	0	562	846	1408	3213
Approach %	0.0	0.0	0.0	0.0	79.1	20.9		0.0	0.0	0.0	0.0	40.9	59.1		0.0	0.0	0.0	0.0	19.1	80.9		0.0	0.0	0.0	0.0	39.9	60.1		
Total %	0.0	0.0	0.0	0.0	11.6	3.1	14.6	0.0	0.0	0.0	0.0	2.4	3.4	5.8	0.0	0.0	0.0	0.0	6.8	28.9	35.8	0.0	0.0	0.0	0.0	17.5	26.3	43.8	
Exiting Leg Total							470							186							1149						1408	3213

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Congress Street							Milk Street							Congress Street							Milk Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	57	9	66	0	0	0	0	5	12	17	0	0	0	0	30	145	175	0	0	0	0	67	107	174	432
8:15 AM	0	0	0	0	64	12	76	0	0	0	0	16	27	43	0	0	0	0	31	154	185	0	0	0	0	118	137	255	559
8:30 AM	0	0	0	0	66	24	90	0	0	0	0	19	29	48	0	0	0	0	38	144	182	0	0	0	0	107	149	256	576
8:45 AM	0	0	0	0	79	18	97	0	0	0	0	13	17	30	0	0	0	0	43	162	205	0	0	0	0	74	125	199	531
Total Volume	0	0	0	0	266	63	329	0	0	0	0	53	85	138	0	0	0	0	142	605	747	0	0	0	0	366	518	884	2098
% Approach Total	0.0	0.0	0.0	0.0	80.9	19.1		0.0	0.0	0.0	0.0	38.4	61.6		0.0	0.0	0.0	0.0	19.0	81.0		0.0	0.0	0.0	0.0	41.4	58.6		
PHF	0.000	0.000	0.000	0.000	0.842	0.656	0.848	0.000	0.000	0.000	0.000	0.697	0.733	0.719	0.000	0.000	0.000	0.000	0.826	0.934	0.911	0.000	0.000	0.000	0.000	0.775	0.869	0.863	0.911
Entering Leg	0	0	0	0	266	63	329	0	0	0	0	53	85	138	0	0	0	0	142	605	747	0	0	0	0	366	518	884	2098
Exiting Leg							329							138							747						884	2098
Total							658							276							1494						1768	4196

PDI File #: **175645 AA**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles

	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	168	24	0	192	0	0	0	0	0	0	0	0	0	0	55	86	0	0	141	333
4:15 PM	0	196	21	0	217	0	0	0	0	0	0	0	0	0	0	53	92	0	0	145	362
4:30 PM	0	172	17	0	189	0	0	0	0	0	0	0	0	0	0	69	104	0	0	173	362
4:45 PM	0	180	22	0	202	0	0	0	0	0	0	0	0	0	0	66	101	0	0	167	369
Total	0	716	84	0	800	0	0	0	0	0	0	0	0	0	0	243	383	0	0	626	1426
5:00 PM	0	153	23	0	176	0	0	0	0	0	0	0	0	0	0	55	87	0	0	142	318
5:15 PM	0	154	27	0	181	0	0	0	0	0	0	0	0	0	0	59	97	0	0	156	337
5:30 PM	0	165	20	0	185	0	0	0	0	0	0	0	0	0	0	65	80	0	0	145	330
5:45 PM	0	154	16	0	170	0	0	0	0	0	0	0	0	0	0	61	97	0	0	158	328
Total	0	626	86	0	712	0	0	0	0	0	0	0	0	0	0	240	361	0	0	601	1313
Grand Total	0	1342	170	0	1512	0	0	0	0	0	0	0	0	0	0	483	744	0	0	1227	2739
Approach %	0.0	88.8	11.2	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		39.4	60.6	0.0	0.0		
Total %	0.0	49.0	6.2	0.0	55.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.6	27.2	0.0	0.0	44.8	
Exiting Leg Total					0					914					1825					0	2739
Cars	0	1298	162	0	1460	0	0	0	0	0	0	0	0	0	0	467	701	0	0	1168	2628
% Cars	0.0	96.7	95.3	0.0	96.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.7	94.2	0.0	0.0	95.2	95.9
Exiting Leg Total					0					863					1765					0	2628
Heavy Vehicles	0	44	8	0	52	0	0	0	0	0	0	0	0	0	0	16	43	0	0	59	111
% Heavy Vehicles	0.0	3.3	4.7	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	5.8	0.0	0.0	4.8	4.1
Exiting Leg Total					0					51					60					0	111

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	168	24	0	192	0	0	0	0	0	0	0	0	0	0	55	86	0	0	141	333
4:15 PM	0	196	21	0	217	0	0	0	0	0	0	0	0	0	0	53	92	0	0	145	362
4:30 PM	0	172	17	0	189	0	0	0	0	0	0	0	0	0	0	69	104	0	0	173	362
4:45 PM	0	180	22	0	202	0	0	0	0	0	0	0	0	0	0	66	101	0	0	167	369
Total Volume	0	716	84	0	800	0	0	0	0	0	0	0	0	0	0	243	383	0	0	626	1426
% Approach Total	0.0	89.5	10.5	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		38.8	61.2	0.0	0.0		
PHF	0.000	0.913	0.875	0.000	0.922	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.880	0.921	0.000	0.000	0.905	0.966
Cars	0	692	80	0	772	0	0	0	0	0	0	0	0	0	0	231	365	0	0	596	1368
Cars %	0.0	96.6	95.2	0.0	96.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	95.1	95.3	0.0	0.0	95.2	95.9
Heavy Vehicles	0	24	4	0	28	0	0	0	0	0	0	0	0	0	0	12	18	0	0	30	58
Heavy Vehicles %	0.0	3.4	4.8	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.9	4.7	0.0	0.0	4.8	4.1
Cars Enter Leg	0	692	80	0	772	0	0	0	0	0	0	0	0	0	0	231	365	0	0	596	1368
Heavy Enter Leg	0	24	4	0	28	0	0	0	0	0	0	0	0	0	0	12	18	0	0	30	58
Total Entering Leg	0	716	84	0	800	0	0	0	0	0	0	0	0	0	0	243	383	0	0	626	1426
Cars Exiting Leg					0					445					923					0	1368
Heavy Exit Leg					0					22					36					0	58
Total Exiting Leg					0					467					959					0	1426

PDI File #: **175645 AA**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	164	23	0	187	0	0	0	0	0	0	0	0	0	0	53	80	0	0	133	320
4:15 PM	0	188	18	0	206	0	0	0	0	0	0	0	0	0	0	51	89	0	0	140	346
4:30 PM	0	164	17	0	181	0	0	0	0	0	0	0	0	0	0	67	97	0	0	164	345
4:45 PM	0	176	22	0	198	0	0	0	0	0	0	0	0	0	0	60	99	0	0	159	357
Total	0	692	80	0	772	0	0	0	0	0	0	0	0	0	0	231	365	0	0	596	1368
5:00 PM	0	150	21	0	171	0	0	0	0	0	0	0	0	0	0	54	82	0	0	136	307
5:15 PM	0	151	27	0	178	0	0	0	0	0	0	0	0	0	0	57	92	0	0	149	327
5:30 PM	0	159	19	0	178	0	0	0	0	0	0	0	0	0	0	65	73	0	0	138	316
5:45 PM	0	146	15	0	161	0	0	0	0	0	0	0	0	0	0	60	89	0	0	149	310
Total	0	606	82	0	688	0	0	0	0	0	0	0	0	0	0	236	336	0	0	572	1260
Grand Total	0	1298	162	0	1460	0	0	0	0	0	0	0	0	0	0	467	701	0	0	1168	2628
Approach %	0.0	88.9	11.1	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		40.0	60.0	0.0	0.0		
Total %	0.0	49.4	6.2	0.0	55.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.8	26.7	0.0	0.0	44.4	
Exiting Leg Total					0					863					1765					0	2628

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Congress Street					Milk Street					Congress Street					Milk Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	164	23	0	187	0	0	0	0	0	0	0	0	0	0	53	80	0	0	133	320
4:15 PM	0	188	18	0	206	0	0	0	0	0	0	0	0	0	0	51	89	0	0	140	346
4:30 PM	0	164	17	0	181	0	0	0	0	0	0	0	0	0	0	67	97	0	0	164	345
4:45 PM	0	176	22	0	198	0	0	0	0	0	0	0	0	0	0	60	99	0	0	159	357
Total Volume	0	692	80	0	772	0	0	0	0	0	0	0	0	0	0	231	365	0	0	596	1368
% Approach Total	0.0	89.6	10.4	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		38.8	61.2	0.0	0.0		
PHF	0.000	0.920	0.870	0.000	0.937	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.862	0.922	0.000	0.000	0.909	0.958
Entering Leg	0	692	80	0	772	0	0	0	0	0	0	0	0	0	0	231	365	0	0	596	1368
Exiting Leg					0					445					923					0	1368
Total					772					445					923					596	2736

PDI File #: **175645 AA**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Heavy Vehicles

	Congress Street (North)					Milk Street (East)					Congress Street (South)					Milk Street (West)					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	2	6	0	0	8	13
4:15 PM	0	8	3	0	11	0	0	0	0	0	0	0	0	0	0	2	3	0	0	5	16
4:30 PM	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	2	7	0	0	9	17
4:45 PM	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	6	2	0	0	8	12
Total	0	24	4	0	28	0	0	0	0	0	0	0	0	0	0	12	18	0	0	30	58
5:00 PM	0	3	2	0	5	0	0	0	0	0	0	0	0	0	0	1	5	0	0	6	11
5:15 PM	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	2	5	0	0	7	10
5:30 PM	0	6	1	0	7	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	14
5:45 PM	0	8	1	0	9	0	0	0	0	0	0	0	0	0	0	1	8	0	0	9	18
Total	0	20	4	0	24	0	0	0	0	0	0	0	0	0	0	4	25	0	0	29	53
Grand Total	0	44	8	0	52	0	0	0	0	0	0	0	0	0	0	16	43	0	0	59	111
Approach %	0.0	84.6	15.4	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		27.1	72.9	0.0	0.0		
Total %	0.0	39.6	7.2	0.0	46.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4	38.7	0.0	0.0	53.2	
Exiting Leg Total					0					51					60					0	111

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Congress Street (North)					Milk Street (East)					Congress Street (South)					Milk Street (West)					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	4	1	0	5	0	0	0	0	0	0	0	0	0	0	2	6	0	0	8	13
4:15 PM	0	8	3	0	11	0	0	0	0	0	0	0	0	0	0	2	3	0	0	5	16
4:30 PM	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	2	7	0	0	9	17
4:45 PM	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	6	2	0	0	8	12
Total Volume	0	24	4	0	28	0	0	0	0	0	0	0	0	0	0	12	18	0	0	30	58
% Approach Total	0.0	85.7	14.3	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		40.0	60.0	0.0	0.0		
PHF	0.000	0.750	0.333	0.000	0.636	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500	0.643	0.000	0.000	0.833	0.853
Entering Leg	0	24	4	0	28	0	0	0	0	0	0	0	0	0	0	12	18	0	0	30	58
Exiting Leg					0					22					36					0	58
Total					28					22					36					30	116

PDI File #: **175645 AA**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Congress Street							Milk Street							Congress Street							Milk Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6	8
4:15 PM	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	11
4:30 PM	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	4	9
4:45 PM	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	5
Total	0	16	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	16	0	0	0	0	17	33
5:00 PM	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	13	17
5:15 PM	0	4	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	6	11
5:30 PM	0	3	0	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	7	11
5:45 PM	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	5	0	0	0	0	8	15
Total	0	17	0	0	2	0	19	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	29	0	0	0	1	34	54
Grand Total	0	33	0	0	2	0	35	0	0	0	0	0	0	0	0	0	0	0	0	1	1	5	45	0	0	0	1	51	87
Approach %	0.0	94.3	0.0	0.0	5.7	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		9.8	88.2	0.0	0.0	0.0	2.0		
Total %	0.0	37.9	0.0	0.0	2.3	0.0	40.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.1	5.7	51.7	0.0	0.0	0.0	1.1	58.6	
Exiting Leg Total							2							45							39							1	87

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Congress Street							Milk Street							Congress Street							Milk Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	13	17
5:15 PM	0	4	0	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	6	11
5:30 PM	0	3	0	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	7	11
5:45 PM	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	5	0	0	0	0	8	15
Total Volume	0	17	0	0	2	0	19	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	29	0	0	0	1	34	54
% Approach Total	0.0	89.5	0.0	0.0	10.5	0.0		0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	100.0		11.8	85.3	0.0	0.0	0.0	2.9		
PHF	0.000	0.708	0.000	0.000	0.500	0.000	0.792	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.333	0.558	0.000	0.000	0.000	0.250	0.654	0.794
Entering Leg	0	17	0	0	2	0	19	0	0	0	0	0	0	0	0	0	0	0	0	1	1	4	29	0	0	0	1	34	54
Exiting Leg							2							29							22							1	54
Total							21							29							23							35	108

PDI File #: **175645 AA**
Location: **N: Congress Street S: Congress Street**
Location: **E: Milk Street W: Milk Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Pedestrians

	Congress Street North							Milk Street East							Congress Street South							Milk Street West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	16	22	38	0	0	0	0	9	19	28	0	0	0	0	56	44	100	0	0	0	0	83	74	157	323
4:15 PM	0	0	0	0	16	26	42	0	0	0	0	3	25	28	0	0	0	0	57	37	94	0	0	0	0	101	68	169	333
4:30 PM	0	0	0	0	14	40	54	0	0	0	0	8	31	39	0	0	0	0	68	34	102	0	0	0	0	75	110	185	380
4:45 PM	0	0	0	0	17	53	70	0	0	0	0	8	28	36	0	0	0	0	82	47	129	0	0	0	0	104	93	197	432
Total	0	0	0	0	63	141	204	0	0	0	0	28	103	131	0	0	0	0	263	162	425	0	0	0	0	363	345	708	1468
5:00 PM	0	0	0	0	37	64	101	0	0	0	0	6	26	32	0	0	0	0	116	37	153	0	0	0	0	208	108	316	602
5:15 PM	0	0	0	0	39	73	112	0	0	0	0	13	34	47	0	0	0	0	114	41	155	0	0	0	0	145	96	241	555
5:30 PM	0	0	0	0	13	53	66	0	0	0	0	4	25	29	0	0	0	0	80	41	121	0	0	0	0	128	84	212	428
5:45 PM	0	0	0	0	14	42	56	0	0	0	0	9	17	26	0	0	0	0	98	49	147	0	0	0	0	94	62	156	385
Total	0	0	0	0	103	232	335	0	0	0	0	32	102	134	0	0	0	0	408	168	576	0	0	0	0	575	350	925	1970
Grand Total	0	0	0	0	166	373	539	0	0	0	0	60	205	265	0	0	0	0	671	330	1001	0	0	0	0	938	695	1633	3438
Approach %	0.0	0.0	0.0	0.0	30.8	69.2		0.0	0.0	0.0	0.0	22.6	77.4		0.0	0.0	0.0	0.0	67.0	33.0		0.0	0.0	0.0	0.0	57.4	42.6		
Total %	0.0	0.0	0.0	0.0	4.8	10.8	15.7	0.0	0.0	0.0	0.0	1.7	6.0	7.7	0.0	0.0	0.0	0.0	19.5	9.6	29.1	0.0	0.0	0.0	0.0	27.3	20.2	47.5	
Exiting Leg Total							539							265							1001							1633	3438

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:45 PM	Congress Street North							Milk Street East							Congress Street South							Milk Street West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:45 PM	0	0	0	0	17	53	70	0	0	0	0	8	28	36	0	0	0	0	82	47	129	0	0	0	0	104	93	197	432
5:00 PM	0	0	0	0	37	64	101	0	0	0	0	6	26	32	0	0	0	0	116	37	153	0	0	0	0	208	108	316	602
5:15 PM	0	0	0	0	39	73	112	0	0	0	0	13	34	47	0	0	0	0	114	41	155	0	0	0	0	145	96	241	555
5:30 PM	0	0	0	0	13	53	66	0	0	0	0	4	25	29	0	0	0	0	80	41	121	0	0	0	0	128	84	212	428
Total Volume	0	0	0	0	106	243	349	0	0	0	0	31	113	144	0	0	0	0	392	166	558	0	0	0	0	585	381	966	2017
% Approach Total	0.0	0.0	0.0	0.0	30.4	69.6		0.0	0.0	0.0	0.0	21.5	78.5		0.0	0.0	0.0	0.0	70.3	29.7		0.0	0.0	0.0	0.0	60.6	39.4		
PHF	0.000	0.000	0.000	0.000	0.679	0.832	0.779	0.000	0.000	0.000	0.000	0.596	0.831	0.766	0.000	0.000	0.000	0.000	0.845	0.883	0.900	0.000	0.000	0.000	0.000	0.703	0.882	0.764	0.838
Entering Leg	0	0	0	0	106	243	349	0	0	0	0	31	113	144	0	0	0	0	392	166	558	0	0	0	0	585	381	966	2017
Exiting Leg							349							144							558							966	2017
Total							698							288							1116							1932	4034

PDI File #: **175645 B**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles

	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	27	41	0	0	68	0	21	11	0	32	0	0	0	0	0	100
7:15 AM	0	0	0	0	0	28	54	0	0	82	0	18	10	0	28	0	0	0	0	0	110
7:30 AM	0	0	0	0	0	36	59	0	0	95	0	21	13	0	34	0	0	0	0	0	129
7:45 AM	0	0	0	0	0	37	52	0	0	89	0	34	10	0	44	0	0	0	0	0	133
Total	0	0	0	0	0	128	206	0	0	334	0	94	44	0	138	0	0	0	0	0	472
8:00 AM	0	0	0	0	0	45	48	0	0	93	0	33	13	0	46	0	0	0	0	0	139
8:15 AM	0	0	0	0	0	42	61	0	0	103	0	37	21	0	58	0	0	0	0	0	161
8:30 AM	0	0	0	0	0	48	56	0	0	104	0	35	16	0	51	0	0	0	0	0	155
8:45 AM	0	0	0	0	0	38	59	0	0	97	0	41	29	0	70	0	0	0	0	0	167
Total	0	0	0	0	0	173	224	0	0	397	0	146	79	0	225	0	0	0	0	0	622
Grand Total	0	0	0	0	0	301	430	0	0	731	0	240	123	0	363	0	0	0	0	0	1094
Approach %	0.0	0.0	0.0	0.0		41.2	58.8	0.0	0.0		0.0	66.1	33.9	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	27.5	39.3	0.0	0.0	66.8	0.0	21.9	11.2	0.0	33.2	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					541					0					0					553	1094
Cars	0	0	0	0	0	281	410	0	0	691	0	226	107	0	333	0	0	0	0	0	1024
% Cars	0.0	0.0	0.0	0.0	0.0	93.4	95.3	0.0	0.0	94.5	0.0	94.2	87.0	0.0	91.7	0.0	0.0	0.0	0.0	0.0	93.6
Exiting Leg Total					507					0					0					517	1024
Heavy Vehicles	0	0	0	0	0	20	20	0	0	40	0	14	16	0	30	0	0	0	0	0	70
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	6.6	4.7	0.0	0.0	5.5	0.0	5.8	13.0	0.0	8.3	0.0	0.0	0.0	0.0	0.0	6.4
Exiting Leg Total					34					0					0					36	70

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	45	48	0	0	93	0	33	13	0	46	0	0	0	0	0	139
8:15 AM	0	0	0	0	0	42	61	0	0	103	0	37	21	0	58	0	0	0	0	0	161
8:30 AM	0	0	0	0	0	48	56	0	0	104	0	35	16	0	51	0	0	0	0	0	155
8:45 AM	0	0	0	0	0	38	59	0	0	97	0	41	29	0	70	0	0	0	0	0	167
Total Volume	0	0	0	0	0	173	224	0	0	397	0	146	79	0	225	0	0	0	0	0	622
% Approach Total	0.0	0.0	0.0	0.0		43.6	56.4	0.0	0.0		0.0	64.9	35.1	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.901	0.918	0.000	0.000	0.954	0.000	0.890	0.681	0.000	0.804	0.000	0.000	0.000	0.000	0.000	0.931
Cars	0	0	0	0	0	163	211	0	0	374	0	138	70	0	208	0	0	0	0	0	582
Cars %	0.0	0.0	0.0	0.0	0.0	94.2	94.2	0.0	0.0	94.2	0.0	94.5	88.6	0.0	92.4	0.0	0.0	0.0	0.0	0.0	93.6
Heavy Vehicles	0	0	0	0	0	10	13	0	0	23	0	8	9	0	17	0	0	0	0	0	40
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	5.8	5.8	0.0	0.0	5.8	0.0	5.5	11.4	0.0	7.6	0.0	0.0	0.0	0.0	0.0	6.4
Cars Enter Leg	0	0	0	0	0	163	211	0	0	374	0	138	70	0	208	0	0	0	0	0	582
Heavy Enter Leg	0	0	0	0	0	10	13	0	0	23	0	8	9	0	17	0	0	0	0	0	40
Total Entering Leg	0	0	0	0	0	173	224	0	0	397	0	146	79	0	225	0	0	0	0	0	622
Cars Exiting Leg					301					0					0					281	582
Heavy Exit Leg					18					0					0					22	40
Total Exiting Leg					319					0					0					303	622

PDI File #: **175645 B**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	25	38	0	0	63	0	19	11	0	30	0	0	0	0	0	93
7:15 AM	0	0	0	0	0	24	52	0	0	76	0	16	8	0	24	0	0	0	0	0	100
7:30 AM	0	0	0	0	0	35	58	0	0	93	0	20	10	0	30	0	0	0	0	0	123
7:45 AM	0	0	0	0	0	34	51	0	0	85	0	33	8	0	41	0	0	0	0	0	126
Total	0	0	0	0	0	118	199	0	0	317	0	88	37	0	125	0	0	0	0	0	442
8:00 AM	0	0	0	0	0	43	43	0	0	86	0	32	12	0	44	0	0	0	0	0	130
8:15 AM	0	0	0	0	0	39	58	0	0	97	0	34	18	0	52	0	0	0	0	0	149
8:30 AM	0	0	0	0	0	46	54	0	0	100	0	31	12	0	43	0	0	0	0	0	143
8:45 AM	0	0	0	0	0	35	56	0	0	91	0	41	28	0	69	0	0	0	0	0	160
Total	0	0	0	0	0	163	211	0	0	374	0	138	70	0	208	0	0	0	0	0	582
Grand Total	0	0	0	0	0	281	410	0	0	691	0	226	107	0	333	0	0	0	0	0	1024
Approach %	0.0	0.0	0.0	0.0		40.7	59.3	0.0	0.0		0.0	67.9	32.1	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	27.4	40.0	0.0	0.0	67.5	0.0	22.1	10.4	0.0	32.5	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					507					0					0					517	1024

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	43	43	0	0	86	0	32	12	0	44	0	0	0	0	0	130
8:15 AM	0	0	0	0	0	39	58	0	0	97	0	34	18	0	52	0	0	0	0	0	149
8:30 AM	0	0	0	0	0	46	54	0	0	100	0	31	12	0	43	0	0	0	0	0	143
8:45 AM	0	0	0	0	0	35	56	0	0	91	0	41	28	0	69	0	0	0	0	0	160
Total Volume	0	0	0	0	0	163	211	0	0	374	0	138	70	0	208	0	0	0	0	0	582
% Approach Total	0.0	0.0	0.0	0.0		43.6	56.4	0.0	0.0		0.0	66.3	33.7	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.886	0.909	0.000	0.000	0.935	0.000	0.841	0.625	0.000	0.754	0.000	0.000	0.000	0.000	0.000	0.909
Entering Leg	0	0	0	0	0	163	211	0	0	374	0	138	70	0	208	0	0	0	0	0	582
Exiting Leg					301					0					0					281	582
Total					301					374					208					281	1164

PDI File #: **175645 B**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Heavy Vehicles

	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:00 AM	0	0	0	0	0	2	3	0	0	5	0	2	0	0	2	0	0	0	0	0	7
7:15 AM	0	0	0	0	0	4	2	0	0	6	0	2	2	0	4	0	0	0	0	0	10
7:30 AM	0	0	0	0	0	1	1	0	0	2	0	1	3	0	4	0	0	0	0	0	6
7:45 AM	0	0	0	0	0	3	1	0	0	4	0	1	2	0	3	0	0	0	0	0	7
Total	0	0	0	0	0	10	7	0	0	17	0	6	7	0	13	0	0	0	0	0	30
8:00 AM	0	0	0	0	0	2	5	0	0	7	0	1	1	0	2	0	0	0	0	0	9
8:15 AM	0	0	0	0	0	3	3	0	0	6	0	3	3	0	6	0	0	0	0	0	12
8:30 AM	0	0	0	0	0	2	2	0	0	4	0	4	4	0	8	0	0	0	0	0	12
8:45 AM	0	0	0	0	0	3	3	0	0	6	0	0	1	0	1	0	0	0	0	0	7
Total	0	0	0	0	0	10	13	0	0	23	0	8	9	0	17	0	0	0	0	0	40
Grand Total	0	0	0	0	0	20	20	0	0	40	0	14	16	0	30	0	0	0	0	0	70
Approach %	0.0	0.0	0.0	0.0		50.0	50.0	0.0	0.0		0.0	46.7	53.3	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	28.6	28.6	0.0	0.0	57.1	0.0	20.0	22.9	0.0	42.9	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					34					0					0					36	70

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:45 AM	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
7:45 AM	0	0	0	0	0	3	1	0	0	4	0	1	2	0	3	0	0	0	0	0	7
8:00 AM	0	0	0	0	0	2	5	0	0	7	0	1	1	0	2	0	0	0	0	0	9
8:15 AM	0	0	0	0	0	3	3	0	0	6	0	3	3	0	6	0	0	0	0	0	12
8:30 AM	0	0	0	0	0	2	2	0	0	4	0	4	4	0	8	0	0	0	0	0	12
Total Volume	0	0	0	0	0	10	11	0	0	21	0	9	10	0	19	0	0	0	0	0	40
% Approach Total	0.0	0.0	0.0	0.0		47.6	52.4	0.0	0.0		0.0	47.4	52.6	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.833	0.550	0.000	0.000	0.750	0.000	0.563	0.625	0.000	0.594	0.000	0.000	0.000	0.000	0.000	0.833
Entering Leg	0	0	0	0	0	10	11	0	0	21	0	9	10	0	19	0	0	0	0	0	40
Exiting Leg					19					0					0					21	40
Total					19					21					19					21	80

PDI File #: **175645 B**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Arch Street							Franklin Street							Arch Street							Franklin Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1	0	0	0	0	1	3
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	0	4	0	0	0	0	0	0	0	4
Total	0	0	0	0	0	0	0	0	2	0	0	0	0	2	1	5	0	0	1	0	7	0	1	0	0	0	0	1	10
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	1	0	1	1	13	0	0	0	0	0	0	0	13
8:15 AM	0	0	0	0	0	0	0	0	1	2	0	0	0	3	1	9	0	0	0	0	10	0	0	0	0	0	0	0	13
8:30 AM	0	0	0	0	0	0	0	2	4	1	0	0	0	7	0	15	1	0	0	0	16	0	0	0	0	0	0	0	23
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	12	0	1	0	0	0	0	1	13
Total	0	0	0	0	0	0	0	2	5	3	0	0	0	10	1	44	4	0	1	1	51	0	1	0	0	0	0	1	62
Grand Total	0	0	0	0	0	0	0	2	7	3	0	0	0	12	2	49	4	0	2	1	58	0	2	0	0	0	0	2	72
Approach %	0.0	0.0	0.0	0.0	0.0	0.0		16.7	58.3	25.0	0.0	0.0	0.0		3.4	84.5	6.9	0.0	3.4	1.7		0.0	100.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	9.7	4.2	0.0	0.0	0.0	16.7	2.8	68.1	5.6	0.0	2.8	1.4	80.6	0.0	2.8	0.0	0.0	0.0	0.0	2.8	
Exiting Leg Total							51							4							6							11	72

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Arch Street							Franklin Street							Arch Street							Franklin Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	1	0	1	1	13	0	0	0	0	0	0	0	13
8:15 AM	0	0	0	0	0	0	0	0	1	2	0	0	0	3	1	9	0	0	0	0	10	0	0	0	0	0	0	0	13
8:30 AM	0	0	0	0	0	0	0	2	4	1	0	0	0	7	0	15	1	0	0	0	16	0	0	0	0	0	0	0	23
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	12	0	1	0	0	0	0	1	13
Total Volume	0	0	0	0	0	0	0	2	5	3	0	0	0	10	1	44	4	0	1	1	51	0	1	0	0	0	0	1	62
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0		20.0	50.0	30.0	0.0	0.0	0.0		2.0	86.3	7.8	0.0	2.0	2.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.313	0.375	0.000	0.000	0.000	0.357	0.250	0.733	0.500	0.000	0.250	0.250	0.797	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.674
Entering Leg	0	0	0	0	0	0	0	2	5	3	0	0	0	10	1	44	4	0	1	1	51	0	1	0	0	0	0	1	62
Exiting Leg							46							2							5							9	62
Total							46							12							56							10	124

PDI File #: **175645 B**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **7:00 AM**
End Time: **9:00 AM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Pedestrians

	Arch Street							Franklin Street							Arch Street							Franklin Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
7:00 AM	0	0	0	0	27	20	47	0	0	0	0	4	18	22	0	0	0	0	8	25	33	0	0	0	0	10	4	14	116
7:15 AM	0	0	0	0	31	31	62	0	0	0	0	10	21	31	0	0	0	0	11	30	41	0	0	0	0	17	11	28	162
7:30 AM	0	0	0	0	49	37	86	0	0	0	0	19	36	55	0	0	0	0	18	42	60	0	0	0	0	43	15	58	259
7:45 AM	0	0	0	0	80	45	125	0	0	0	0	19	49	68	0	0	0	0	20	68	88	0	0	0	0	29	15	44	325
Total	0	0	0	0	187	133	320	0	0	0	0	52	124	176	0	0	0	0	57	165	222	0	0	0	0	99	45	144	862
8:00 AM	0	0	0	0	89	25	114	0	0	0	0	11	78	89	0	0	0	0	19	77	96	0	0	0	0	46	15	61	360
8:15 AM	0	0	0	0	113	57	170	0	0	0	0	21	66	87	0	0	0	0	19	98	117	0	0	0	0	41	26	67	441
8:30 AM	0	0	0	0	104	51	155	0	0	0	0	35	77	112	0	0	0	0	42	100	142	0	0	0	0	59	24	83	492
8:45 AM	0	0	0	0	111	69	180	0	0	0	0	31	99	130	0	0	0	0	33	130	163	0	0	0	0	64	22	86	559
Total	0	0	0	0	417	202	619	0	0	0	0	98	320	418	0	0	0	0	113	405	518	0	0	0	0	210	87	297	1852
Grand Total	0	0	0	0	604	335	939	0	0	0	0	150	444	594	0	0	0	0	170	570	740	0	0	0	0	309	132	441	2714
Approach %	0.0	0.0	0.0	0.0	64.3	35.7		0.0	0.0	0.0	0.0	25.3	74.7		0.0	0.0	0.0	0.0	23.0	77.0		0.0	0.0	0.0	0.0	70.1	29.9		
Total %	0.0	0.0	0.0	0.0	22.3	12.3	34.6	0.0	0.0	0.0	0.0	5.5	16.4	21.9	0.0	0.0	0.0	0.0	6.3	21.0	27.3	0.0	0.0	0.0	0.0	11.4	4.9	16.2	
Exiting Leg Total							939							594							740							441	2714

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Arch Street							Franklin Street							Arch Street							Franklin Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
8:00 AM	0	0	0	0	89	25	114	0	0	0	0	11	78	89	0	0	0	0	19	77	96	0	0	0	0	46	15	61	360
8:15 AM	0	0	0	0	113	57	170	0	0	0	0	21	66	87	0	0	0	0	19	98	117	0	0	0	0	41	26	67	441
8:30 AM	0	0	0	0	104	51	155	0	0	0	0	35	77	112	0	0	0	0	42	100	142	0	0	0	0	59	24	83	492
8:45 AM	0	0	0	0	111	69	180	0	0	0	0	31	99	130	0	0	0	0	33	130	163	0	0	0	0	64	22	86	559
Total Volume	0	0	0	0	417	202	619	0	0	0	0	98	320	418	0	0	0	0	113	405	518	0	0	0	0	210	87	297	1852
% Approach Total	0.0	0.0	0.0	0.0	67.4	32.6		0.0	0.0	0.0	0.0	23.4	76.6		0.0	0.0	0.0	0.0	21.8	78.2		0.0	0.0	0.0	0.0	70.7	29.3		
PHF	0.000	0.000	0.000	0.000	0.923	0.732	0.860	0.000	0.000	0.000	0.000	0.700	0.808	0.804	0.000	0.000	0.000	0.000	0.673	0.779	0.794	0.000	0.000	0.000	0.000	0.820	0.837	0.863	0.828
Entering Leg	0	0	0	0	417	202	619	0	0	0	0	98	320	418	0	0	0	0	113	405	518	0	0	0	0	210	87	297	1852
Exiting Leg							619							418							518							297	1852
Total							1238							836							1036							594	3704

PDI File #: **175645 BB**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars and Heavy Vehicles

	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	29	30	0	0	59	0	41	13	0	54	0	0	0	0	0	113
4:15 PM	0	0	0	0	0	37	32	0	0	69	0	47	13	0	60	0	0	0	0	0	129
4:30 PM	0	0	0	0	0	42	41	0	0	83	0	48	11	0	59	0	0	0	0	0	142
4:45 PM	0	0	0	0	0	42	32	0	0	74	0	47	18	0	65	0	0	0	0	0	139
Total	0	0	0	0	0	150	135	0	0	285	0	183	55	0	238	0	0	0	0	0	523
5:00 PM	0	0	0	0	0	36	30	0	0	66	0	41	12	0	53	0	0	0	0	0	119
5:15 PM	0	0	0	0	0	38	46	0	0	84	0	47	14	1	62	0	0	0	0	0	146
5:30 PM	0	0	0	0	0	29	38	0	0	67	0	38	20	0	58	0	0	0	0	0	125
5:45 PM	0	0	0	0	0	31	39	0	0	70	0	51	14	0	65	0	0	0	0	0	135
Total	0	0	0	0	0	134	153	0	0	287	0	177	60	1	238	0	0	0	0	0	525
Grand Total	0	0	0	0	0	284	288	0	0	572	0	360	115	1	476	0	0	0	0	0	1048
Approach %	0.0	0.0	0.0	0.0		49.7	50.3	0.0	0.0		0.0	75.6	24.2	0.2		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	27.1	27.5	0.0	0.0	54.6	0.0	34.4	11.0	0.1	45.4	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					644					0					1					403	1048
Cars	0	0	0	0	0	271	279	0	0	550	0	347	113	1	461	0	0	0	0	0	1011
% Cars	0.0	0.0	0.0	0.0	0.0	95.4	96.9	0.0	0.0	96.2	0.0	96.4	98.3	100.0	96.8	0.0	0.0	0.0	0.0	0.0	96.5
Exiting Leg Total					618					0					1					392	1011
Heavy Vehicles	0	0	0	0	0	13	9	0	0	22	0	13	2	0	15	0	0	0	0	0	37
% Heavy Vehicles	0.0	0.0	0.0	0.0	0.0	4.6	3.1	0.0	0.0	3.8	0.0	3.6	1.7	0.0	3.2	0.0	0.0	0.0	0.0	0.0	3.5
Exiting Leg Total					26					0					0					11	37

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	0	0	0	0	0	42	41	0	0	83	0	48	11	0	59	0	0	0	0	0	142
4:45 PM	0	0	0	0	0	42	32	0	0	74	0	47	18	0	65	0	0	0	0	0	139
5:00 PM	0	0	0	0	0	36	30	0	0	66	0	41	12	0	53	0	0	0	0	0	119
5:15 PM	0	0	0	0	0	38	46	0	0	84	0	47	14	1	62	0	0	0	0	0	146
Total Volume	0	0	0	0	0	158	149	0	0	307	0	183	55	1	239	0	0	0	0	0	546
% Approach Total	0.0	0.0	0.0	0.0		51.5	48.5	0.0	0.0		0.0	76.6	23.0	0.4		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.940	0.810	0.000	0.000	0.914	0.000	0.953	0.764	0.250	0.919	0.000	0.000	0.000	0.000	0.000	0.935
Cars	0	0	0	0	0	152	147	0	0	299	0	178	54	1	233	0	0	0	0	0	532
Cars %	0.0	0.0	0.0	0.0	0.0	96.2	98.7	0.0	0.0	97.4	0.0	97.3	98.2	100.0	97.5	0.0	0.0	0.0	0.0	0.0	97.4
Heavy Vehicles	0	0	0	0	0	6	2	0	0	8	0	5	1	0	6	0	0	0	0	0	14
Heavy Vehicles %	0.0	0.0	0.0	0.0	0.0	3.8	1.3	0.0	0.0	2.6	0.0	2.7	1.8	0.0	2.5	0.0	0.0	0.0	0.0	0.0	2.6
Cars Enter Leg	0	0	0	0	0	152	147	0	0	299	0	178	54	1	233	0	0	0	0	0	532
Heavy Enter Leg	0	0	0	0	0	6	2	0	0	8	0	5	1	0	6	0	0	0	0	0	14
Total Entering Leg	0	0	0	0	0	158	149	0	0	307	0	183	55	1	239	0	0	0	0	0	546
Cars Exiting Leg					330					0					1					201	532
Heavy Exit Leg					11					0					0					3	14
Total Exiting Leg					341					0					1					204	546

PDI File #: **175645 BB**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Cars

	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	28	29	0	0	57	0	38	13	0	51	0	0	0	0	0	108
4:15 PM	0	0	0	0	0	35	30	0	0	65	0	45	13	0	58	0	0	0	0	0	123
4:30 PM	0	0	0	0	0	42	40	0	0	82	0	47	11	0	58	0	0	0	0	0	140
4:45 PM	0	0	0	0	0	40	32	0	0	72	0	45	17	0	62	0	0	0	0	0	134
Total	0	0	0	0	0	145	131	0	0	276	0	175	54	0	229	0	0	0	0	0	505
5:00 PM	0	0	0	0	0	34	30	0	0	64	0	40	12	0	52	0	0	0	0	0	116
5:15 PM	0	0	0	0	0	36	45	0	0	81	0	46	14	1	61	0	0	0	0	0	142
5:30 PM	0	0	0	0	0	28	37	0	0	65	0	38	20	0	58	0	0	0	0	0	123
5:45 PM	0	0	0	0	0	28	36	0	0	64	0	48	13	0	61	0	0	0	0	0	125
Total	0	0	0	0	0	126	148	0	0	274	0	172	59	1	232	0	0	0	0	0	506
Grand Total	0	0	0	0	0	271	279	0	0	550	0	347	113	1	461	0	0	0	0	0	1011
Approach %	0.0	0.0	0.0	0.0		49.3	50.7	0.0	0.0		0.0	75.3	24.5	0.2		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	26.8	27.6	0.0	0.0	54.4	0.0	34.3	11.2	0.1	45.6	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					618					0					1					392	1011

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:30 PM	0	0	0	0	0	42	40	0	0	82	0	47	11	0	58	0	0	0	0	0	140
4:45 PM	0	0	0	0	0	40	32	0	0	72	0	45	17	0	62	0	0	0	0	0	134
5:00 PM	0	0	0	0	0	34	30	0	0	64	0	40	12	0	52	0	0	0	0	0	116
5:15 PM	0	0	0	0	0	36	45	0	0	81	0	46	14	1	61	0	0	0	0	0	142
Total Volume	0	0	0	0	0	152	147	0	0	299	0	178	54	1	233	0	0	0	0	0	532
% Approach Total	0.0	0.0	0.0	0.0		50.8	49.2	0.0	0.0		0.0	76.4	23.2	0.4		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.905	0.817	0.000	0.000	0.912	0.000	0.947	0.794	0.250	0.940	0.000	0.000	0.000	0.000	0.000	0.937
Entering Leg	0	0	0	0	0	152	147	0	0	299	0	178	54	1	233	0	0	0	0	0	532
Exiting Leg					330					0					1					201	532
Total					330					299					234					201	1064

PDI File #: **175645 BB**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Heavy Vehicles

	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	1	1	0	0	2	0	3	0	0	3	0	0	0	0	0	5
4:15 PM	0	0	0	0	0	2	2	0	0	4	0	2	0	0	2	0	0	0	0	0	6
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	2	0	0	0	2	0	2	1	0	3	0	0	0	0	0	5
Total	0	0	0	0	0	5	4	0	0	9	0	8	1	0	9	0	0	0	0	0	18
5:00 PM	0	0	0	0	0	2	0	0	0	2	0	1	0	0	1	0	0	0	0	0	3
5:15 PM	0	0	0	0	0	2	1	0	0	3	0	1	0	0	1	0	0	0	0	0	4
5:30 PM	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	2
5:45 PM	0	0	0	0	0	3	3	0	0	6	0	3	1	0	4	0	0	0	0	0	10
Total	0	0	0	0	0	8	5	0	0	13	0	5	1	0	6	0	0	0	0	0	19
Grand Total	0	0	0	0	0	13	9	0	0	22	0	13	2	0	15	0	0	0	0	0	37
Approach %	0.0	0.0	0.0	0.0		59.1	40.9	0.0	0.0		0.0	86.7	13.3	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	0.0	0.0	0.0	0.0	35.1	24.3	0.0	0.0	59.5	0.0	35.1	5.4	0.0	40.5	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total					26					0					0					11	37

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Arch Street					Franklin Street					Arch Street					Franklin Street					
	North					East					South					West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
4:00 PM	0	0	0	0	0	1	1	0	0	2	0	3	0	0	3	0	0	0	0	0	5
4:15 PM	0	0	0	0	0	2	2	0	0	4	0	2	0	0	2	0	0	0	0	0	6
4:30 PM	0	0	0	0	0	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	2	0	0	0	2	0	2	1	0	3	0	0	0	0	0	5
Total Volume	0	0	0	0	0	5	4	0	0	9	0	8	1	0	9	0	0	0	0	0	18
% Approach Total	0.0	0.0	0.0	0.0		55.6	44.4	0.0	0.0		0.0	88.9	11.1	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.625	0.500	0.000	0.000	0.563	0.000	0.667	0.250	0.000	0.750	0.000	0.000	0.000	0.000	0.000	0.750
Entering Leg	0	0	0	0	0	5	4	0	0	9	0	8	1	0	9	0	0	0	0	0	18
Exiting Leg					13					0					0					5	18
Total					13					9					9					5	36

PDI File #: **175645 BB**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**
Class:

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Bicycles (on Roadway and Crosswalks)

	Arch Street							Franklin Street							Arch Street							Franklin Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	1	0	0	0	0	1	3	3	0	0	0	0	6	0	2	0	0	0	0	2	0	0	0	0	0	0	0	9
4:15 PM	0	0	0	0	0	0	0	0	7	0	0	0	1	8	0	1	0	0	0	0	1	0	0	0	0	0	0	0	9
4:30 PM	0	0	0	0	0	0	0	1	8	0	0	0	0	9	0	2	2	0	1	0	5	0	0	0	0	0	0	0	14
4:45 PM	0	0	0	0	0	0	0	0	9	0	0	0	1	10	0	4	3	0	0	0	7	0	0	0	0	0	0	0	17
Total	0	1	0	0	0	0	1	4	27	0	0	0	2	33	0	9	5	0	1	0	15	0	0	0	0	0	0	0	49
5:00 PM	0	0	0	0	1	0	1	0	19	2	0	0	1	22	0	3	0	0	0	0	3	0	1	0	0	0	0	1	27
5:15 PM	0	0	0	0	0	0	0	0	22	0	0	0	0	22	0	6	2	0	1	0	9	0	1	0	0	0	0	1	32
5:30 PM	0	0	0	0	0	0	0	0	14	1	0	0	0	15	0	6	2	0	0	0	8	0	1	0	0	0	0	1	24
5:45 PM	0	0	0	0	0	0	0	0	15	2	0	0	0	17	0	4	2	0	0	0	6	0	0	0	0	0	0	0	23
Total	0	0	0	0	1	0	1	0	70	5	0	0	1	76	0	19	6	0	1	0	26	0	3	0	0	0	0	3	106
Grand Total	0	1	0	0	1	0	2	4	97	5	0	0	3	109	0	28	11	0	2	0	41	0	3	0	0	0	0	3	155
Approach %	0.0	50.0	0.0	0.0	50.0	0.0		3.7	89.0	4.6	0.0	0.0	2.8		0.0	68.3	26.8	0.0	4.9	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
Total %	0.0	0.6	0.0	0.0	0.6	0.0	1.3	2.6	62.6	3.2	0.0	0.0	1.9	70.3	0.0	18.1	7.1	0.0	1.3	0.0	26.5	0.0	1.9	0.0	0.0	0.0	0.0	1.9	
Exiting Leg Total							33							6							8							108	155

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Arch Street							Franklin Street							Arch Street							Franklin Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	1	0	1	0	19	2	0	0	1	22	0	3	0	0	0	0	3	0	1	0	0	0	0	1	27
5:15 PM	0	0	0	0	0	0	0	0	22	0	0	0	0	22	0	6	2	0	1	0	9	0	1	0	0	0	0	1	32
5:30 PM	0	0	0	0	0	0	0	0	14	1	0	0	0	15	0	6	2	0	0	0	8	0	1	0	0	0	0	1	24
5:45 PM	0	0	0	0	0	0	0	0	15	2	0	0	0	17	0	4	2	0	0	0	6	0	0	0	0	0	0	0	23
Total Volume	0	0	0	0	1	0	1	0	70	5	0	0	1	76	0	19	6	0	1	0	26	0	3	0	0	0	0	3	106
% Approach Total	0.0	0.0	0.0	0.0	100.0	0.0		0.0	92.1	6.6	0.0	0.0	1.3		0.0	73.1	23.1	0.0	3.8	0.0		0.0	100.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.795	0.625	0.000	0.000	0.250	0.864	0.000	0.792	0.750	0.000	0.250	0.000	0.722	0.000	0.750	0.000	0.000	0.000	0.000	0.750	0.828
Entering Leg	0	0	0	0	1	0	1	0	70	5	0	0	1	76	0	19	6	0	1	0	26	0	3	0	0	0	0	3	106
Exiting Leg							20							4							6							76	106
Total							21							80							32							79	212

PDI File #: **175645 BB**
Location: **N: Arch Street S: Arch Street**
Location: **E: Franklin Street W: Franklin Street**
City, State: **Bston, MA**
Client: **VHB/ A. Santiago**
Site Code: **13706.00**
Count Date: **Wednesday, May 3, 2017**
Start Time: **4:00 PM**
End Time: **6:00 PM**

PRECISION DATA INDUSTRIES, LLC
46 Morton Street, Framingham, MA 01702
Office: 508-875-0100 Fax: 508-875-0118
Email: datarequests@pdillc.com

Class:

Pedestrians

	Arch Street							Franklin Street							Arch Street							Franklin Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
4:00 PM	0	0	0	0	36	73	109	0	0	0	0	27	34	61	0	0	0	0	62	34	96	0	0	0	0	27	40	67	333
4:15 PM	0	0	0	0	27	72	99	0	0	0	0	14	34	48	0	0	0	0	68	34	102	0	0	0	0	15	30	45	294
4:30 PM	0	0	0	0	33	72	105	0	0	0	0	27	31	58	0	0	0	0	81	28	109	0	0	0	0	18	51	69	341
4:45 PM	0	0	0	0	55	73	128	0	0	0	0	20	40	60	0	0	0	0	114	28	142	0	0	0	0	24	51	75	405
Total	0	0	0	0	151	290	441	0	0	0	0	88	139	227	0	0	0	0	325	124	449	0	0	0	0	84	172	256	1373
5:00 PM	0	0	0	0	48	129	177	0	0	0	0	56	46	102	0	0	0	0	201	42	243	0	0	0	0	15	60	75	597
5:15 PM	0	0	0	0	53	154	207	0	0	0	0	61	35	96	0	0	0	0	181	59	240	0	0	0	0	21	79	100	643
5:30 PM	0	0	0	0	44	147	191	0	0	0	0	49	34	83	0	0	0	0	157	36	193	0	0	0	0	21	56	77	544
5:45 PM	0	0	0	0	55	104	159	0	0	0	0	40	31	71	0	0	0	0	143	25	168	0	0	0	0	24	61	85	483
Total	0	0	0	0	200	534	734	0	0	0	0	206	146	352	0	0	0	0	682	162	844	0	0	0	0	81	256	337	2267
Grand Total	0	0	0	0	351	824	1175	0	0	0	0	294	285	579	0	0	0	0	1007	286	1293	0	0	0	0	165	428	593	3640
Approach %	0.0	0.0	0.0	0.0	29.9	70.1		0.0	0.0	0.0	0.0	50.8	49.2		0.0	0.0	0.0	0.0	77.9	22.1		0.0	0.0	0.0	0.0	27.8	72.2		
Total %	0.0	0.0	0.0	0.0	9.6	22.6	32.3	0.0	0.0	0.0	0.0	8.1	7.8	15.9	0.0	0.0	0.0	0.0	27.7	7.9	35.5	0.0	0.0	0.0	0.0	4.5	11.8	16.3	
Exiting Leg Total							1175							579							1293							593	3640

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Arch Street							Franklin Street							Arch Street							Franklin Street							
	North							East							South							West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	Total
5:00 PM	0	0	0	0	48	129	177	0	0	0	0	56	46	102	0	0	0	0	201	42	243	0	0	0	0	15	60	75	597
5:15 PM	0	0	0	0	53	154	207	0	0	0	0	61	35	96	0	0	0	0	181	59	240	0	0	0	0	21	79	100	643
5:30 PM	0	0	0	0	44	147	191	0	0	0	0	49	34	83	0	0	0	0	157	36	193	0	0	0	0	21	56	77	544
5:45 PM	0	0	0	0	55	104	159	0	0	0	0	40	31	71	0	0	0	0	143	25	168	0	0	0	0	24	61	85	483
Total Volume	0	0	0	0	200	534	734	0	0	0	0	206	146	352	0	0	0	0	682	162	844	0	0	0	0	81	256	337	2267
% Approach Total	0.0	0.0	0.0	0.0	27.2	72.8		0.0	0.0	0.0	0.0	58.5	41.5		0.0	0.0	0.0	0.0	80.8	19.2		0.0	0.0	0.0	0.0	24.0	76.0		
PHF	0.000	0.000	0.000	0.000	0.909	0.867	0.886	0.000	0.000	0.000	0.000	0.844	0.793	0.863	0.000	0.000	0.000	0.000	0.848	0.686	0.868	0.000	0.000	0.000	0.000	0.844	0.810	0.843	0.881
Entering Leg	0	0	0	0	200	534	734	0	0	0	0	206	146	352	0	0	0	0	682	162	844	0	0	0	0	81	256	337	2267
Exiting Leg							734							352							844							337	2267
Total							1468							704							1688							674	4534

2. Background Projects

EXPANDED PROJECT NOTIFICATION FORM

55 India Street

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
Boston Residential Development LLC
20 Park Plaza, Suite 1104
Boston, MA 02116

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Hacin + Associates
Goulston & Storrs
Howard/Stein Hudson Associates, Inc.
Nitsch Engineering
McPhail Associates, LLC
RWDI

June 16, 2014

Epsilon
ASSOCIATES INC.

EXPANDED PROJECT NOTIFICATION FORM

55 India Street

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
Boston Residential Development LLC
20 Park Plaza, Suite 1104
Boston, MA 02116

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Hacin + Associates
Goulston & Storrs
Howard/Stein Hudson Associates, Inc.
Nitsch Engineering
McPhail Associates, LLC

June 16, 2014

Epsilon
ASSOCIATES INC.

Chapter 2.0

Transportation Component

2.0 TRANSPORTATION

2.1 Introduction

Howard/Stein-Hudson Associates, Inc. (HSH) has conducted an evaluation of the transportation impacts of a proposed mixed-use development containing residential and commercial uses to be located at 55 India Street in downtown Boston. This transportation study adheres to the Boston Transportation Department (BTD) *Transportation Access Plan Guidelines* and Article 80 development review process. This study includes an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, loading operations, transit services, and pedestrian activity. The intersections studied will continue to operate at the same Level of Service as under the No-Build conditions during both the a.m. and p.m. peak hours. The Project will have minimal impact on the study area intersections or on public transportation or pedestrian facilities in the area.

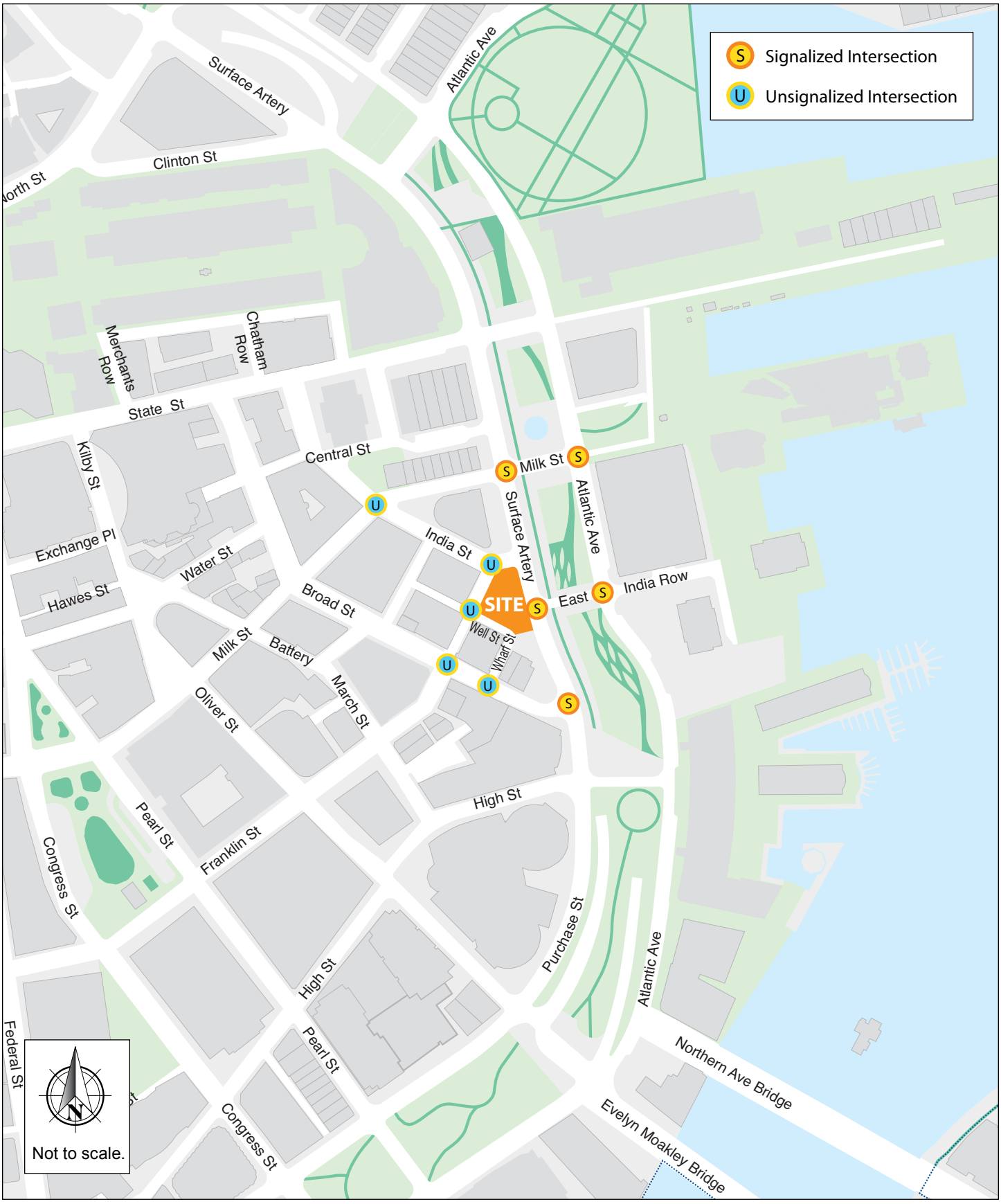
2.1.1 Project Description

The Project site is located at 55 India Street in downtown Boston, as shown in Figure 2-1. The site is bounded by India Street to the north, Well Street to the south, Franklin Street to the west, and Surface Artery/Rose Kennedy Greenway to the east. The Project site currently contains an approximate 15-space public parking lot accessed from Well Street and 10 Zipcar spaces along the Franklin Street frontage. The Project is a proposed mixed-use development consisting of the construction of a 12-story building containing 44 residential condominium units and approximately 4,000 square feet (sf) of ground floor retail/restaurant space that will replace the public parking and Zipcar spaces. No parking will be provided on the Project site. The Proponent will work with nearby garages to secure parking spaces for the residents of the Project.

2.1.2 Study Area

The study area is generally bounded by Milk Street to the north, India Street and Franklin Street to the west, Broad Street to the south, and Atlantic Avenue to the east. It includes the following 10 intersections, also shown on Figure 2-1:

- Surface Artery/Milk Street;
- Atlantic Avenue/Milk Street
- Surface Artery/India Street;
- Atlantic Avenue/East India Row;
- Purchase Street/Broad Street;



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-1
Study Area Intersections

- Milk Street/India Street;
- India Street/Franklin Street;
- Franklin Street/Well Street
- Franklin Street/Broad Street; and
- Broad Street/Wharf Street.

2.1.3 Study Methodology

This transportation study and supporting analyses were conducted in accordance with BTD guidelines as described below.

The existing conditions analysis includes an inventory of the existing (2014) transportation conditions such as traffic characteristics, parking and curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected on Thursday July 18, 2013 at the study intersections. To represent 2014 traffic volume conditions, an adjustment to the traffic data was necessary to account for the estimated traffic growth over the past year; therefore a background traffic growth rate of 1.0 percent per year was applied to the 2013 counts. A more detailed discussion of the background traffic growth rate is provided in Section 2.3.1.1. The traffic counts form the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. Long-term impacts are evaluated for the year 2019, based on a five-year horizon from the year of the filing of this traffic study. Expected roadway, parking, transit, pedestrian, bicycle accommodation, and loading capabilities and deficiencies are identified. This section includes the following scenarios:

- The 2019 No Build conditions scenario includes both general background traffic growth and traffic growth associated with specific developments and transportation improvements that are planned in the vicinity of the Project site.
- The 2019 Build conditions scenario includes Project-generated traffic volume estimates added to the traffic volumes developed as part of the 2019 No Build conditions scenario.

The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or construction related issues that are necessary to accommodate the Project.

An evaluation of short-term traffic impacts associated with construction activities is also provided.

2.2 Existing Conditions

2.2.1 Existing Roadway Conditions

The study area includes the following roadways, which are categorized according to the Massachusetts Department of Transportation Office of Transportation Planning functional classifications:

India Street

- Is adjacent to the north side of the Project site and classified as an urban collector west of Surface Artery and a local roadway east of Surface Artery.
- Runs in a northwest-southeast direction between State Street to the north and Surface Artery/Rose Kennedy Greenway to the southeast.
- Is one-way in the northwestbound direction and consists of a single travel lane.
- Sidewalks are provided along both sides of India Street.

Franklin Street

- Is adjacent to the west side of the Project site and classified as an urban collector south of Broad Street and a local roadway north of Broad Street.
- Runs in a northeast-southwest direction between India Street to the north and Washington Street to the west.
- Is one-way in the southbound direction south of Broad Street and one-way in the northbound direction north of Broad Street.
- Sidewalks are provided along both sides of Franklin Street.

Surface Artery Southbound/Purchase Street

- Is adjacent to the east side of the Project site and classified as an urban minor arterial.
- Runs in a north-south direction between New Chardon Street to the north and the South Station Connector roadway to the south.
- Runs adjacent to the westerly side of the Rose Kennedy Greenway.
- The roadway is named John F. Fitzgerald Surface Artery north of Broad Street and Purchase Street south of Broad Street.

- Is one-way in the southbound direction and generally consists of three travel lanes and an exclusive bicycle lane.
- Sidewalks are provided along both sides of the roadway.

Well Street

- Is adjacent to the south side of the Project site and classified as a local roadway.
- Accommodates two-way travel. However, Well Street is only wide enough to allow passage of a single vehicle in either direction.
- Runs in an east-west direction between Custom House Road to the west and Wharf Street to the east.
- Sidewalks are provided along both sides of Well Street.

Wharf Street

- Is located directly south of the Project site and classified as a local roadway.
- Accommodates two-way travel.
- Runs in a north-south direction between Well Street/the Project site and Broad Street.
- Sidewalks are provided along both sides of Wharf Street.

Atlantic Avenue

- Is located east of the Project site and classified as an urban minor arterial.
- Runs in a north-south direction between Kneeland Street to the south and New Chardon Street to the north.
- Is one-way in the northbound direction and generally consists of two to three travel lanes and an exclusive bicycle lane.
- Sidewalks are provided along both sides of Atlantic Avenue.

Milk Street

- Is located north of the Project site and classified as an urban collector west of Atlantic Avenue and a local roadway east of Atlantic Avenue.
- Runs in an east-west direction between Washington Street to the west and Central Wharf to the east.

- Is one-way in the eastbound direction east of Devonshire Street and two-way west of Devonshire Street.
- Sidewalks are provided along both sides of Milk Street.

Broad Street

- Is located south of the Project site and classified as an urban collector.
- Runs in a northwest-southeast direction between State Street to the north and Purchase Street to the east.
- Consists of a single lane in each direction of travel.
- Is currently being reconstructed in accordance with the Boston Complete Streets design guidelines.
- Sidewalks are provided along both sides of Broad Street.

2.2.2 Existing Intersection Conditions

Existing conditions at each of the study area intersections are described below.

Surface Artery/Milk Street

- Is a four-legged, signalized intersection under BTD jurisdiction.
- Milk Street is one-way eastbound and consists of a through lane and a shared through/right-turn lane.
- Surface Artery is one-way southbound and consists of a shared left-turn/through lane and two through lanes. A five-foot wide bicycle lane is also provided.
- Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Atlantic Avenue/Milk Street

- Is a four-legged, signalized intersection under BTD jurisdiction.
- Milk Street is one-way eastbound west of the intersection and consists of two exclusive left-turn lanes and a through lane.
- Milk Street westbound consists of a single exclusive right-turn lane.
- Atlantic Avenue is one-way northbound and consists of a shared left-turn/through lane and a through lane. A five-foot wide bicycle lane is also provided.

- Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Surface Artery/India Street

- Is a four-legged, signalized intersection under BTD jurisdiction.
- India Street is one-way westbound and consists of two exclusive left-turn lanes and a through lane.
- Surface Artery is one-way southbound and consists of two through lanes and a shared through/right-turn lane. A five-foot wide bicycle lane is also provided.
- Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Atlantic Avenue/East India Row

- Is a four-legged, signalized intersection under BTD jurisdiction.
- East India Row westbound consists of a shared through/right-turn lane.
- East India Row is one-way westbound west of the intersection.
- Atlantic Avenue is one-way northbound and consists of a shared left-turn/through lane and a shared through/right-turn lane. A five-foot wide bicycle lane is also provided.
- Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Purchase Street/Broad Street

- Is a three-legged, signalized intersection under BTD jurisdiction.
- Broad Street eastbound consists of an exclusive right-turn lane.
- Purchase Street is one-way southbound and consists of two through lanes and a shared through/right-turn lane. A five-foot wide bicycle lane is also provided.
- Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Milk Street/India Street

- Is a four-legged, unsignalized intersection under BTD jurisdiction.
- India Street is one-way westbound and consists of a single travel lane.
- Milk Street is one-way northbound and consists of a single travel lane under STOP-sign control.
- Crosswalks with handicap-accessible ramps are provided across all legs of the intersection.

India Street/Franklin Street

- Is a three-legged, unsignalized intersection under BTD jurisdiction.
- India Street is one-way westbound and consists of a single travel lane.
- Franklin Street is one-way northbound and consists of a single travel lane under STOP-sign control.
- Crosswalks are not provided at the intersection.

Franklin Street/Well Street

- Is a three-legged, unsignalized intersection under BTD jurisdiction.
- Well Street consists of a shared through/right-turn lane that accommodates two-way travel. Due to the limited width of Well Street, two vehicles cannot pass each other in opposite directions of travel.
- Franklin Street is one-way northbound and consists of a shared left-turn/ through/right-turn lane.
- Traffic control is not provided at the intersection.
- Crosswalks are not provided at the intersection.

Franklin Street/Broad Street

- Is a four-legged, unsignalized intersection under BTD jurisdiction.
- Broad Street eastbound and westbound both consist of single travel lanes separated by a double-yellow centerline.
- Franklin Street is one-way southbound south of the intersection and one-way northbound north of the intersection.

- Crosswalks with handicap-accessible ramps are provided across both Franklin Street legs and the Broad Street eastbound leg of the intersection.

Broad Street/Wharf Street

- Is a three-legged, unsignalized intersection under BTD jurisdiction.
- Broad Street eastbound and westbound both consist of single travel lanes separated by a double-yellow centerline.
- Wharf Street southbound operates under STOP control and consists of a shared left-turn/right-turn lane that accommodates two-way travel. Due to the width of Wharf Street, two vehicles cannot pass each other in opposite directions of travel.
- Crosswalks are not provided at the intersection.

2.2.3 Existing Traffic Conditions

Traffic movement data was collected at the study area intersections in July 2013. Manual turning movement counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. and p.m. peak periods (7:00-9:00 a.m. and 4:00-6:00 p.m., respectively) for the following six intersections:

- Surface Artery/Milk Street;
- Atlantic Avenue/Milk Street;
- Surface Artery/India Street;
- Atlantic Avenue/East India Row;
- Purchase Street/Broad Street; and
- Milk Street/India Street.

The vehicle classification counts included car, truck, pedestrian, and bicycle movements. Based on the TMCs, the peak hours of vehicular traffic throughout the study area are 8:00-9:00 a.m. and 4:15-5:15 p.m.

Additional vehicular, pedestrian, and bicycle counts were conducted during the a.m. and p.m. peak hours (8:00-9:00 a.m. and 4:15-5:15 p.m., respectively) at the remaining four study area intersections, including the following:

- India Street/Franklin Street;
- Franklin Street/Well Street;

- Franklin Street/Broad Street; and
- Broad Street/Wharf Street.

The detailed traffic counts are provided in the Appendix C.

Seasonal Adjustment

In order to account for seasonal variation in traffic volumes throughout the year, data provided by the Massachusetts Department of Transportation (MassDOT) were reviewed. Typically, nearby continuous traffic count stations are used to determine monthly fluctuations in traffic volumes. However, monthly traffic counts for the nearby continuous count stations located on Interstate 93 were not available at the time of this study. Therefore, the most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the July 2013 TMCs. The 2011 seasonal adjustment factor for July for roadways similar to the study area is 0.92, which indicates that average month traffic volumes are approximately 92 percent of typical July traffic volumes. To provide a conservative analysis, the July counts were not adjusted downward to reflect average month conditions. To account for traffic growth over the past year, a one percent annual growth rate was applied to the 2013 counts to reflect the 2014 existing traffic conditions. A discussion on the annual traffic growth rate is provided in Section 2.3.1.1. The 2014 Existing weekday a.m. and p.m. peak hour traffic volumes are shown in Figure 2-2 and Figure 2-3, respectively.

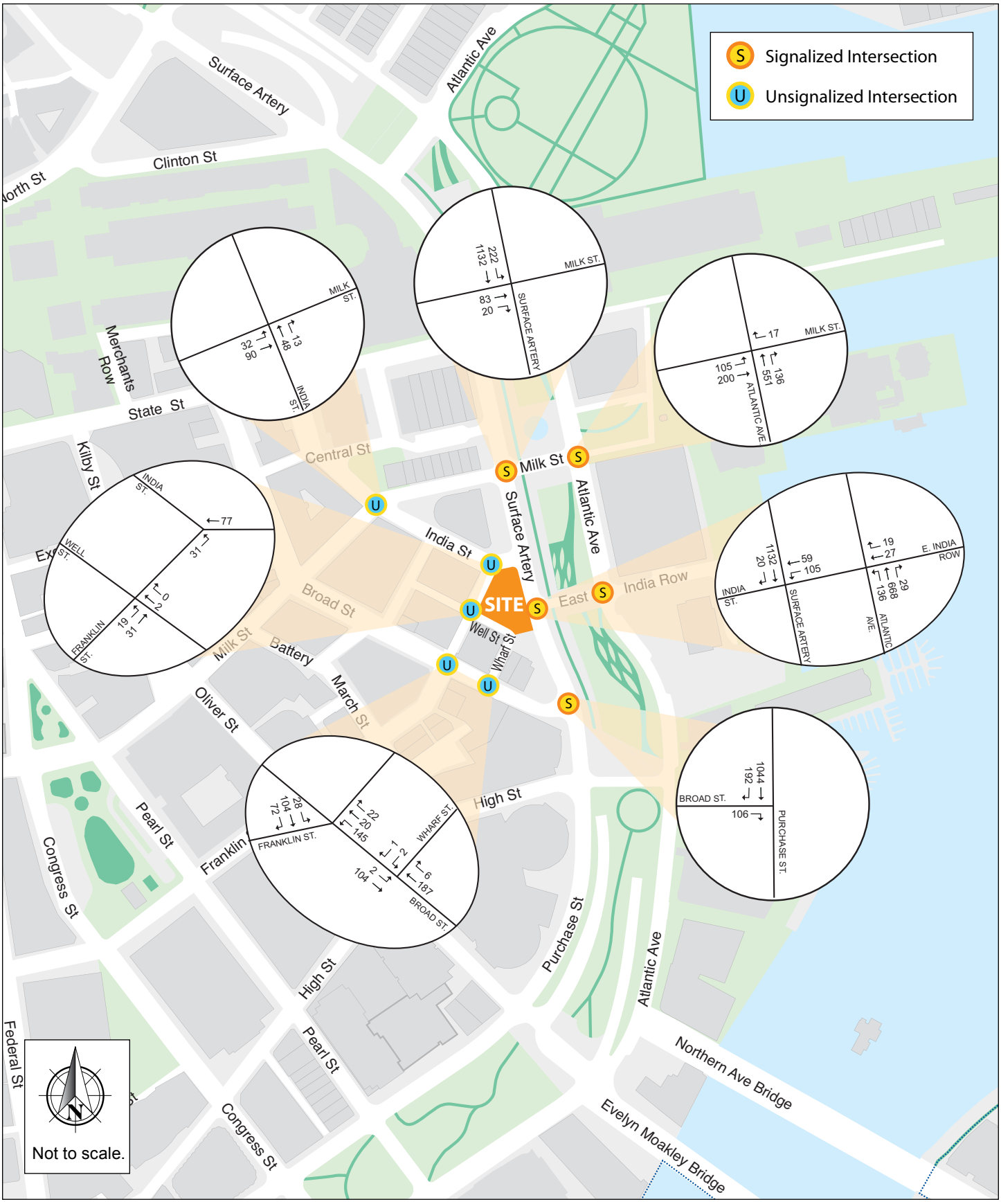
2.2.4 Existing Traffic Operations

The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay incurred by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 6) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 *Highway Capacity Manual* (HCM).

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

The 50th percentile queue length, measured in feet, represents the maximum queue length during a cycle of the traffic signal with typical (or median) entering traffic volumes.

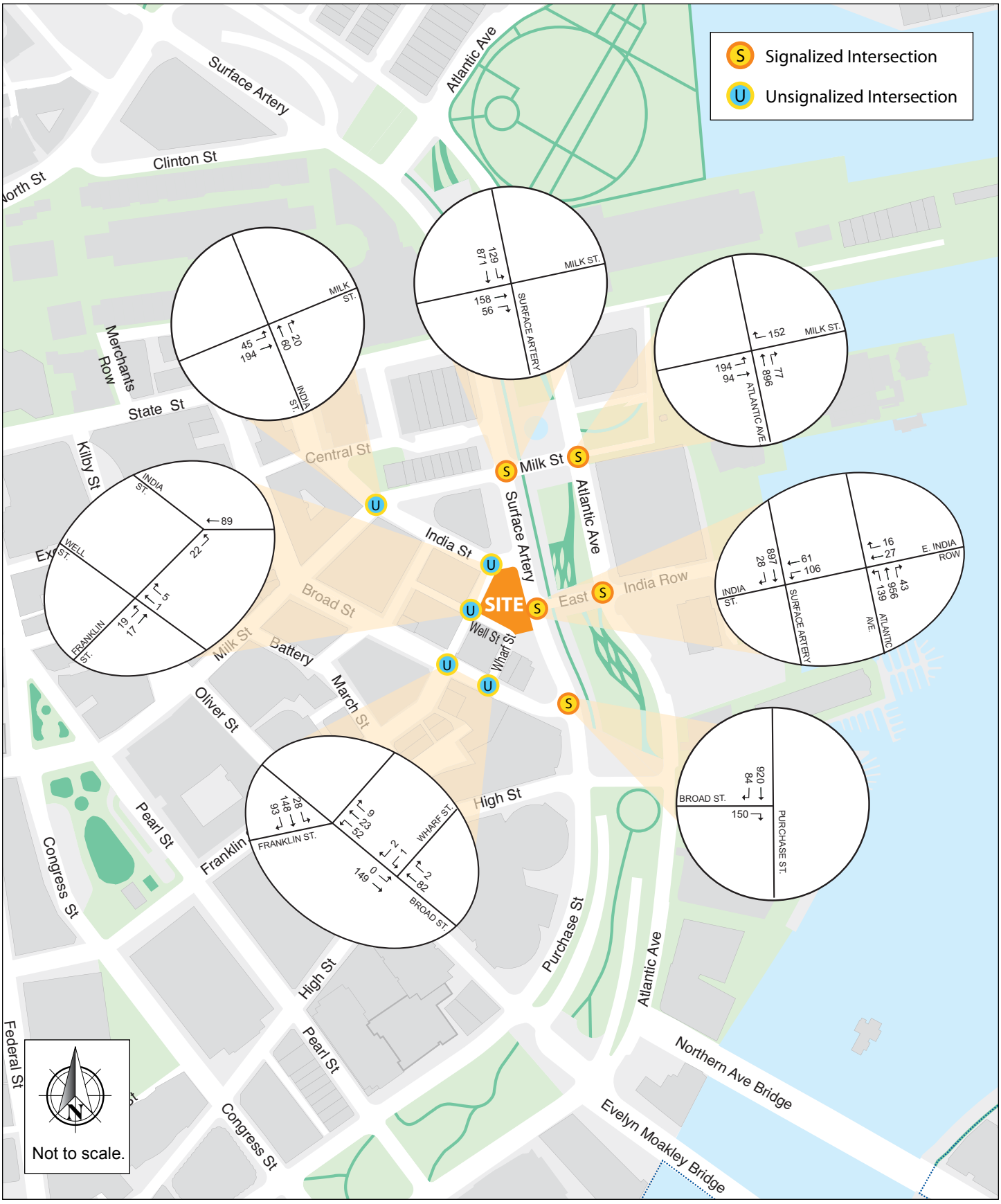
The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five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



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-2
Existing Conditions (2014) Turning Movement Volumes, a.m. Peak Hour (8:00-9:00 a.m.)



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-3
Existing Conditions (2014) Turning Movement Volumes, p.m. Peak Hour (4:15-5:15 p.m.)

Field observations were performed by HSH to collect intersection geometry such as number of turning lanes, lane length, and lane width. Signal timing and phasing used in this analysis were obtained from the BTD and through the field observations conducted by HSH.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 2-1 displays the intersection level of service criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst (unacceptable) condition, with significant traffic delay. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop controlled minor street that intersects a major roadway.

Table 2-1 Level of Service Criteria

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

Source: 2000 Highway Capacity Manual, Transportation Research Board.

Table 2-2 and Table 2-3 present the 2013 Existing conditions capacity analysis for the study area intersections during the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.

As shown in Table 2-2, during the a.m. peak hour, the signalized intersections operate at an overall LOS D or better. All movements at the unsignalized intersections operate at LOS B or better during the a.m. peak hour.

As shown in Table 2-3, during the p.m. peak hour, the majority of the signalized intersections operate at LOS D or better. The intersection of Atlantic Avenue/Milk Street operates at LOS F during the p.m. peak hour. All movements at the unsignalized intersections operate at LOS B or better during the p.m. peak hour.

Table 2-2 Existing Conditions (2014), Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**22.5**	—	—	—
Milk EB thru | thru/right	C	22.9	0.15	23	47
Surface Artery SB left/thru | thru | thru	C	22.5	0.71	263	318
Atlantic Avenue/Milk Street	**D**	**37.1**	—	—	—
Milk EB left l left	C	24.5	0.21	19	m30
Milk EB thru	F	>80.0	0.74	102	153
Milk WB right	A	0.2	0.05	0	0
Atlantic NB thru l thru/right	C	23.4	0.73	80	#201
Surface Artery/India Street	**A**	**8.4**	—	—	—
India WB left l left	D	39.3	0.32	35	62
India WB thru	D	41.2	0.32	40	78
Surface Artery SB thru l thru l thru/right	A	3.7	0.40	65	90
Atlantic Avenue/East India Row	**A**	**9.2**	—	—	—
East India Row WB thru/right	C	20.9	0.18	19	40
Atlantic NB left/thru l thru/right	A	8.3	0.49	126	167
Purchase Street/Broad Street	**A**	**1.2**	—	—	—
Broad EB right	A	1.1	0.24	0	0
Purchase SB thru l thru l thru/right	A	1.2	0.44	26	30
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.05	—	0
Milk NB left/thru	B	10.4	0.20	—	18
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.05	—	0
Franklin NB left	A	9.2	0.04	—	3
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	9.9	0.01	—	1
Franklin NB left/thru	A	3.3	0.02	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.6	0.03	—	2
Broad WB left/thru/right	A	6.7	0.15	—	13
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	0.3	0.00	—	0
Broad WB thru/right	A	0.0	0.14	—	0
Wharf SB left/right	B	11.2	0.02	—	2

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates unacceptable level of service.

Table 2-3 Existing Conditions (2014), Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**21.0**	—	—	—
Milk EB thru | thru/right	D	38.1	0.44	80	83
Surface Artery SB left/thru | thru | thru	B	16.1	0.50	156	194
Atlantic Avenue/Milk Street	**F**	**>80.0**	—	—	—
Milk EB left l left	F	>80.0	0.70	96	105
Milk EB thru	F	>80.0	0.50	71	120
Milk WB right	A	2.0	0.34	0	0
Atlantic NB thru l thru/right	C	26.7	0.86	165	#326
Surface Artery/India Street	**A**	**7.4**	—	—	—
India WB left l left	C	34.1	0.30	34	53
India WB thru	D	37.6	0.39	47	67
Surface Artery SB thru l thru l thru/right	A	1.6	0.33	15	35
Atlantic Avenue/East India Row	**B**	**10.4**	—	—	—
East India Row WB thru/right	C	21.7	0.16	17	44
Atlantic NB left/thru l thru/right	A	9.9	0.61	190	248
Purchase Street/Broad Street	**A**	**2.3**	—	—	—
Broad EB right	A	1.8	0.34	0	0
Purchase SB thru l thru l thru/right	A	2.4	0.35	1	71
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.07	—	0
Milk NB left/thru	B	12.5	0.40	—	48
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.07	—	0
Franklin NB left	A	9.6	0.03	—	3
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	6.7	0.01	—	0
Franklin NB left/thru	A	7.5	0.08	—	0
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.1	0.03	—	2
Broad WB left/thru/right	A	4.9	0.05	—	4
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	0.0	0.00	—	0
Broad WB thru/right	A	0.0	0.07	—	0
Wharf SB left/right	B	10.9	0.01	—	1

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates unacceptable level of service.

2.2.5 Existing Parking and Curb Usage

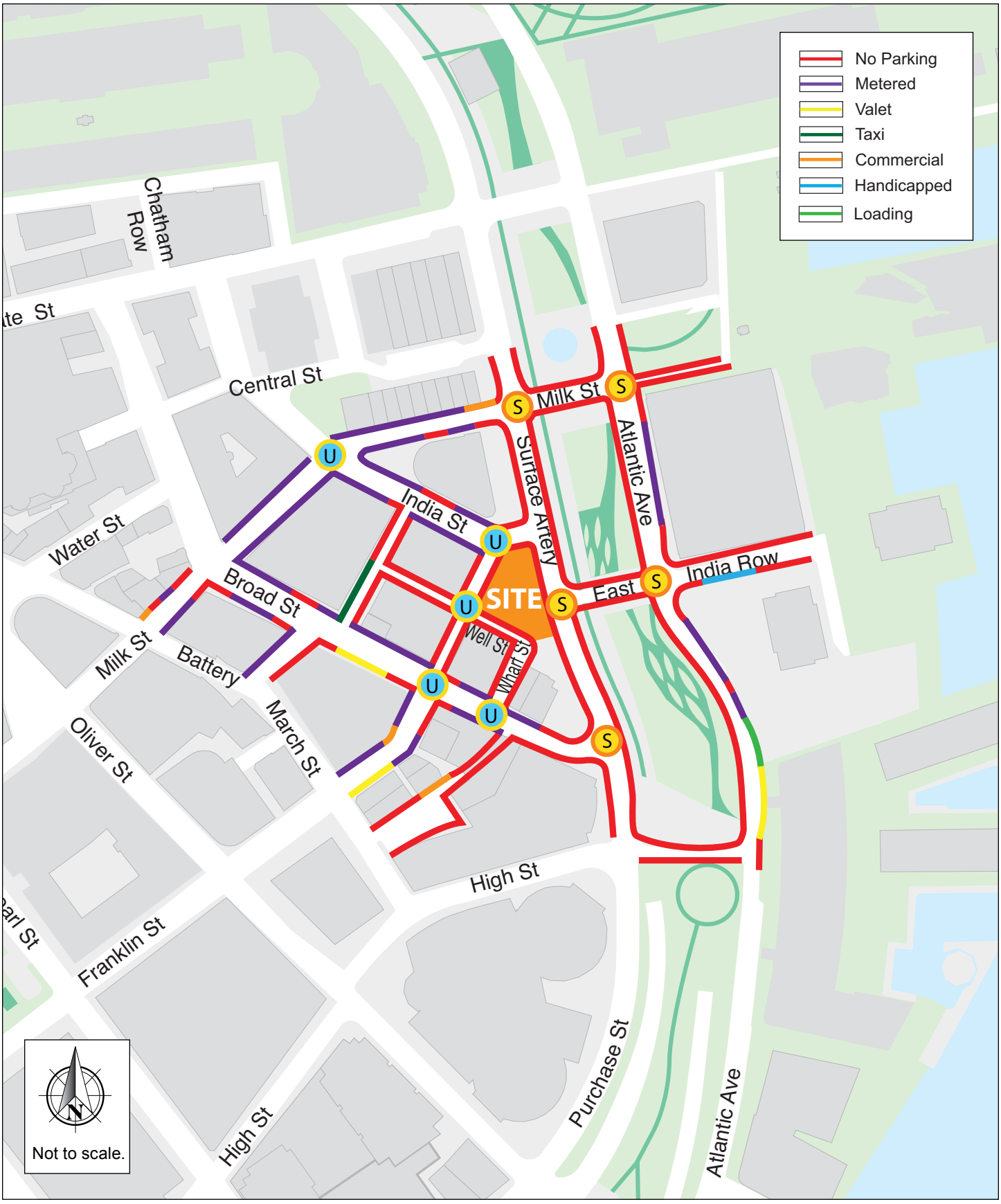
On-street parking regulations in the study area consist of a mixture of no parking, commercial parking, metered parking, loading zones, cabstands, and handicapped-designated spaces. A significant number of metered parking spaces lie within the immediate area of the site, mostly on Broad Street, Franklin Street, India Street, Milk Street and Atlantic Avenue. Parking is prohibited on Wharf Street, Well Street, Franklin Street between Broad Street and India Street, and Surface Artery/Purchase Street within the study area. The on-street parking regulations are shown in Figure 2-4.

Approximately 6,830 off-street parking spaces are located in lots and garages within a quarter-mile radius of the Project: 141 lot spaces and 6,689 garage spaces. Of these off-street spaces, 2,525 are in private facilities and 4,305 are open to the public. These parking facilities and associated capacities are identified in Figure 2-5 and Table 2-4 and Table 2-5, respectively, for lots and garages.

Table 2-4 Off-Street Parking Lots within a Quarter-Mile of the Site

Map #	Address	Parking Lot Facility	Private Capacity	Public Capacity
1	53–59 India Street [1]	53–59 India Street	0	14
2	51 India Street [1]	51 India Street	10	0
3	Wendell Street	Wendell Street Lot	15	0
4	47–49 Broad Street	Broad & Water Street Lot	0	21
5	15–17 Northern Avenue	James Hook & Co. Lot	20	0
6	49–51 Chatham Street	Chatham Street Lot A	0	31
7	57 Chatham Street	Chatham Street Lot B	0	30
Lots—Subtotal			**45**	**96**

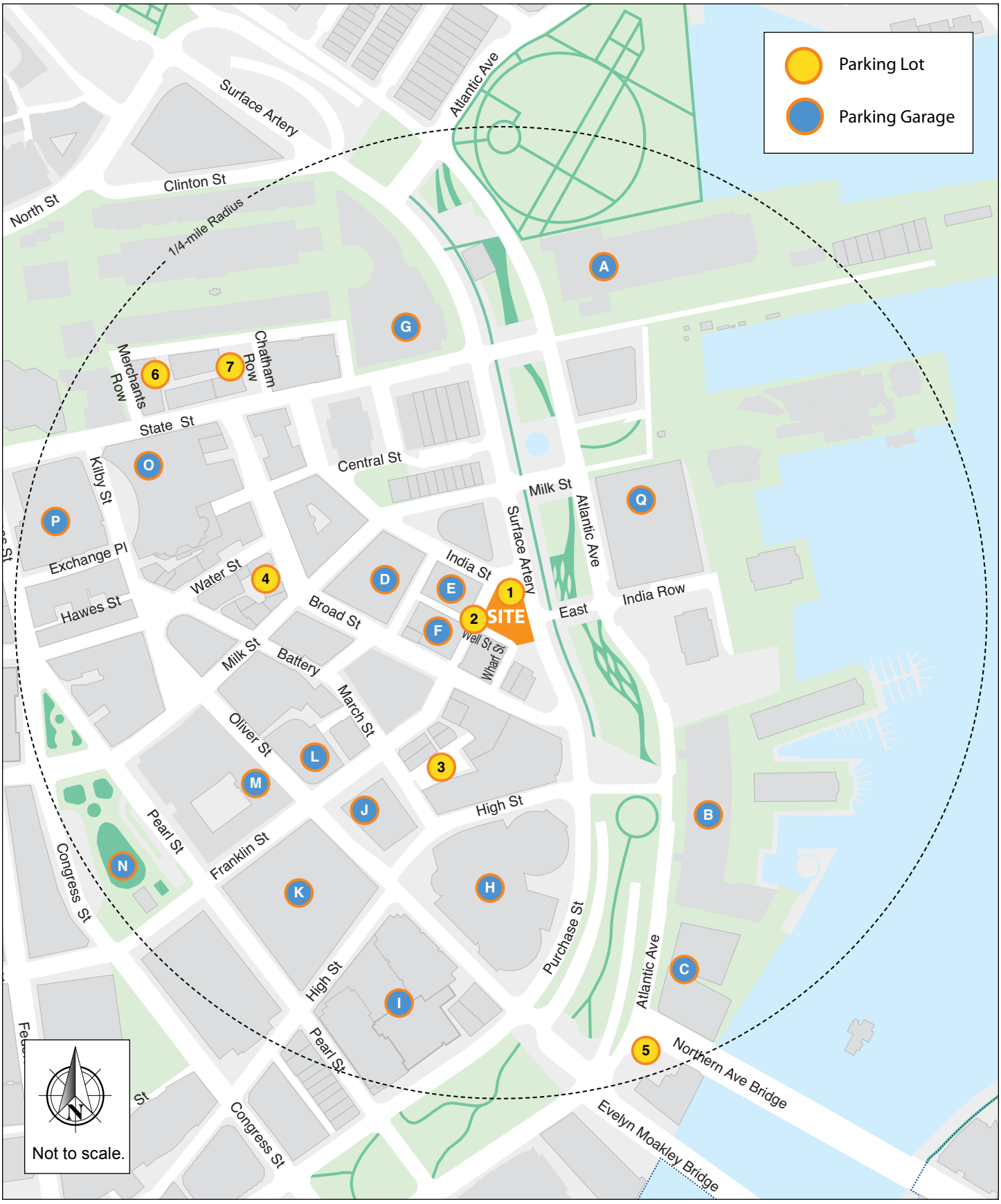
1 Will be eliminated with the construction of the Project.



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-4
On-street Parking in the Study Area



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-5
Off-street Parking in the Study Area

Table 2-5 Off-Street Parking Garages within a Quarter-Mile of the Site

Map #	Address	Parking Garage Facility	Private Capacity	Public Capacity
A	New Atlantic Ave. @ State St.	Long Wharf Hotel	190	0
B	10–30 Rowes Wharf	Rowes Wharf Garage	420	280
C	470 Atlantic Avenue	470 Atlantic Avenue	119	0
D	20 Custom House Street	20 Custom House Street Garage	62	0
E	21 Custom House Street	21 Custom House Street Garage	42	0
F	80 Broad Street	Folio	88	30
G	200 State Street	Marketplace Center Garage	0	120
H	High Street	International Place	0	827
I	125 High Street	125 High St Garage	700	150
J	265 Franklin Street	Paine Webber Building	128	0
K	225 Franklin Street	State Street Bank Building	0	200
L	260 Franklin Street	Franklin Street Garage	83	0
M	1 Post Office Square	One Post Office Sq. Garage	318	82
N	Post Office Square	New Post Office Sq. Garage	0	900
O	75 State Street	75 State Street Garage	0	700
P	53 State Street	Exchange Place	93	0
Q	70 East India Row	Aquarium Garage	300	1,175
Garage Subtotal			**2,450**	**4,239**
Quarter-mile Radius Lots + Garages			**2,495**	**4,335**
Quarter-mile Radius Total Capacity			**6,830**	

Source: Boston Air Pollution Control Commission.

2.2.6 Existing Public Transportation

The Project site is well served by public transportation. The MBTA public transportation services are shown in Figure 2-6 and summarized in Table 2-6.

Within a quarter-mile of the Project site are the MBTA Aquarium and State Street stations, which provide access to both the Orange Line and the Blue Line. MBTA Bus Route 4, Route 92, and Route 93 also operate near the Project site, with stops located about one-third mile west of the Project site near the intersection of State Street and Congress Street.

55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-6
Public Transportation in the Study Area

Also, in proximity to the Project site are three MBTA commuter ferries: the Hingham-Boston route running between Rowes Wharf and Hingham; the Hull-Boston-Logan Airport route running between Long Wharf, Logan Airport, Hingham, and Hull; and the Charlestown-Boston route running between Long Wharf and the Charlestown Navy Yard. South Station, which provides connections to the MBTA Red Line, South Side commuter rail service, and AMTRAK service is approximately a half-mile from the Project site and is within easy walking distance along the Rose Kennedy Greenway.

Table 2-6 MBTA Transit Service in the Study Area

Transit Service	Description	Peak-hour Headway (in minutes) [1]
Rapid Transit Routes		
Blue Line	Bowdoin – Wonderland	5
Orange Line	Forest Hills – Oak Grove	6
Local Bus Routes		
4	North Station-World Trade Center via Federal Courthouse and South Station	~12
92	Assembly Square Mall – Downtown	~15
93	Sullivan Square Station – Downtown	~7
Commuter Ferry Routes [2]		
Hingham - Boston		~15-30
Hull – Boston – Logan Airport		~20-35
Charlestown – Boston		~15

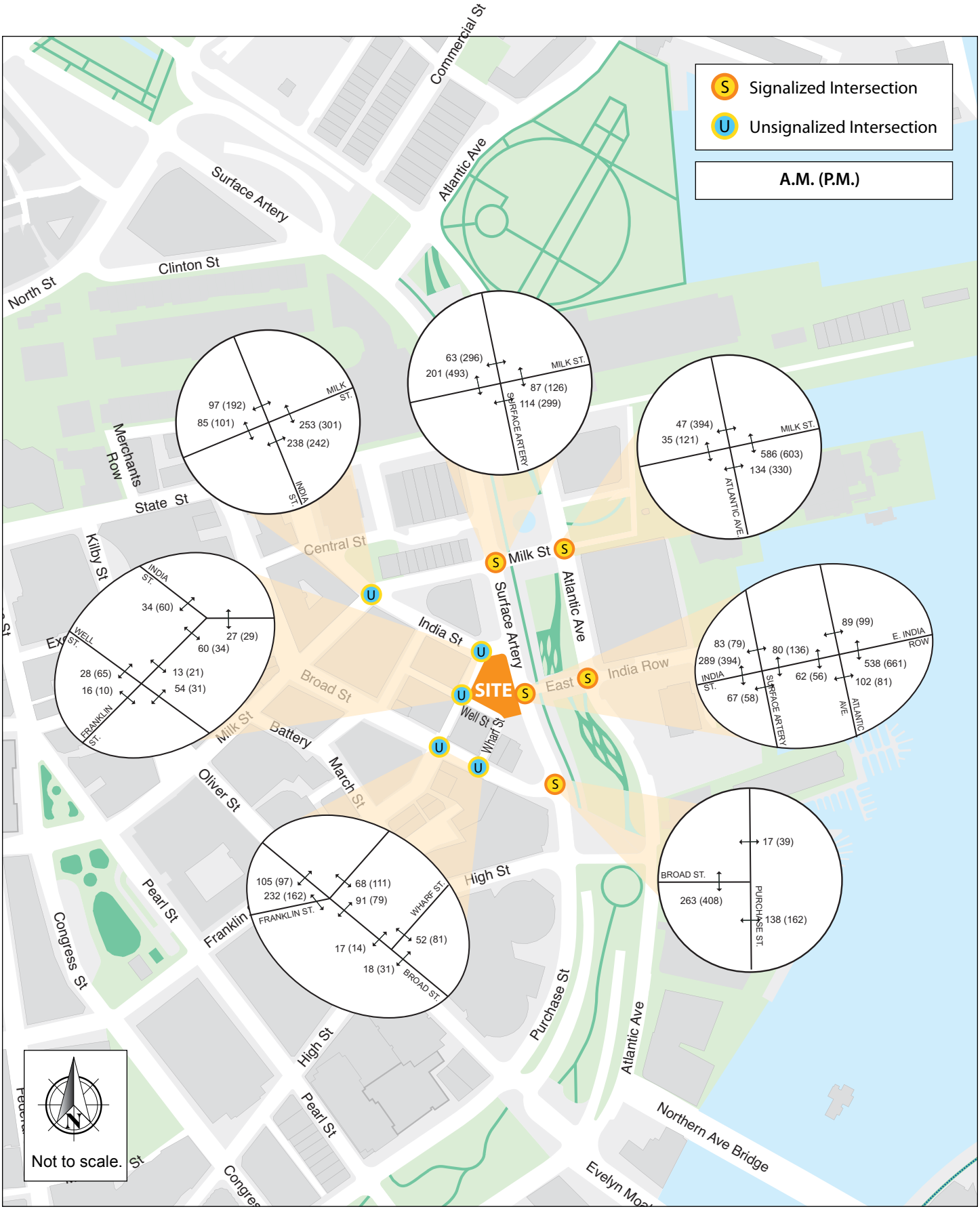
1 Headway is the scheduled time between trains, buses, or boats, as applicable. Source: MBTA.com, August 2013.

2.2.7 Existing Pedestrian Conditions

The Project site is conveniently located adjacent to the Rose Kennedy Greenway, which provides approximately 1.5 miles of biking, walking, and jogging paths between South Station and the North End.

Currently, sidewalks in the study area are generally in good condition and supply more than adequate capacity. In addition, Broad Street is currently being reconstructed as a part of Boston's Crossroads Initiative. The Broad Street design will consist of a wider, tree-lined pedestrian area connecting the Rose Kennedy Greenway to State Street, Government Center, and the Faneuil Hall marketplace. The design will also improve the street for multi-modal transportation including improved accessibility and bicycle accommodations including new bicycle storage racks.

Pedestrian counts were conducted concurrent with the vehicular TMCs and are presented in Figure 2-7 for the a.m. and p.m. peak hours. As shown, pedestrian volumes are heaviest along the roadways adjacent to the Rose Kennedy Greenway.



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-7

Existing Conditions (2014) Pedestrian Volumes, a.m. and p.m. Peak Hours

2.2.8 Existing Bicycle Facilities

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project site is located adjacent to the Rose Kennedy Greenway, which follows Atlantic Avenue, Surface Artery, and Purchase Street between Chinatown and the North End. Bicycle lanes are provided on Atlantic Avenue in the northbound direction and Surface Artery/Purchase Street in the southbound direction along the Greenway. Sharrows are provided along Milk Street and a faded bicycle lane is provided along Franklin Street in the southbound direction, south of Broad Street. The following roadways within the study area are designated bicycle routes on the City of Boston's "Bike Routes of Boston" map:

- Atlantic Avenue is designated as an intermediate route suitable for riders with some on-road experience. Atlantic Avenue has an exclusive bicycle lane.

- Milk Street is designated as an intermediate route suitable for riders with some on-road experience.

Hubway is a bicycle sharing system in the Boston area, which was launched in 2011 and consists of over 100 stations and 1,000 bicycles. As shown in Figure 2-8, there are three Hubway stations in close proximity to the Project site:

- Aquarium Station – Located at the intersection of Atlantic Avenue and State Street, this Hubway station has an overall capacity of 19 bicycles.

- Post Office Square – Located at the intersection of Milk Street and Pearl Street, this Hubway station has an overall capacity of 18 bicycles.

- Rowes Wharf – Located at Rowes Wharf along Atlantic Avenue, this Hubway station has an overall capacity of 15 bicycles.

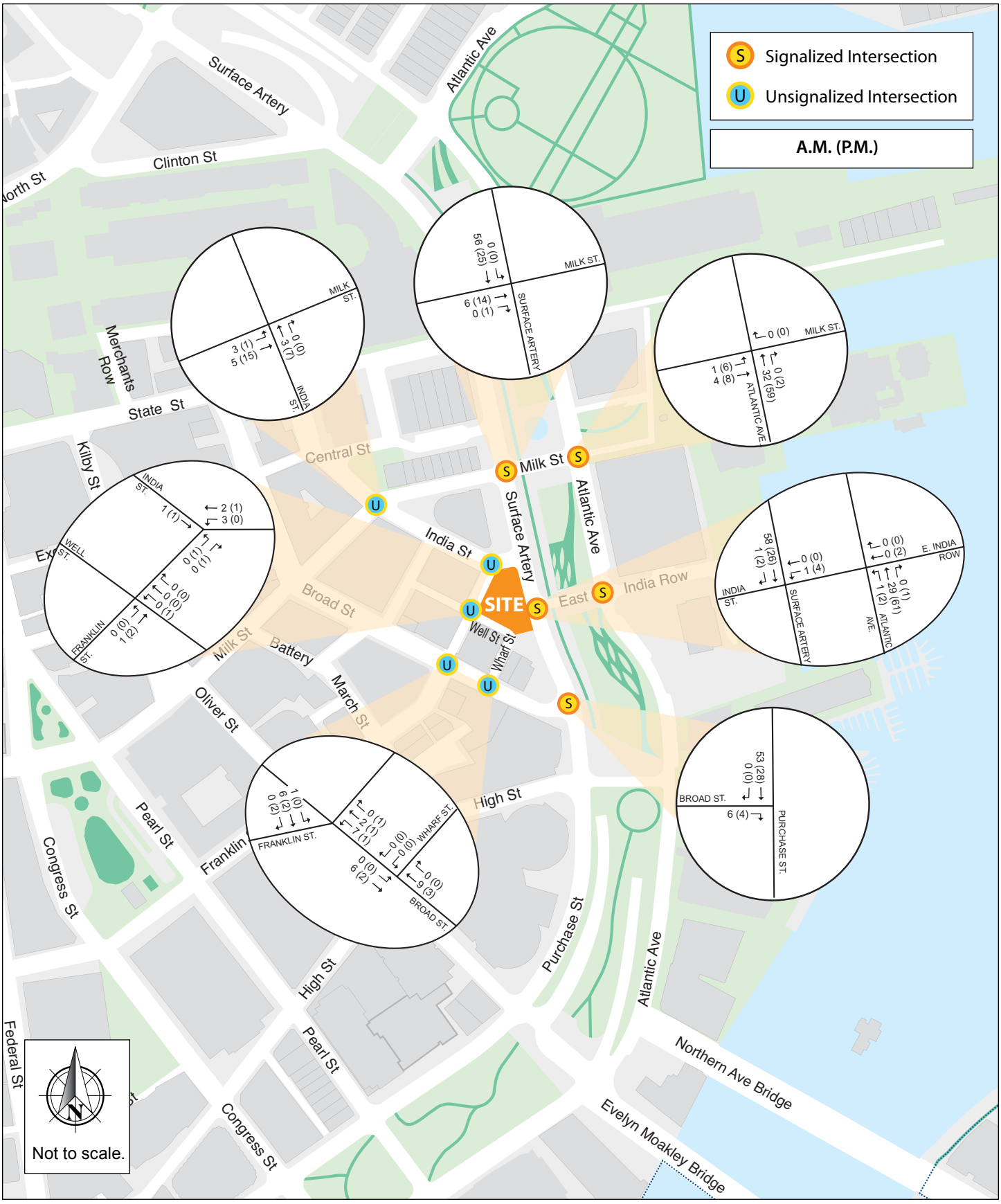
- Milk Street at India Street – Located along Milk Street, this Hubway station has an overall capacity of 19 bicycles.

Bicycle counts were conducted concurrent with the vehicular TMCs and are presented in Figure 2-9 for the a.m. and p.m. peak hours. As shown in Figure 2-9, bicycle volumes are heaviest along Surface Artery/Purchase Street and Atlantic Avenue.

55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-8
Shared Bicycle/Cars in the Study Area



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-9
Existing Conditions (2014) Bicycle Volumes, a.m. and p.m. Peak Hours

2.2.9 Car Sharing Services

Car sharing, predominantly served by Zipcar in the Boston area, provides easy access to vehicular transportation for those who want short term access to a vehicle. Vehicles are rented on an hourly or daily basis, and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location.

There are six car sharing locations within a quarter-mile of the Project site, including the ten spaces located at the Project site. The nearby Zipcar locations are shown in Figure 2-8.

2.3 Future Conditions

For transportation impact analyses, it is standard practice to evaluate two future conditions: No-Build conditions (without the proposed project) and Build conditions (with the proposed project). In accordance with BTD guidelines, these conditions are projected to a future date five years from the Existing conditions year. For this evaluation of this Project, 2019 was selected as the horizon year for the future conditions analyses.

This section presents a description of the 2019 future conditions scenarios and includes an evaluation of the transportation facilities under the No-Build and Build conditions.

2.3.1 No-Build Conditions

The No-Build conditions reflect a future scenario that incorporates any anticipated traffic volume changes independent of the Project and any planned infrastructure improvements that will affect travel patterns throughout the study area. Infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements. Traffic volume changes are based on two factors: annual background growth and growth associated with specific developments near the project.

2.3.1.1 Background Traffic Growth

Two methodologies are used to account for future traffic growth, independent of the Project. The first methodology accounts for general background traffic growth that may be affected by changes in demographics, automobile usage, and automobile ownership. The second methodology accounts for specific developments proposed in the vicinity of the Project site. Based on a review of recent traffic studies conducted for nearby projects and to account for any additional unforeseen traffic growth, a one-percent per year annual traffic growth rate was used to develop the future conditions traffic volumes.

The second methodology identifies any specific planned developments that are expected to affect traffic patterns throughout the study area within the future analysis time horizon. Currently, there are no proposed projects within the vicinity of the Project site that will have a significant impact at the study area intersections. However, there is a potential for future

development at the adjacent parcel immediately south of the Project site at the corner of Surface Artery and Broad Street. To account for any future development on this parcel, it was assumed that a development similar in size and use to the Project could be built. Additional trips associated with the development of the adjacent parcel at the corner of Surface Road and Broad Street were estimated and included in the future conditions traffic volumes.

The one-percent per year annual growth rate was applied to the 2014 Existing conditions traffic volumes, then the traffic volumes associated with the potential background development project listed above were added to develop the 2019 No-Build conditions traffic volumes. The 2019 No-Build a.m. and p.m. peak hour traffic volumes are shown on Figure 2-10 and Figure 2-11, respectively.

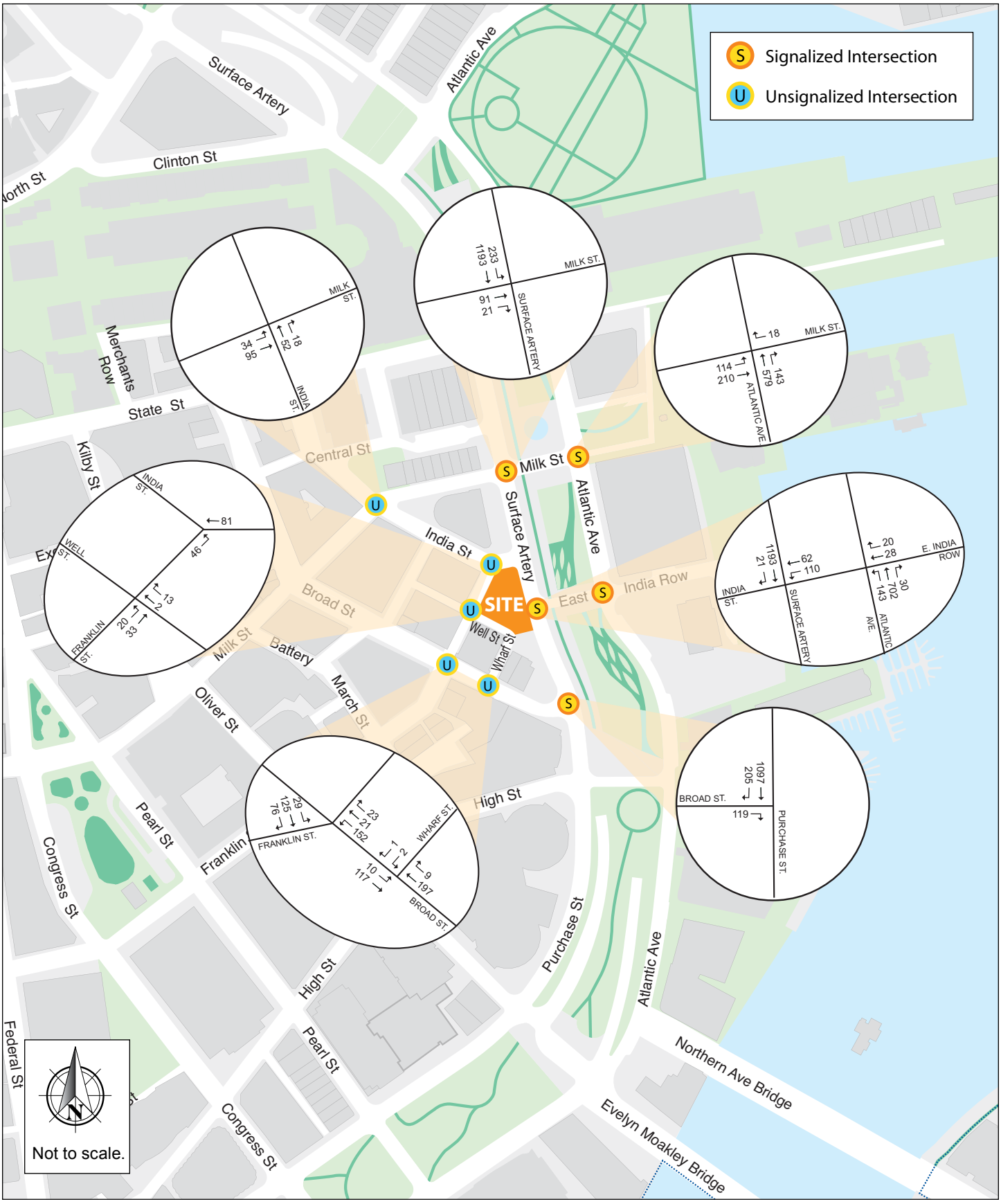
2.3.1.2 Proposed Infrastructure Improvements

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any projects in the vicinity of the study area. The following project is currently under construction:

- **Broad Street – Crossroads Initiative** – This project is being undertaken by the BRA and is currently under construction. The project entails improvements along Broad Street between State Street and Surface Artery/Rose Kennedy Greenway including the widening of sidewalks, new street lighting, improved handicap accessibility, and the addition of new trees to the streetscape.

2.3.1.3 No-Build Conditions Traffic Operations

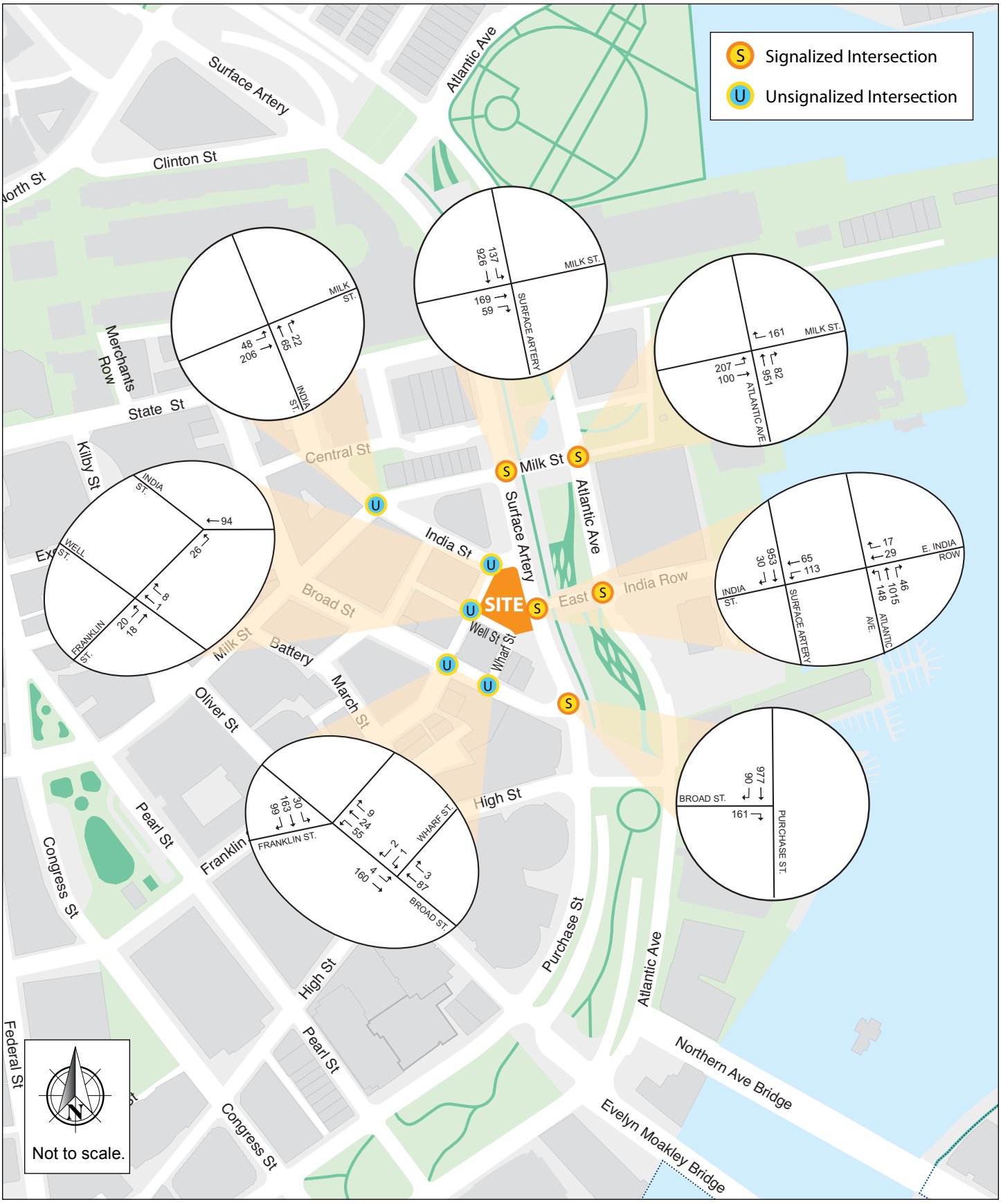
The 2019 No-Build conditions scenario analysis uses the same methodology as the 2014 Existing conditions scenario analysis. Table 2-7 and Table 2-8 present the 2019 No-Build conditions operations analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a worsening in LOS between the 2014 Existing conditions and the 2019 No-Build conditions. The detailed analysis sheets are provided in Appendix C.



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-10
No-Build Conditions (2019) Turning Movement Volumes, a.m. Peak Hour



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-11
No-Build Conditions (2019) Turning Movement Volumes, p.m. Peak Hour

Table 2-7 No-Build Conditions (2019), Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50% Queue Length (ft)	95% Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**23.6**	—	—	—
Milk EB thru | thru/right	C	23.2	0.17	26	51
Surface Artery SB left/thru | thru | thru	C	23.7	0.74	284	344
Atlantic Avenue/Milk Street	**D**	**45.6**	—	—	—
Milk EB left l left	C	26.2	0.22	22	m34
Milk EB thru	F	>80.0	0.75	112	m169
Milk WB right	A	0.2	0.05	0	0
Atlantic NB thru l thru/right	C	25.6	0.78	88	#310
Surface Artery/India Street	**A**	**8.4**	—	—	—
India WB left l left	D	39.1	0.34	36	64
India WB thru	D	41.1	0.34	42	81
Surface Artery SB thru l thru l thru/right	A	3.8	0.43	65	94
Atlantic Avenue/East India Row	**A**	**9.4**	—	—	—
India WB thru/right	C	20.8	0.19	20	41
Atlantic NB left/thru l thru/right	A	8.6	0.52	136	181
Purchase Street/Broad Street	**A**	**1.3**	—	—	—
Broad EB right	A	1.4	0.27	0	0
Purchase SB thru l thru l thru/right	A	1.3	0.46	27	31
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.06	—	0
Milk NB left/thru	B	10.6	0.21	—	20
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.06	—	0
Franklin NB left	A	9.3	0.06	—	5
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	9.1	0.02	—	2
Franklin NB left/thru	A	3.3	0.02	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.5	0.03	—	2
Broad WB left/thru/right	A	6.9	0.16	—	14
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	1.3	0.00	—	1
Broad WB thru/right	A	0.0	0.15	—	0
Wharf SB left/right	B	11.7	0.02	—	2

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates that LOS has worsened from Existing Conditions.

Table 2-8 No-Build Conditions (2019), Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50% Queue Length (ft)	95% Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**22.2**	—	—	—
Milk EB thru | thru/right	D	42.1	0.47	87	89
Surface Artery SB left/thru | thru | thru	B	16.6	0.53	170	210
Atlantic Avenue/Milk Street	**F**	**>80.0**	—	—	—
Milk EB left l left	F	>80.0	0.74	104	110
Milk EB thru	F	>80.0	0.54	76	127
Milk WB right	A	2.3	0.37	0	0
Atlantic NB thru l thru/right	C	33.2	0.91	221	#463
Surface Artery/India Street	**A**	**7.5**	—	—	—
India WB left l left	C	34.1	0.32	36	m55
India WB thru	D	37.7	0.42	49	70
Surface Artery SB thru l thru l thru/right	A	1.6	0.35	15	37
Atlantic Avenue/East India Row	**B**	**11.1**	—	—	—
India WB thru/right	C	22.0	0.17	18	46
Atlantic NB left/thru l thru/right	B	10.6	0.64	212	276
Purchase Street/Broad Street	**A**	**2.4**	—	—	—
Broad EB right	A	2.1	0.38	0	0
Purchase SB thru l thru l thru/right	A	2.5	0.37	1	75
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.08	—	0
Milk NB left/thru	B	13.0	0.43	—	54
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.08	—	0
Franklin NB left	A	9.7	0.04	—	3
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	6.7	0.02	—	0
Franklin NB left/thru	A	7.5	0.08	—	0
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.1	0.03	—	2
Broad WB left/thru/right	A	5.0	0.05	—	4
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	0.5	0.01	—	1
Broad WB thru/right	A	0.0	0.08	—	0
Wharf SB left/right	B	11.1	0.01	—	1

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.

As shown in Table 2-7, the signalized intersections will continue to operate at an overall LOS D or better during the a.m. peak hour under the 2019 No-Build conditions, with all movements at the unsignalized intersections continuing to operate at LOS B or better.

As shown in Table 2-8, the majority of the signalized intersections will continue to operate at an overall LOS D or better during the p.m. peak hour under the 2019 No-Build conditions. The intersection of Atlantic Avenue/Milk Street will continue to operate at an overall LOS F. All movements at the unsignalized intersections will continue to operate at LOS B or better.

2.3.2 Build Conditions

As previously summarized, the Project will consist of 44 residential condominium units and 4,000 sf of restaurant/retail space. No vehicular parking will be provided on the Project site. Secure storage for approximately 44 bicycles will also be provided on site. The 2019 Build conditions reflect a future scenario that adds anticipated Project-generated trips to the 2019 No-Build conditions traffic volumes.

2.3.2.1 Site Access and Circulation

As shown in the Site Access Plan in Figure 2-12, no parking will be provided at the Project site. Vehicular access to the site will be provided curbside along Well Street. There will be minimal vehicular activity destined to and from the Project site. The majority of vehicular activity will be for pick-up/drop-offs, move-in/move-out, service, and delivery vehicles.

In addition, the Proponent will reconstruct the segments of Wharf Street and Well Street between Broad Street and Franklin Street to be at-grade with the existing sidewalk. By bringing the roadway at-grade with the existing sidewalk, a shared space will be created to be used by pedestrians, bicycles, and vehicles. It will also allow easier two-way travel along Well Street, which is currently only wide enough to accommodate a single vehicle in one direction. It will also allow for easier unloading and loading of delivery vehicles and better access for emergency vehicles.

Pedestrian access to the residences will be provided from Well Street, with doors opening to the residential lobby of the building and to the stairwell providing access to the upper levels. Pedestrian access to the commercial space will be provided along Surface Artery and at the corner of the intersection of Surface Artery and India Street.

2.3.2.2 Trip Generation

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

55 India Street Boston, Massachusetts

Hacin + Associates Inc. [architecture + design]
112 Shawmut Avenue, Studio 5A, Boston, MA 02118

Figure 2-12

Site Access Plan

To estimate the number of trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*[1] were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well-served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

To estimate the unadjusted number of vehicular trips for the Project, the following ITE land use codes (LUCs) were used:

LUC 230 – Residential Condominium/Townhouse. The residential condominium/ townhouse land use is defined as an ownership unit with at least one other owned unit within the same building structure. Trip generation estimates are based on average vehicular rates per unit.

LUC 932 – High-Turnover (Sit-Down) Restaurant. The high-turnover (sit-down) restaurant land use is defined as a full-service eating establishment with a typical stay duration of approximately one hour. Trip generation estimates are based on average vehicular rates per 1,000 sf of gross floor area. Restaurant use rather than retail use was chosen to be conservative as it is a higher trip generator than retail use.

2.3.2.3 Mode Share

The BTD publishes vehicle, transit, and walking/bicycling mode split rates for different areas of Boston. The Project site is located within BTD's designated Area 2. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[2]. The BTD's travel mode share data for Area 2 are shown in Table 2-9.

Table 2-9 Travel Mode Shares

Land Use	Direction	Walk/ Bicycle Share	Transit Share	Auto Share	Local Vehicle Occupancy Rate
Daily					
Condominium	In	42%	30%	28%	1.13
	Out	42%	30%	28%	1.13
Restaurant	In	59%	20%	21%	2.20
	Out	59%	20%	21%	2.20

[1] *Trip Generation Manual*, 9th Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

[2] *Summary of Travel Trends: 2009 National Household Survey*; FHWA; Washington, D.C.; June 2011.

Table 2-9 Travel Mode Shares (Continued)

Land Use	Direction	Walk/ Bicycle Share	Transit Share	Auto Share	Local Vehicle Occupancy Rate
a.m. Peak Hour					
Condominium	In	7%	52%	41%	1.13
	Out	51%	18%	31%	1.13
Restaurant	In	14%	46%	40%	2.20
	Out	58%	10%	32%	2.20
p.m. Peak Hour					
Condominium	In	51%	18%	31%	1.13
	Out	7%	52%	41%	1.13
Restaurant	In	58%	10%	32%	2.20
	Out	14%	46%	40%	2.20

2.3.2.4 Vehicle Trip Generation

To develop the overall trip generation characteristics of the Project, the adjusted vehicular trips associated with the Project were estimated. The Project-generated new vehicle trips are summarized in Table 2-10, with the detailed trip generation information provided in Appendix C.

Table 2-10 Project Vehicle Trip Generation

Time Period	Direction	Condominium [1]	Restaurant [2]	Total
Daily	In	36	53	89
	Out	36	53	89
	Total	**72**	**106**	**178**
a.m. Peak Hour	In	1	10	11
	Out	5	6	11
	Total	**6**	**16**	**22**
p.m. Peak Hour	In	5	7	12
	Out	3	6	10
	Total	**8**	**13**	**22**

1 Based on ITE LUC 230 – Residential Condominium/Townhouse for 44 units.
2 Based on ITE LUC 932 – High-Turnover (Sit-Down) Restaurant for 4,000 sf.

As shown in Table 2-10, the Project is expected to generate approximately 178 new daily vehicle trips (89 entering and 89 exiting), with 22 new vehicle trips (11 entering and 11 exiting) during the a.m. peak hour and 22 new vehicle trips (12 entering and 10 exiting) during the p.m. peak hour.

2.3.2.5 Trip Distribution

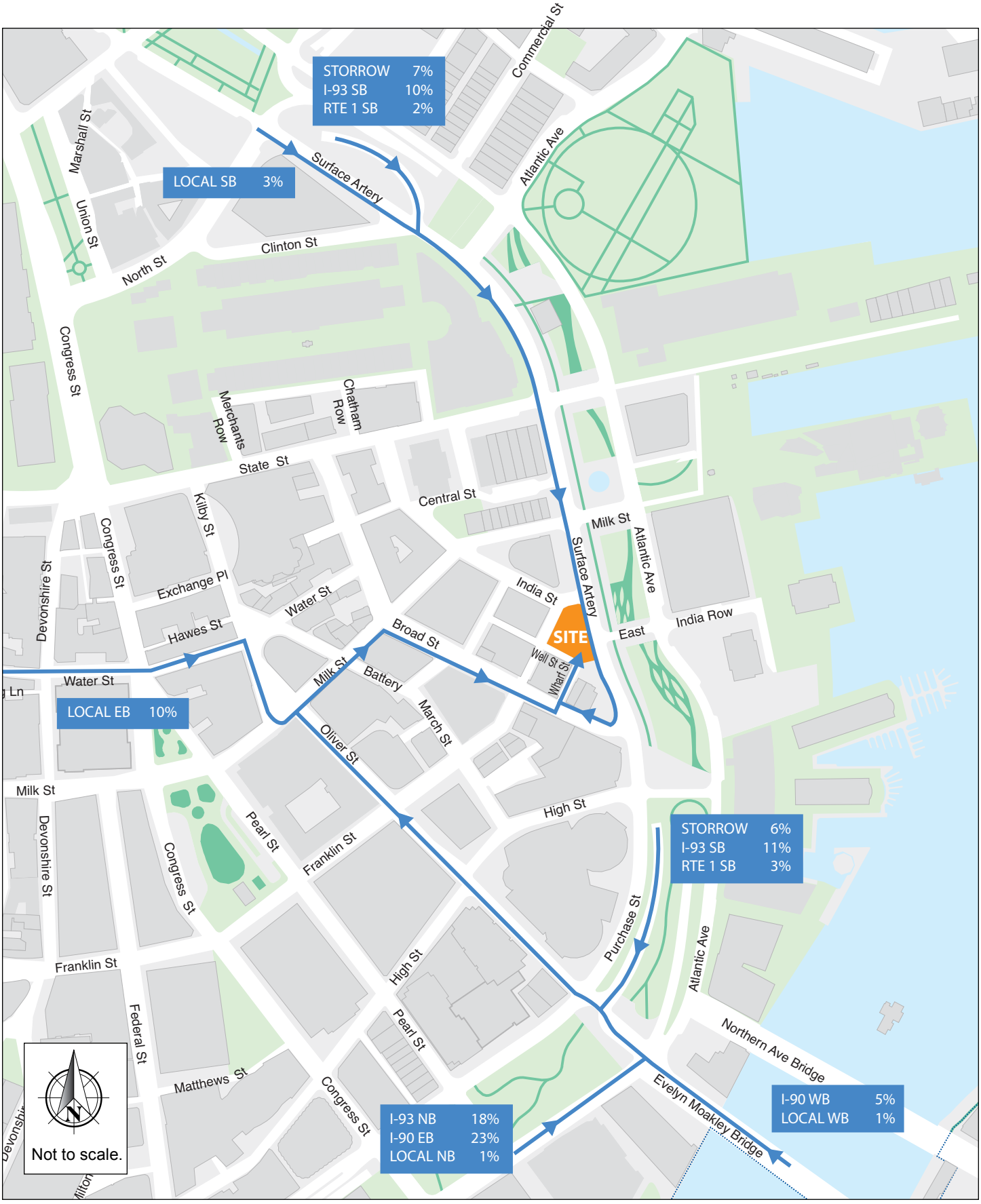
The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 2 and trip distribution patterns presented in a traffic study conducted for a nearby project[3]. The trip distribution patterns for the Project are illustrated in Figure 2-13 and Figure 2-14 for the entering and exiting trips, respectively. The trip distribution patterns assume that all vehicular related trips will travel to the Project site. The actual trip distribution patterns may vary slightly from what is shown in the figures based on the location of the garages that will be used by the residents of the Project.

The Project-generated vehicle trips were assigned to the study area roadway network based on the trip distribution patterns shown in Figures 2-13 and 2-14 and are shown in Figure 2-15 and Figure 2-16 for the a.m. and p.m. peak hours, respectively. The Project-generated trips were added to the 2019 No-Build conditions traffic volumes to develop the 2019 Build conditions peak hour traffic volume networks and are shown in Figure 2-17 and Figure 2-18 for the a.m. and p.m. peak hours, respectively.

2.3.2.6 Build Conditions Traffic Operations

The 2019 Build conditions scenario analyses use the same methodology as the 2014 Existing and 2019 No-Build conditions scenario analyses. The results of the 2019 Build condition traffic analysis at study area intersections are presented in Table 2-11 and Table 2-12 for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.

[3] *Harbor Garage Redevelopment – Project Notification Form*; Boston, Massachusetts; Howard/Stein-Hudson Associates; April 16, 2009.



55 India Street Boston, Massachusetts

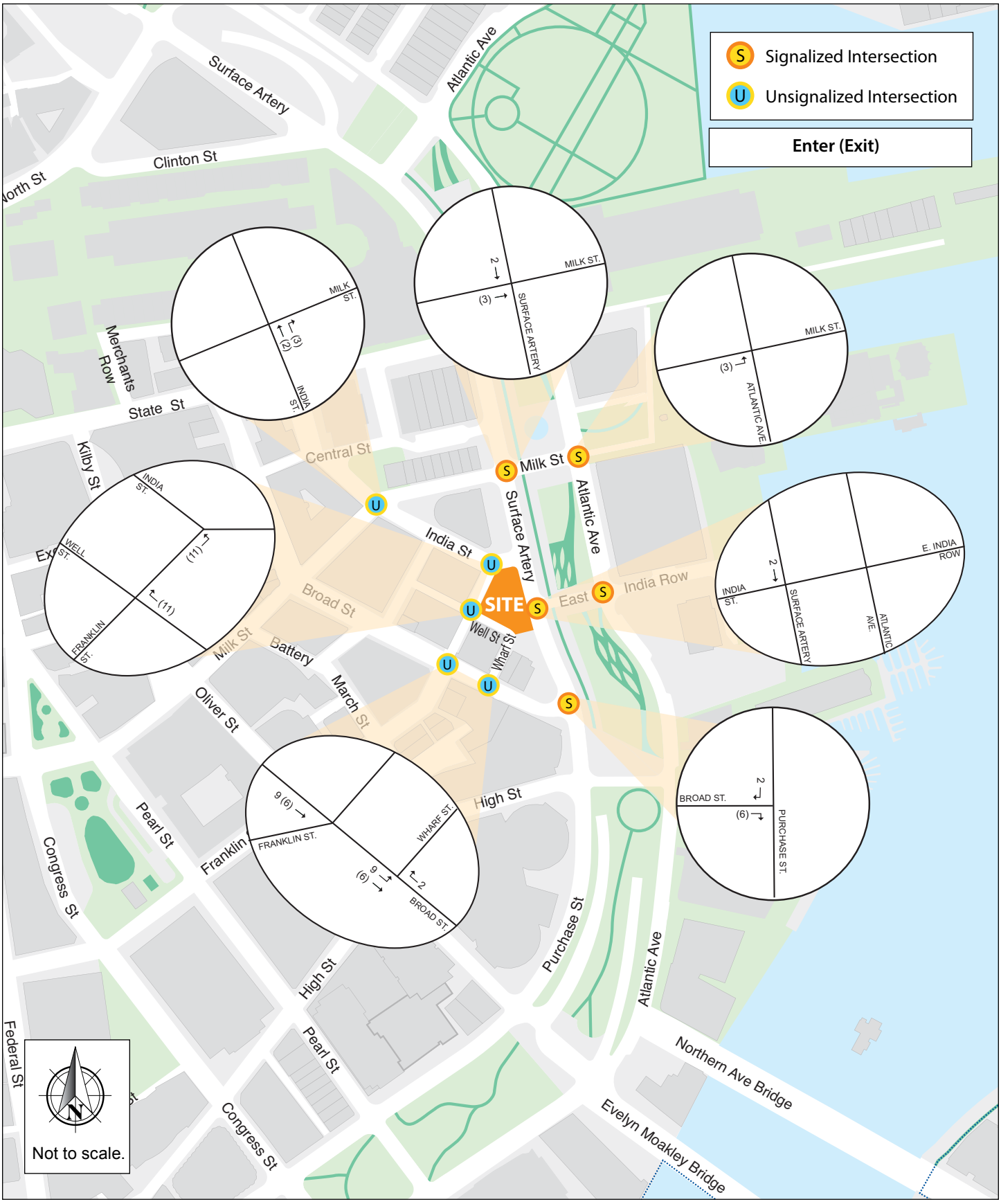
Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-13
Vehicle Trip Distribution: Entering

55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

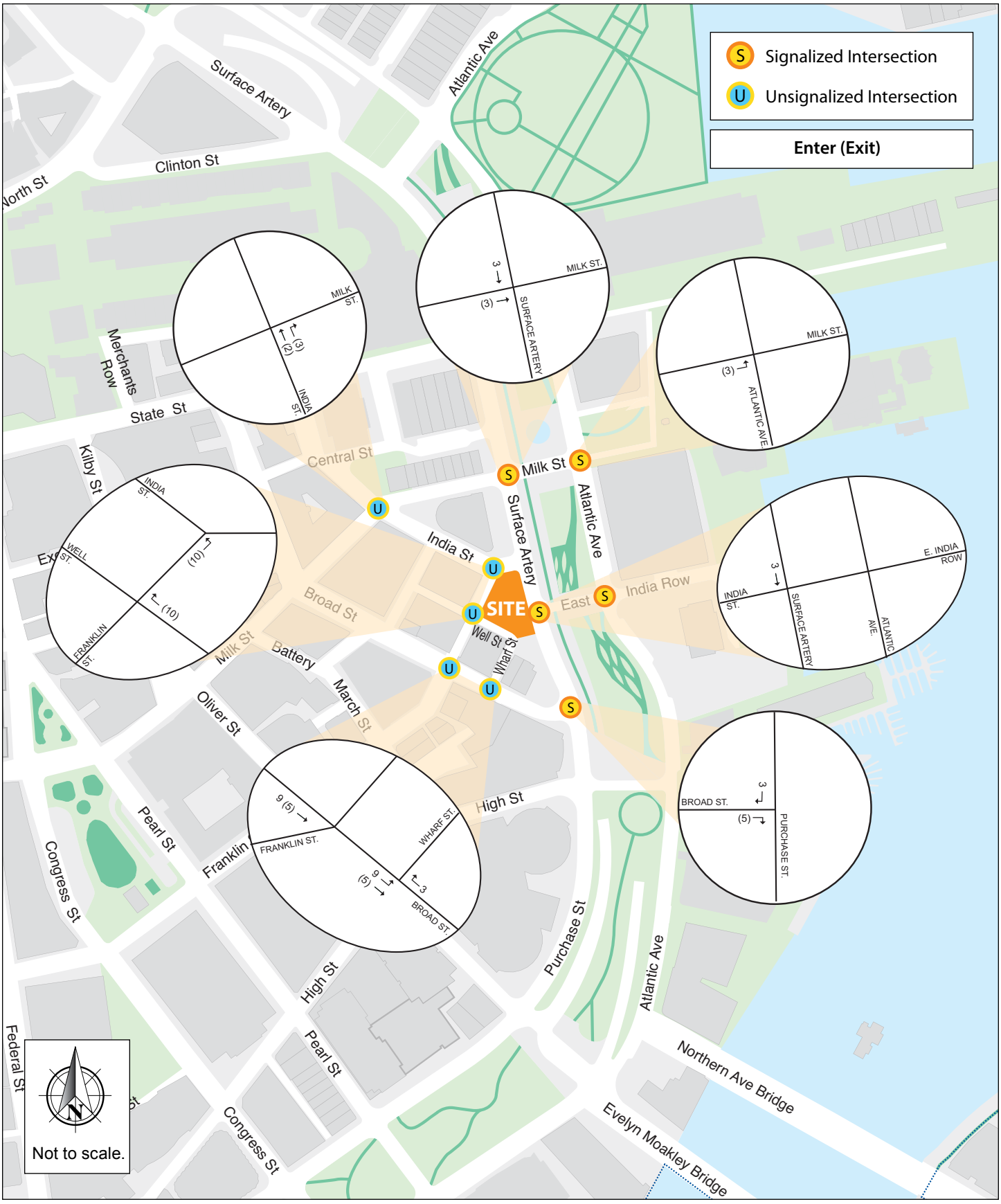
Figure 2-14
Vehicle Trip Distribution: Exiting



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

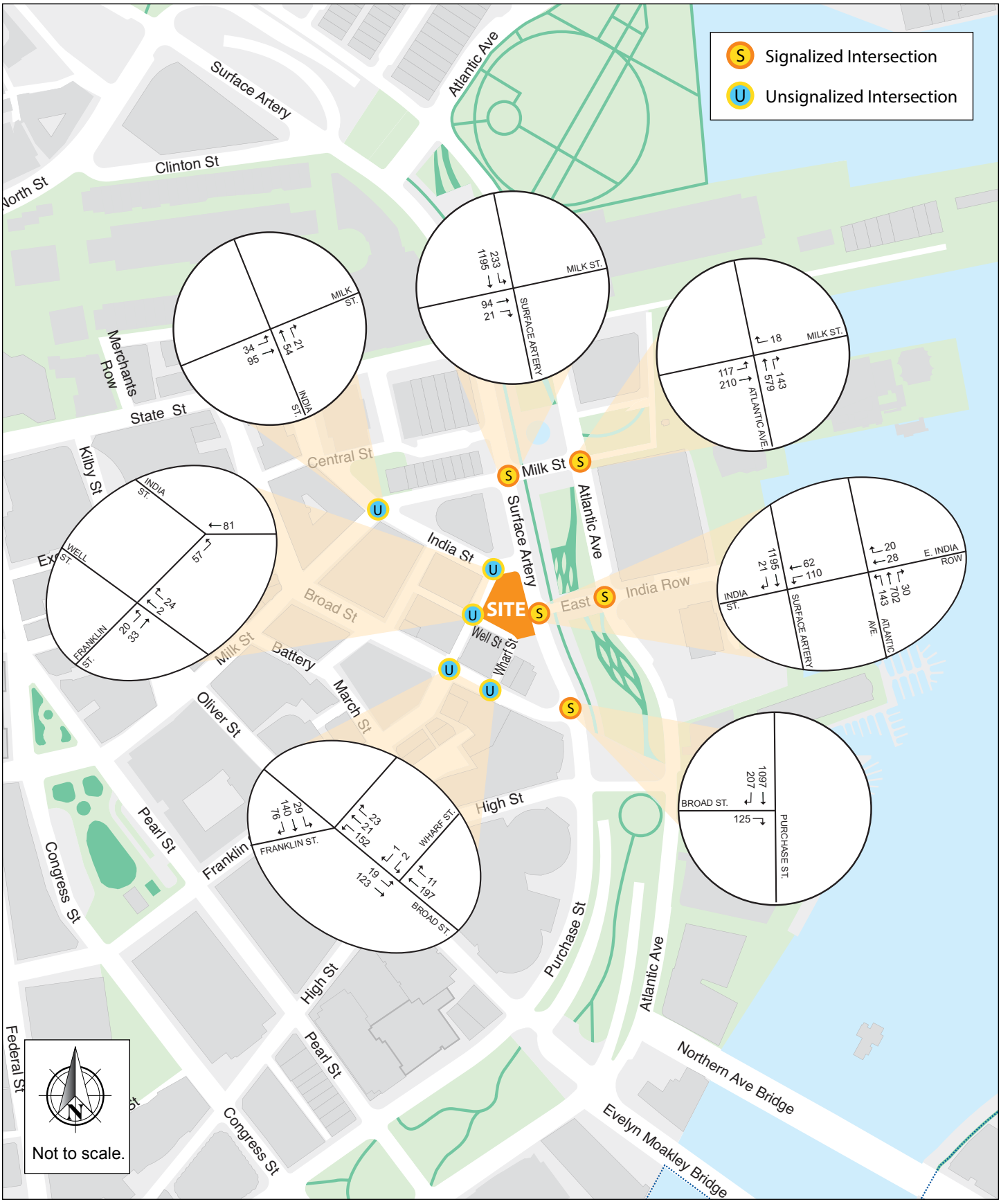
Figure 2-15
Project-generated Trips, a.m. Peak Hour



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

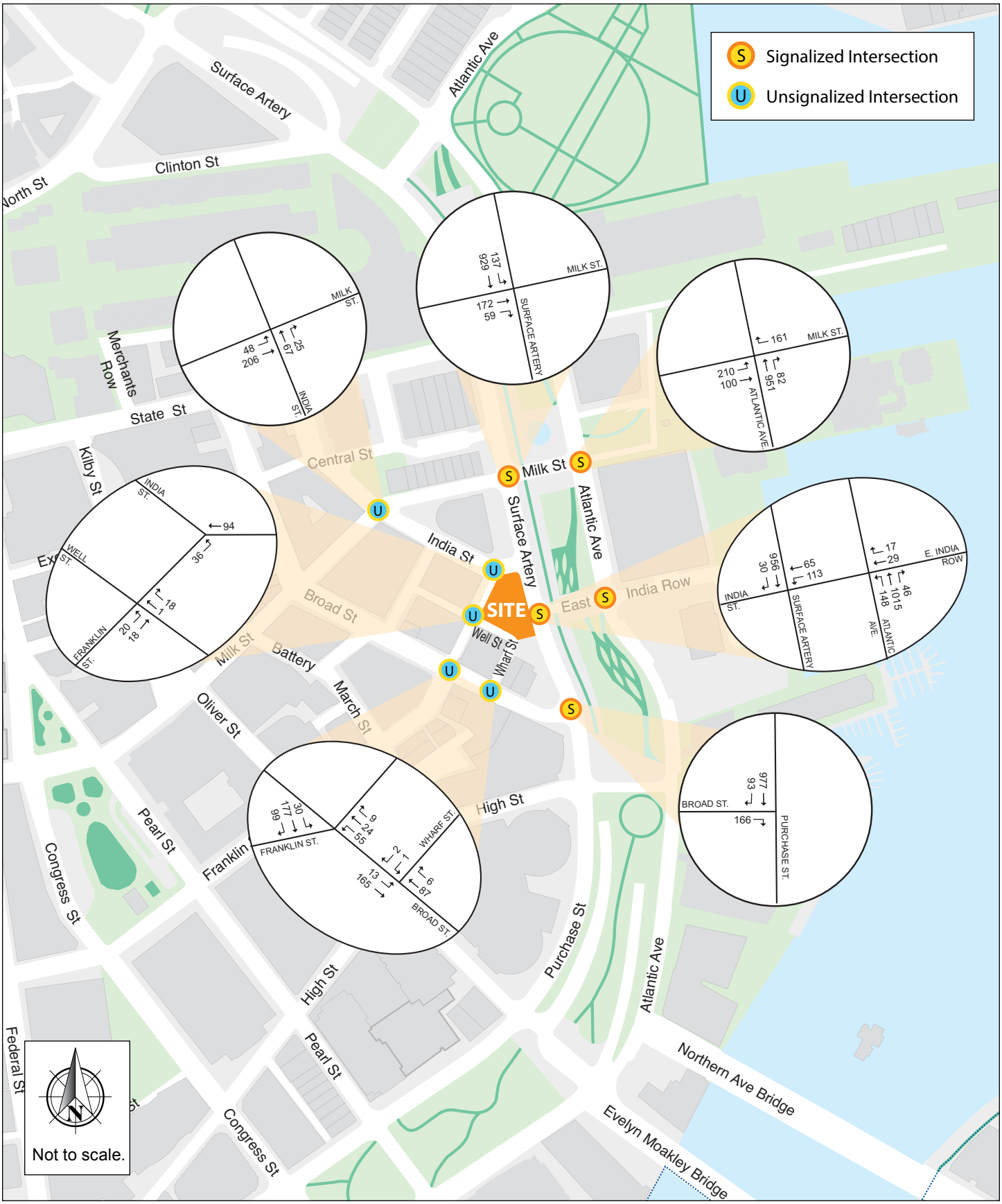
Figure 2-16
Project-generated Trips, p.m. Peak Hour



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-17
Build Conditions (2019) Turning Movement Volumes, a.m. Peak Hour



55 India Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING ®

Figure 2-18
Build Conditions (2019) Turning Movement Volumes, p.m. Peak Hour

Table 2-11 Build Conditions (2019), Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50% Queue Length (ft)	95% Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**23.7**	—	—	—
Milk EB thru | thru/right	C	23.4	0.17	27	52
Surface Artery SB left/thru | thru | thru	C	23.7	0.75	285	345
Atlantic Avenue/Milk Street	**D**	**45.6**	—	—	—
Milk EB left | left	C	26.4	0.23	22	m35
Milk EB thru	F	>80.0	0.75	112	m170
Milk WB right	A	0.2	0.05	0	0
Atlantic NB thru | thru/right	C	25.6	0.78	84	#310
Surface Artery/India Street	**A**	**8.4**	—	—	—
India WB left | left	D	39.1	0.34	36	64
India WB thru	D	41.1	0.34	42	81
Surface Artery SB thru | thru | thru/right	A	3.8	0.43	66	94
Atlantic Avenue/East India Row	**A**	**9.4**	—	—	—
India WB thru/right	C	20.8	0.19	20	41
Atlantic NB left/thru | thru/right	A	8.6	0.52	136	181
Purchase Street/Broad Street	**A**	**1.3**	—	—	—
Broad EB right	A	1.5	0.28	0	0
Purchase SB thru | thru | thru/right	A	1.3	0.46	27	31
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.06	—	0
Milk NB left/thru	B	10.7	0.22	—	20
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.06	—	0
Franklin NB left	A	9.4	0.08	—	6
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	8.9	0.04	—	3
Franklin NB left/thru	A	3.3	0.02	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.4	0.03	—	2
Broad WB left/thru/right	A	6.9	0.16	—	15
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	2.0	0.03	—	2
Broad WB thru/right	A	0.0	0.15	—	0
Wharf SB left/right	B	12.0	0.02	—	2

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.

Table 2-12 Build Conditions (2019), Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50% Queue Length (ft)	95% Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**22.7**	—	—	—
Milk EB thru | thru/right	D	43.8	0.48	89	91
Surface Artery SB left/thru | thru | thru	B	16.6	0.53	171	211
Atlantic Avenue/Milk Street	**F**	**>80.0**	—	—	—
Milk EB left | left	F	>80.0	0.76	105	111
Milk EB thru	F	>80.0	0.54	76	127
Milk WB right	A	2.3	0.37	0	0
Atlantic NB thru | thru/right	C	33.2	0.91	221	#463
Surface Artery/India Street	**A**	**7.5**	—	—	—
India WB left | left	C	34.1	0.32	36	m55
India WB thru	D	38.0	0.42	49	70
Surface Artery SB thru | thru | thru/right	A	1.6	0.35	16	38
Atlantic Avenue/East India Row	**B**	**11.1**	—	—	—
India WB thru/right	C	22.0	0.17	18	46
Atlantic NB left/thru | thru/right	B	10.6	0.64	212	276
Purchase Street/Broad Street	**A**	**2.4**	—	—	—
Broad EB right	A	2.2	0.39	0	0
Purchase SB thru | thru | thru/right	A	2.5	0.38	1	75
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.08	—	0
Milk NB left/thru	B	13.2	0.43	—	55
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.08	—	0
Franklin NB left	A	9.8	0.06	—	5
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	6.7	0.03	—	0
Franklin NB left/thru	A	7.6	0.08	—	0
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.1	0.03	—	2
Broad WB left/thru/right	A	5.0	0.05	—	4
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	1.4	0.03	—	2
Broad WB thru/right	A	0.0	0.09	—	0
Wharf SB left/right	B	11.5	0.01	—	1

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.

As shown in Table 2-11 and Table 2-12, the intersections will continue to operate at the same LOS as under the No-Build conditions during both the a.m. and p.m. peak hours. The Project will have minimal impact on the study area intersections.

2.3.2.7 Parking

The Project will not provide parking on site. The Proponent anticipates entering into an agreement with one or more parking garages in proximity to the site in order to accommodate the parking demand for the residential condominium units. The Proponent will reserve parking spaces at one or more nearby garages and allow the residents to rent or purchase them.

BTD has established parking space guidelines throughout the City to ensure that the proper parking capacity is provided with new developments. The Project site, however, cannot accommodate new parking due to the small building footprint. The recommended BTD parking ratio for residences in this area of Boston is 0.5 – 1.0 parking spaces per unit. However, parking ratios lower than 0.5 spaces per unit are common for residential developments in this area of Boston.

No additional parking will be provided for the commercial use on the Project site. Patrons of the restaurant or retail space that arrive by vehicle will use the nearby public lots or garages.

2.3.2.8 Public Transportation

Based on the transit mode shares presented earlier, the future transit trips associated with the Project were estimated and are summarized in Table 2-13.

Table 2-13 Project Transit Trips

Time Period	Direction	Condominium	Restaurant	Total
Daily	In	43	112	155
	Out	43	112	155
	Total	**86**	**224**	**310**
a.m. Peak Hour	In	2	24	26
	Out	3	4	7
	Total	**5**	**28**	**33**
p.m. Peak Hour	In	3	5	8
	Out	5	16	21
	Total	**8**	**21**	**29**

As shown in Table 2-13, the Project will generate an estimated 310 new transit trips on a daily basis. Approximately 33 new transit trips (26 alighting and 7 boarding) will occur during the a.m. peak hour and 29 new trips (8 alighting and 21 boarding) will occur during the p.m. peak hour.

The transit trips will be mostly dispersed between the Blue Line station at the Aquarium, the Orange Line/Blue Line Station at State Street, and the nearby MBTA bus routes. The additional transit trips will be accommodated by the existing public transportation facilities that serve the Project study area.

2.3.2.9 Pedestrians

Based on the walk mode shares presented earlier, the future walk trips were estimated and are summarized in Table 2-14.

Table 2-14 Project Pedestrian Trips

Time Period	Direction	Condominium	Restaurant	Total
Daily	In	61	330	391
	Out	61	330	391
	Total	**122**	**660**	**782**
a.m. Peak Hour	In	0	7	7
	Out	9	24	33
	Total	**9**	**31**	**40**
p.m. Peak Hour	In	9	29	38
	Out	1	5	6
	Total	**10**	**34**	**44**

Over the course of a day, the Project will generate an estimated 782 new pedestrian trips and an additional 310 new transit trips that will require a walk to or from the site. This results in an additional 1,092 new pedestrian trips per day. Approximately 40 new pedestrian trips will occur during the a.m. peak hour and 44 new pedestrian trips will occur during the p.m. peak hour in addition to the new transit trips that will also require a walk to or from the site. The Project site is located in proximity to the Rose Kennedy Greenway, which provides pedestrian access to the North End, the financial district, South Station, and Chinatown. The existing pedestrian facilities that serve the Project site will accommodate all additional pedestrian trips generated by the Project.

2.3.2.10 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for residents and employees and short-term bicycle racks for visitors. The Project will provide a total of approximately 44 covered and secure bicycle storage spaces on-site for residents and employees of the site.

All bicycle racks, signs, and parking areas will conform to BTD guidelines and will be located in safe, secure locations.

2.3.2.11 Build Conditions Loading and Service Activity

Loading and service operations will occur along the Well Street curbside. Vehicles will access the loading area via Wharf Street and Broad Street. All trash truck activity will also take place along Well Street.

A summary of anticipated loading/service activity by land use is presented in Table 2-15; the sources of the assumptions are presented below. Delivery trip estimates were based on data provided in the Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area report[4]. Deliveries to the Project site will be mostly limited to SU-36 trucks and smaller delivery vehicles.

Restaurant. Restaurants depend on frequent food deliveries from smaller trucks. Based on the CTPS report, restaurant uses generate approximately 0.70 light truck trips per 1,000 sf of floor area and 0.07 medium/heavy truck trips per 1,000 sf of gross floor area. Again, restaurant use was considered to be more conservative as it generates more deliveries than retail space.

Residential. Residential units primarily generate delivery trips related to small packages and prepared food. Based on the CTPS report, residential uses generate approximately 0.01 light truck trips per 1,000 sf of gross floor area and 0.001 medium/heavy truck trips per 1,000 sf of gross floor area.

Table 2-15 Delivery Activity by Land Use

Land Use	Number of Deliveries			General Delivery Times
	SU-30 or smaller	*Larger than SU-30*	*Total*	
Restaurant	3	0	3	10% before 7:00 a.m. 70% between 7:00 a.m. and 1:00 p.m. 20% after 1:00 p.m.
Residential	1	0	1	
Total	**4**	**0**	**4**	

The Project is expected to generate approximately four deliveries per day. It is anticipated that the majority of these deliveries will occur between 7:00 a.m. and 1:00 p.m. These numbers do not include trash truck trips. The low number of anticipated deliveries will have minimal impact on the vehicular operations along Well Street and Wharf Street, which are both very low-volume roadways.

[4] *Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area*; Central Transportation Planning Staff; September 1993.

2.4 Transportation Mitigation Measures

While the traffic impacts associated with the new trips are minimal, the Proponent will continue to work with the City of Boston to create a Project that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use.

In addition, the Proponent will reconstruct the segments of Wharf Street and Well Street between Broad Street and Franklin Street to be at-grade with the existing sidewalk. By bringing the roadway at-grade with the existing sidewalk, a shared space will be created to be used by pedestrians, bicycles, and vehicles. It will also allow easier two-way travel along Well Street, which is currently only wide enough to accommodate a single vehicle in one direction. It will also allow for easier unloading and loading of delivery vehicles and improved access for emergency vehicles. Wharf Street and Well Street are both low volume and low speed roadways, allowing for a shared spaced that will be more efficient at accommodating all modes of transportation.

The Proponent is responsible for preparation of the TAPA, a formal legal agreement between the Proponent and the BTD. The TAPA formalizes the findings of the transportation study, mitigation commitments, elements of access and physical design, travel demand management measures, and any other responsibilities that are agreed to by both the Proponent and the BTD. Because the TAPA must incorporate the results of the technical analysis, it must be executed after these other processes have been completed. The Proponent will work closely with BTD to determine the level of transportation mitigation that will be necessary to accommodate the Project. Any transportation improvements to be undertaken as part of this Project will be defined and documented in the TAPA.

The Proponent will also produce a Construction Management Plan (CMP) for review and approval by BTD. The CMP will detail the schedule, staging, parking, delivery, and other associated impacts of the construction of the Project.

2.5 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and Project related traffic impacts. TDM will be facilitated by the nature of the Project (which does not generate significant peak hour trips) and its proximity to numerous public transit alternatives.

On-site management will keep a supply of transit information (schedules, maps, and fare information) to be made available to the residents and patrons of the site. The Proponent will work with the City to develop a TDM program appropriate to the Project and consistent with its level of impact.

The Proponent is prepared to take advantage of good transit access in marketing the site to future residents by working with them to implement the following demand management measures to encourage the use of non-vehicular modes of travel.

The TDM measures for the Project may include but are not limited to the following:

- **Orientation Packets**: The Proponent will provide orientation packets to new residents and tenants containing information on available transportation choices, including transit routes/schedules and nearby Zipcar locations. On-site management will work with residents and tenants as they move in to help facilitate transportation for new arrivals.

- **Bicycle Accommodation**: The Proponent will provide bicycle storage in secure, sheltered areas for residents. Secure bicycle storage will also be made available to employees to encourage bicycling as an alternative mode of transportation.

- **Transportation Coordinator**: The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries and will work with residents as they move in to raise awareness of public transportation, bicycling, and walking opportunities.

- **Project Web Site**: The web site will include transportation-related information for residents, workers, and visitors.

2.6 Evaluation of Short-term Construction Impacts

Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in the CMP to be filed with BTD in accordance with the City's transportation maintenance plan requirements. The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary to accommodate a safe and secure work zone.

To minimize transportation impacts during the construction period, the following measures will be considered for the CMP:

- Construction workers will be encouraged to use public transportation and/or carpool;

- A subsidy for MBTA passes will be considered for full-time employees; and

- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the site each day.

The CMP will be executed with the City prior to commencement of construction and will document all committed measures.

EXPANDED PROJECT NOTIFICATION FORM

110 Broad Street

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
New Boston Ventures, LLC
540 Tremont Street, Suite 8
Boston, MA 02116

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Finegold Alexander + Associates, Inc
Goulston & Storrs
Howard/Stein Hudson Associates, Inc.
Vanasse Hangen Brustlin, Inc
McPhail Associates, LLC
RWDI
Exclusive Real Estate

January 2, 2015

Epsilon
ASSOCIATES INC.

EXPANDED PROJECT NOTIFICATION FORM

110 Broad Street

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
New Boston Ventures, LLC
540 Tremont Street, Suite 8
Boston, MA 02116

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Finegold Alexander + Associates, Inc
Goulston & Storrs
Howard/Stein Hudson Associates, Inc.
Vanasse Hangen Brustlin, Inc
McPhail Associates, LLC
RWDI
Exclusive Real Estate

January 2, 2015

Epsilon
ASSOCIATES INC.

Chapter 2.0

Transportation Component

2.0 TRANSPORTATION

2.1 Introduction

Howard/Stein-Hudson Associates, Inc. (HSH) has conducted an evaluation of the transportation impacts of the Project. The transportation study adheres to the Boston Transportation Department (BTD) *Transportation Access Plan Guidelines* and Article 80 development review process. Included in the study is an evaluation of existing conditions, future conditions with and without the Project, projected parking demand, loading operations, transit services, and pedestrian activity. In summary, the Project will have minimal impact on the study area intersections, the public transportation services, and the pedestrian facilities in the vicinity of the Project site. The Project's proximity to numerous transit options and its location in a pedestrian and bike friendly neighborhood minimizes traffic impacts associated with the proposed uses.

2.1.1 Project Description

The Project site is located at 102 to 112 Broad Street in downtown Boston, as shown in Figure 2-1. The site is bounded by Wharf Street to the northwest, Broad Street to the southwest, and John F. Fitzgerald Surface Artery/Rose Kennedy Greenway to the east. The Project site currently contains four residential units, the Times Irish Pub and Restaurant, the Littlest Bar, and a small amount of office space.

The Project will replace the existing uses with 52 new residential condominium units and approximately 3,500 square foot (sf) of commercial/café space. For purposes of the transportation analysis, restaurant uses were considered as they are a more intense use than retail space and therefore provides a more conservative analysis. A total of approximately 35 parking spaces will be located in an underground automated parking structure. Access to the automated parking structure will be provided at the corner of Wharf Street and Well Street. In addition, the Proponent is exploring the feasibility of reconstructing Wharf Street and Well Street between Broad Street and Franklin Street to be at-grade with the existing sidewalk and the new crosswalk that was recently installed at the intersection with Broad Street. It is anticipated that should these improvements be accepted by the Boston Transportation Department and other City agencies, these improvements will be implemented and coordinated with the BRA Board-approved residential project at 55 India Street, located immediately north of the Project site along Well Street. Bringing Wharf Street and Well Street to the same elevation as the sidewalk will create a shared space to be used by pedestrians, bicycles, and vehicles. It will also allow for easier delivery and parking maneuvers for both the proposed Project and the project at 55 India Street. The design is consistent with the segment of Well Street between Franklin Street and Custom House Road.

2.1.2 Study Area

The study area is generally bounded by Milk Street to the north, India Street and Franklin Street to the west, Broad Street to the south, and Atlantic Avenue to the east. It includes the following 10 intersections, also shown on Figure 2-1:

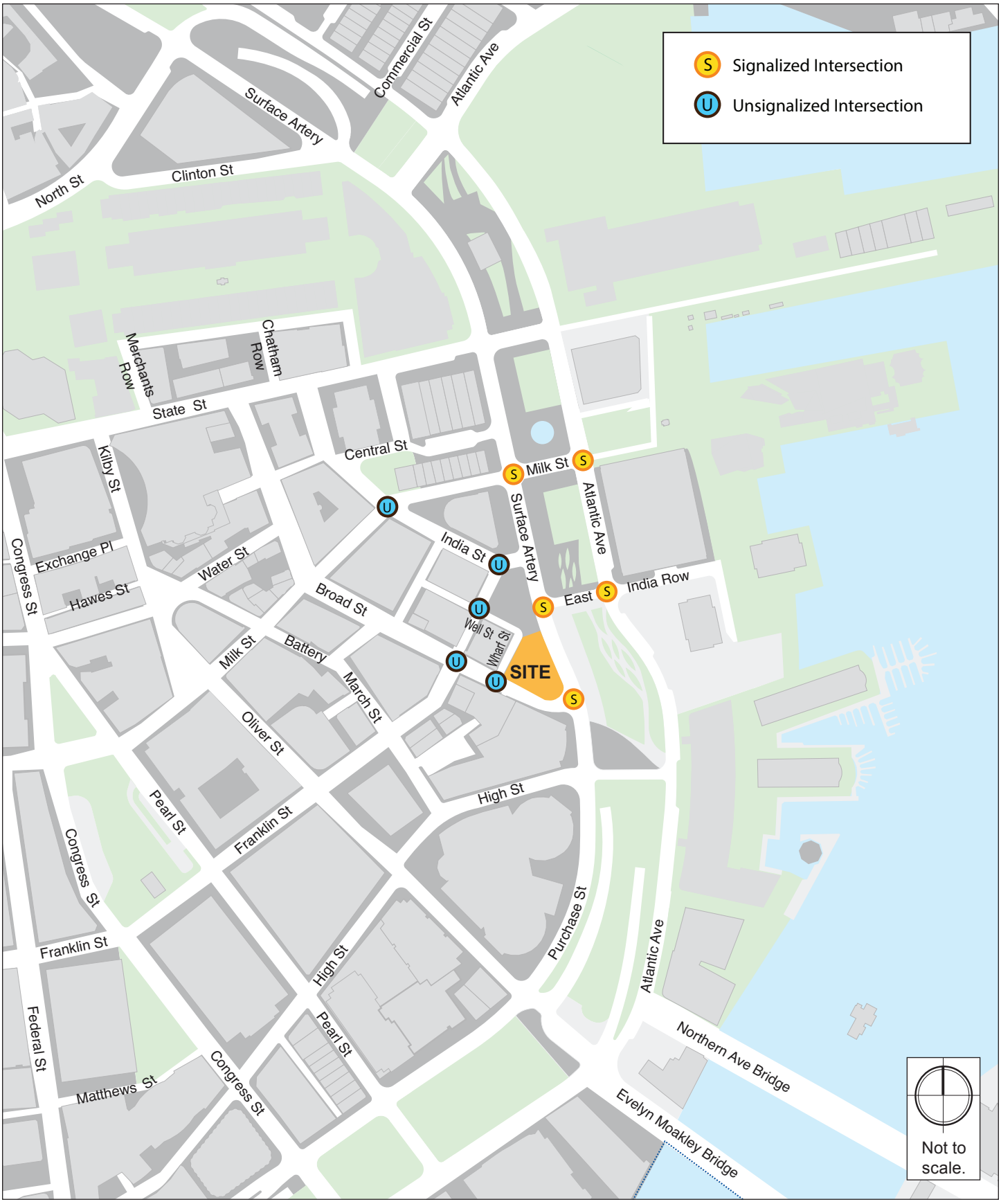
- Surface Artery/Milk Street;
- Atlantic Avenue/Milk Street;
- Surface Artery/India Street;
- Atlantic Avenue/East India Row;
- Purchase Street/Broad Street;
- Milk Street/India Street;
- India Street/Franklin Street;
- Franklin Street/Well Street;
- Franklin Street/Broad Street; and
- Broad Street/Wharf Street.

2.1.3 Study Methodology

This transportation study and supporting analyses were conducted in accordance with BTD guidelines and are described below.

The existing conditions analysis includes an inventory of the existing transportation conditions such as traffic characteristics, parking and curb usage, transit, pedestrian circulation, bicycle facilities, loading, and site conditions. Existing counts for vehicles, bicycles, and pedestrians were collected on July, 18th 2013 at the study area intersections. The traffic counts form the basis for the transportation analysis conducted as part of this evaluation.

The future transportation conditions analysis evaluates potential transportation impacts associated with the Project. Long-term impacts are evaluated for the year 2019, based on a five-year horizon from the filing of this study. Expected roadway, parking, transit, pedestrian, bicycle accommodation, and loading capacities and deficiencies are identified. This section includes the following scenarios:



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-1
Study Area Intersections

- The 2019 No-Build conditions scenario includes both general background traffic growth and traffic growth associated with specific developments and transportation improvements that are planned in the vicinity of the Project site.

- The 2019 Build conditions scenario includes Project-generated traffic volume estimates added to the traffic volumes developed as part of the 2019 No-Build conditions scenario.

The final part of the transportation study identifies measures to mitigate Project-related impacts and to address any traffic, pedestrian, bicycle, transit, safety, or construction related issues that are necessary to accommodate the Project.

An evaluation of short-term traffic impacts associated with construction activities is also provided.

2.2 Existing Conditions

2.2.1 Existing Roadway Conditions

The study area includes the following roadways, which are categorized according to the Massachusetts Department of Transportation (MassDOT) Office of Transportation Planning functional classifications:

Broad Street

Broad Street, classified as an urban collector, is located to the south side of the Project site. Broad Street runs in a northwest-southeast direction between State Street to the north and Purchase Street to the east. Broad Street is currently being reconstructed in accordance with the Boston Complete Streets design guidelines. Sidewalks are provided along both sides of the roadway.

Purchase Street (Surface Artery Southbound)

Purchase Street, classified as an urban principal arterial, is located to the east side of the Project site. Purchase Street runs in a north-south direction between New Chardon Street to the north and the South Station Connector to the south. Purchase Street runs adjacent to the westerly side of the Greenway. The roadway is named John F. Fitzgerald Surface Artery north of Broad Street and Purchase Street south of Broad Street. Surface Artery/Purchase Street is one-way in the southbound direction and generally consists of three travel lanes and an exclusive bicycle lane. Sidewalks are provided along both sides of the roadway.

Wharf Street

Wharf Street, classified as a local roadway, in located to the west of the Project site. Wharf Street runs in a north-south direction between Well Street and Broad Street. Wharf Street accommodates two-way travel and has sidewalks along both sides of the roadway.

Well Street

Well Street, classified as a local roadway, is located immediately west of the Project site. Well Street runs in an east-west direction between Custom House Road to the west and Wharf Street to the east. Well Street Accommodates two-way travel, however Well Street is only wide enough to allow passage of a single vehicle in either direction. Sidewalks are provided along both sides of Well Street.

India Street

India Street, classified as an urban collector, is located north of the Project site. India Street runs in a northwest-southeast direction between State Street to the north and Surface Artery/Rose Kennedy Greenway to the southeast. India Street is one-way in the northwestbound direction and consists of a single travel lane with sidewalks provided along both sides of the roadway.

Franklin Street

Franklin Street, classified as an urban collector, is located west of the Project site. Franklin Street runs in a northeast-southwest direction between India Street to the north and Washington Street to the west. Franklin Street is one-way in the southbound direction south of Broad Street and one-way in the northbound direction north of Broad Street. Sidewalks are provided along both sides of the roadway.

Atlantic Avenue

Atlantic Avenue, classified as an urban principal arterial, is located east of the Project site. Atlantic Avneue runs in a north-south direction between Kneeland Street to the south and New Chardon Street to the north. Atlantic Avenue is one-way in the northbound direction and generally consists of two to three travel lanes and an exclusive bicycle lane. Sidewalks are provided along both sides of the roadway.

Milk Street

Milk Street, classified as an urban collector, is located north of the Project site. Milk Street runs in an east-west direction between Washington Street to the west and Central Wharf to the east. Milk Street is one-way in the eastbound direction east of Devonshire Street and two-way west of Devonshire Street. Sidewalks are provided along both sides of the roadway.

2.2.2 Existing Intersection Conditions

Existing conditions at each of the study area intersections are described below.

Surface Artery/Milk Street

Surface Artery/Milk Street is a four-legged, signalized intersection under BTD jurisdiction. Milk Street is one-way eastbound and consists of a through lane and a shared through/right-turn lane. Surface Artery is one-way southbound and consists of a shared left-turn/through lane, two through lanes, and a five-foot wide bicycle lane. Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Atlantic Avenue/Milk Street

Atlantic Avenue/Milk Street is a four-legged, signalized intersection under BTD jurisdiction. Milk Street is one-way eastbound west of the intersection and consists of two exclusive left-turn lanes and a through lane. Milk Street westbound consists of a single exclusive right-turn lane. Atlantic Avenue is one-way northbound and consists of a shared left-turn/through lane, a through lane, and a five-foot wide bicycle lane. Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Surface Artery/India Street

Surface Artery/India Street is a four-legged, signalized intersection under BTD jurisdiction. India Street is one-way westbound and consists of two exclusive left-turn lanes and a through lane. Surface Artery is one-way southbound and consists of two through lanes, a shared through/right-turn lane, and a five-foot wide bicycle lane. Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Atlantic Avenue/East India Row

Atlantic Avenue/East India Row is a four-legged, signalized intersection under BTD jurisdiction. East India Row westbound consists of a shared through/right-turn lane. East India Row is one-way westbound to the west of the intersection. Atlantic Avenue is one-way northbound and consists of a shared left-turn/through lane, a shared through/right-turn lane, and a five-foot wide bicycle lane. Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Purchase Street/Broad Street

Purchase Street/Broad Street is a three-legged, signalized intersection under BTD jurisdiction. Broad Street eastbound consists of an exclusive right-turn lane. Purchase Street is one-way southbound and consists of two through lanes, a shared through/right-turn lane, and a five-foot wide bicycle lane. Crosswalks with handicap-accessible ramps and pedestrian signal equipment are provided across all legs of the intersection.

Milk Street/India Street

Milk Street/India Street is a four-legged, unsignalized intersection under BTD jurisdiction. India Street is one-way westbound and consists of a single travel lane. Milk Street is one-way northbound and consists of a single travel lane under STOP-sign control. Crosswalks with handicap-accessible ramps are provided across all legs of the intersection.

India Street/Franklin Street

Milk Street/India Street is a three-legged, unsignalized intersection under BTD jurisdiction. India Street is one-way westbound and consists of a single travel lane. Franklin Street is one-way northbound and consists of a single travel lane under STOP-sign control. Crosswalks are not provided at the intersection.

Franklin Street/Well Street

Franklin Street/Well Street is a three-legged, unsignalized intersection under BTD jurisdiction. Well Street consists of a shared through/right-turn lane that accommodates two-way travel. Due to the limited width of Well Street, two vehicles cannot pass each other in opposite directions of travel. Franklin Street is one-way northbound and consists of a shared left-turn/ through/right-turn lane. Traffic control and crosswalks are not provided at the intersection.

Franklin Street/Broad Street

Franklin Street/Broad Street is a four-legged, unsignalized intersection under BTD jurisdiction. Broad Street eastbound and westbound both consist of single travel lanes separated by a double-yellow centerline. Franklin Street is one-way southbound south of the intersection and one-way northbound north of the intersection. Crosswalks with handicap-accessible ramps are provided across both Franklin Street legs and the Broad Street eastbound leg of the intersection.

Broad Street/Wharf Street

Broad Street/Wharf Street is a three-legged, unsignalized intersection under BTD jurisdiction. Broad Street eastbound and westbound both consist of single travel lanes separated by a double-yellow centerline. Wharf Street southbound operates under STOP

control and consists of a shared left-turn/right-turn lane that accommodates two-way travel. Due to the width of Wharf Street, two vehicles cannot pass each other in opposite directions of travel. Crosswalks are not provided at the intersection.

2.2.3 Existing Traffic Conditions

Traffic movement data was collected at the study area intersections on July, 18th 2013. Manual turning movement counts (TMCs) and vehicle classification counts were conducted during the weekday a.m. and p.m. peak periods (7:00-9:00 a.m. and 4:00-6:00 p.m., respectively) for the following six intersections:

- Surface Artery/Milk Street;
- Atlantic Avenue/Milk Street;
- Surface Artery/India Street;
- Atlantic Avenue/East India Row;
- Purchase Street/Broad Street; and
- Milk Street/India Street.

The vehicle classification counts included car, truck, pedestrian, and bicycle movements. Based on the TMCs, the peak hours of vehicular traffic throughout the study area are 8:00-9:00 a.m. and 4:15-5:15 p.m.

Additional vehicular, pedestrian, and bicycle counts were conducted during the a.m. and p.m. peak hours (8:00-9:00 a.m. and 4:15-5:15 p.m., respectively) at the remaining four study area intersections:

- India Street/Franklin Street;
- Franklin Street/Well Street;
- Franklin Street/Broad Street; and
- Broad Street/Wharf Street.

The detailed traffic counts are provided in Appendix C.

Seasonal Adjustment

In order to account for seasonal variation in traffic volumes throughout the year, data provided by the Massachusetts Department of Transportation (MassDOT) were reviewed. Typically, nearby continuous traffic count stations are used to determine monthly

fluctuations in traffic volumes. However, monthly traffic counts for the nearby continuous count stations located on Interstate 93 were not available at the time of this study. Therefore, the most recent (2011) MassDOT Weekday Seasonal Factors were used to determine the need for seasonal adjustments to the July 2013 TMCs. The 2011 seasonal adjustment factor for July for roadways similar to the study area is 0.92, which indicates that average month traffic volumes are approximately 92 percent of typical July traffic volumes. To provide a conservative analysis, the July counts were not adjusted downward to reflect average month conditions. The 2013 Existing weekday a.m. and p.m. peak hour traffic volumes are shown in Figure 2-2 and Figure 2-3, respectively.

2.2.4 Existing Traffic Operations

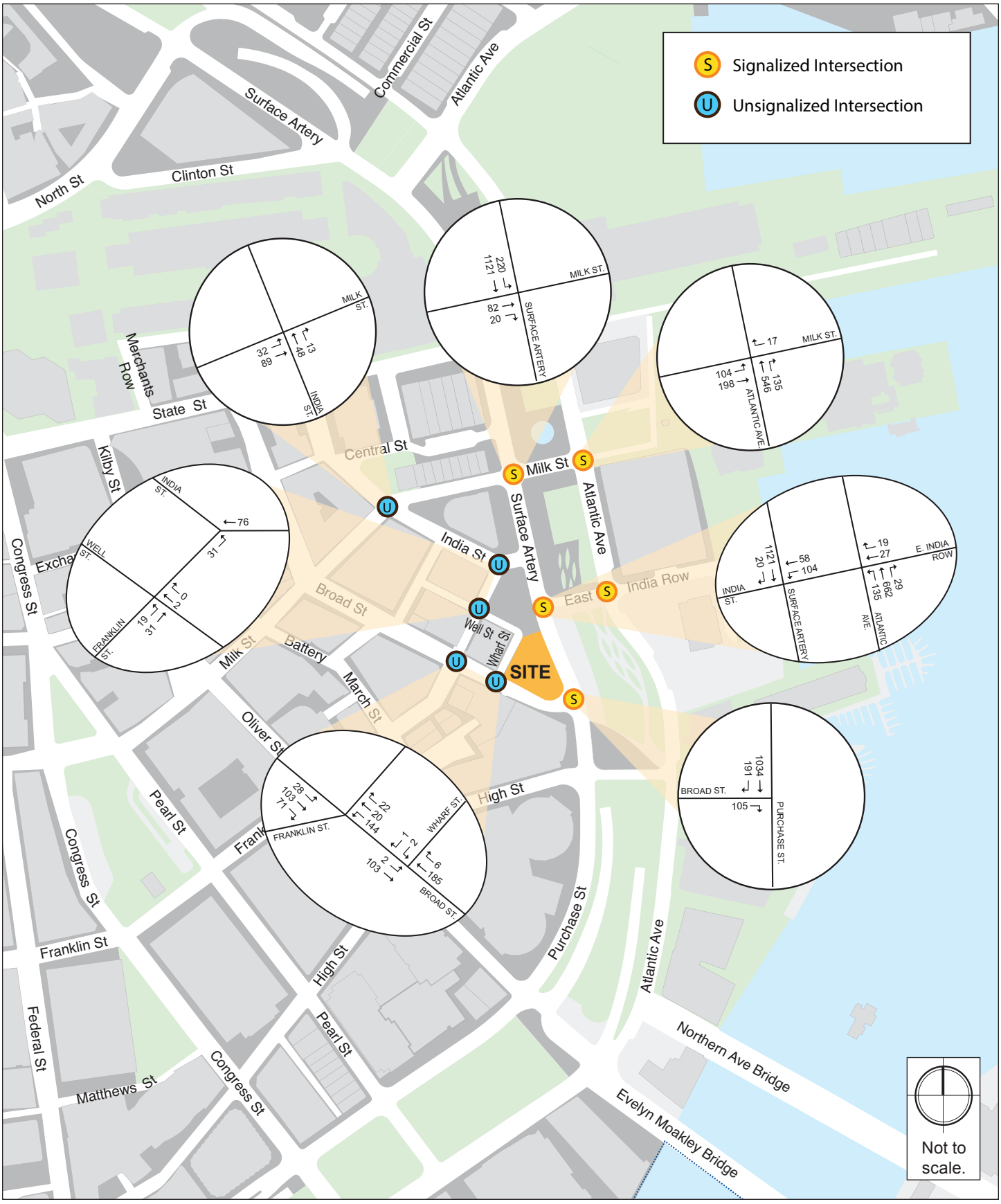
The criterion for evaluating traffic operations is level of service (LOS), which is determined by assessing average delay experienced by vehicles at intersections and along intersection approaches. Trafficware's Synchro (version 6) software package was used to calculate average delay and associated LOS at the study area intersections. This software is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM). Field observations were performed by HSH to collect intersection geometry such as number of turning lanes, lane length, and lane width that were then incorporated into the operations analysis.

LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 2-1 displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition.

Table 2-1 Level of Service Criteria

Level of Service	Average Stopped Delay (sec./veh.)	
	Signalized Intersections	Unsignalized Intersections
A	≤10	≤10
B	>10 and ≤20	>10 and ≤15
C	>20 and ≤35	>15 and ≤25
D	>35 and ≤55	>25 and ≤35
E	>55 and ≤80	>35 and ≤50
F	>80	>50
Source: 2000 Highway Capacity Manual, Transportation Research Board.		

In addition to delay and LOS, the operational capacity and vehicular queues are calculated and used to further quantify traffic operations at intersections. The following describes these other calculated measures.

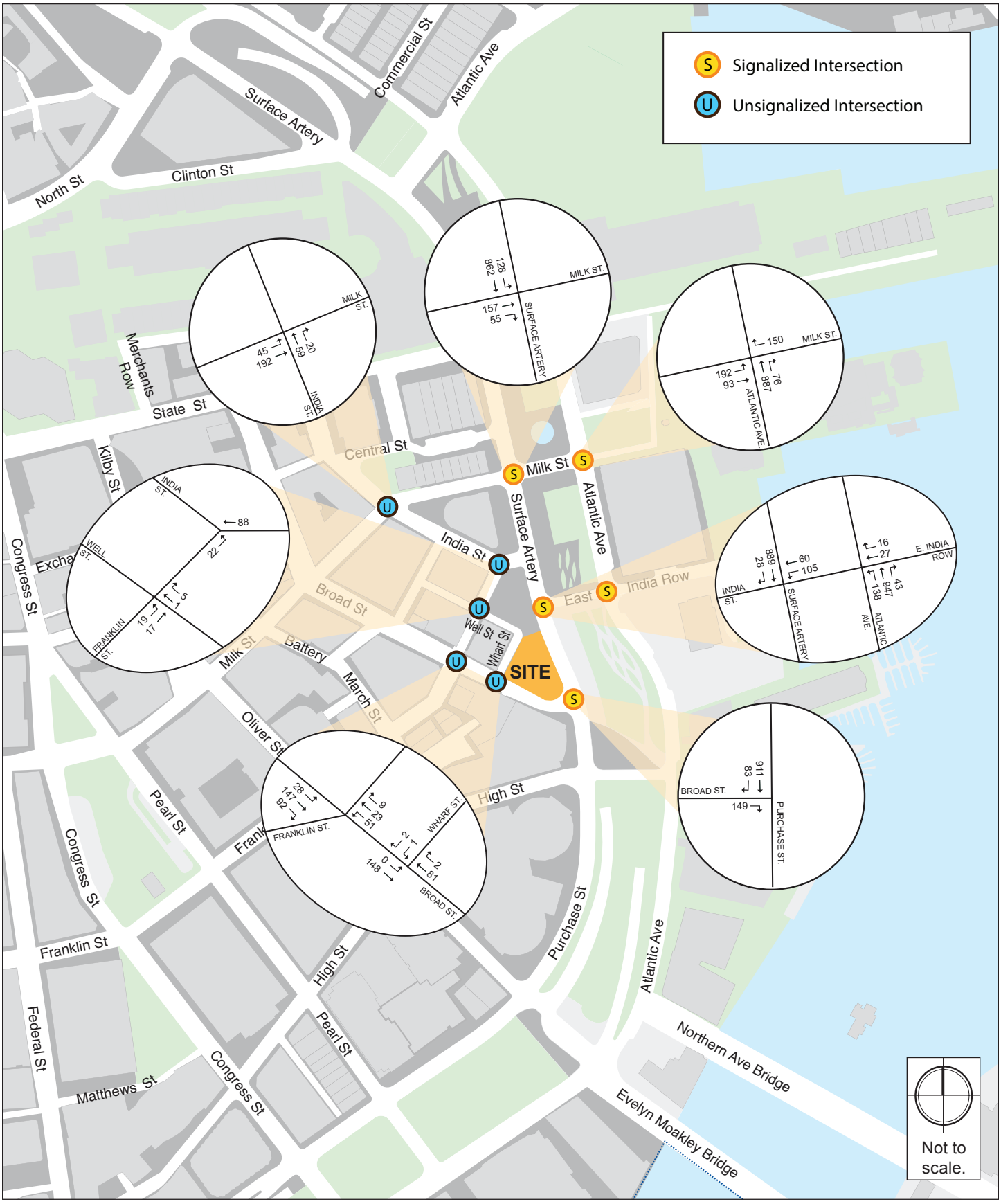


110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-2

Existing Conditions (2013) Turning Movement Volumes, a.m. Peak Hour (8:00-9:00 a.m.)



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-3

Existing Conditions (2013) Turning Movement Volumes, p.m. Peak Hour (4:15-5:15 p.m.)

The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has adequate capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity.

The 50th percentile queue length, measured in feet, represents the maximum queue length during a cycle of the traffic signal with typical (or median) entering traffic volumes.

The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five percent of the time and would typically not occur during off-peak hours. Since volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" scenario. Queues at the intersection are generally below the 95th percentile queue throughout the course of the peak hour. It is also unlikely that the 95th percentile queues for each approach to the intersection will occur simultaneously.

Table 2-2 and Table 2-3 presents the 2013 Existing conditions operational analysis for the study area intersection during the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.

Table 2-2 Existing Conditions (2013), Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**22.4**	—	—	—
Milk EB thru | thru/right	C	22.8	0.15	23	47
Surface Artery SB left/thru | thru |	C	22.3	0.70	258	314
Atlantic Avenue/Milk Street	**D**	**35.5**	—	—	—
Milk EB left l left	C	24.2	0.21	19	m29
Milk EB thru	F	>80.0	0.74	100	150
Milk WB right	A	0.2	0.05	0	0
Atlantic NB thru l thru/right	C	23.0	0.72	78	#176
Surface Artery/India Street	**A**	**8.3**	—	—	—
India WB left l left	D	39.3	0.32	34	61
India WB thru	D	41.1	0.32	40	77
Surface Artery SB thru l thru l	A	3.7	0.40	66	91
Atlantic Avenue/East India Row	**A**	**9.1**	—	—	—
East India Row WB thru/right	C	20.9	0.18	19	40
Atlantic NB left/thru l thru/right	A	8.3	0.49	125	165

Table 2-2 Existing Conditions (2013), Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized Intersections					
Purchase Street/Broad Street	**A**	**1.2**	—	—	—
Broad EB right	A	1.1	0.23	0	0
Purchase SB thru l thru l thru/right	A	1.2	0.43	26	30
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.05	—	0
Milk NB left/thru	B	10.4	0.20	—	18
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.05	—	0
Franklin NB left	A	9.2	0.04	—	3
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	9.9	0.01	—	1
Franklin NB left/thru	A	3.3	0.02	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.6	0.03	—	2
Broad WB left/thru/right	A	6.7	0.15	—	13
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	0.3	0.00	—	0
Broad WB thru/right	A	0.0	0.14	—	0
Wharf SB left/right	B	11.1	0.02	—	2

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates LOS E or LOS F.

Table 2-3 Existing Conditions (2013), Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**20.8**	—	—	—
Milk EB thru | thru/right	D	37.7	0.44	80	83
Surface Artery SB left/thru | thru |	B	16.0	0.49	154	191
Atlantic Avenue/Milk Street	**E**	**79.9**	—	—	—
Milk EB left l left	F	>80.0	0.69	95	104
Milk EB thru	F	>80.0	0.50	70	120
Milk WB right	A	2.0	0.34	0	0
Atlantic NB thru l thru/right	C	26.0	0.85	157	#291

Table 2-3 Existing Conditions (2013), Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (ft)	95th Percentile Queue Length (ft)
Signalized Intersections					
Surface Artery/India Street	**A**	**7.4**	—	—	—
India WB left l left	C	33.9	0.30	34	53
India WB thru	D	37.4	0.39	47	66
Surface Artery SB thru l thru l	A	1.5	0.32	14	35
Atlantic Avenue/East India Row	**B**	**10.3**	—	—	—
East India Row WB thru/right	C	21.7	0.16	17	44
Atlantic NB left/thru l thru/right	A	9.8	0.60	188	244
Purchase Street/Broad Street	**A**	**2.3**	—	—	—
Broad EB right	A	1.8	0.34	0	0
Purchase SB thru l thru l thru/right	A	2.3	0.35	1	70
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.07	—	0
Milk NB left/thru	B	12.5	0.39	—	47
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.07	—	0
Franklin NB left	A	9.6	0.03	—	3
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	9.4	0.01	—	1
Franklin NB left/thru	A	4.9	0.03	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.1	0.03	—	2
Broad WB left/thru/right	A	4.9	0.05	—	4
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	0.0	0.00	—	0
Broad WB thru/right	A	0.0	0.07	—	0
Wharf SB left/right	B	10.8	0.01	—	1

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
Grey shading indicates LOS E or LOS F.

As shown in Table 2-2, during the a.m. peak hour, the signalized intersections operate at LOS D or better overall. All movements at the unsignalized intersections operate at LOS B or better during the a.m. peak hour.

As shown in Table 2-3, during the p.m. peak hour, the majority of the signalized intersections operate at LOS D or better. The intersection of Atlantic Avenue/Milk Street operates at LOS E during the p.m. peak hour. All movements at the unsignalized intersections operate at LOS B or better during the a.m. peak hour.

Based on volume to capacity ratios, the study area intersections were shown to have adequate capacity to accommodate the existing vehicular demand during both the a.m. and p.m. peak hours.

2.2.5 Existing Parking and Curb Usage

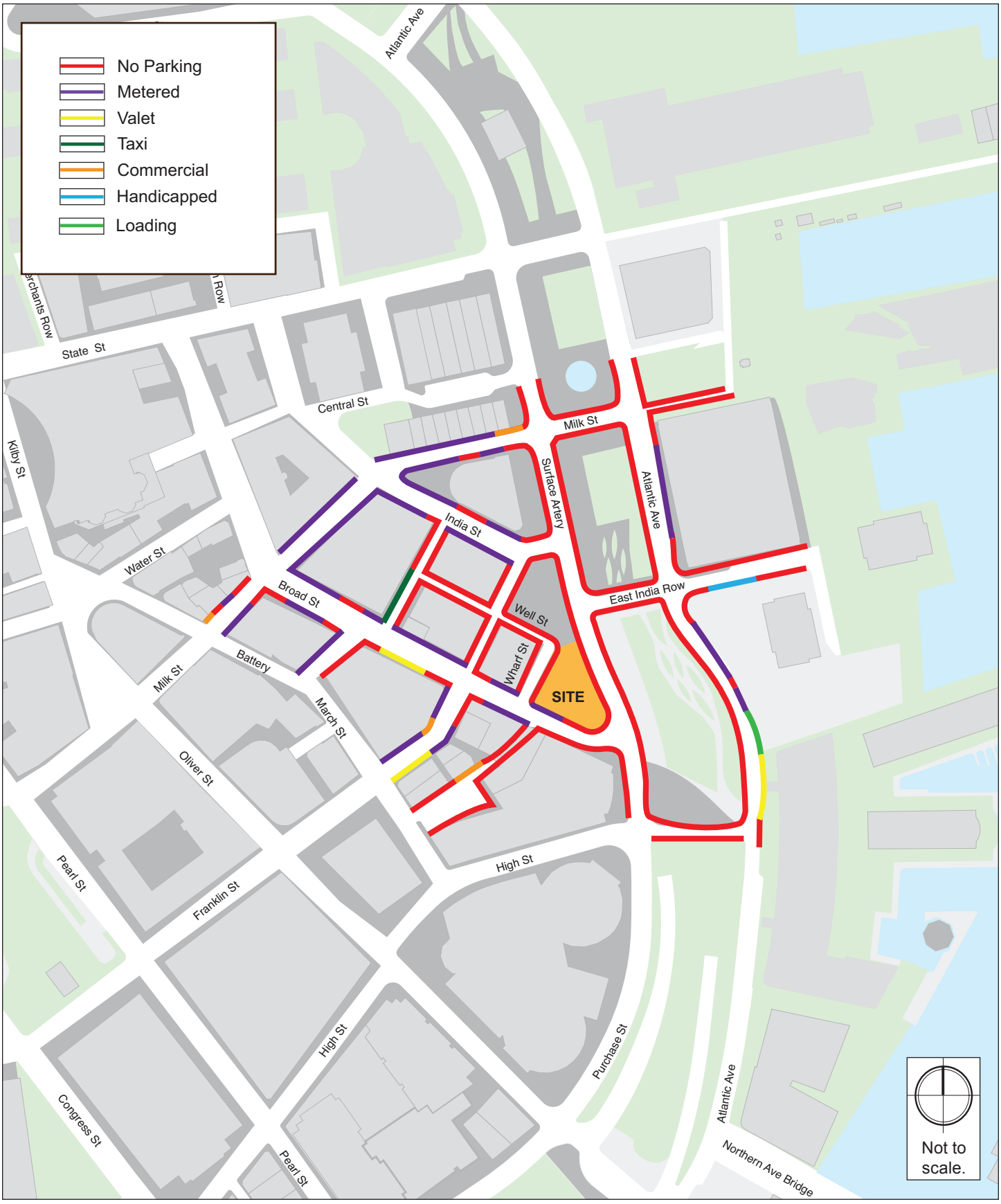
On-street parking regulations in the study area consist of a mixture of no parking, commercial parking, metered parking, loading zones, cabstands, and handicapped-designated spaces. A significant number of metered parking spaces lie within the immediate area of the site, mostly on Broad Street, Franklin Street, India Street, Milk Street and Atlantic Avenue. Parking is prohibited on Wharf Street, Well Street, Franklin Street between Broad Street and India Street, and Surface Artery/Purchase Street within the study area. The on-street parking regulations are shown in Figure 2-4.

Approximately 6,830 off-street parking spaces are located in lots and garages within a quarter-mile radius of the Project: 141 lot spaces and 7,007 garage spaces. Of these off-street spaces, 2,543 are in private facilities and 4,464 are open to the public. These parking facilities and associated capacities are identified in Figure 2-5 and Table 2-4 and Table 2-5, respectively, for lots and garages.

Table 2-4 Off-Street Parking Lots within a Quarter-Mile of the Site

Map #	Address	Parking Lot Facility	Private Capacity	Public Capacity
1	53–59 India Street [1]	53–59 India Street	0	14
2	51 India Street [1]	51 India Street	10	0
3	Wendell Street	Wendell Street Lot	15	0
4	47–49 Broad Street	Broad & Water Street Lot	0	21
5	15–17 Northern Avenue	James Hook & Co. Lot	20	0
6	49–51 Chatham Street	Chatham Street Lot A	0	31
7	57 Chatham Street	Chatham Street Lot B	0	30
Lots—Subtotal			**45**	**96**

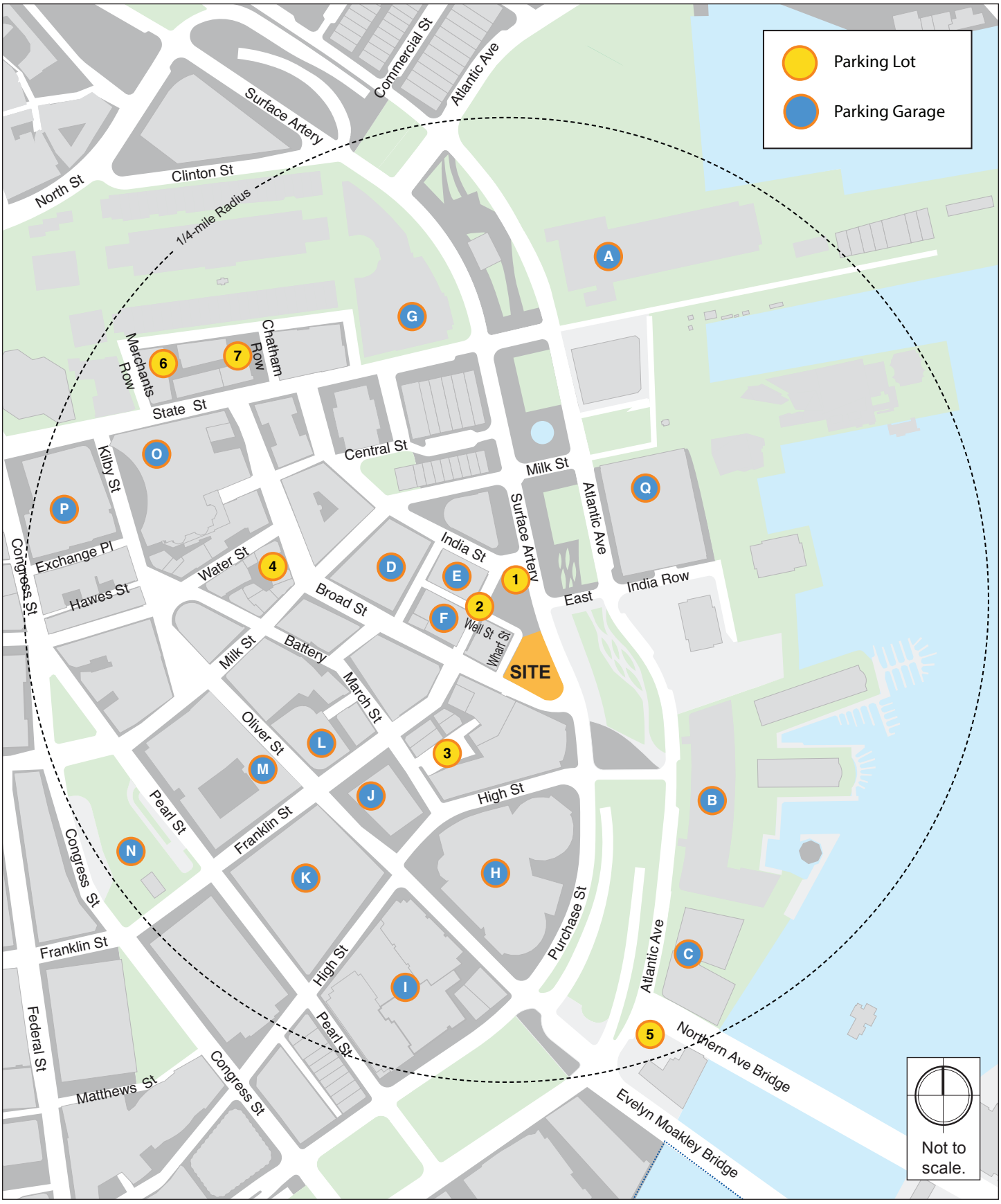
1 Will be eliminated with the construction of the proposed project at 55 India Street.



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-4
On-street Parking in the Study Area



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-5
Off-street Parking in the Study Area

Table 2-5 Off-Street Parking Garages within a Quarter-Mile of the Site

Map #	Address	Parking Garage Facility	Private Capacity	Public Capacity
A	New Atlantic Ave. @ State St.	Long Wharf Hotel	190	0
B	10–30 Rowes Wharf	Rowes Wharf Garage	420	280
C	470 Atlantic Avenue	470 Atlantic Avenue	119	0
D	20 Custom House Street	20 Custom House Street Garage	62	0
E	21 Custom House Street	21 Custom House Street Garage	42	0
F	80 Broad Street	Folio	88	30
G	200 State Street	Marketplace Center Garage	0	120
H	High Street	International Place	0	827
I	125 High Street	125 High St Garage	700	150
J	265 Franklin Street	Paine Webber Building	128	0
K	225 Franklin Street	State Street Bank Building	0	200
L	260 Franklin Street	Franklin Street Garage	83	0
M	1 Post Office Square	One Post Office Sq. Garage	318	82
N	Post Office Square	New Post Office Sq. Garage	0	900
O	75 State Street	75 State Street Garage	0	700
P	53 State Street	Exchange Place	93	0
Q	70 East India Row	Aquarium Garage	300	1,175
Garage Subtotal			**2,543**	**4,464**
Quarter-mile Radius Lots + Garages			**2,588**	**4,560**
Quarter-mile Radius Total Capacity			**7,148**	

Source: Boston Air Pollution Control Commission.

2.2.6 Existing Public Transportation

The Project site is well served by public transportation. The MBTA public transportation services are shown in Figure 2-6 and summarized in Table 2-6.

Within a quarter-mile of the Project site are the MBTA Aquarium and State Street stations, which provide access to both the Orange Line and the Blue Line. MBTA Bus Route 4, Route 92, and Route 93 also operate near the Project site, with stops located about one-third mile west of the site near the intersection of State Street and Congress Street.

110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-6
Public Transportation in the Study Area

Also in proximity to the site are three MBTA commuter ferries: the Hingham ferry, running between Rowes Wharf and Hingham; the Charlestown Navy Yard ferry, running between Long Wharf (Central) and the Charlestown Navy Yard; and the Hingham/Hull/Logan ferry, running between Long Wharf and Hingham, Hull, and Logan Airport. South Station, which provides connections to the MBTA Red Line, South Side commuter rail service, and AMTRAK service is slightly farther from the site but is within easy walking distance – approximately one half mile away - along the Greenway.

Table 2-6 MBTA Transit Service in the Study Area

Transit Service	Description	Peak-hour Headway (in minutes) [1]
Rapid Transit Routes		
Blue Line	Bowdoin – Wonderland	5
Orange Line	Forest Hills – Oak Grove	6
Local Bus Routes		
4	North Station-World Trade Center via Federal Courthouse and South	~12
92	Assembly Square Mall – Downtown	~15
93	Sullivan Square Station – Downtown	~7
Commuter Ferry Routes		
	Hingham Shipyard to Rowes Wharf	~15-30
	Charlestown Navy Yard to Long Wharf (Central)	~20-35
	Hingham/Hull/Logan to Long Wharf	~15

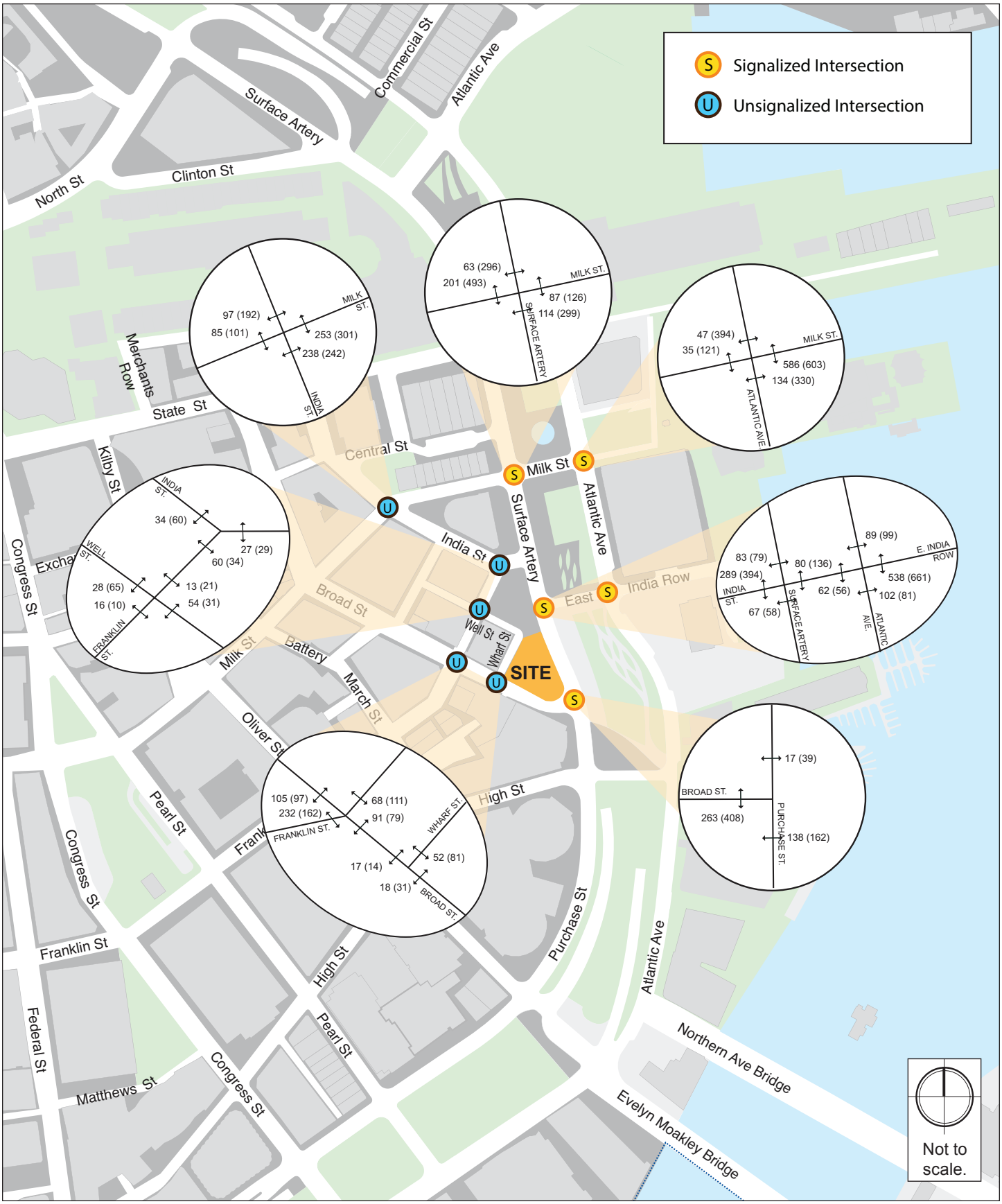
1 Headway is the scheduled time between trains or buses, as applicable. Source: MBTA.com.

2.2.7 Existing Pedestrian Conditions

The Project site is conveniently located adjacent to the Rose Kennedy Greenway, which provides approximately 1.5 miles of biking, walking, and jogging paths between South Station and the North End.

Currently, sidewalks in the study area are generally in good condition and supply more than adequate capacity. In addition, Broad Street was recently reconstructed as a part of Boston's Crossroads Initiative. The Broad Street design consists of a wider, tree-lined pedestrian area, connecting the Greenway to State Street, Government Center, and the Faneuil Hall marketplace. The design will improvethe street for multi-modal transportation including improved accessibility and bicycle accommodations as well as new bicycle storage racks.

Pedestrian counts were conducted concurrent with the vehicular Turning Movement Counts and are presented in Figure 2-7 for the a.m. and p.m. peak hours. As shown, pedestrian volumes are heaviest along the roadways adjacent to the Greenway.



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-7

Existing Conditions (2013) Pedestrian Volumes, a.m. and p.m. Peak Hours

2.2.8 Existing Bicycle Facilities

In recent years, bicycle use has increased dramatically throughout the City of Boston. The Project is located adjacent to the Greenway, which follows Atlantic Avenue, Surface Artery, and Purchase Street between Chinatown and the North End. Bicycle lanes are provided on Atlantic Avenue in the northbound direction and Surface Artery/Purchase Street in the southbound direction along the Greenway. Sharrows are provided along Milk Street and a faded bicycle lane is provided along Franklin Street in the southbound direction, south of Broad Street. The following roadways within the study area are designated bicycle routes on the City of Boston's "Bike Routes of Boston" map:

- Atlantic Avenue is designated as an intermediate route suitable for riders with some on-road experience. Atlantic Avenue has an exclusive bicycle lane.

- Milk Street is designated as an intermediate route suitable for riders with some on-road experience.

Hubway is a bicycle sharing system in the Boston area, which was launched in 2011 and consists of over 140 stations and 1,300 bicycles. There are three Hubway stations in close proximity to the Project site:

- Aquarium Station – Located at the intersection of Atlantic Avenue and State Street, this Hubway station has an overall capacity of 19 bicycles.

- Post Office Square – Located at the intersection of Milk Street and Pearl Street, this Hubway station has an overall capacity of 19 bicycles.

- Rowes Wharf – Located at Rowes Wharf along Atlantic Avenue, this Hubway station has an overall capacity of 15 bicycles.

- Milk Street at India Street – Located along Milk Street, this Hubway station has an overall capacity of 19 bicycles.

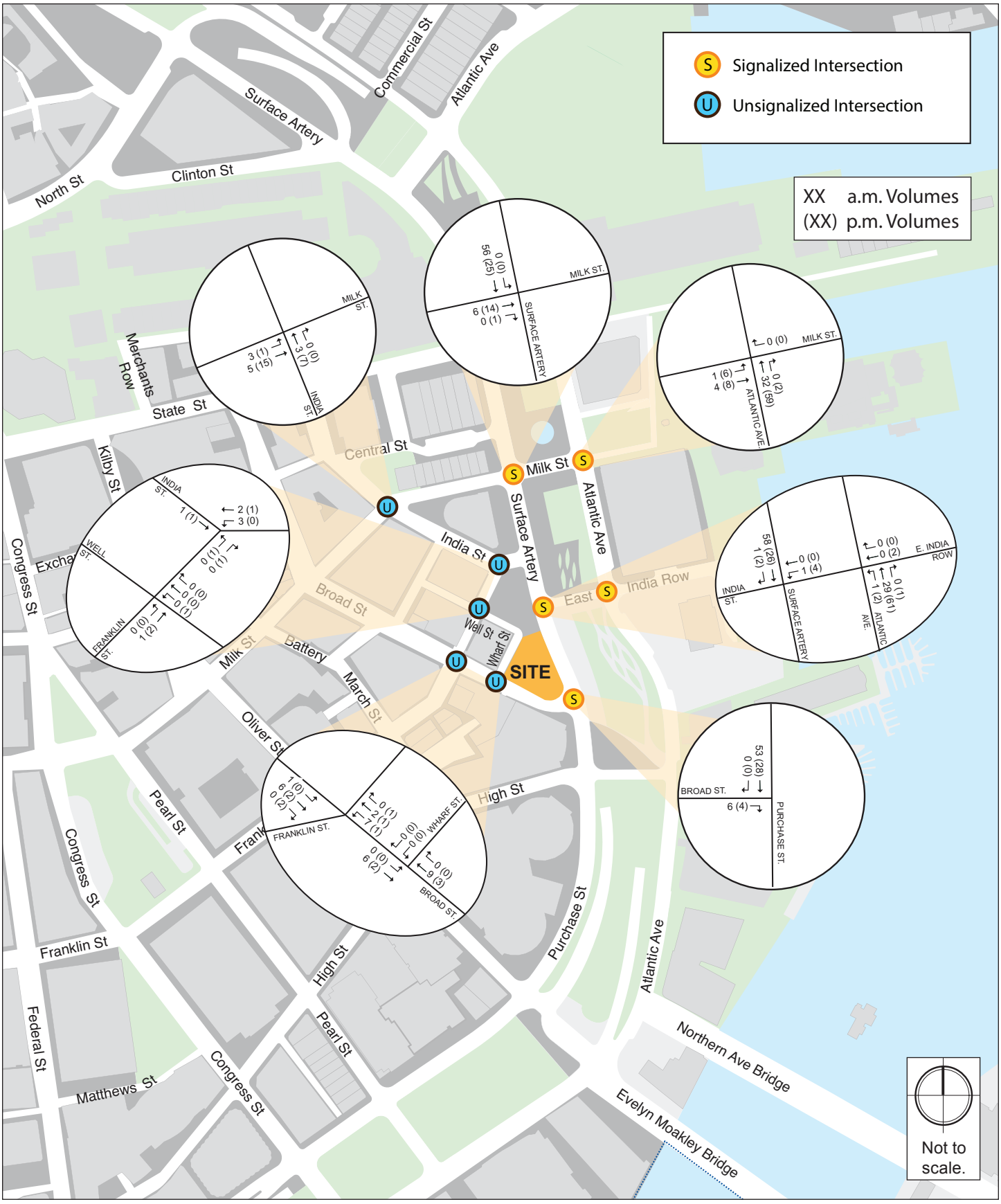
The nearby Hubway stations are shown in Figure 2-8.

Bicycle counts were conducted concurrent with the vehicular TMCs and are presented in Figure 2-9 for the a.m. and p.m. peak hours. As shown in Figure 2-9, bicycle volumes are heaviest along Surface Artery/Purchase Street and Atlantic Avenue.

110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-8
Shared Bicycle/Cars in the Study Area



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-9
Existing Conditions (2013) Bicycle Volumes, a.m. and p.m. Peak Hours

2.2.9 Car Sharing Services

Car sharing, predominantly served by Zipcar in the Boston area, provides easy access to vehicular transportation for those who want short term access to a vehicle. Vehicles are rented on an hourly or daily basis, and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location.

There are six car sharing locations within a quarter-mile of the Project site, including spaces in the parking lot adjacent to the Project site. The nearby Zipcar locations are shown in Figure 2-8. The Zipcar spaces that are currently located north of the Project site will be eliminated with the construction of the BRA Board-approved project at 55 India Street.

2.3 Future Conditions

For transportation impact analyses, it is standard practice to evaluate two future conditions: No-Build conditions (without the proposed project) and Build conditions (with the proposed project). In accordance with BTD guidelines, these conditions are projected to a future date five years from the year of filing this document. For this evaluation of this Project, 2019 was selected as the horizon year for the future conditions analyses.

This section presents a description of the 2019 future conditions scenarios and includes an evaluation of the transportation facilities under the No-Build and Build conditions.

2.3.1 No-Build Conditions

The No-Build conditions reflect a future scenario that incorporates any anticipated traffic volume changes independent of the Project and any planned infrastructure improvements that will affect travel patterns throughout the study area. Infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements. Traffic volume changes are based on two factors: annual background growth and growth associated with specific developments near the Project.

2.3.1.1 Background Traffic Growth

Two methodologies are used to account for future traffic growth, independent of the Project. The first methodology accounts for general background traffic growth that may be affected by changes in demographics, automobile usage, and automobile ownership. The second methodology accounts for specific developments proposed in the vicinity of the Project site. Based on a review of recent traffic studies conducted for nearby projects and to account for any additional unforeseen traffic growth, a one-percent per year annual traffic growth rate was used to develop the future conditions traffic volumes.

The second methodology identifies any specific planned developments that are expected to affect traffic patterns throughout the study area within the future analysis time horizon. The following project is located in the vicinity of the study area and traffic volumes associated with this project were also incorporated into the future conditions traffic volumes.

- **55 India Street** – This BRA Board-approved project includes the construction of 44 new residential units and a 4,000 sf restaurant that will replace the existing parking lot and Zipcar spaces on the site. This project is located adjacent to the north side of the Project site along the John F. Fitzgerald Surface Artery.

The one-percent per year annual growth rate was applied to the 2013 Existing conditions traffic volumes, then the traffic volumes associated with the background development project listed above were added to develop the 2019 No-Build conditions traffic volumes. The 2019 No-Build a.m. and p.m. peak hour traffic volumes are shown on Figure 2-10 and Figure 2-11, respectively.

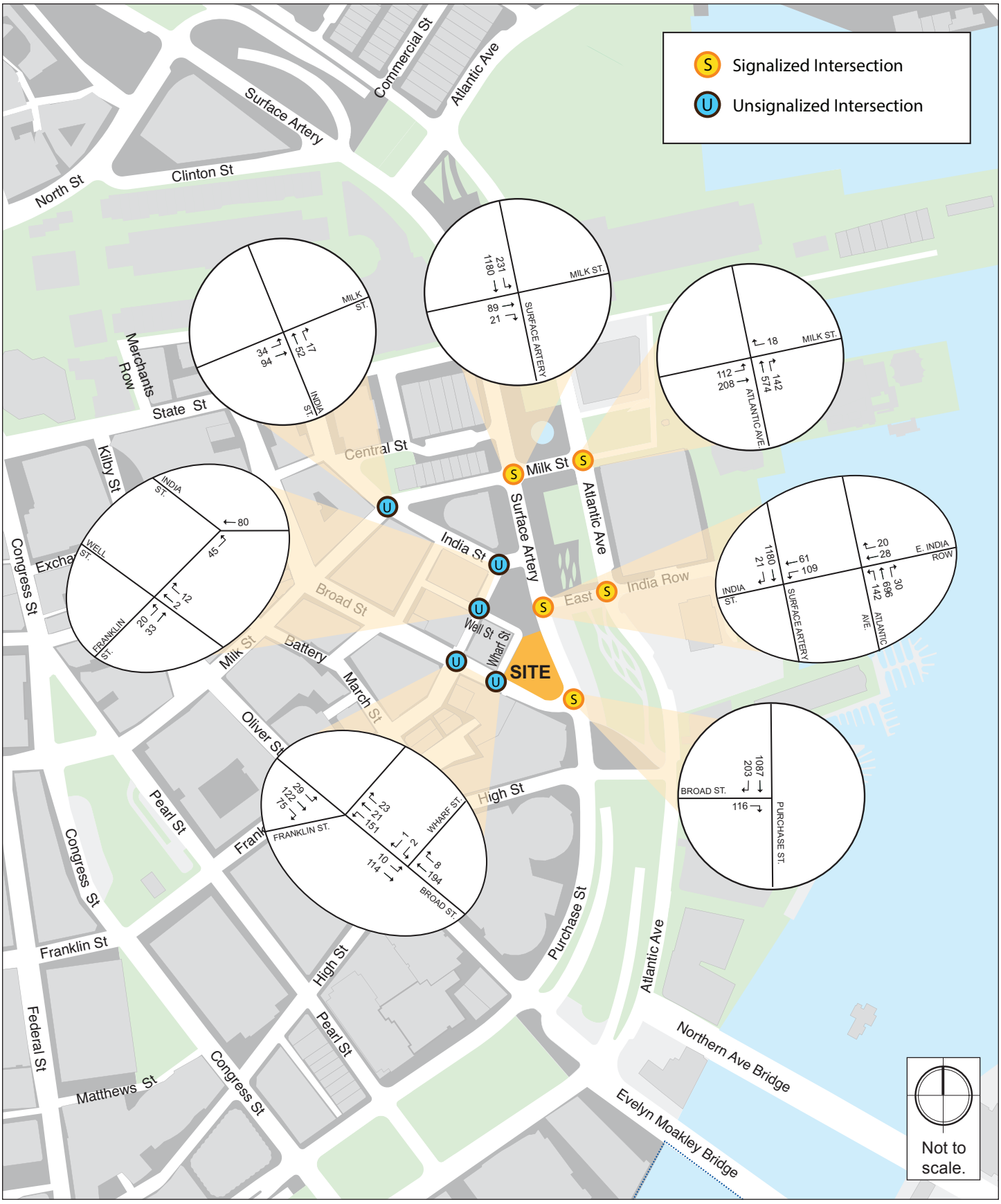
2.3.1.2 Proposed Infrastructure Improvements

A review of planned improvements to roadway, transit, bicycle, and pedestrian facilities was conducted to determine if there are any nearby projects in the vicinity of the study area. The following project is currently under construction:

- **Broad Street – Crossroads Initiative** – This project, undertaken by the BRA, is currently under construction and entails improvements along Broad Street between State Street and Surface Artery/ Greenway including the widening of sidewalks, new street lighting, improved handicap accessibility, and the addition of new trees to the streetscape.

2.3.1.3 No-Build Conditions Traffic Operations

The 2019 No-Build conditions scenario analysis uses the same methodology as the 2013 Existing conditions scenario analysis. Table 2-7 and Table 2-8 present the 2019 No-Build conditions operations analysis for the a.m. and p.m. peak hours, respectively. The shaded cells in the tables indicate a worsening to LOS E or LOS F between the 2013 Existing conditions and the 2019 No-Build conditions. The detailed analysis sheets are provided in Appendix C.

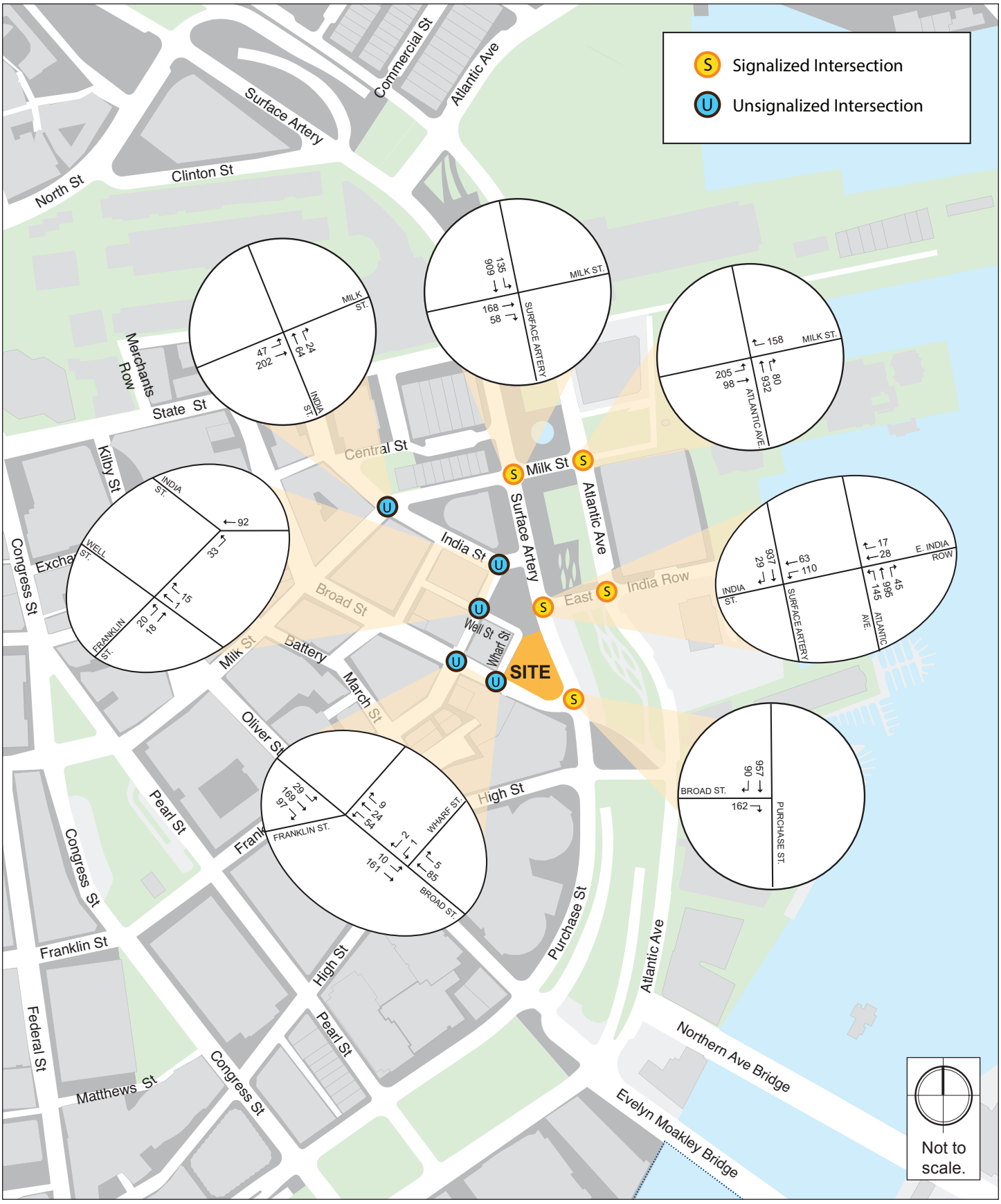


110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-10

No-Build Conditions (2019) Turning Movement Volumes, a.m. Peak Hour



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-11

No-Build Conditions (2019) Turning Movement Volumes, p.m. Peak Hour

Table 2-7 No-Build Conditions (2019), Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50% Queue Length (ft)	95% Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**23.6**	—	—	—
Milk EB thru | thru/right	C	23.1	0.17	26	51
Surface Artery SB left/thru | thru |	C	23.7	0.74	284	344
Atlantic Avenue/Milk Street	**D**	**45.2**	—	—	—
Milk EB left l left	C	26.2	0.22	21	m33
Milk EB thru	F	>80.0	0.75	112	m169
Milk WB right	A	0.2	0.05	0	0
Atlantic NB thru l thru/right	C	25.7	0.78	84	#316
Surface Artery/India Street	**A**	**8.4**	—	—	—
India WB left l left	D	39.2	0.34	36	64
India WB thru	D	41.3	0.34	43	81
Surface Artery SB thru l thru l	A	3.8	0.43	67	92
Atlantic Avenue/India Street	**A**	**9.5**	—	—	—
India WB thru/right	C	21.0	0.19	20	42
Atlantic NB left/thru l thru/right	A	8.6	0.52	137	182
Purchase Street/Broad Street	**A**	**1.3**	—	—	—
Broad EB right	A	1.3	0.27	0	0
Purchase SB thru l thru l thru/right	A	1.3	0.46	27	31
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.06	—	0
Milk NB left/thru	B	10.6	0.21	—	20
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.06	—	0
Franklin NB left	A	9.3	0.06	—	5
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	9.1	0.02	—	2
Franklin NB left/thru	A	3.3	0.02	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.5	0.03	—	2
Broad WB left/thru/right	A	6.9	0.16	—	15
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	1.3	0.02	—	1
Broad WB thru/right	A	0.0	0.15	—	0
Wharf SB left/right	B	11.6	0.02	—	2

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.

Table 2-8 No-Build Conditions (2019), Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50% Queue Length (ft)	95% Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**22.3**	—	—	—
Milk EB thru | thru/right	D	42.3	0.47	88	90
Surface Artery SB left/thru | thru |	B	16.5	0.52	168	208
Atlantic Avenue/Milk Street	**F**	**>80.0**	—	—	—
Milk EB left l left	F	>80.0	0.74	104	110
Milk EB thru	F	>80.0	0.53	75	127
Milk WB right	A	2.3	0.37	0	0
Atlantic NB thru l thru/right	C	31.7	0.90	212	#457
Surface Artery/India Street	**A**	**7.4**	—	—	—
India WB left l left	C	34.0	0.32	35	m54
India WB thru	D	37.7	0.41	48	69
Surface Artery SB thru l thru l	A	1.6	0.35	15	37
Atlantic Avenue/India Street	**B**	**11.0**	—	—	—
India WB thru/right	C	22.0	0.17	18	46
Atlantic NB left/thru l thru/right	B	10.4	0.64	209	272
Purchase Street/Broad Street	**A**	**2.4**	—	—	—
Broad EB right	A	2.1	0.38	0	0
Purchase SB thru l thru l thru/right	A	2.4	0.37	1	74
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.08	—	0
Milk NB left/thru	B	13.0	0.43	—	54
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.07	—	0
Franklin NB left	A	9.8	0.05	—	4
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	9.1	0.03	—	2
Franklin NB left/thru	A	4.9	0.03	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.1	0.03	—	2
Broad WB left/thru/right	A	5.0	0.05	—	4
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	1.1	0.02	—	2
Broad WB thru/right	A	0.0	0.08	—	0
Wharf SB left/right	B	11.4	0.01	—	1

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates that LOS has worsened to LOS E or LOS F from Existing Conditions.

As shown in Table 2-7, the signalized intersections will continue to operate at LOS D or better during the a.m. peak hour under the 2019 No-Build conditions, with all movements at the unsignalized intersections continuing to operate at LOS B or better.

As shown in Table 2-8, the majority of the signalized intersections will continue to operate at LOS D or better during the p.m. peak hour under the 2019 No-Build conditions. The intersection of Atlantic Avenue/Milk Street will worsen from an overall LOS E to LOS F. All movements at the unsignalized intersections will continue to operate at LOS B or better.

Based on the volume to capacity ratios, the study area intersections were shown to have adequate capacity to accommodate the future vehicular demand during both the a.m. and p.m. peak hours under the No-Build conditions.

2.3.2 Build Conditions

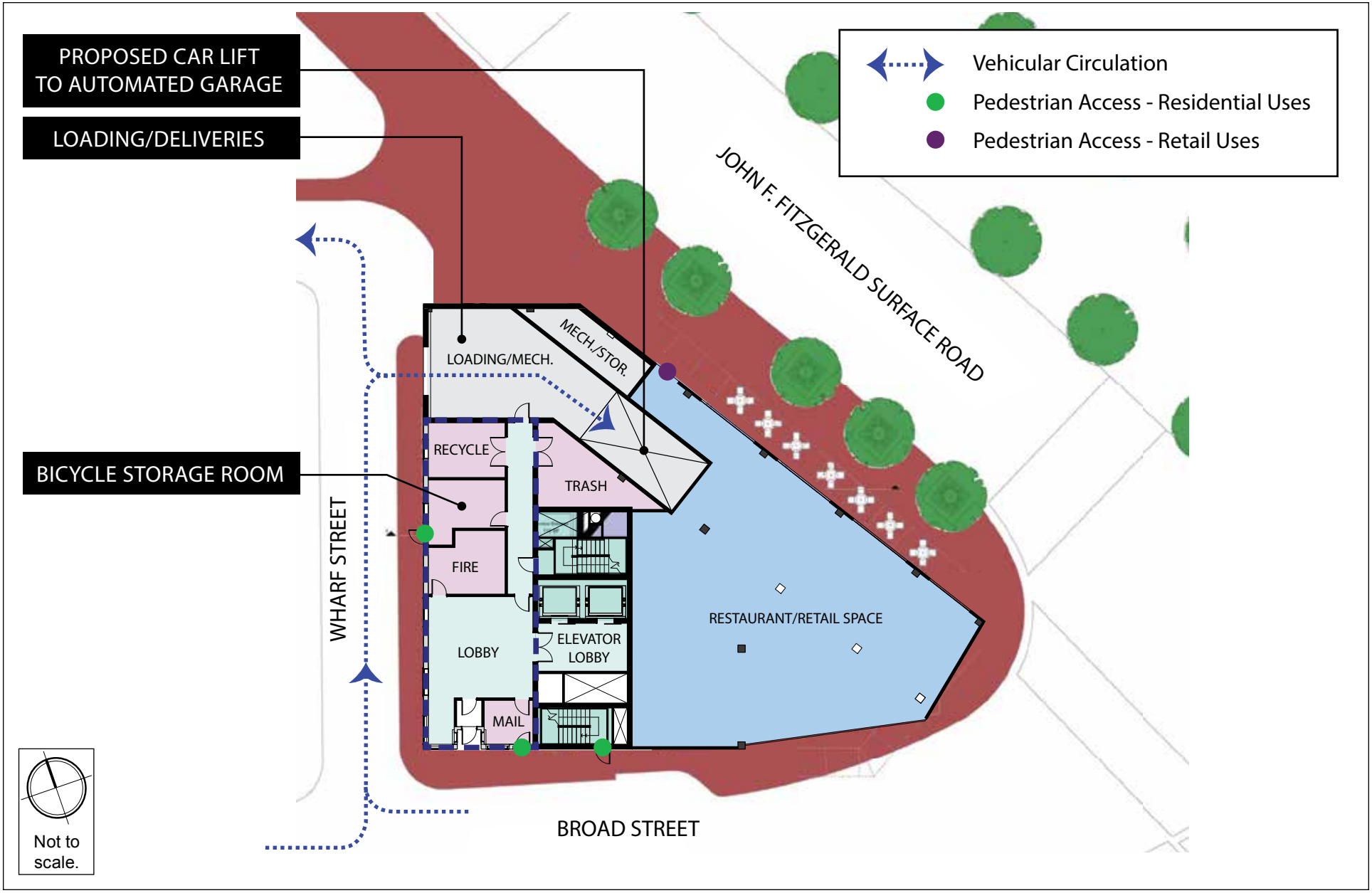
As previously summarized, the Project will consist of 52 residential condominium units and approximately 3,500 sf of commercial/café space. Underground parking will be provided for approximately 35 vehicles in an automated, mechanical garage on the Project site. Secure storage for approximately 52 bicycles will also be provided on site. The 2019 Build conditions reflect a future scenario that adds anticipated Project-generated trips to the 2019 No-Build conditions traffic volumes.

2.3.2.1 Site Access and Circulation

As shown in the Site Access Plan in Figure 2-12, access will be provided to an underground, automated parking structure containing approximately 35 spaces. Drivers will enter a loading bay accessed off of Wharf Street, opposite Well Street and enter the parking structure. A more detailed description of the Project's parking supply is included in Section 2.3.2.8.

In addition, the Proponent is exploring the feasibility of reconstructing the segments of Wharf Street and Well Street between Broad Street and Franklin Street to be at-grade with the existing sidewalk. This roadway modification will be undertaken jointly with the proponent of the development at 55 India Street. By bringing the roadway at-grade with the existing sidewalk, a shared space will be created to be used by pedestrians, bicycles, and vehicles. It will also allow easier two-way travel along Well Street, which is currently only wide enough to accommodate a single vehicle in one direction. It will also allow for easier maneuvers to and from the loading and parking bay and better access for emergency vehicles.

Pedestrian access to the residences will be provided off of Broad Street, with doors opening to the residential lobby of the building and to the stairwell providing access to the upper levels. Pedestrian access to the commercial space will be provided at the corner of Broad Street and Surface Artery.



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-12
Site Access Plan

2.3.2.2 Trip Generation

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

To estimate the number of trips expected to be generated by the Project, data published by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*[1] were used. ITE provides data to estimate the total number of unadjusted vehicular trips associated with the Project. In an urban setting well served by transit, adjustments are necessary to account for other travel mode shares such as walking, bicycling, and transit.

To estimate the number of vehicular trips for the Project, the following ITE land use codes (LUCs) were used:

LUC 230 – Residential Condominium/Townhouse. The residential condominium/ townhouse land use is defined as an ownership unit with at least one other owned unit within the same building structure. Trip generation estimates are based on average vehicular rates per unit.

LUC 932 – High-Turnover (Sit-Down) Restaurant. The high-turnover (sit-down) restaurant land use is defined as a full-service eating establishment with a typical stay duration of approximately one hour. Trip generation estimates are based on average vehicular rates per 1,000 sf of gross floor area.

2.3.2.3 Mode Share

The BTD publishes vehicle, transit, and walking/bicycling mode split rates for different areas of Boston. The Project site is located within BTD's designated Area 2. The unadjusted vehicular trips were converted to person trips by using vehicle occupancy rates published by the Federal Highway Administration (FHWA)[2]. The BTD's travel mode share data for Area 2 are shown in Table 2-9.

---

1 *Trip Generation Manual*, 9th Edition; Institute of Transportation Engineers; Washington, D.C.; 2012.

2 *Summary of Travel Trends: 2009 National Household Survey*; FHWA; Washington, D.C.; June 2011.

Table 2-9 Travel Mode Shares

Land Use	Direction	Walk/ Bicycle Share	Transit Share	Auto Share	Local Vehicle Occupancy Rate
Daily					
Condominium	In	42%	30%	28%	1.13
	Out	42%	30%	28%	1.13
Commercial/café	In	59%	20%	21%	2.20
	Out	59%	20%	21%	2.20
a.m. Peak Hour					
Condominium	In	7%	52%	41%	1.13
	Out	51%	18%	31%	1.13
Commercial/café	In	14%	46%	40%	2.20
	Out	58%	10%	32%	2.20
p.m. Peak Hour					
Condominium	In	51%	18%	31%	1.13
	Out	7%	52%	41%	1.13
Commercial/café	In	58%	10%	32%	2.20
	Out	14%	46%	40%	2.20

2.3.2.4 Existing Site Trip Generation

The Project site currently contains four residential apartment units, the Times Restaurant and Pub, the Littlest Bar, and approximately 1,650 sf of occupied office space. In order to account for the effect of these uses on the trip generating characteristics of the Project, the existing vehicular trips were estimated using the following ITE LUCs:

LUC 220 – Apartment. The apartment land use can be a rental dwelling unit located within the same building with at least three other dwelling units. Trip generation estimates are based on average vehicular rates per unit.

LUC 710 – General Office Building. The general office building land use was used for the office space associated with the existing site uses. The general office building land use encompasses a wide variety of office-related uses and was selected as the most appropriate LUC to develop the trip generation characteristics for the existing office space on the Project site. Trip generation estimates are based on average vehicular rates per 1,000 of gross floor area.

LUC 925 – Drinking Place. The drinking place land use is defined as a bar where alcoholic beverages and food are sold and possibly some type of entertainment such as music, television screens, video games, or pool tables. This LUC was selected to estimate the trip generation characteristics of The Littlest Bar. Trip generation estimates are based on average vehicular rates per 1,000 sf of gross floor area.

LUC 932 – High-Turnover (Sit-Down) Restaurant. The high-turnover (sit-down) restaurant land use is defined as a full-service eating establishment with a typical stay duration of approximately one hour. This LUC was selected to estimate the trip generation characteristics of The Times Restaurant and Pub. Trip generation estimates are based on average vehicular rates per 1,000 sf of gross floor area.

Based on the land use trip rates and travel mode share assumptions published by BTD for Area 2, the existing trips are shown in Table 2-10.

Table 2-10 Trip Generation – Existing Land Uses

Land Use		Walk/Bicycle Trips	Transit Trips	Vehicle Trips
Daily				
Residential *4 apartment units*	In	6	4	4
	Out	6	4	4
Restaurant – The Times Restaurant and Pub *2,740 sf*	In	223	76	36
	Out	223	76	36
Drinking Place – The Littlest Bar *1,630 sf*	In	91	31	15
	Out	91	31	15
Office *1,650 sf (occupied)*	In	3	4	2
	Out	3	4	2
Total	**In**	**323**	**115**	**57**
	Out	**323**	**115**	**57**
a.m. Peak Hour				
Residential *4 apartment units*	In	0	0	0
	Out	1	0	1
Restaurant – The Times Restaurant and Pub *2,740 sf*	In	0	0	0
	Out	0	0	0
Drinking Place – The Littlest Bar *1,630 sf*	In	0	0	0
	Out	0	0	0
Office *1,650 sf(occupied)*	In	0	2	1
	Out	0	0	0
Total	**In**	**0**	**2**	**1**
	Out	**1**	**0**	**1**

Table 2-10 Trip Generation – Existing Land Uses (Continued)

Land Use		Walk/Bicycle Trips	Transit Trips	Vehicle Trips
p.m. Peak Hour				
Residential *4 apartment units*	In	1	0	0
	Out	0	1	0
Restaurant – The Times Restaurant and Pub *2,740 sf*	In	20	4	5
	Out	3	11	4
Drinking Place – The Littlest Bar *1,630 sf*	In	15	3	4
	Out	2	6	2
Office *1,650 sf(occupied)*	In	0	0	1
	Out	0	1	1
Total	**In**	**36**	**7**	**10**
	Out	**5**	**19**	**7**

2.3.2.5 Vehicle Trip Generation

To develop the overall trip generation characteristics of the Project, the adjusted vehicular trips associated with both the existing uses on the Project site and the proposed Project were estimated. The Project-generated new vehicle trips are summarized in Table 2-11, with the detailed trip generation information provided in Appendix C.

Table 2-11 Project Vehicle Trip Generation

Time Period	Direction	Condominium [1]	Restaurant [2]	Total	Existing Uses	Net New Trips
Daily	In	42	71	113	57	56
	Out	42	71	113	57	56
	Total	**84**	**142**	**226**	**114**	**112**
a.m. Peak Hour	In	2	13	15	1	14
	Out	6	8	14	1	13
	Total	**8**	**21**	**29**	**2**	**27**
p.m. Peak Hour	In	6	10	16	10	6
	Out	4	8	12	7	5
	Total	**10**	**18**	**28**	**17**	**11**

1 Based on ITE LUC 230 – Residential Condominium/Townhouse for 52 units.
2 Based on ITE LUC 932 – High-Turnover (Sit-Down) Restaurant for 4,000 sf.

As shown in Table 2-11, the Project is expected to generate approximately 112 new daily vehicle trips (56 entering and 56 exiting), with 27 new vehicle trips during the a.m. peak hour (14 entering and 13 exiting) and 11 new vehicle trips during the p.m. peak hour (6 entering and 5 exiting).

2.3.2.6 Trip Distribution

The trip distribution identifies the various travel paths for vehicles arriving and leaving the Project site. Trip distribution patterns for the Project were based on BTD's origin-destination data for Area 2 and trip distribution patterns presented in traffic studies conducted for nearby project[3,4]. The trip distribution patterns for the Project are illustrated in Figure 2-13 and Figure 2-14 for the entering and exiting trips, respectively.

The Project-generated vehicle trips were assigned to the study area roadway network based on the trip distribution patterns shown in Figures 2-13 and 2-14 and are shown in Figure 2-15 and Figure 2-16 for the a.m. and p.m. peak hours, respectively. The Project-generated trips were added to the 2019 No-Build conditions traffic volumes to develop the 2019 Build conditions peak hour traffic volume networks and are shown in Figure 2-17 and Figure 2-18 for the a.m. and p.m. peak hours, respectively.

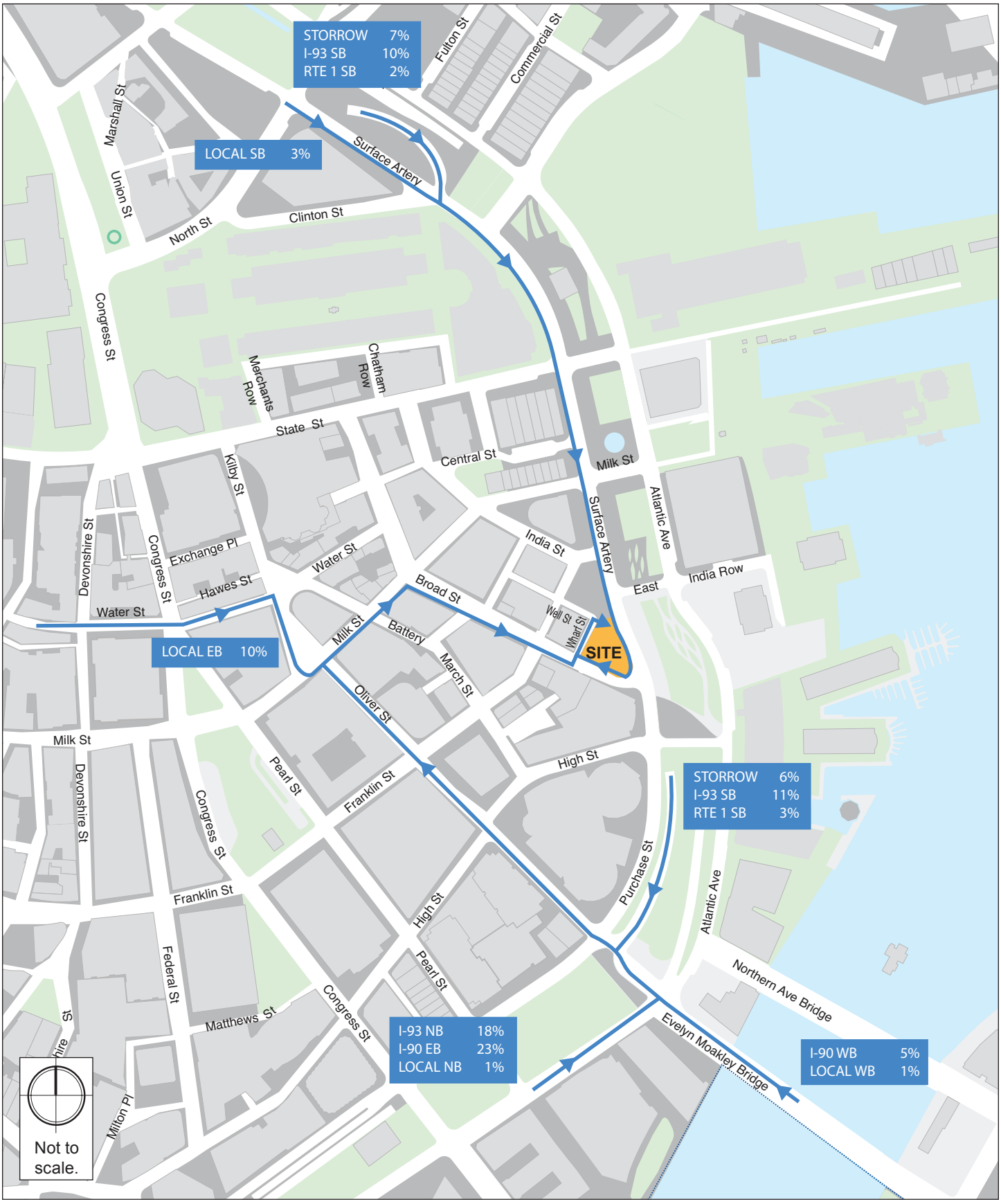
2.3.2.7 Build Conditions Traffic Operations

The 2019 Build conditions scenario analyses use the same methodology as the 2013 Existing and 2019 No-Build conditions scenario analyses. The results of the 2019 Build condition traffic analysis at study area intersections are presented in Table 2-12 and Table 2-13 for the a.m. and p.m. peak hours, respectively. The detailed analysis sheets are provided in Appendix C.

---

[3] *Harbor Garage Redevelopment – Project Notification Form*; Boston, Massachusetts; Howard/Stein-Hudson Associates; April 16, 2009.

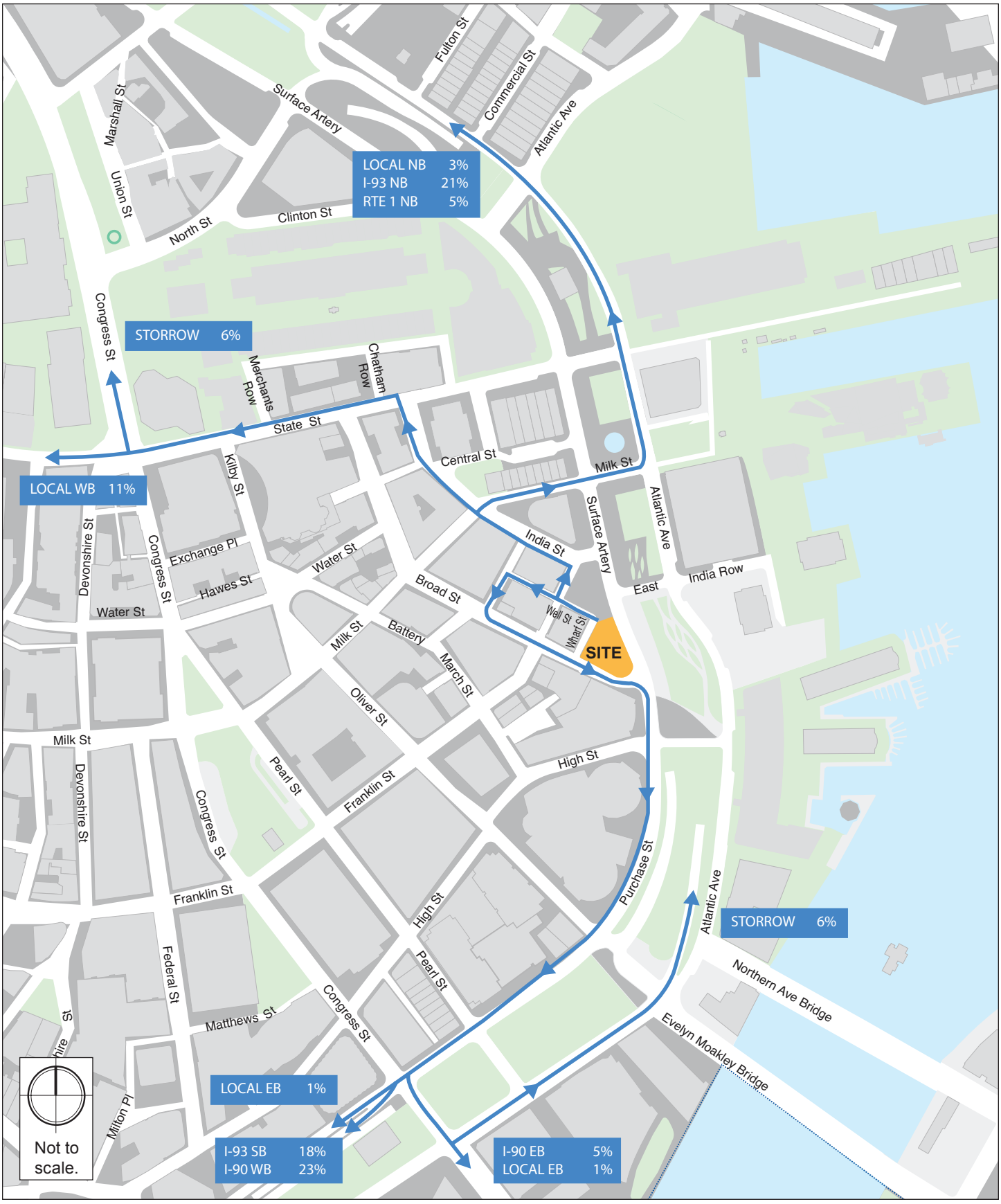
[4] *55 India Street – Expanded Project Notification Form*; Boston, Massachusetts; Howard/Stein-Hudson Associates; June 16, 2014.



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

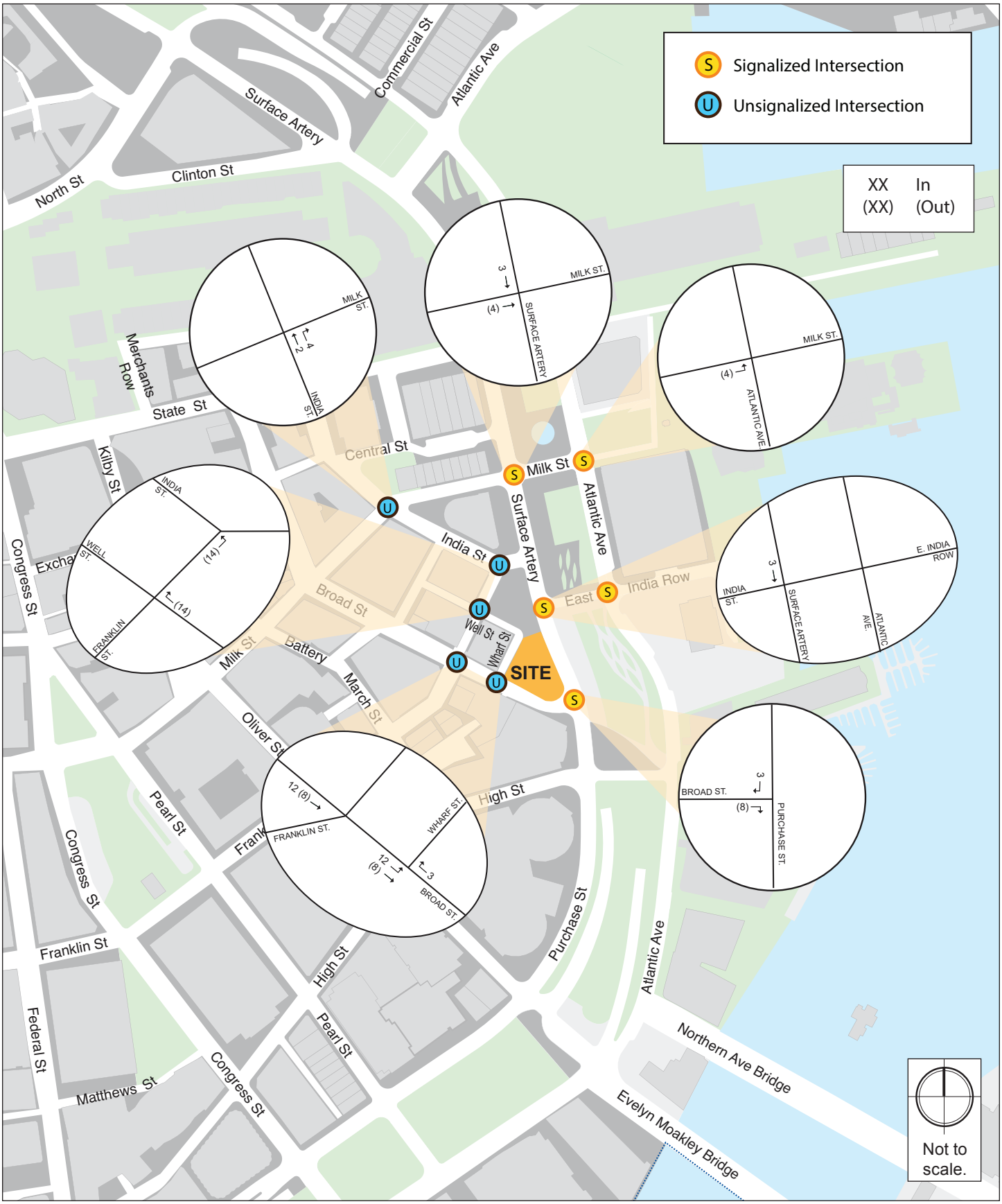
Figure 2-13
Vehicle Trip Distribution: Entering



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

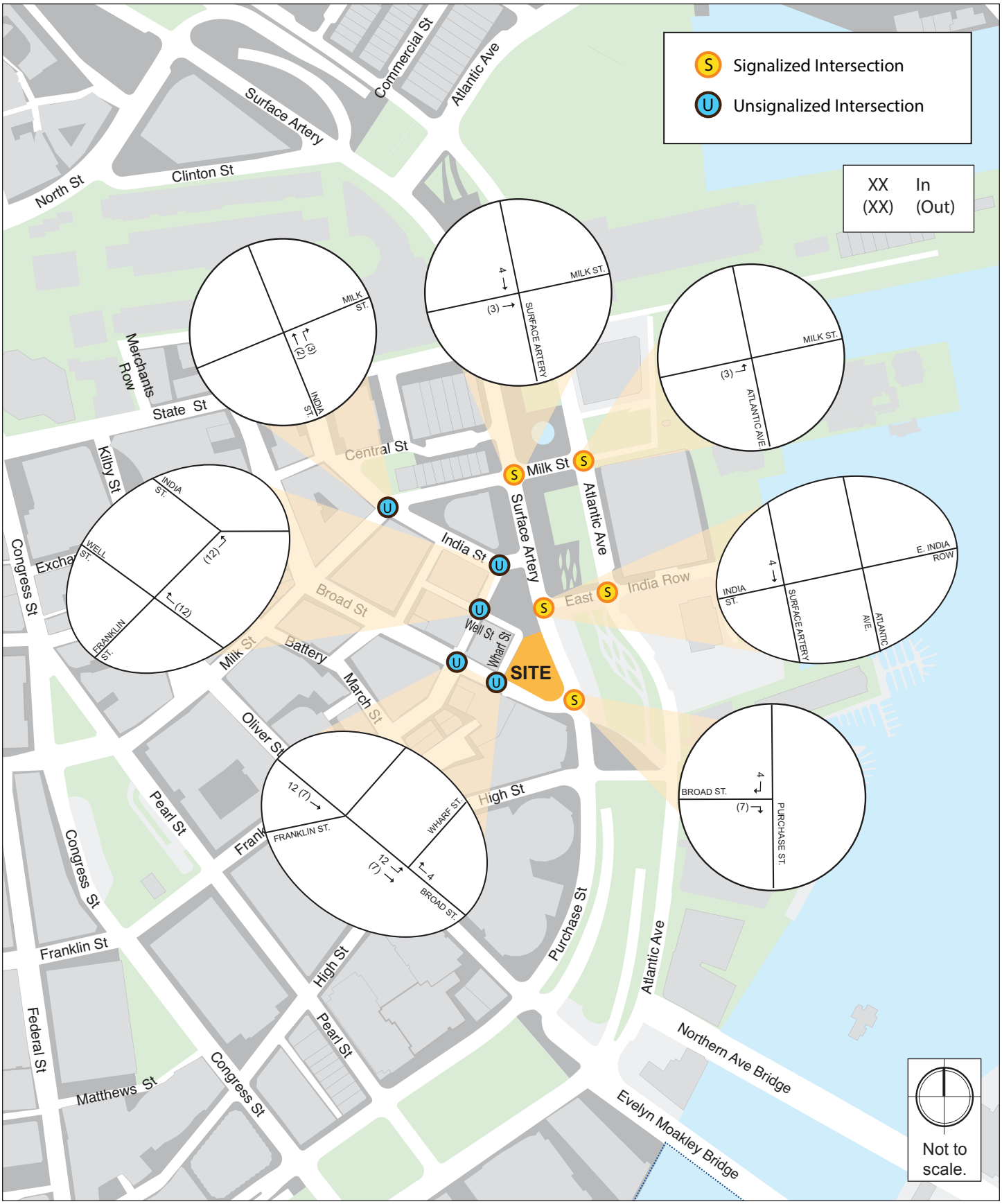
Figure 2-14
Vehicle Trip Distribution: Exiting



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

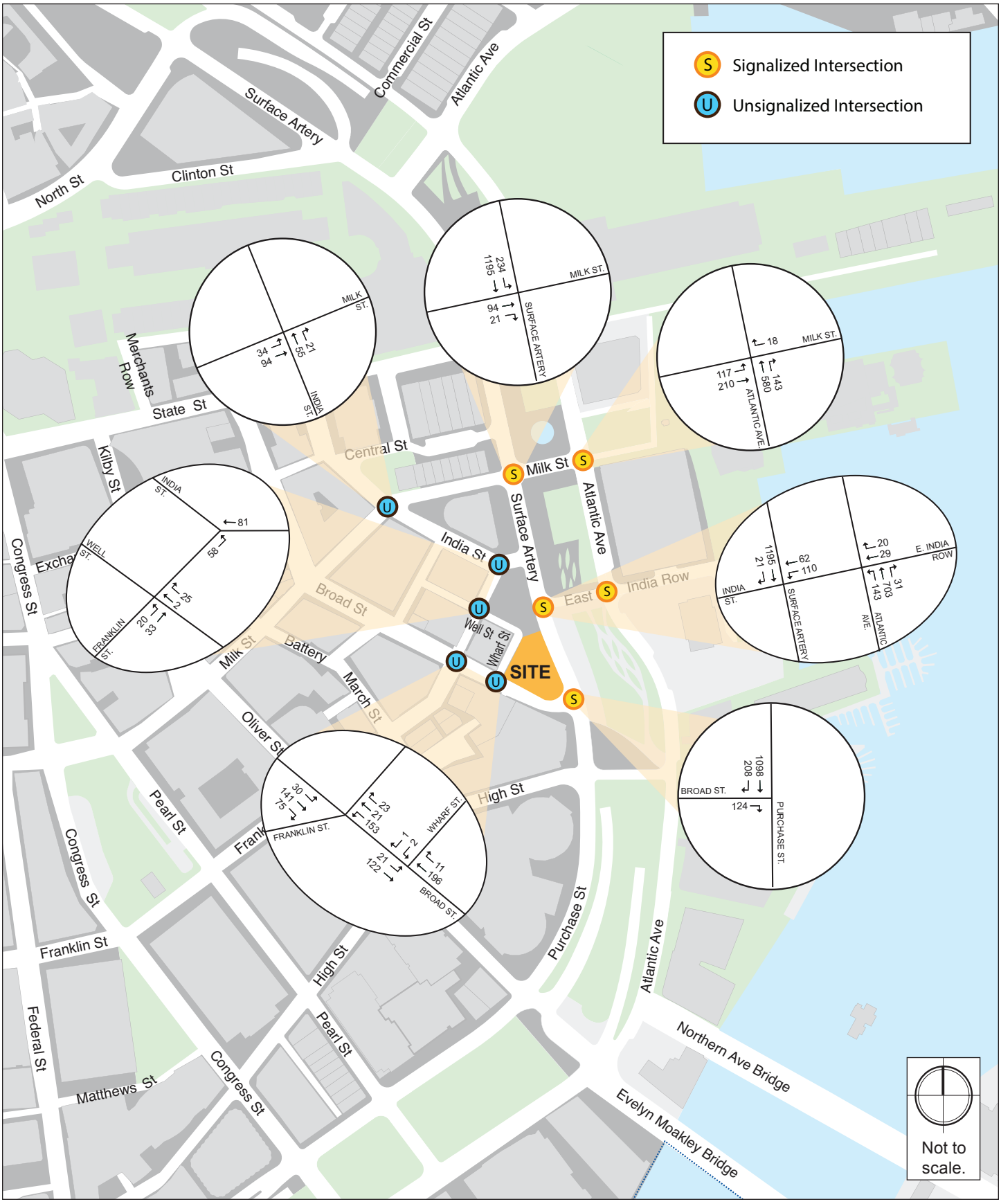
Figure 2-15
Project Generated Trips, a.m. Peak Hour



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-16
Project Generated Trips, p.m. Peak Hour

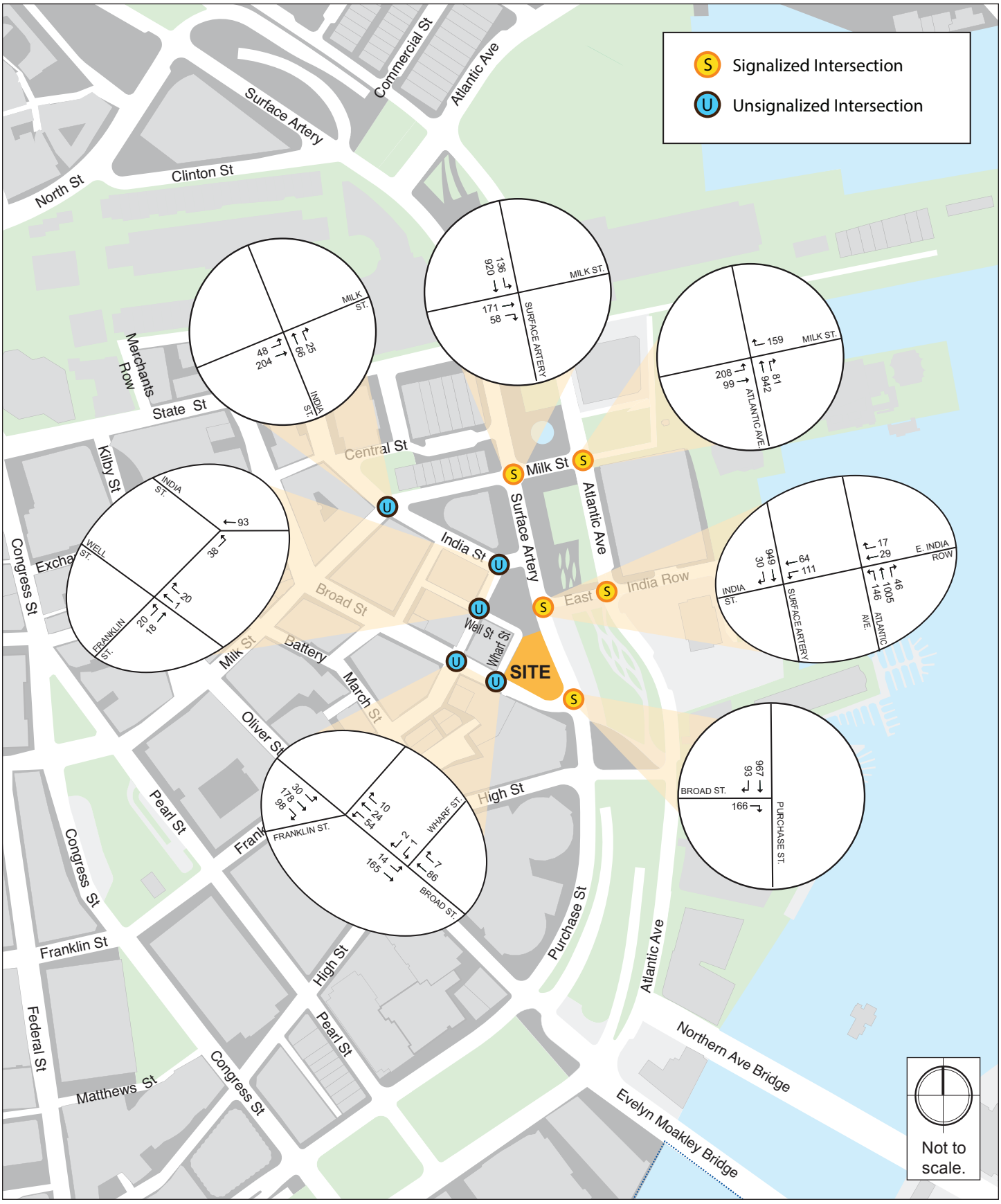


110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-17

Build Conditions (2019) Turning Movement Volumes, a.m. Peak Hour



110 Broad Street Boston, Massachusetts

Howard/Stein-Hudson Associates, Inc.
CREATIVE SOLUTIONS • EFFECTIVE PARTNERING

Figure 2-18

Build Conditions (2019) Turning Movement Volumes, p.m. Peak Hour

Table 2-12 Build Conditions (2019), Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50% Queue Length (ft)	95% Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**23.7**	—	—	—
Milk EB thru | thru/right	C	23.4	0.17	27	52
Surface Artery SB left/thru | thru |	C	23.7	0.75	285	345
Atlantic Avenue/Milk Street	**D**	**45.6**	—	—	—
Milk EB left l left	C	26.4	0.23	22	m35
Milk EB thru	F	>80.0	0.75	113	m169
Milk WB right	A	0.2	0.05	0	0
Atlantic NB thru l thru/right	C	25.7	0.78	84	#316
Surface Artery/India Street	**A**	**8.4**	—	—	—
India WB left l left	D	39.2	0.34	36	64
India WB thru	D	41.3	0.34	43	81
Surface Artery SB thru l thru l	A	3.8	0.43	66	94
Atlantic Avenue/India Street	**A**	**9.5**	—	—	—
India WB thru/right	C	21.0	0.19	20	42
Atlantic NB left/thru l thru/right	A	8.6	0.52	137	182
Purchase Street/Broad Street	**A**	**1.3**	—	—	—
Broad EB right	A	1.4	0.28	0	0
Purchase SB thru l thru l thru/right	A	1.3	0.46	27	31
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.06	—	0
Milk NB left/thru	B	10.7	0.22	—	20
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.06	—	0
Franklin NB left	A	9.4	0.08	—	6
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	8.9	0.04	—	3
Franklin NB left/thru	A	3.3	0.02	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.4	0.03	—	2
Broad WB left/thru/right	A	6.9	0.17	—	15
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	2.2	0.04	—	3
Broad WB thru/right	A	0.0	0.15	—	0
Wharf SB left/right	B	12.1	0.02	—	2

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.

Table 2-13 Build Conditions (2019), Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	50% Queue Length (ft)	95% Queue Length (ft)
Signalized Intersections					
Surface Artery/Milk Street	**C**	**22.4**	—	—	—
Milk EB thru | thru/right	D	42.8	0.47	88	90
Surface Artery SB left/thru | thru |	B	16.5	0.52	168	208
Atlantic Avenue/Milk Street	**F**	**>80.0**	—	—	—
Milk EB left l left	F	>80.0	0.75	104	111
Milk EB thru	F	>80.0	0.53	75	128
Milk WB right	A	2.3	0.37	0	0
Atlantic NB thru l thru/right	C	31.7	0.90	212	#457
Surface Artery/India Street	**A**	**7.4**	—	—	—
India WB left l left	C	34.0	0.32	35	m54
India WB thru	D	37.7	0.41	48	69
Surface Artery SB thru l thru l	A	1.6	0.35	15	37
Atlantic Avenue/India Street	**B**	**11.0**	—	—	—
India WB thru/right	C	22.0	0.17	18	46
Atlantic NB left/thru l thru/right	B	10.4	0.64	209	272
Purchase Street/Broad Street	**A**	**2.4**	—	—	—
Broad EB right	A	2.2	0.39	0	0
Purchase SB thru l thru l thru/right	A	2.4	0.37	1	74
Unsignalized Intersections					
Milk Street/India Street	—	—	—	—	—
India WB thru/right	A	0.0	0.08	—	0
Milk NB left/thru	B	13.1	0.43	—	54
India Street/Franklin Street	—	—	—	—	—
India WB thru	A	0.0	0.07	—	0
Franklin NB left	A	9.8	0.06	—	5
Franklin Street/Well Street	—	—	—	—	—
Well WB thru/right	A	9.1	0.04	—	3
Franklin NB left/thru	A	4.9	0.03	—	2
Franklin Street/Broad Street	—	—	—	—	—
Broad EB left/thru/right	A	1.1	0.03	—	2
Broad WB left/thru/right	A	5.0	0.05	—	4
Broad Street/Wharf Street	—	—	—	—	—
Broad EB left/thru	A	1.5	0.03	—	2
Broad WB thru/right	A	0.0	0.09	—	0
Wharf SB left/right	B	11.6	0.01	—	1

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.

As shown in Table 2-12 and Table 2-13, the intersections will continue to operate at the same LOS as under the No-Build conditions during both the a.m. and p.m. peak hours. The Project will have minimal impact on the study area intersections. No specific intersection improvements are necessary to accommodate the Project-generated traffic volumes.

2.3.2.8 Parking

This section presents the Project's parking supply and an evaluation of the Project's parking demand. The Project will provide approximately 35 parking spaces on site to be located in an underground, automated parking structure. Access to a loading bay will be provided along Wharf Street, opposite Well Street. Drivers will enter the loading bay and park on a mechanical lift, where they will exit the vehicle. The lift will deliver the vehicles to an underground vehicle storage structure where the vehicle will remain secure. To retrieve the vehicles, drivers will be able to contact the automated lift remotely through cell phone or wireless technology or through a panel that will be located near the entrance of the loading bay. This type of automated system requires significantly less space than a traditional parking structure. It also reduces the amount of idling and exhaust produced by vehicular parking in a traditional parking structure, allowing for a more environmentally friendly parking experience. For more information and demonstrations of automated parking structures, please visit http://www.unitronics.com/automated-parking/videos. Public parking will not be provided at the Project site.

A parking ratio of approximately 0.67 parking spaces per unit will be provided for the residential component of the Project, which is in line with the current BTD district-based parking goals for the downtown area of 0.5 to 1.0 parking spaces per unit. Recent studies have shown that parking demand at some residential buildings throughout Boston is lower than 0.5 parking spaces per unit, indicating that there may be some excess parking associated with the Project. The Proponent anticipates selling or leasing the parking spaces independently of the residential units, allowing the potential to sell or lease parking to nearby residential buildings, including the project at 55 India Street, which does not have any on-site parking associated with it.

No parking will be provided for the commercial/café use on the Project site. Patrons of the commercial/café that arrive by vehicle will use the nearby public lots or garages.

2.3.2.9 Public Transportation

Based on the transit mode shares presented earlier, the future transit trips associated with the Project were estimated and are summarized in Table 2-14.

Table 2-14 Project Transit Trips

Time Period	Direction	Condominium	Restaurant	Total	Existing Uses	Net New Trips
Daily	In	51	150	201	115	86
	Out	51	150	201	115	86
	Total	102	300	402	230	172
a.m. Peak Hour	In	2	32	34	2	32
	Out	4	6	10	0	10
	Total	6	38	44	2	42
p.m. Peak Hour	In	4	7	11	7	4
	Out	5	21	26	19	7
	Total	9	28	37	26	11

As shown in Table 2-14, the Project will generate an estimated 172 new transit trips on a daily basis. Approximately 42 new transit trips will occur during the a.m. peak hour (32 alighting and 10 boarding) and 11 new trips will occur during the p.m. peak hour (4 alighting and 7 boarding).

The transit trips will be mostly dispersed between the Blue Line station at the Aquarium, the Orange Line/Blue Line Station at State Street, and the nearby MBTA bus routes. The additional transit trips will be accommodated by the existing public transportation facilities that serve the Project study area.

2.3.2.10 Pedestrians

Based on the walk mode shares presented earlier, the future walk trips were estimated and are summarized in Table 2-15.

Table 2-15 Project Pedestrian Trips

Time Period	Direction	Condominium	Restaurant	Total	Existing Trips	Net New Trips
Daily	In	72	441	513	323	190
	Out	72	441	513	323	190
	Total	144	882	1,026	646	380
a.m. Peak Hour	In	0	10	10	0	10
	Out	11	33	44	1	43
	Total	11	43	54	1	53
p.m. Peak Hour	In	10	41	51	36	15
	Out	1	6	7	5	2
	Total	11	47	58	41	17

Over the course of a day, the Project will generate an estimated 380 new pedestrian trips and an additional 172 new transit trips that will require a walk to or from the Project site. Combined, the Project will result in an additional approximately 552 new pedestrian trips per day. Approximately 53 new pedestrian trips will occur during the a.m. peak hour and 17 new pedestrian trips will occur during the p.m. peak hour in addition to the new transit trips that will also require a walk to or from the site. The Project site is located in proximity to the Greenway, which provides pedestrian access to the North End, the financial district, South Station, and Chinatown. The existing pedestrian facilities that serve the Project site will accommodate all additional pedestrian trips generated by the Project.

2.3.2.11 Bicycle Accommodations

BTD has established guidelines requiring projects subject to Transportation Access Plan Agreements to provide secure bicycle parking for residents and employees and short-term bicycle racks for visitors. The Project will provide a total of approximately 52 covered and secure bicycle storage spaces on-site for residents and employees of the Project. Additional storage will be provided by outdoor bicycle racks accessible to visitors to the Project site in accordance with BTD guidelines.

All bicycle racks, signs, and parking areas will conform to BTD guidelines and will be located in safe, secure locations. The Proponent will work with BTD to identify the most appropriate quantity and location for bicycle racks on the Project site as part of the Transportation Access Plan Agreement (TAPA) process.

2.3.2.12 Build Conditions Loading and Service Activity

Loading and service operations will occur within the loading bay located off of Wharf Street, opposite Well Street. The loading bay is sized to serve a 36-foot long single unit box truck (SU-36). Vehicles will access this area by traveling along Wharf Street, turning left on to Well Street and backing into the bay. All trash activity will also occur within the loading bay. No loading activity will take place on the surrounding roadway network.

A summary of anticipated loading/service activity by land use is presented in Table 2-16; the sources of the assumptions are presented below. Delivery trip estimates were based on data provided in the Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area report[5]. Deliveries to the Project site will be mostly limited to SU-36 trucks and smaller delivery vehicles.

Restaurant. Restaurants depend on more frequent food deliveries from smaller trucks. Based on the CTPS report, restaurant uses generate approximately 0.70 light truck trips per 1,000 sf of floor area and 0.07 medium/heavy truck trips per 1,000 sf of gross floor area.

---

[5] *Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area*; Central Transportation Planning Staff; September 1993.

Residential. Residential units primarily generate delivery trips related to small packages and prepared food. Based on the CTPS report, residential uses generate approximately 0.01 light truck trips per 1,000 sf of gross floor area and 0.001 medium/heavy truck trips per 1,000 sf of gross floor area.

Table 2-16 Delivery Activity by Land Use

Land Use	Number of Deliveries			General Delivery Times
	SU-30 or smaller	*Larger than SU-30*	*Total*	
Restaurant	3	0	3	10% before 7:00 a.m.70% between 7:00 a.m. and 1:00 p.m. 20% after 1:00 p.m.
Residential	1	0	1	
Total	**4**	**0**	**4**	

The Project is expected to generate approximately four deliveries per day. It is anticipated that the majority of these deliveries will occur between 7:00 a.m. and 1:00 p.m. These numbers do not include trash truck trips. For this area, trash truck trips generally occur between 5:00 a.m. and 7:00 a.m. and do not coincide with the regular delivery activities. The low number of anticipated deliveries will have minimal impact on the vehicular operations along Well Street and Wharf Street, which are both very low-volume roadways.

2.4 Transportation Mitigation Measures

While the traffic impacts associated with the new trips are minimal, the Proponent will continue to work with the City of Boston to create a Project that efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use.

The Proponent is exploring the feasibility of reconstructing the segments of Wharf Street and Well Street between Broad Street and Franklin Street to be at-grade with the existing sidewalk. By bringing the roadway at-grade with the existing sidewalk, a shared space will be created to be used by pedestrians, bicycles, and vehicles. It will also allow easier two-way travel along Well Street, which is currently only wide enough to accommodate a single vehicle in one direction. Wharf Street and Well Street are both low volume and low speed roadways, allowing for a shared space that will be more efficient at accommodating all modes of transportation, including emergency vehicles.

The Proponent is responsible for preparation of the TAPA, a formal legal agreement between the Proponent and the BTD. The TAPA formalizes the findings of the transportation study, mitigation commitments, elements of access and physical design, travel demand management measures, and any other responsibilities that are agreed to by both the Proponent and the BTD. Because the TAPA will incorporate the results of the technical analysis, it must be executed after these other processes have been completed. The Proponent will work closely with BTD to determine the level of additional

transportation mitigation that will be necessary to accommodate the Project. Any transportation improvements to be undertaken as part of this Project will be defined and documented in the TAPA.

The Proponent will also produce a Construction Management Plan (CMP) for review and approval by BTD. The CMP will detail the schedule, staging, parking, delivery, and other associated impacts of the construction of the Project.

2.5 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to minimize automobile usage and Project related traffic impacts. TDM will be facilitated by the nature of the Project (which does not generate significant peak hour trips) and its proximity to numerous public transit alternatives.

On-site management will keep a supply of transit information (schedules, maps, and fare information) to be made available to the residents and patrons of the site. The Proponent will work with the City to develop a TDM program appropriate to the Project and consistent with its level of impact.

The Proponent is prepared to take advantage of good transit access in marketing the site to future residents by working with them to implement the following demand management measures to encourage the use of non-vehicular modes of travel.

The TDM measures for the Project may include but are not limited to the following:

- **Orientation Packets**: The Proponent will provide orientation packets to new residents and tenants containing information on available transportation choices, including transit routes/schedules and nearby Zipcar locations. On-site management will work with residents and tenants as they move in to help facilitate transportation for new arrivals.

- **Bicycle Accommodation**: The Proponent will provide bicycle storage in secure, sheltered areas for residents. Secure bicycle storage will also be made available to employees to encourage bicycling as an alternative mode of transportation. Subject to necessary approvals, public use bicycle racks for visitors will be placed near building entrances.

- **Transportation Coordinator**: The Proponent will designate a transportation coordinator to oversee transportation issues, including parking, service and loading, and deliveries and will work with residents as they move in to raise awareness of public transportation, bicycling, and walking opportunities.

- **Project Web Site**: The web site will include transportation-related information for residents, workers, and visitors.

2.6 Evaluation of Short-term Construction Impacts

Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan (CMP) to be filed with BTD in accordance with the City's transportation maintenance plan requirements. The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary to accommodate a safe and secure work zone.

To minimize transportation impacts during the construction period, the following measures will be considered for the CMP:

- Construction workers will be encouraged to use public transportation and/or carpool;
- A subsidy for MBTA passes will be considered for full-time employees; and
- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the site each day.

The CMP will be executed with the City prior to commencement of construction and will document all committed measures.

EXPANDED PROJECT NOTIFICATION FORM

Submitted to:
Boston Redevelopment Authority One City Hall Square . Boston, MA 02201

Submitted by:
Related Beal 177 Milk Street . Boston, MA 02109

Prepared by:
Epsilon Associates, Inc. 3 Clock Tower Place, Suite 250 . Maynard, MA 01754

In Association with:
Arrowstreet . **Nutter McClennen & Fish LLC** . **Vanasse & Associates, Inc.**
Nitsch Engineering . **Haley & Aldrich, Inc.** . **Tremont Preservation Services**

MARCH 25, 2015

Epsilon ASSOCIATES INC.

EXPANDED PROJECT NOTIFICATION FORM

Congress Square

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
Related Beal
177 Milk Street
Boston, MA 02109

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Arrowstreet
Nutter McClennen & Fish LLC
Vanasse & Associates, Inc.
Nitsch Engineering
Haley & Aldrich, Inc.
Tremont Preservation Services

March 25, 2015

Epsilon
ASSOCIATES INC.

Chapter 2.0

Transportation

2.0 TRANSPORTATION COMPONENT

2.1 Introduction

Vanasse & Associates, Inc. (VAI) has conducted a Traffic Impact and Access Study (TIAS) in conjunction with this Expanded PNF to determine the potential impacts on the transportation infrastructure associated with the Project as described in Chapter 1. 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 and future conditions, both with and without the Project, on the transportation infrastructure serving the Project site.

This study presents a comprehensive assessment of all elements of the transportation infrastructure serving the Project site. The study area evaluated as a part of this assessment includes all major roadways and intersections that are expected to convey vehicular and pedestrian traffic to and from the Project site, and includes 13 intersections located along Congress Street, Devonshire Street, State Street, Water Street and Milk Street. This expansive study area, determined through consultation with the Boston Transportation Department (BTD), allows for a full evaluation of the transportation system serving the Project site, both at present and with planned future development in the area. Further, the extent of the study area allows for the development of a transportation improvement program that is designed to incorporate a balanced approach to improving traffic flow, public transportation access, and accessibility for pedestrians and bicyclists. These goals have been advanced as part of the transportation improvement program developed for the Project.

2.1.1 Project Impact Summary

As compared to the current use of the site, the proposed redevelopment project is expected to primarily result in an increase in pedestrian traffic to and from the Project, with only minor vehicular traffic increases during peak hours due to the reduction of the amount of existing office space currently provided at the Project. As compared to the fully-occupied current use of the Project site, the Project is projected to result in 208 new automobile trips (two-way, 24-hour volume) on an average weekday, with 494 new transit trips and 2,672 new pedestrian/bicycle trips. During the weekday morning peak hour, the Project is projected to generate seven fewer automobile trips than the current use of the site, 19 fewer transit trips and 81 additional pedestrian/bicycle trips as compared to the current uses of the site. During the weekday evening peak hour, the Project is predicted to generate nine new automobile trips, 22 additional transit trips and 225 additional pedestrian/bicycle trips as compared to the current use of the site.

As a result of the analyses presented herein, a comprehensive transportation improvement program has been developed for the Project that has been designed to: i) address the potential impact of the Project on the transportation infrastructure; ii) encourage the use of alternative modes of transportation for those accessing the Project; and iii) address transportation infrastructure deficiencies identified as a part of this study or by the City.

The planned improvements encompass the following general elements:

- Sidewalk and streetscape improvements along the Quaker Lane corridor to transform the corridor from its current loading zone use to a pedestrian friendly environment;

- Conversion of the northern segment of Quaker Lane from a two-way roadway to a one-way roadway in the eastbound direction to minimize the level of vehicular activity along the corridor;

- Installation of removable bollards along the northern east-west segment of Quaker Lane to prohibit vehicular through traffic from the southern segment of the corridor outside of off-peak hours;

- Expansion of the existing sidewalk area at the intersections of Water Street with Congress Street and Devonshire Street to enhance pedestrian crossings at these locations;

- Reconstruction of segments of the existing sidewalk system that surrounds the Project site;

- Pedestrian and bicycle access and safety improvements, including provision of on-site bicycle storage for residents, employees and patrons of the Project;

- Advancement of a comprehensive Transportation Demand Management (TDM) program to include specific elements designed to encourage the use of public transportation services, car and vanpooling, and pedestrian and bicycle use; and

- Implementation of a detailed Construction Management Plan (CMP) that is designed to reduce impacts during the construction phase of the Project.

The implementation of the identified improvements will serve to provide additional capacity and enhancements to the transportation system, and facilitate access to the Project site in a safe and efficient manner.

2.1.2 Project Description

The Project will entail the redevelopment of, and new additions to, existing office buildings located in the block bound by Quaker Lane to the north, Devonshire Street to the west, Congress Street to the east and Water Street to the south to accommodate a proposed mixed-use development with retail, residential, hotel and office uses, as described in detail in Section 1.3.3. As part of the development program, Quaker Lane will be transformed from its current use as a service way that primarily serves loading activity into a pedestrian corridor with ground level commercial space. Consistent with the current use of the Project site, parking will not be provided on-site and will be continue to be accommodated within existing private off-site area parking facilities located proximate to the Project site. Figure 2-1 depicts the Project site location in relation to the existing roadway network.

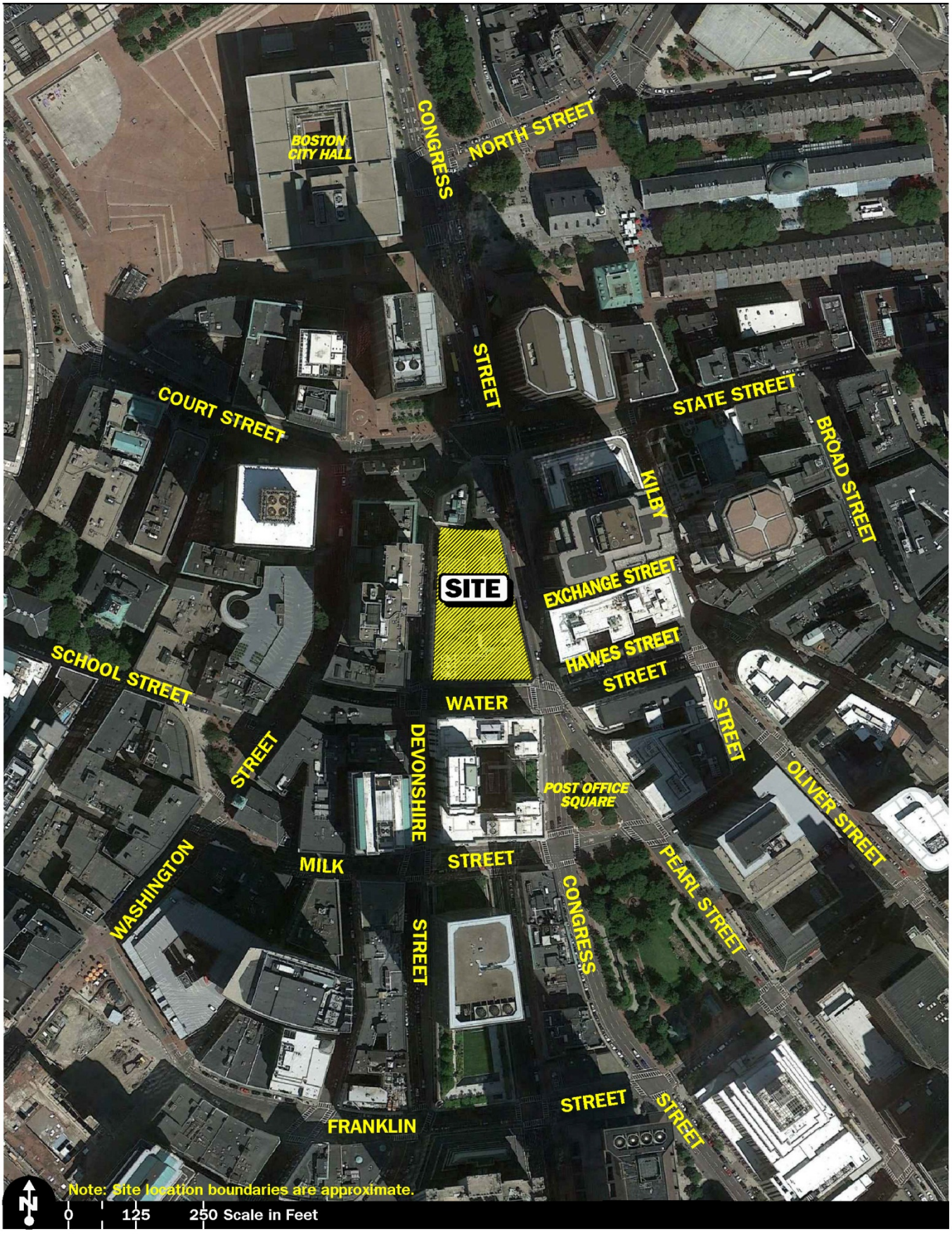
2.1.3 Study Methodology

This study was prepared in consultation with the City of Boston; was performed in accordance with the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs (EEA)/Massachusetts Department of Transportation (MassDOT) Guidelines for Environmental Impact Report/Environmental Impact Statement Traffic Impact Assessments (TIAs), and the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports; and was conducted 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; on- and off-street parking; observations of traffic flow; and collection of peak period pedestrian, bicycle and vehicle counts.

In the second stage of the study, future conditions were projected and analyzed. Specific travel demand forecasts for the Project were assessed along with future demands due to expected growth independent of the Project. A seven-year time horizon was selected for analyses consistent with state guidelines for traffic impact assessments. The future conditions analysis conducted in stage two identifies existing or projected future capacity, safety, and site access issues.

The third stage of the study presents and evaluates measures to address the projected impact of the Project on the transportation infrastructure as identified in stage two of the study, and to facilitate safe and efficient travel to and from the Project site.



Congress Square Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-1
Site Location Map

2.2 Existing Conditions

A comprehensive field inventory of the study area roadways and intersections was conducted in October and November 2014. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; on- and off-street parking; public transportation services; traffic volumes; operating characteristics; posted speed limits; and land use information within the study area.

2.2.1 Study Area

The study area assessed for the Project was identified in initial consultation meetings with the BTD and was selected to contain the major roadways providing access to the Project site including: Congress Street, Devonshire Street and Water Street; as well as 13 major intersections located along these roadways through which Project-related traffic will travel. The 13 study intersections, as depicted in Figure 2-2, include:

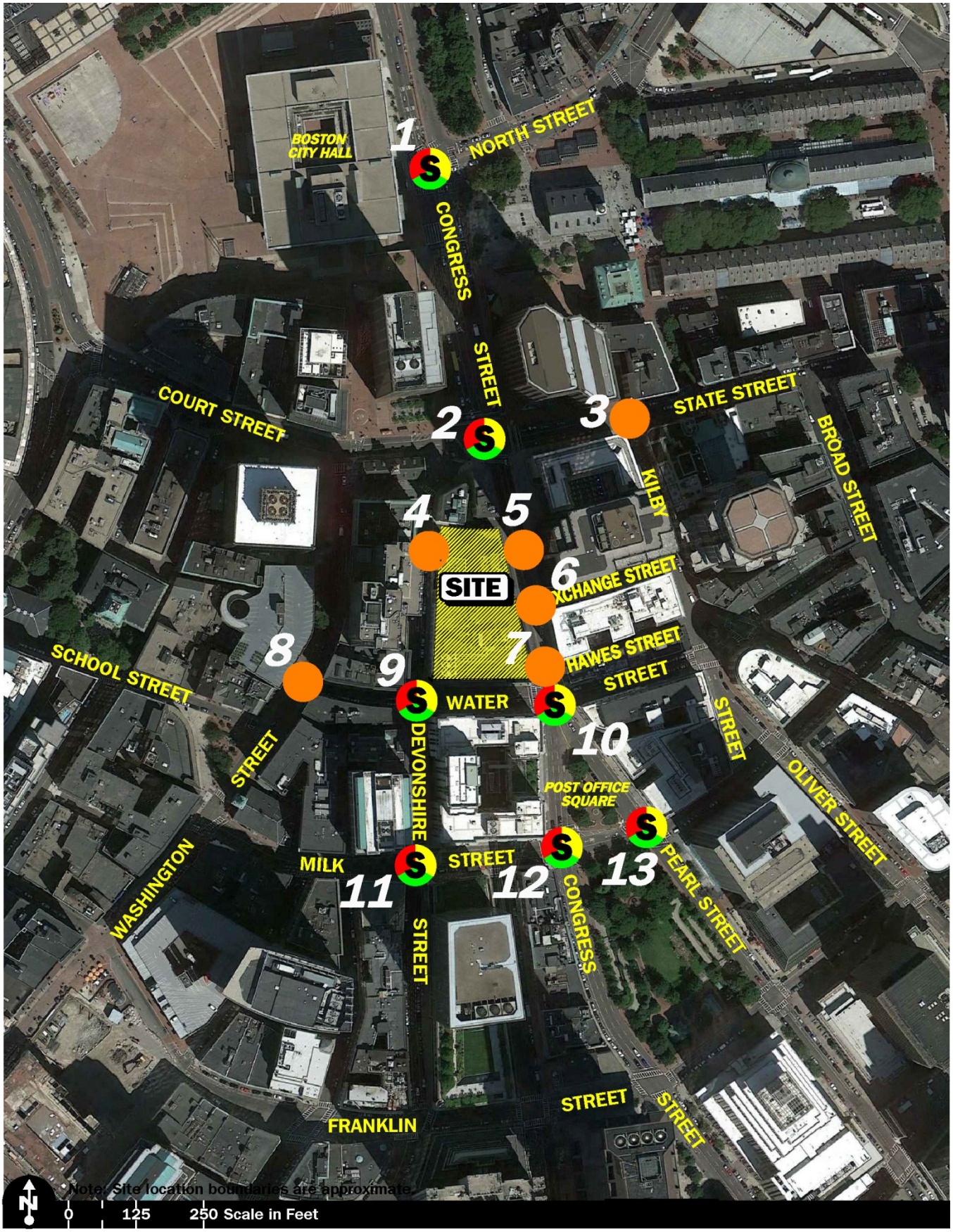
1. Congress Street at North Street and Boston City Hall driveway
2. Congress Street at State Street and Devonshire Street
3. State Street at Kilby Street
4. Devonshire Street at Quaker Lane
5. Congress Street at Quaker Lane (north)
6. Congress Street at Quaker Lane (south) and Exchange Street
7. Congress Street at Hawes Street
8. Washington Street at Water Street
9. Devonshire Street at Water Street
10. Congress Street at Water Street and Post Office Square
11. Devonshire Street at Milk Street
12. Congress Street at Milk Street
13. Pearl Street at Milk Street

2.2.2 Geometry

A field inventory of the study area roadways, intersection geometrics, pedestrian accommodations and bicycle facilities was conducted in October and November 2014 and is summarized in the following sections.

2.2.2.1 Roadways

Congress Street – Congress Street is an urban principle arterial under the jurisdiction of the City of Boston that traverses the study area in a general north-south orientation between New Chardon Street to the north and Seaport Avenue in the South Boston waterfront district to the south. North of State Street, Congress Street generally provides three lanes of travel in each direction, separated by a median island. In the vicinity of the Project site, Congress Street provides two lanes of travel in each direction, separated by a double-yellow



Congress Square Boston, Massachusetts

Figure 2-2
Study Area Intersections

centerline. South of Water Street, Congress Street provides three lanes of travel in the southbound direction. An exclusive bicycle lane is provided along Congress Street in the southbound direction south of Water Street. Sidewalks are provided along both sides of Congress Street throughout the study area with painted crosswalks provided at signalized intersections along the corridor. Within the study area, on-street parking is generally prohibited along the corridor. Land use along Congress Street is primarily a mix of commercial and office uses as well as Boston City Hall.

Devonshire Street – Devonshire Street is a one lane (one lane in the southbound direction), urban minor arterial roadway that is under City of Boston jurisdiction, and traverses the study area in a general north-south orientation between State Street to the north and Summer Street to the south. Sidewalks are provided along both sides of Devonshire Street with on-street commercial parking provided in designated areas along one or both sides of the roadway. Within the vicinity of the Project site, shared bicycle lane designation (sharrow) pavement markings are provided along the corridor. Land use along Devonshire Street in the vicinity of the Project site consists primarily of residential, commercial and office uses as well as a parking garage.

Water Street – Water Street is a one lane (one lane in the eastbound direction) local roadway that is under City of Boston jurisdiction and traverses the study area in a general east-west orientation between its western terminus at Washington Street and its eastern terminus at Broad Street. Sidewalks are provided continuously along both sides of Water Street throughout the study area. Land use along Water Street consists primarily of a mix of office and commercial uses.

2.2.2.2 Intersections

The following section provides a description of the roadway geometry, traffic control, parking restrictions and land uses for each study area location as observed in October and November 2014.

1. Congress Street at North Street and Boston City Hall Driveway - North Street and the Boston City Hall driveway approach meet Congress Street from the east and west, respectively, to form a four-way intersection that operates under traffic signal control. The Boston City Hall driveway provides a single approximately 17-foot wide driveway approach to this location. The North Street westbound approach provides an approximately 11-foot wide exclusive left-turn lane and an approximately 12-foot wide general purpose travel lane. The Congress Street northbound approach provides three approximately 11-foot wide general purpose travel lanes. The Congress Street southbound approach provides three approximately 11-foot wide general purpose travel lanes. Directional flow of traffic on all four intersection approaches is separated by a raised median island. Crosswalks are provided along all four approaches to this intersection. The traffic signal at this location operates under a four-phase signal cycle with a lead phase provided for southbound traffic

on Congress Street and an exclusive pedestrian phase. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses as well as Boston City Hall.

2. Congress Street at State Street and Devonshire Street – Congress Street meets State Street and Devonshire Street from the north and south to form this five-way intersection that operates under traffic signal control. The State Street westbound approach provides an approximately 12-foot wide exclusive left-turn lane and two approximately 12-foot wide general purpose travel lanes. An approximately 8-foot wide parking aisle for taxi delivery is also provided on this approach. The Congress Street northbound approach provides two approximately 10-foot wide general purpose travel lanes from which turning movements are prohibited. The Congress Street southbound approach provides an approximately 11-foot wide through lane, an approximately 11-foot wide shared through/right-turn lane and an approximately 11-foot wide exclusive right-turn lane. Directional travel on Congress Street is separated by a raised median island north of State Street and a painted double-yellow centerline south of State Street. Crosswalks are provided along all five approaches to this intersection. The traffic signal at this location operates under a three-phase signal cycle with an exclusive pedestrian phase provided. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

3. Congress Street at Kilby Street – Kilby Street meets Congress Street from the south to form a three-way intersection that operates under STOP-sign control. The Congress Street westbound approach provides three approximately 11-foot wide general purpose travel lanes. The Kilby Street northbound approach provides an approximately 8-foot wide exclusive bicycle lane, an approximately 12-foot wide left-turn only lane and an approximately 8-foot wide parking lane on the eastern side of the roadway. The Kilby Street northbound approach operates under STOP-sign control. Crosswalks are provided across the northbound and westbound approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial space.

4. Devonshire Street at Quaker Lane – Quaker Lane intersects Devonshire Street from the east to form a three-way intersection that operates under stop control. The Devonshire Street southbound approach provides a single approximately 12-foot wide general purpose travel lane that is designated as a shared roadway with bicycle traffic with painted sharrows provided along the corridor. The Quaker Lane westbound approach to Devonshire Street is approximately 10 feet in total width and accommodates two-way travel. On-street parking is provided along both sides of Devonshire Street in the vicinity of this intersection. Land use in the vicinity of this intersection consists of a mix of office and commercial uses.

5. Congress Street at Quaker Lane (north) – Quaker Lane intersects Congress Street from the west to form a three-way intersection that operates under stop control. The Congress Street northbound and southbound approaches provide two approximately 10-foot wide general purpose travel lanes in each direction that are separated by a double-yellow centerline. Quaker Lane provides an approximately 16-foot wide approach in the

eastbound direction that accommodates both entering and exiting traffic flows. On-street parking is prohibited along both sides of Congress Street and along Quaker Lane in the vicinity of this intersection. Land use in the vicinity of this intersection is primarily office uses.

6. Congress Street at Quaker Lane (south) and Exchange Place – Quaker Lane and Exchange Place intersect Congress Street from the west and east, respectively, to form a four-way offset intersection that operates under stop control. The Congress Street northbound and southbound approaches provide two approximately 10-foot wide general purpose travel lanes in each direction that are separated by a double-yellow centerline. Quaker Lane provides an approximately 14-foot wide approach in the eastbound direction that accommodates both entering and exiting traffic flows. Exchange Place provides an approximately 25-foot wide approach that accommodates one-way traffic in the westbound direction. On-street parking is prohibited along both sides of Congress Street in the vicinity of this intersection. Land use in the vicinity of this intersection is primarily office uses.

7. Congress Street at Hawes Street – Hawes Street intersects Congress Street from the east to form a three-way intersection that operates under stop control. The Congress Street northbound and southbound approaches provide two approximately 10-foot wide general purpose travel lanes in each direction that are separated by a double-yellow centerline. Hawes Street provides an approximately 8-foot wide approach in the westbound direction that accommodates one-way westbound traffic flows. On-street parking is prohibited along both sides of Congress Street and along Hawes Street in the vicinity of this intersection. Land use in the vicinity of this intersection is primarily office uses.

8. Washington Street at Water Street – Water Street and a parking garage exit driveway intersect Washington Street from the east and west, respectively, to form a four-way intersection that operates under stop control. The parking garage exit driveway provides two separate exit driveways that are controlled by mechanical exit bars. The Washington Street northbound approach provides an approximately 12-foot wide through lane and an approximately 12-foot wide exclusive right-turn lane. A painted crosswalk is provided across the westbound Water Street approach to this intersection. Land use in the vicinity of this intersection includes a mix of office and commercial uses as well as a parking garage.

9. Devonshire Street at Water Street – Water Street intersects Devonshire Street from the east and west to form a four-way intersection that operates under traffic signal control. The Water Street eastbound approach provides a single approximately 16-foot wide general purpose travel lane. On-street parking is allowed along the southern side of Water Street at this intersection. The Devonshire Street southbound approach provides an approximately 13-foot wide general purpose travel lane that is designated as a shared roadway with bicycle traffic with painted sharrows provided along the corridor. The traffic signal at this location operates under a two-phase signal cycle. Crosswalks are provided across all four

intersection approaches with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Land use in the vicinity of this intersection consists of a mix of office and commercial uses.

10. Congress Street at Water Street and Post Office Square – Water Street intersects Congress Street and Post Office Square from the east and west to form a five-way intersection that operates under traffic signal control. The Water Street eastbound approach provides an approximately 12-foot wide exclusive left-turn lane and an approximately 12-foot wide shared through/right-turn lane. On-street parking is provided along both sides of Water Street at this location. The Congress Street southbound approach provides two approximately 10-foot wide general purpose travel lanes. On-street parking is prohibited along both sides of Congress Street at this location. The Post Office Square northbound approach provides two approximately 12-foot wide general purpose travel lanes and an approximately 6-foot wide bicycle lane. On-street parking is provided along the western side of the Post Office Square northbound approach to this location. The traffic signal at this location operates under a two-phase signal cycle with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Crosswalks are provided across all four intersection approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

11. Devonshire Street at Milk Street – Milk Street intersects Devonshire Street from the east and west to form a four-way intersection that operates under traffic signal control. The Milk Street eastbound approach provides two approximately 11-foot wide general purpose travel lanes, with the inside lane designated as a shared roadway with bicycle traffic with painted sharrows provided. On-street parking is prohibited along both sides of Milk Street at this location. The Devonshire Street southbound approach provides a single approximately 18-foot wide general purpose travel lane that is designated as a shared roadway with bicycle traffic with painted sharrows provided. On-street parking is provided along the western side of Devonshire Street at this location. The traffic signal at this location operates under a two-phase signal cycle with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Crosswalks are provided across all four intersection approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

12. Congress Street at Milk Street – Milk Street intersects Congress Street from the east and west to form a four-way intersection that operates under traffic signal control. The Milk Street eastbound approach provides two approximately 11-foot wide general purpose travel lanes and an approximately 11-foot wide exclusive right-turn lane. On-street parking is prohibited along both sides of Milk Street at this location. The Congress Street southbound approach provides an approximately 11-foot wide exclusive left-turn lane, two approximately 10-foot wide through lanes and an approximately 11-foot wide exclusive right-turn lane. On-street parking is prohibited along both sides of Congress Street at this location. An approximately 6-foot wide exclusive bicycle lane is provided along Congress

Street in the southbound direction. The traffic signal at this location operates under a two-phase signal cycle with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Crosswalks are provided across all four intersection approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

13. Pearl Street at Milk Street – Milk Street intersects Pearl Street from the east and west to form a four-way intersection that operates under traffic signal control. The Milk Street eastbound approach provides an approximately 16-foot wide exclusive left-turn lane that is designated as a shared roadway with bicycle traffic with painted sharrows provided, an approximately 13-foot wide through lane and an approximately 6-foot wide exclusive bicycle lane. On-street parking is prohibited along the Milk Street eastbound approach to this intersection. The Pearl Street northbound approach provides an approximately 10-foot wide general purpose travel lane and an approximately 5-foot wide bicycle lane. On-street parking is provided along the western side of Pearl Street at this location. A Hubway shared bicycle station is provided along the eastern side of Pearl Street at this location. The traffic signal at this location operates under a two-phase signal cycle with concurrent pedestrian signal phasing provided to accommodate pedestrian crossings at this intersection. Crosswalks are provided across all four intersection approaches to this intersection. Land use in the vicinity of this intersection consists primarily of a mix of office and commercial uses.

2.2.3 Traffic Volumes

To determine existing traffic-volume demands and flow patterns within the study area, manual turning movement counts (TMCs) and vehicle classification counts were completed in October and November 2014. The TMCs were conducted at the study intersections during the weekday morning (7:00 to 9:00 a.m.) and weekday evening (4:00 to 6:00 p.m.) peak periods, the critical time periods for both the Project and the adjacent roadway network.

Seasonal Adjustments

In order to evaluate the potential for seasonal fluctuation of traffic volumes within the study area, MassDOT weekday seasonal factors for Group 6 roadways (urban arterials, collectors and rural arterials, the MassDOT functional classification for the study area roadways) were reviewed.[1] Based on a review of this data, it was determined that traffic volumes for the months of October and November are approximately 8 and 3 percent above average-month conditions, respectively. In order to provide a conservative (above average) analysis

[1] MassDOT Traffic Volumes for the Commonwealth of Massachusetts; 2011 Weekday Seasonal Factors, Group 6 – Urban Arterials, Collectors and Rural Arterials.

scenario, the traffic volumes collected as a part of this study were not adjusted downward to average-month conditions. The 2014 Existing weekday morning and weekday evening peak-hour traffic volumes are depicted on Figures 2-3 and 2-4, respectively.

A review of the peak-period traffic counts indicates that the weekday morning peak hour generally occurs between 8:00 and 9:00 a.m., while the weekday evening peak hour generally occurs between 5:00 and 6:00 p.m. In all instances, the individual peak hours of intersection traffic were utilized for analysis purposes.

2.2.4 Pedestrian and Bicycle Facilities

A comprehensive field inventory of pedestrian and bicycle facilities was performed in October and November 2014. 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 bicycle facilities. Pedestrian and bicycle counts were conducted at each of the study intersections during weekday morning (7:00 to 9:00 a.m.) and weekday evening (4:00 to 6:00 p.m.) peak periods.

Figures 2-5 and 2-6 depict the 2014 Existing weekday morning and weekday evening peak hour pedestrian volumes, respectively. In general, pedestrian flows along the Congress Street corridor are more heavily distributed in the southbound direction towards Post Office Square during the weekday morning peak hour, and more heavily distributed in the northbound direction away from Post Office Square during the weekday evening peak hour.

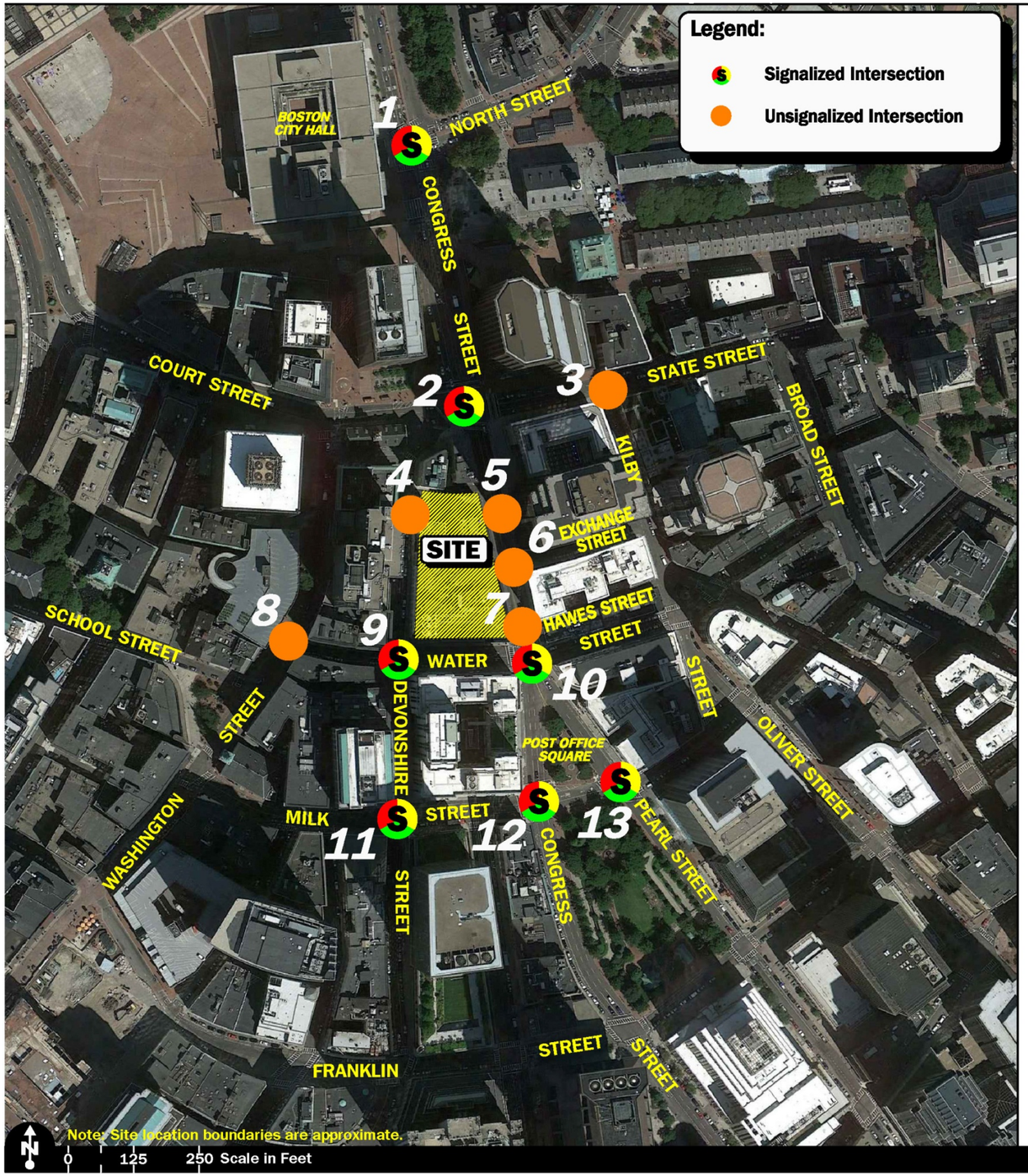
2.2.4.1 Pedestrian Facilities

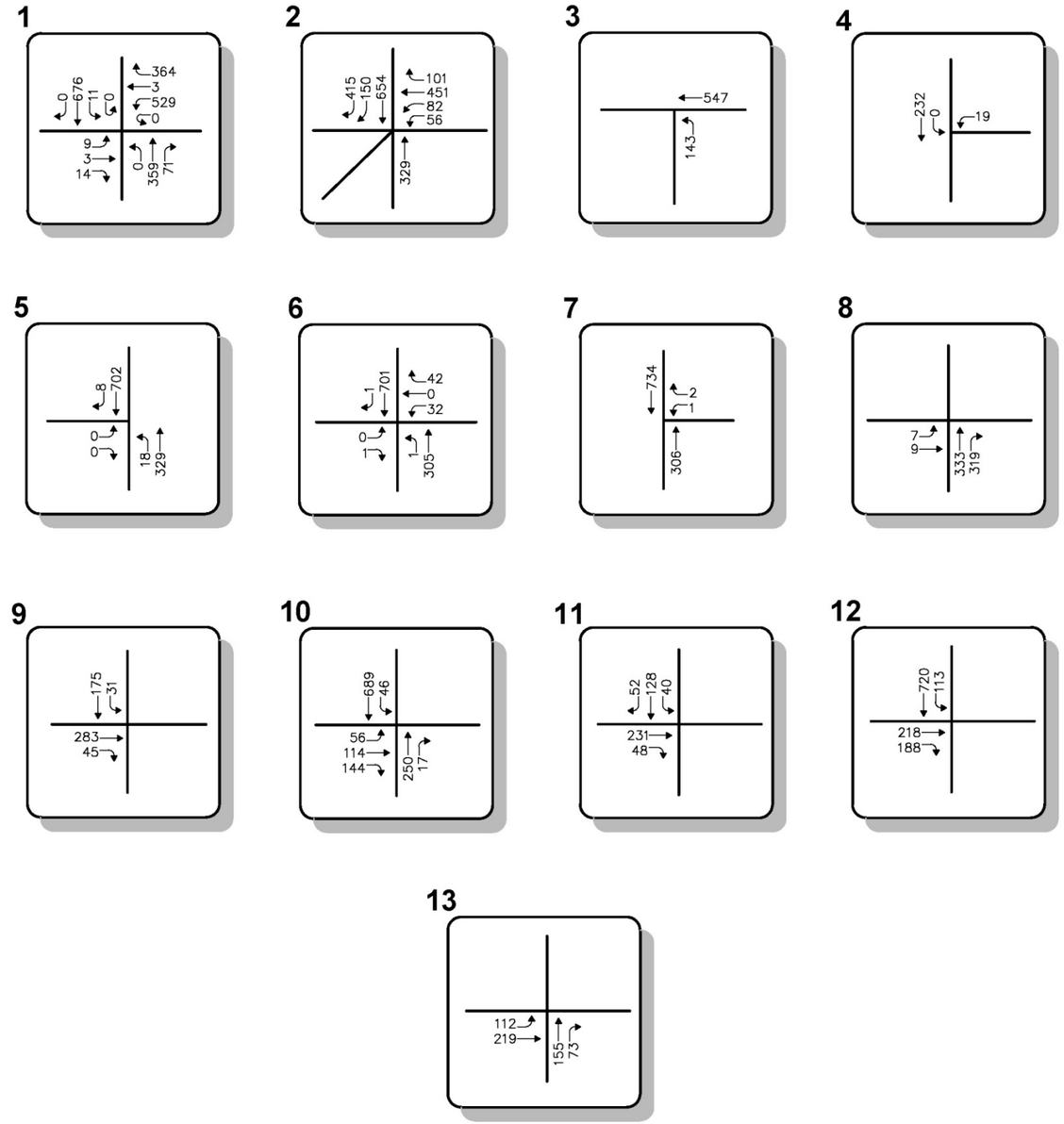
Sidewalks are generally provided along both sides of each study area roadway proximate to the Project site, with painted crosswalks provided at signalized and unsignalized intersections within the study area. At the majority of study area locations, signalized pedestrian crossings occur concurrent with vehicular movements, with the exceptions of the intersections of Congress Street with North Street and State Street.

2.2.4.2 Bicycle Facilities

Within the study area, bicycle accommodations are provided along segments of Congress Street, Devonshire Street, Milk Street and Pearl Street. Specifically, sharrows are provided along segments of each of these corridors alerting motorists to share the corridor with bicycle traffic. Additionally, segments of Congress Street and Pearl Street, south of Water Street, provide exclusive bicycle lanes within the study area.

Within close proximity of the Project site, the Hubway bicycle sharing program provides two bicycle stations along the eastern side of Post Office Square south of Milk Street, and along the northern side of Court Street, immediately west of the intersection of Devonshire Street and State Street. The Hubway bike sharing program was introduced in the City of



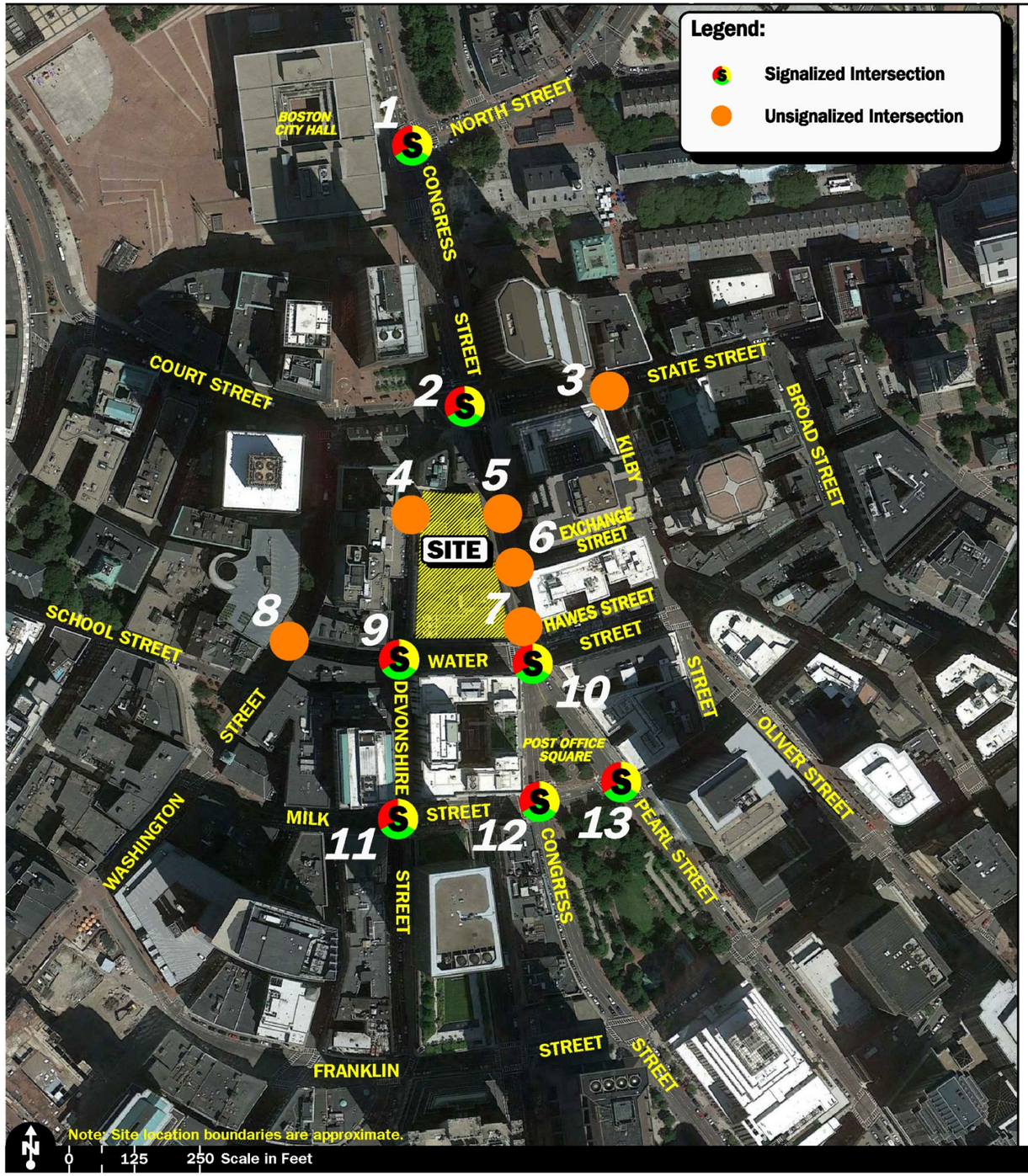


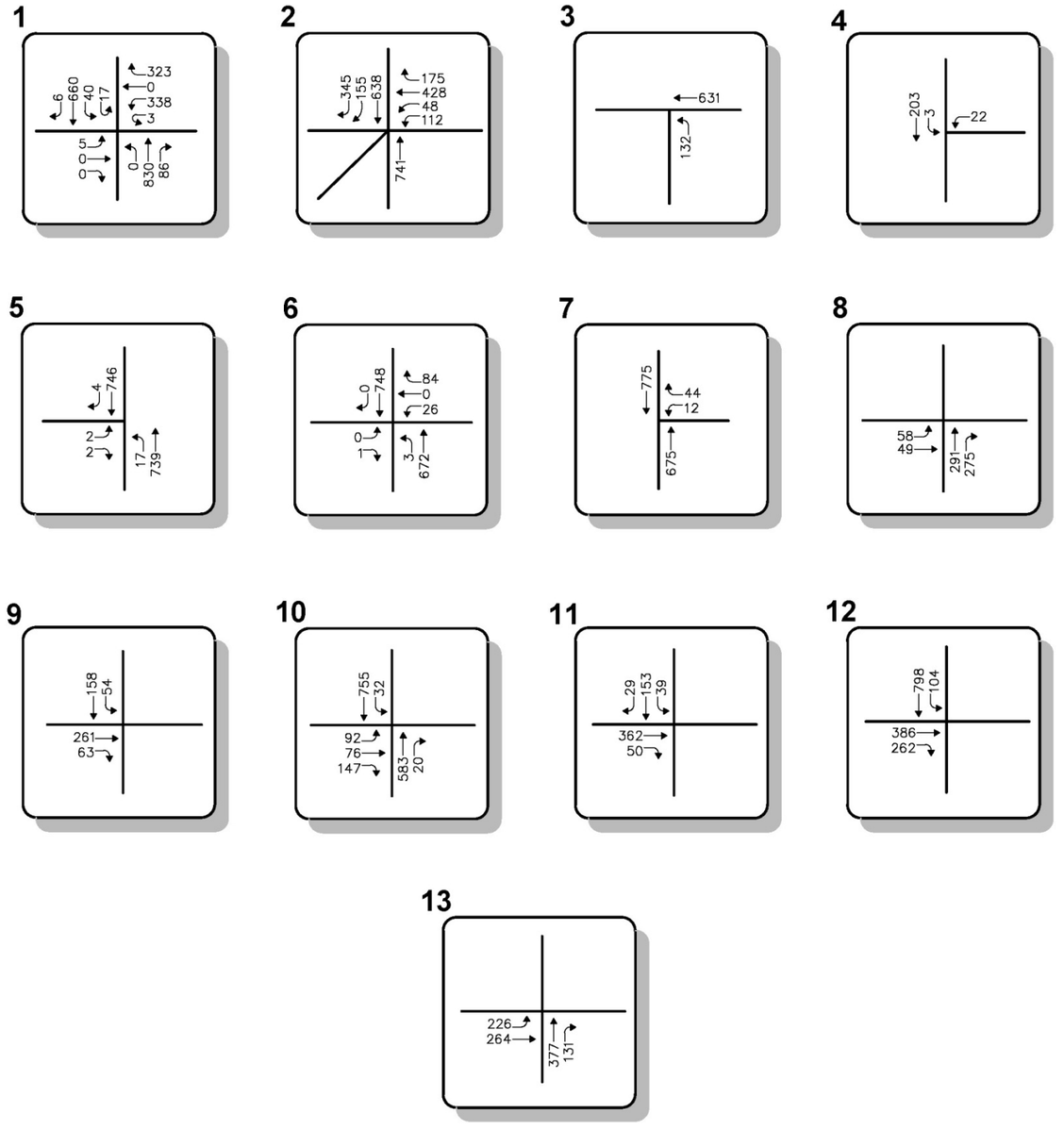
Note: Imbalances exist due to intersection and curb cuts not depicted on this figure.

Congress Square Boston, Massachusetts

Figure 2-3

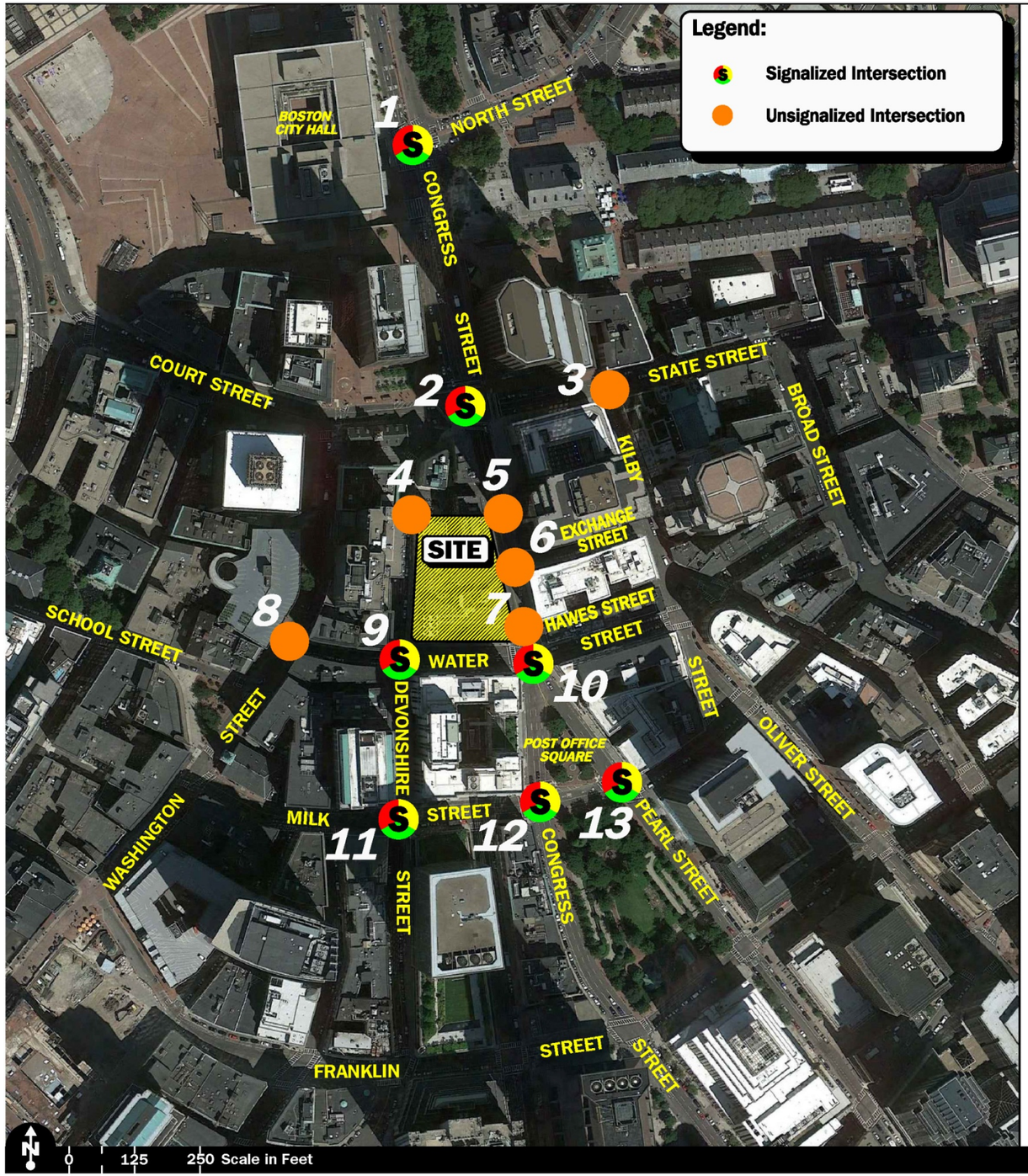
2014 Existing Weekday Morning Peak Hour Traffic Volumes

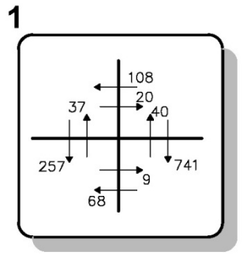


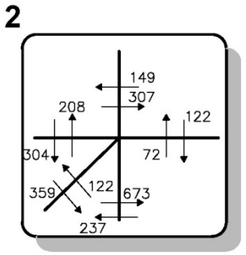


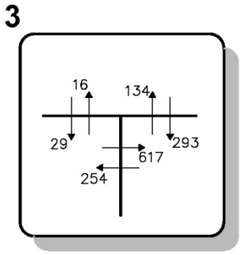
Note: Imbalances exist due to intersection and curb cuts not depicted on this figure.

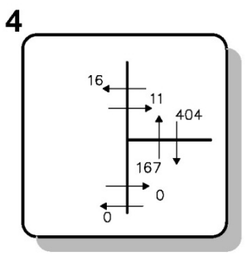
Congress Square Boston, Massachusetts

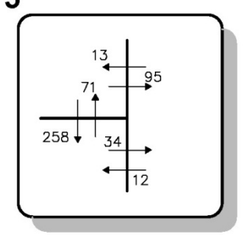


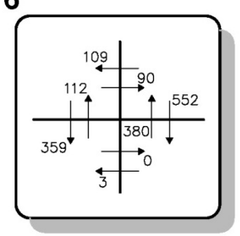


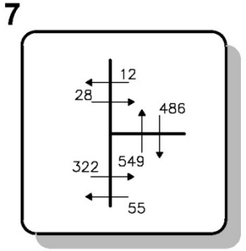


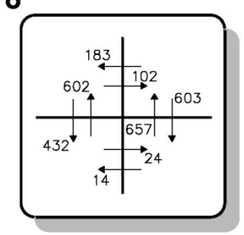


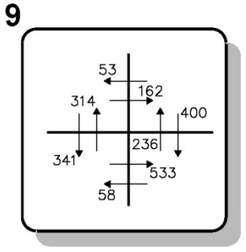


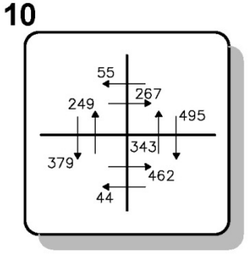


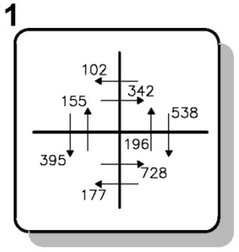


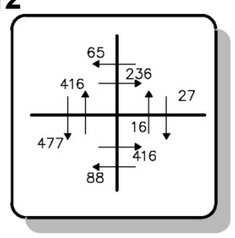


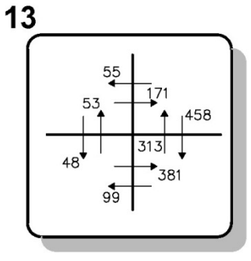








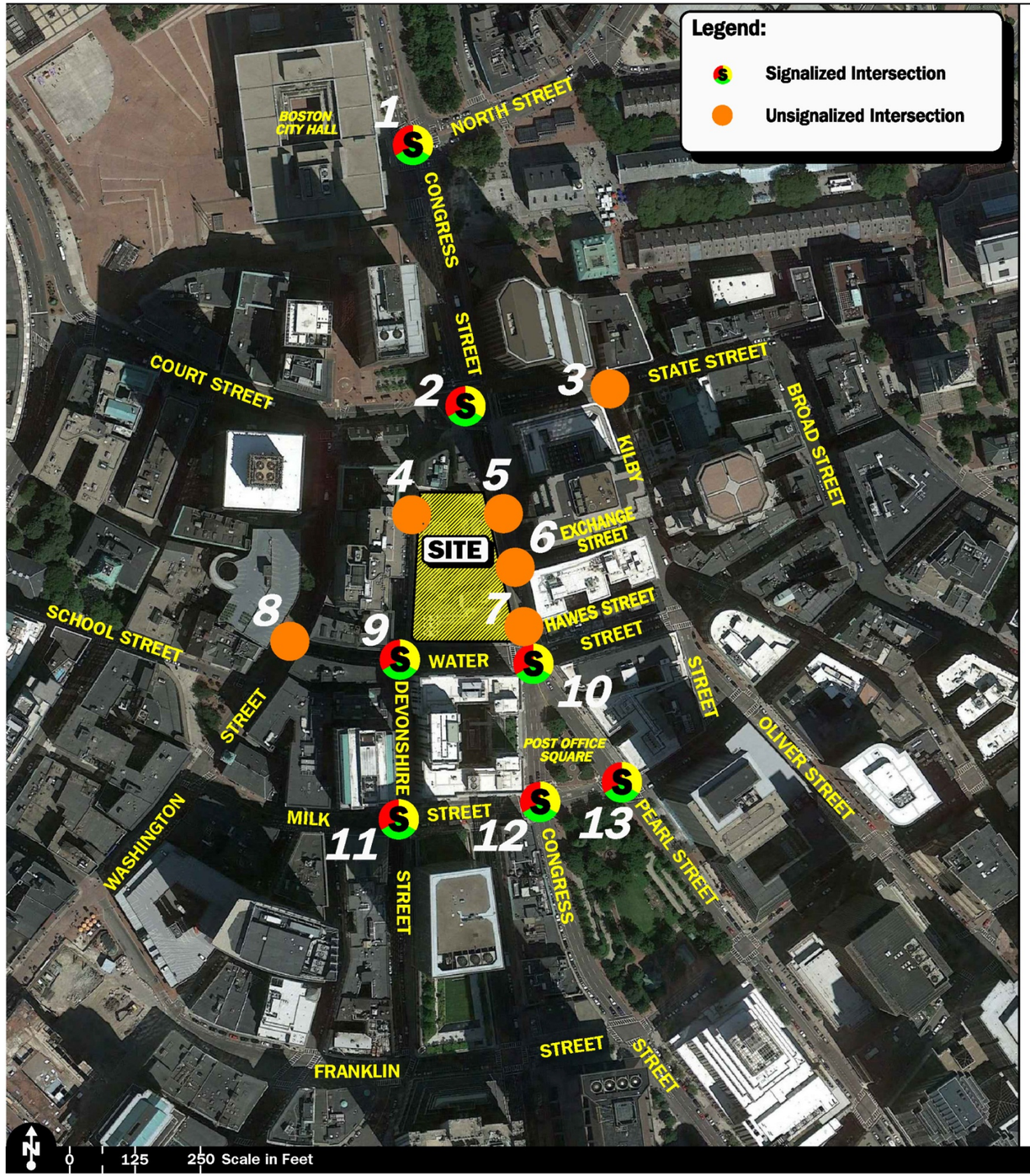


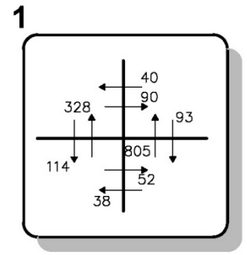


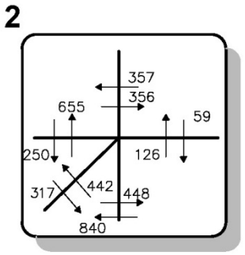
Congress Square Boston, Massachusetts

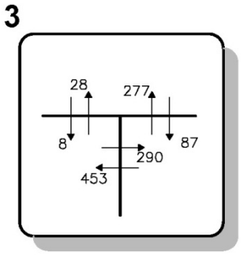
Figure 2-5

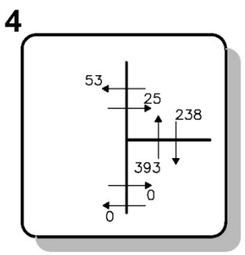
2014 Existing Weekday Morning Peak Hour Pedestrian Volumes

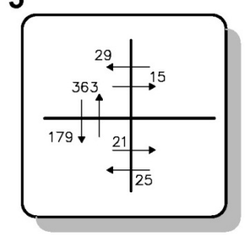


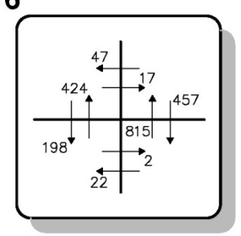


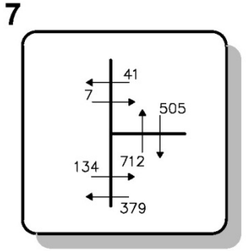


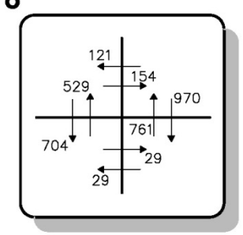


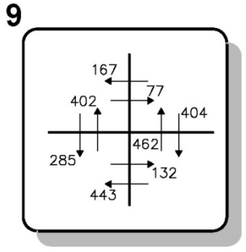


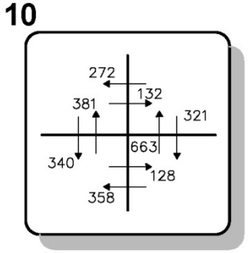


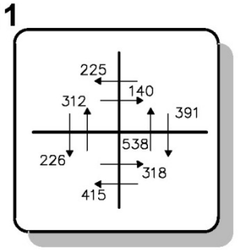


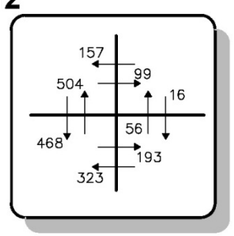


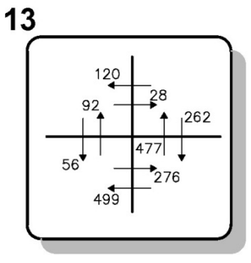












Congress Square Boston, Massachusetts

Figure 2-6

2014 Existing Weekday Evening Peak Hour Pedestrian Volumes

Boston in July 2011 and included 600 bicycles at 60 stations located throughout the City. Since its introduction, the program has expanded to include over 140 stations and in excess of 1,300 bicycles, with the service area extended to Brookline, Cambridge and Somerville.

2.2.5 Public Transportation

The Project site is ideally situated in close proximity to transit service offered by the Massachusetts Bay Transit Authority (MBTA). The Project site is served by a number of public transportation services, including bus service and subway service via the Orange, Blue, Red and Green Lines. The State Street Station Orange Line/Blue Line headhouses are located on the southwest corner of the intersection of Devonshire Street with Water Street, as well as the northwest corner of Devonshire Street and Court Street, immediately adjacent to the Project site. In addition, the Government Center Station, which provides access to the Green Line, is located in close walking distance to the Project site at City Hall Plaza. As discussed in subsequent sections of this report, the Government Center station is currently closed to the public as part of ongoing improvements to make the station fully accessible to all MBTA patrons in accordance with the Americans with Disabilities Act (ADA). Lastly, Red Line service is accessible via the Downtown Crossing Station which is within walking distance of the site and also available via connections from the Orange Line at the State Street Station.

Figure 2-7 depicts the available public transportation services in the area. The following sections describe the available public transportation services within the study area that serve the Project site, with detailed system maps, schedules and fare information provided in Appendix C.

2.2.5.1 Bus Service

The MBTA operates the following six public bus routes within the study area:

- ***Route 4: North Station – Tide Street*** – via World Trade Center.
- ***Route 92: Assembly Square Mall - Downtown*** – via Main Street.
- ***Route 93: Sullivan Square Station - Downtown*** – via Bunker Hill Street.
- ***Route 352: Burlington Express - Boston*** – via Route 128 and I-93.
- ***Route 354: Woburn Express - Boston*** – via Woburn Square and I-93.

Table 2-1 summarizes the MBTA bus service capacity and ridership information as provided by the Central Transportation Planning Staff (CTPS) for the five public bus routes serving the study area, and indicates reserve capacity is available to accommodate additional passenger loadings associated with the Project.

Congress Square Boston, Massachusetts

Figure 2-7
Public Transportation Map

Table 2-1 MBTA Bus Service and Capacity

Bus Route Number	Bus Route	Weekday Morning Peak Period			Weekday Evening Peak Period		
		Peak Period Headway (minutes)	Ridership[a] (Inbound and Outbound Total)	Maximum Load Capacity[b] (Inbound and Outbound Total)	Peak Period Headway (minutes)	Ridership[a] (Inbound and Outbound Total)	Maximum Load Capacity[b] (Inbound and Outbound Total)
4	North Station – Tide Street	13	226	1,216	20	170	912
92	Assembly Square Mall – Downtown	15	324	1,064	15	335	1,216
93	Sullivan Square Station – Downtown	7	1,191	2,280	8	1,069	2,204
352	Burlington Express – Boston	20	454	912	20	377	912
354	Woburn Express – Boston	20	307	912	15	426	1,216

Source: MBTA/CTPS.

[a]Ridership for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.)

[b]Passenger capacity for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.). Maximum load capacity is equal to 76 passengers.

2.2.5.2 Subway Service

The Project site and the immediate study area is served by MBTA subway service provided by way of both the Orange and Blue Lines. The State Street Station Orange Line/Blue Line headhouse is located on the southwest corner of Devonshire Street and Water Street, on the opposite intersection quadrant of the Project site. Connections to the MBTA Red Line and Green Line can be made at Downtown Crossing or Haymarket, respectively. Additionally, connections to the MBTA Commuter Rail at North Station can be made via the Orange Line, located two stops from the State Street Station.

Table 2-2 summarizes the service capacity and ridership information for the Orange and Blue Lines at State Street Station, and indicates reserve capacity is available to accommodate additional passenger loadings associated with the Project.

Table 2-2 MBTA State Station Orange and Blue Line Service and Capacity

Subway Line	Peak Period Headway (Minutes)	Policy Load Capacity (Passengers)	Crush Load Capacity (Passengers)	Ridership in Passengers	
				Weekday Morning Peak-Period	Weekday Evening Peak-Period
Orange Line:	4 – 5 mins.				
Inbound		6,681	11,424	13,634	5,140
Outbound		6,681	11,424	4,911	11,860
Total		13,362	22,848	18,545	17,000
Blue Line:	5 -9 mins.				
Inbound		2,280	3,480	2,460	859
Outbound		2,280	3,480	404	2,023
Total		4,560	6,960	2,864	2,882

Source: MBTA/CTPS.

[a]Ridership for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

2.2.5.3 Commuter Rail Service

As stated previously, efficient connections between the Project site and the MBTA Commuter Rail systems at both South Station and North Station is provided via the Orange Line from State Street Station. The Orange Line provides a direct connection to North Station, with access from South Station available via a transfer from the Red Line at Downtown Crossing. North Station is served by four of the 12 MBTA Commuter Rail lines:

- Newburyport/Rockport
- Haverhill

- Lowell
- Fitchburg

South Station is served by the remaining eight MBTA Commuter Lines:

- Framingham/Worcester
- Needham
- Franklin
- Providence/Stoughton
- Fairmount
- Plymouth/Kingston
- Middleborough/Lakeville
- Greenbush

Table 2-3 and Table 2-4 summarize the service capacity and ridership information for the Commuter Rail Lines that serve North Station and South Station. As shown, within the two-hour commuter service period, the majority of commuter rail lines provide excess capacity during peak commuter hours. It was noted that there are trains that currently operate over their service capacity resulting in passengers standing or finding other accommodations within the train. However, reserve capacity is afforded within the overall Commuter Rail system serving North Station and South Station to accommodate additional ridership, with passengers shifting to either an earlier or later train as work schedules permit.

Table 2-3 MBTA South Station Commuter Rail Service and Capacity

Commuter Rail Line	Weekday Morning Peak Period		Weekday Evening Peak Period	
	Ridership[a]	Maximum Load Capacity[b]	Ridership[a]	Maximum Load Capacity[b]
Framingham/Worcester:				
Inbound	5,229	7,644	244	6,798
Outbound	359	7,644	4,710	6,798
Total	5,588	15,288	4,954	13,596
Needham:				
Inbound	2,384	3,264	107	4,740
Outbound	204	3,264	2,227	4,740
Total	2,584	6,528	2,334	9,580
Franklin:				
Inbound	4,151	8,820	142	7,560
Outbound	107	8,820	4,007	7,560
Total	4,258	17,640	4,149	15,120
Providence/Stoughton:				
Inbound	8,848	12,720	611	9,096
Outbound	492	12,720	7,568	9,096
Total	9,340	25,440	8,179	18,192
Fairmont:				
Inbound	301	2,280	24	2,280
Outbound	11	2,280	326	2,280
Total	312	4,560	350	4,560
Plymouth/Kingston:				
Inbound	2,614	4,938	30	4,056
Outbound	43	4,938	2,136	4,056
Total	2,657	9,876	2,166	8,112
Middleborough/Lakeville:				
Inbound	1,791	3,792	158	3,792
Outbound	133	3,792	1,953	3,792
Total	1,924	7,584	2,111	7,584
Greenbush:				
Inbound	2,035	4,410	58	4,410
Outbound	17	4,410	1,903	4,410
Total	2,052	8,820	1,961	8,820

Source: CTPS counts, Spring 2012.

[a]Ridership for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

Table 2-4 MBTA North Station Commuter Rail Service and Capacity

Commuter Rail Line	Weekday Morning Peak Period		Weekday Evening Peak Period	
	Ridership[a]	Maximum Load Capacity[b]	Ridership[a]	Maximum Load Capacity[b]
Newburyport/Rockland:				
Inbound	5,436	5,600	333	5,600
Outbound	405	5,600	4,890	5,600
Total	5,841	11,200	5,223	11,200
Haverhill:				
Inbound	2,834	2,240	98	1,680
Outbound	109	2,240	2,374	1,680
Total	2,943	4,480	2,472	3,360
Lowell:				
Inbound	3,953	2,520	323	2,940
Outbound	236	2,520	3,329	2,940
Total	4,189	5,040	3,652	5,880
Fitchburg:				
Inbound	2,858	2,100	554	2,100
Outbound	569	2,100	2,543	2,100
Total	3,427	4,200	3,097	4,200

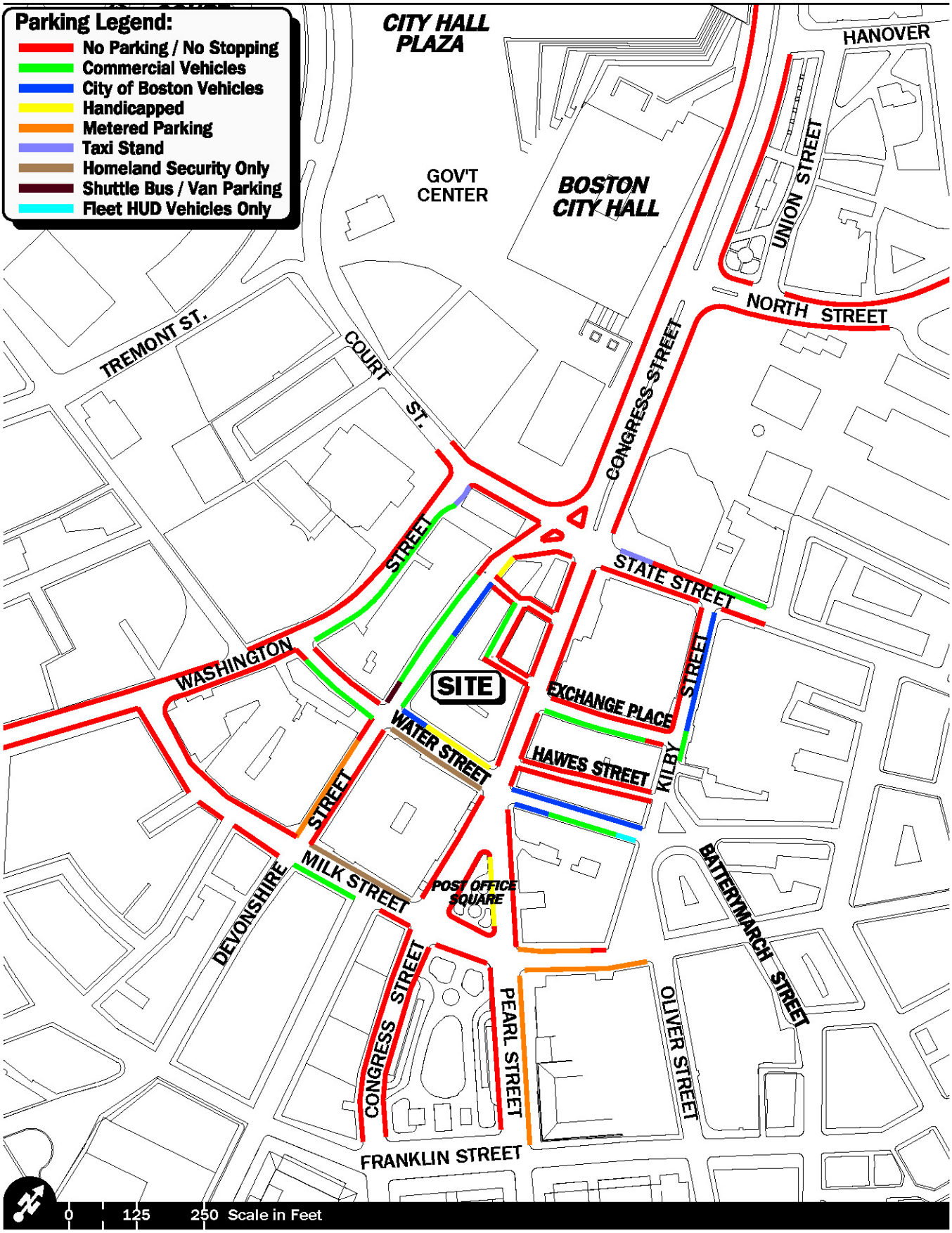
Source: CTPS counts, Spring 2012.

[a]Ridership for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.).

2.2.6 Parking

To assess the availability of parking proximate to the Project site, an inventory of public parking located within the study area was conducted in November 2014. The inventory included publicly available parking located on-street or within surface parking lots or garages. Within the study area, parking is primarily provided within area parking garages, with limited on-street or surface lot parking provided. As previously noted, consistent with the current use of the site, parking demand for the Project will be served via off-site private parking facilities. Given their proximity to the Project site, it is anticipated that the majority of site-generated parking demand will be accommodated within the Post Office Square subsurface parking garage or the 1 Devonshire Street parking garage located proximate to the Project site. Additional area parking facilities are also provided within close proximity to the Project site. On-street parking restrictions and available on-street parking within the study area are depicted on Figure 2-8. Table 2-5 summarizes the inventory of available off-street public parking spaces within the study area.



Congress Square Boston, Massachusetts

Figure 2-8
On-Street Curbside Parking Inventory

Table 2-5 Existing Area Public Parking Facilities

Parking Facility/Address	Number of Spaces
Garages:	
Garage at Post Office Square – Zero Post Office Square	1,400
Pi Alley Garage – 275 Washington Street	500
Icon Parking Systems - 1 Devonshire Street	175
LAZ Parking – 33 Arch Street	850
One Parking Inc. – 1 Federal Street	240
TOTAL	3,165

2.3 Future Conditions

Existing conditions in the study area were projected to the year 2021, which reflects a seven-year planning horizon consistent with state traffic study guidelines. Independent of the Project, conditions on the transportation system in the year 2021 under No-Build conditions are influenced by changes in the transportation system resulting from: i) specific development projects by others; ii) population and demographic shifts; and iii) capital investments made by the local, state and/or federal government or private interests. Anticipated Project-generated trips superimposed upon the 2021 No-Build condition transportation network reflect 2021 Build conditions with the Project.

2.3.1 Future Growth

Future 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 volumes under study. The drawback to such a procedure is that some 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 trips that are to be generated, and assigns the resultant values to the area transportation network. This procedure produces a more realistic estimate of growth for local conditions; however, the drawback of this procedure is that potential growth in population and development external to the study area would not be accounted for in the projections.

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

2.3.1.1 Specific Development by Others

The BTD was contacted in order to determine if there are any projects planned within the study area that would have an impact on future traffic conditions at the study area intersections. Based on these discussions, the following projects were identified for inclusion in this study:

- ***Government Center Garage Redevelopment.*** This project consists of the redevelopment of the Government Center Garage to include: approximately 651 apartment units; approximately 120 residential condominium units; an approximately 204-room hotel; approximately 82,500 sf of retail/restaurant space (37,602 sf existing and 44,898 sf new); and approximately 1,303,300 sf of office space (256,532 sf existing and 1,046,768 sf new). Additional traffic volumes expected to be generated by this development were obtained from the traffic study prepared for this project and have been included in the analysis of future 2021 No-Build and Build traffic conditions.

- ***Congress Square Office Space Occupancy.*** Under existing conditions, portions of the Congress Square redevelopment site that were previously occupied as office uses have been vacated resulting in an existing traffic generation that falls below the prior use of the site when fully occupied. For the purpose of this assessment, it is assumed that if the proposed Congress Square redevelopment project did not move forward the vacant office space within the Project would be leased to an office tenant consistent with the historical use of the site. In order to account for the additional traffic demand that would be associated with the full leasing of the existing buildings located on-site, trip generation calculations were performed based on the total number of employees at the site when data collection was conducted, as well as for the full occupancy of the total square footage of the office buildings. Based on these calculations, the additional traffic demand for the full occupancy of the site as an office use was determined and has been included in the analysis of future 2021 No-Build traffic conditions.

No other projects were identified at this time that are expected to impact future traffic volumes within the study area beyond the general background traffic growth rate.

2.3.1.2 General Background Traffic Growth

Traffic-volume data and historic traffic counts in the area were reviewed in order to determine general traffic growth trends. Based on a review of this data, it was determined that traffic volumes within the City of Boston have remained relatively stable over the past 10 years (i.e., none or nominal growth). In order to account for future traffic growth and presently unforeseen development within the study area, a 0.50 percent per year compounded annual background traffic growth rate was applied to the existing traffic volumes over the seven-year planning horizon.

2.3.1.3 Planned Transportation Improvements

The BTD was consulted in order to determine if there were any planned transportation improvement projects expected to be completed within the study area. Based on this consultation, the following improvement projects were identified:

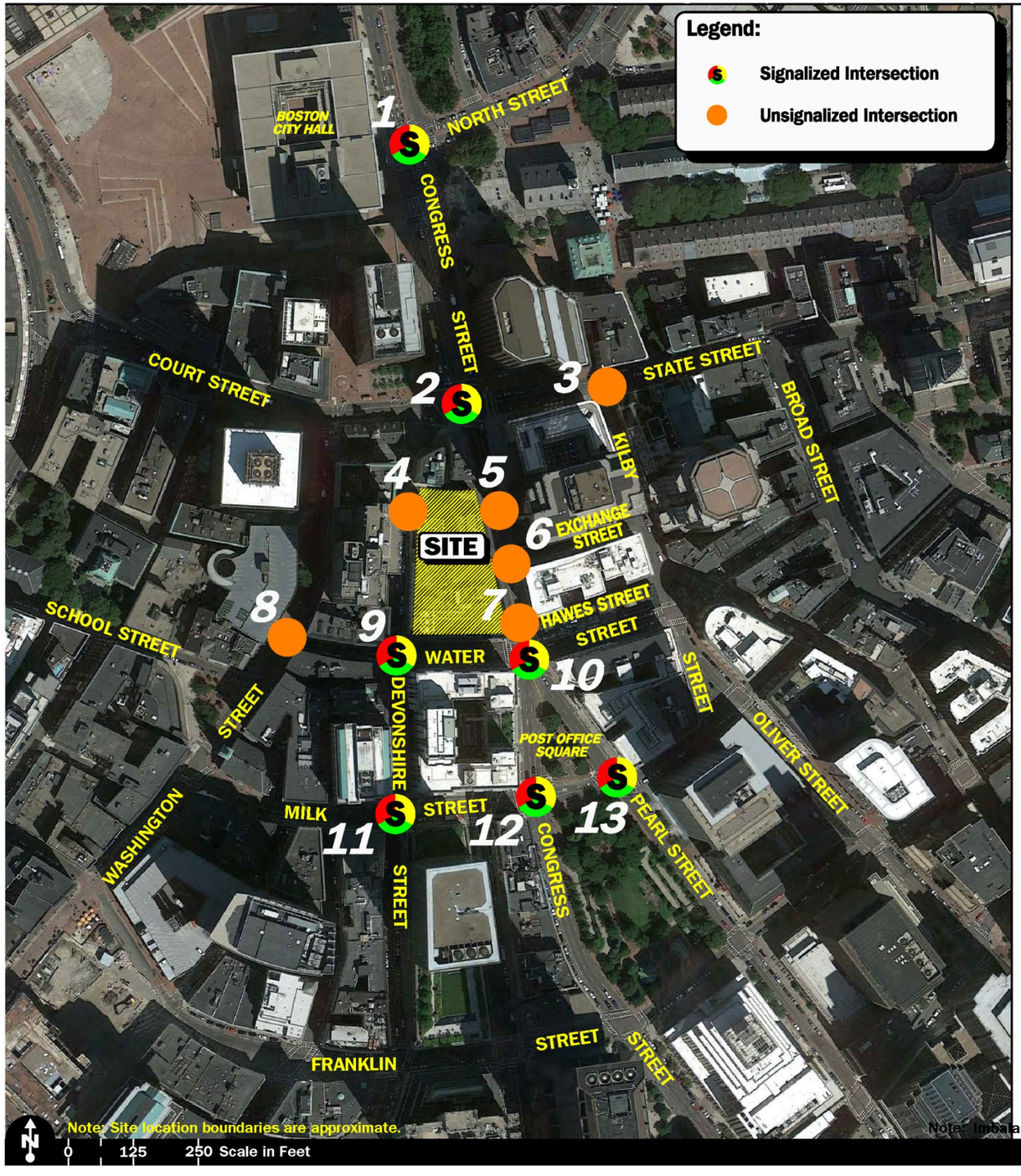
- *Government Center Station Improvements Project* – The MBTA is currently in the process of constructing improvements to the Government Center Station, including the Green Line and Blue Line stations as well as Cambridge Street and the Government Center Plaza, which will enhance Government Center Station, making it fully accessible to all MBTA passengers in compliance with the ADA. The project includes modifications to the plaza area adjacent to the new station entrances and exits to create a more accessible route to City Hall and the surrounding sidewalk system. In order to accommodate the improvements the Government Center Station has been closed since March 2014 with the construction expected to be completed in the fourth quarter of 2016.

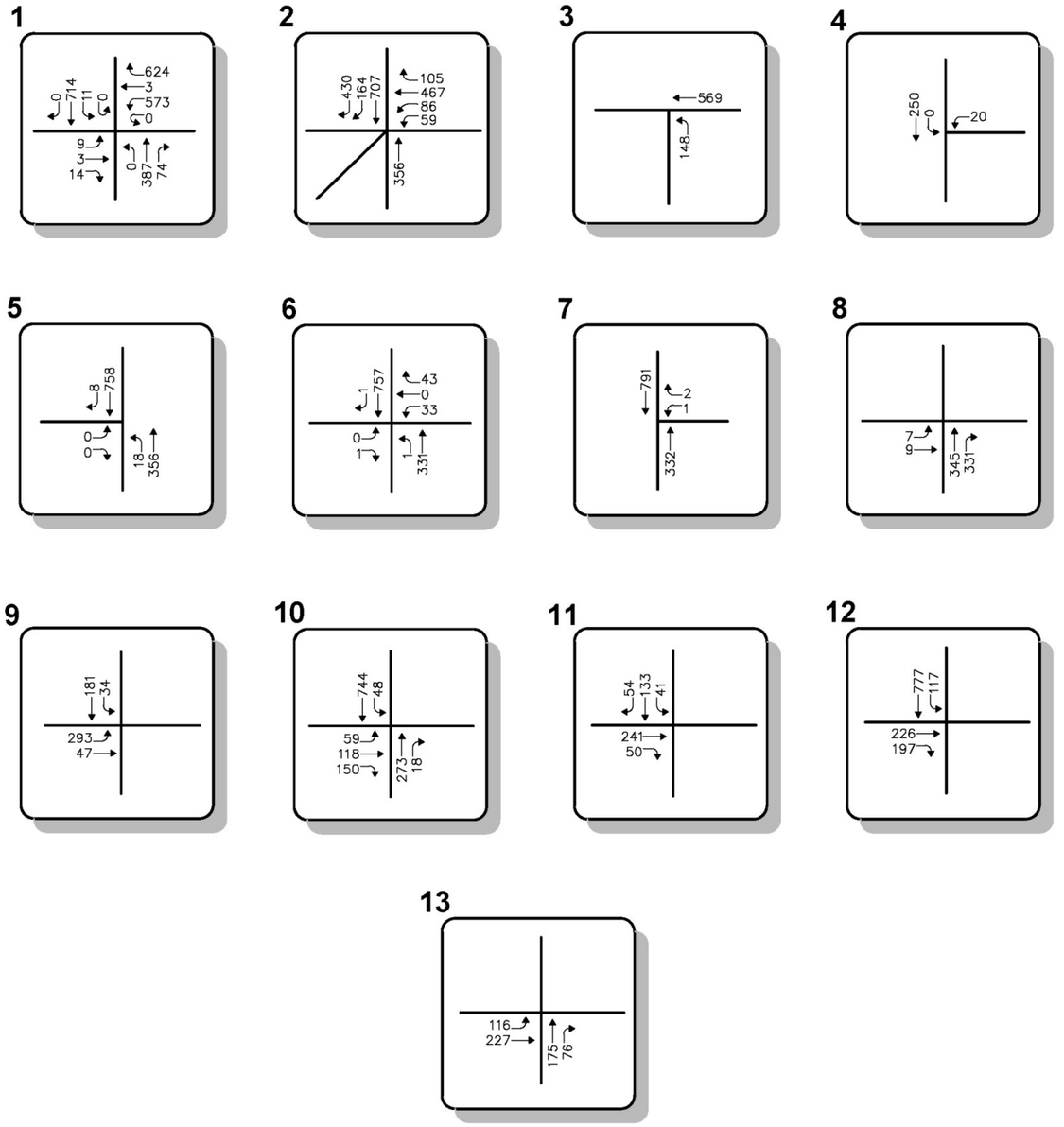
- *Haymarket Station Improvements Project* – In conjunction with the proposed redevelopment of the Government Center Garage, improvements are proposed to the Haymarket Station, including the integration of the Station's ingress and egress into the project's East Parcel public plaza. The project will reconfigure and optimize the MBTA Haymarket bus facility to better utilize the existing space for a new public plaza and pedestrian connector between Government Center and North Station.

No other roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

2.3.1.4 No-Build Traffic Volumes

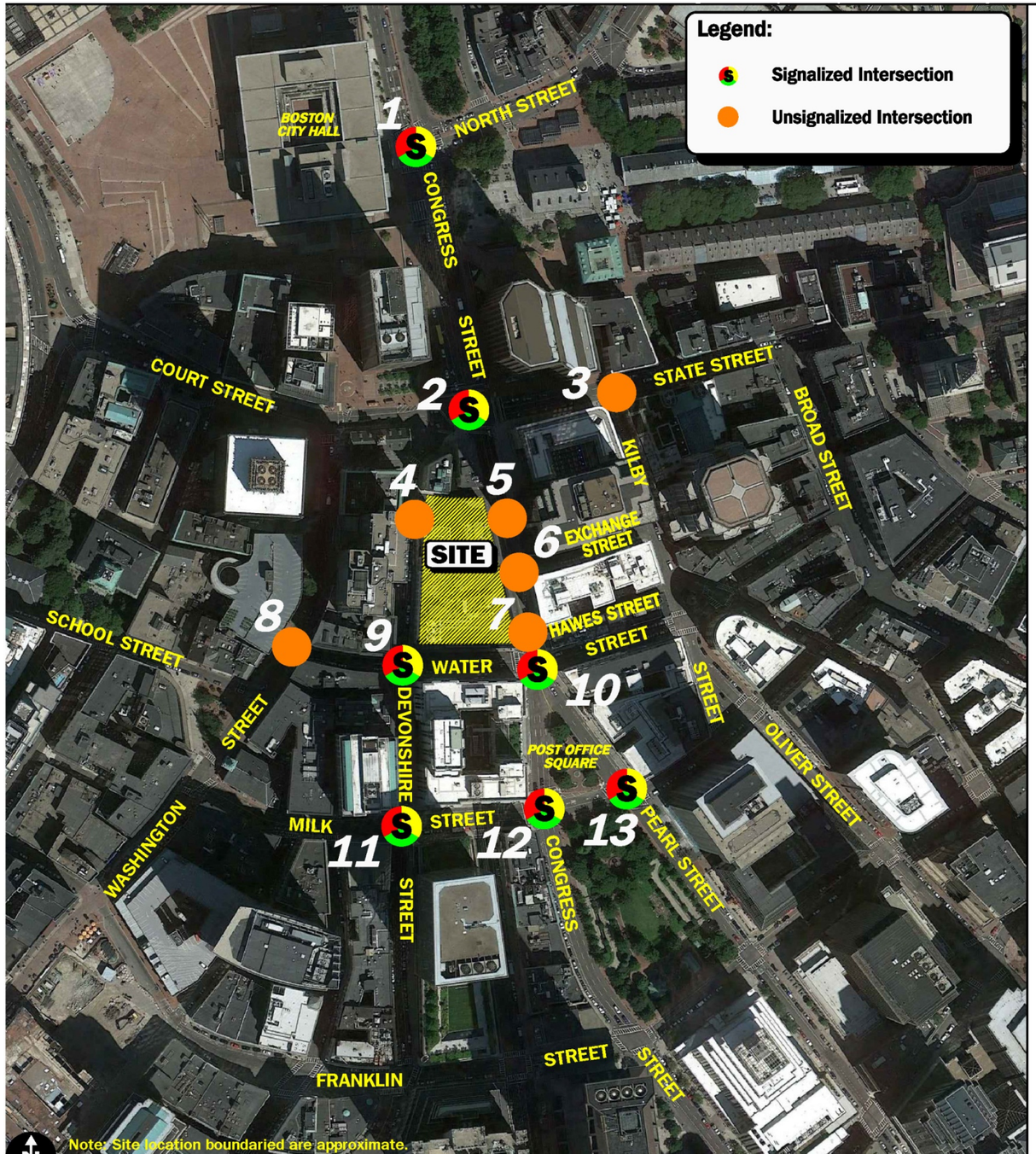
The 2021 No-Build condition peak-hour traffic-volume networks were developed by increasing the 2014 Existing peak-hour traffic volumes by 0.50 percent per year between 2014 and 2021 and then superimposing the peak-hour traffic volumes expected to be generated by the previously identified development projects. The resulting 2021 No-Build condition weekday morning and weekday evening peak-hour traffic-volume networks are shown on Figures 2-9 and 2-10, respectively.

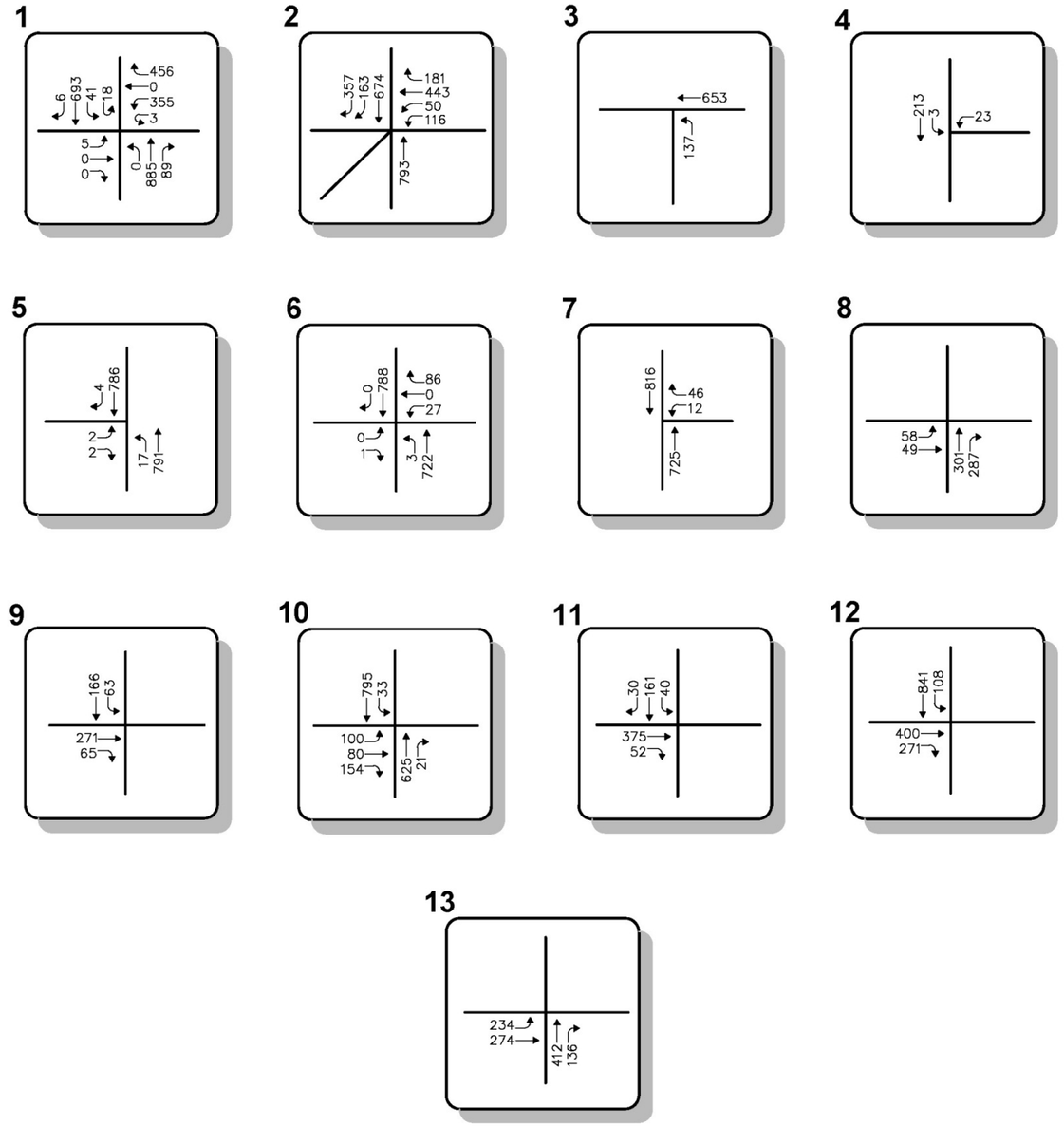




Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Congress Square Boston, Massachusetts





Congress Square Boston, Massachusetts

2.3.1.5 No-Build Pedestrian Volumes

The future 2021 No-Build condition pedestrian volume networks were developed by applying a 0.5 percent per year compounded annual growth rate to the 2014 Existing peak-hour pedestrian volumes, consistent with the methodology used for developing the future condition traffic volume networks beyond 2021. The resulting 2021 No-Build weekday morning and weekday evening peak-hour pedestrian-volume networks are shown on Figures 2-11 and 2-12, respectively.

2.3.2 Project-Generated Trips

Design year (2021 Build) automobile, pedestrian and public transportation trips for the study area were determined by estimating the trip characteristics of the Project and assigning these volumes on the transportation system. The following sections describe the procedures used to develop Build conditions (with the Project) within the study area.

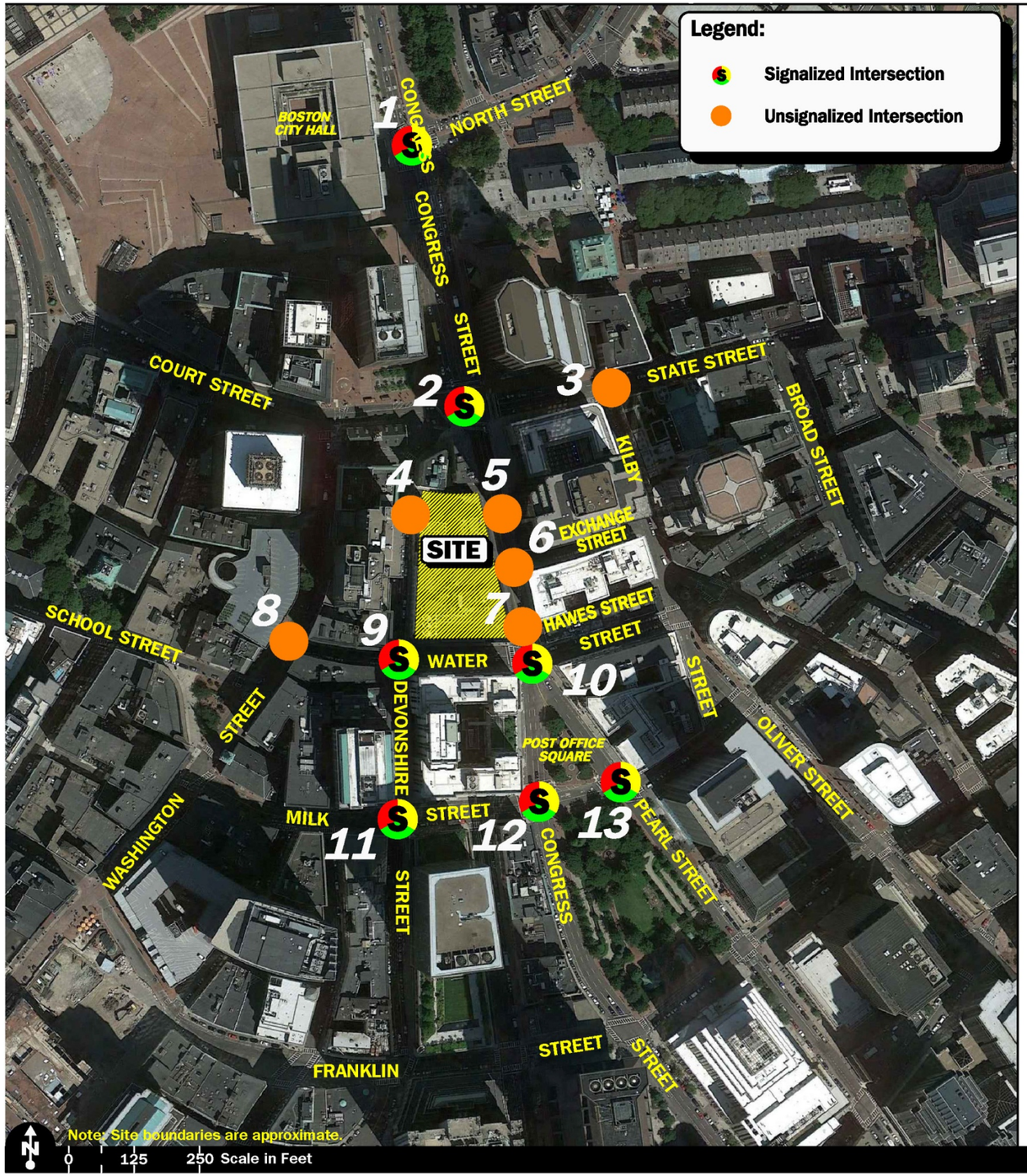
2.3.2.1 Methodology

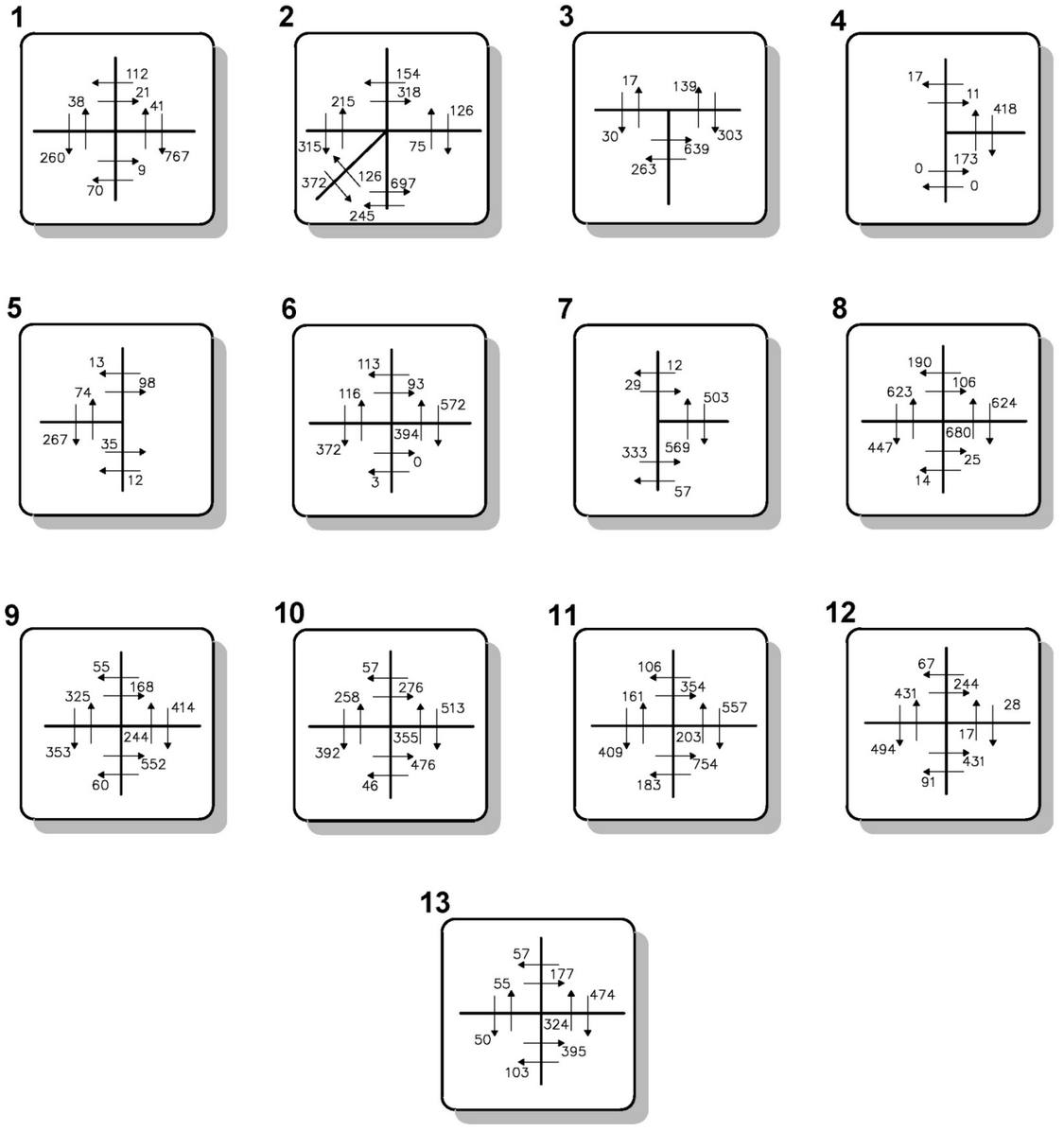
As described previously, the Project includes the construction of a mixed-use, transit-oriented development with office, residential, hotel and retail uses. In order to develop the base trip characteristics of the Project, trip-generation statistics published by the ITE[2] for similar land uses as those proposed were used. ITE Land Use Codes (LUCs) 230, *Residential Condominium/Townhouse;* 310, *Hotel*; 710, *General Office Building* and 820, *Shopping Center*; were used to develop the base trip estimates for the Project.

Given the availability of public transportation to the Project site (bus and subway service) and the extensive sidewalk network that links the Project site to downtown Boston and the Financial District, it is expected that a significant portion of the trips generated by the Project will be made by public transportation or will include pedestrian/bicycle trips. In order to disseminate the ITE trip characteristics of the Project, which are expressed in vehicle trips, to the modes of travel that will be available to the Project (automobile, public transportation and pedestrian/bicycle), vehicle occupancy ratios (VORs) and travel mode data obtained from BTD were reviewed. Table 2-6 summarizes the VOR and travel mode data used for the individual components of the Project.

---

[2] Ibid.

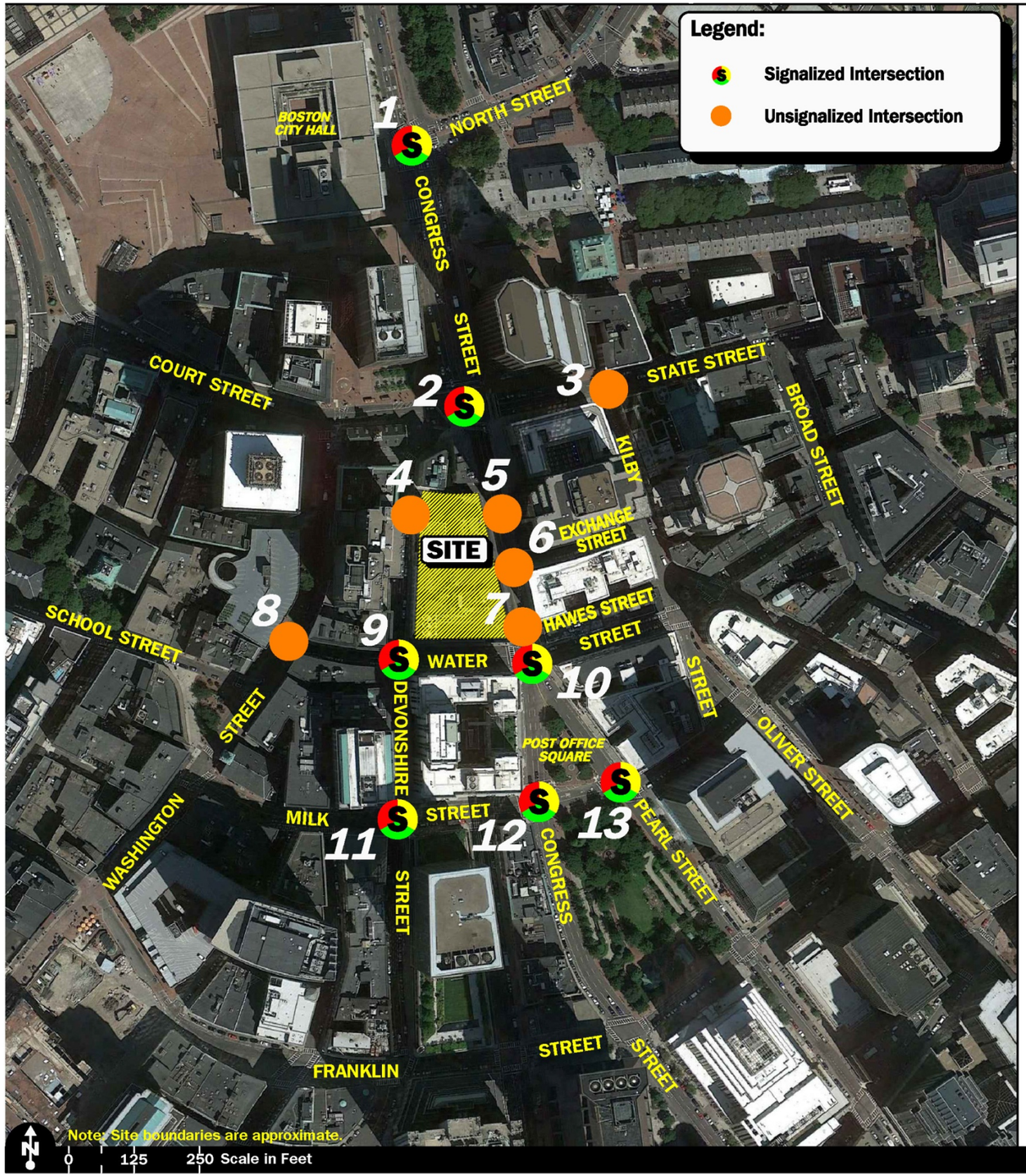


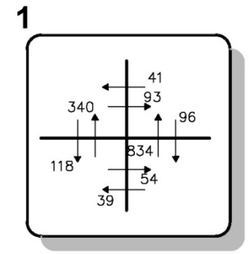


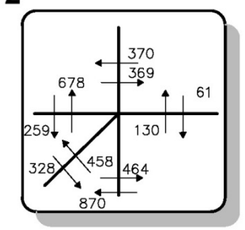
Congress Square Boston, Massachusetts

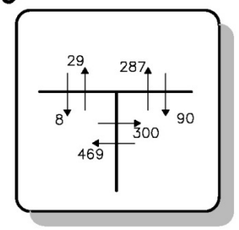
Figure 2-11

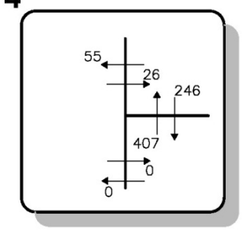
2021 No-Build Weekday Morning Peak Hour Pedestrian Volumes

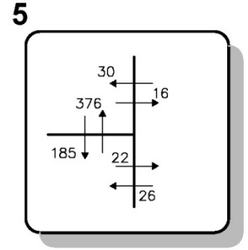


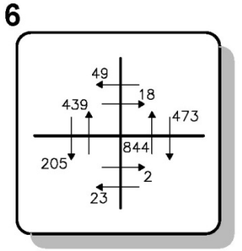


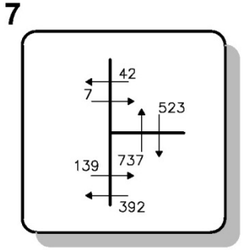


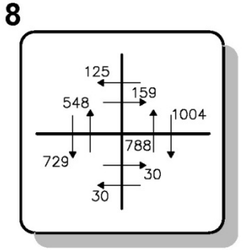


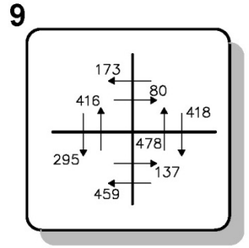


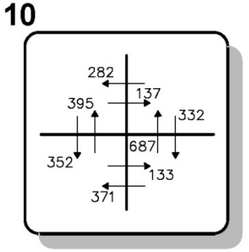


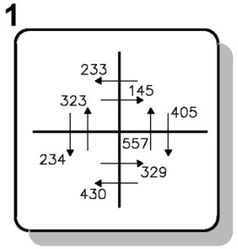


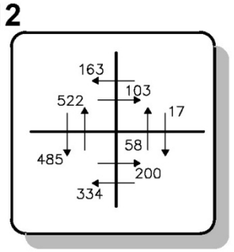


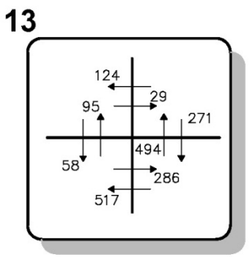












Congress Square Boston, Massachusetts

Figure 2-12

2021 No-Build Weekday Evening Peak Hour Pedestrian Volumes

Table 2-6 Travel Mode Split and Vehicle Occupancy Ratio[a]

Land Use	Mode of Travel									VOR (Persons per Vehicle)
	Automobile (Percent)			Transit (Percent)			Pedestrian/Bicycle (Percent)			
	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour	
Residential:										
Entering	28	28	28	30	30	30	42	42	42	1.2
Exiting	28	28	28	30	30	30	42	42	42	1.2
Office:										
Entering	26	26	26	43	43	43	31	31	31	1.2
Exiting	26	26	26	43	43	43	31	31	31	1.2
Hotel:										
Entering	21	21	21	20	20	20	59	59	59	1.8
Exiting	21	21	21	20	20	20	59	59	59	1.8
Retail:										
Entering	11	11	11	18	18	18	71	71	71	1.8
Exiting	11	11	11	18	18	18	71	71	71	1.8

[a]Source: *Access Boston 2000-2010 - Boston Transportation Fact Book and Neighborhood Profiles,* Boston Transportation Department, Central Transportation Planning Staff, Boston Metropolitan Planning Organization.

Table 2-7 summarizes the anticipated trip characteristics of the Project using the above methodology, with the trip-generation calculations for the individual components of the Project provided in Appendix C.

Table 2-7 Project Trip-Generation Summary

Time Period/Direction	ITE Trips	Person Trips				Vehicle Trips
		Total Person Trips	Automobile Trips	Transit Trips	Pedestrian/ Bicycle Trips	Automobile Trips
Average Weekday Daily:						
Entering	1,532	2,544	417	563	1,564	262
Exiting	1,532	2,544	417	563	1,564	262
Total	3,064	5,088	834	1,126	3,128	524
Weekday Morning Peak Hour:						
Entering	124	187	40	53	94	28
Exiting	61	97	20	22	55	14
Total	185	284	60	75	149	42
Weekday Evening Peak Hour:						
Entering	127	215	36	44	135	22
Exiting	166	264	46	65	153	31
Total	293	479	82	109	288	53

2.3.2.2 Project-Generated Trip Summary

As summarized in Table 2-7, the Project is projected to result in 524 new automobile trips (262 vehicles entering and 262 exiting) on an average weekday, with 1,126 transit trips and 3,128 pedestrian/bicycle trips. During the weekday morning peak hour, the Project is projected to generate 42 new automobile trips (28 vehicles entering and 14 exiting), with 75 transit trips and 149 pedestrian/bicycle trips. During the weekday evening peak hour, the Project is projected to generate 53 new automobile trips (22 vehicles entering and 31 exiting), with 109 transit trips and 288 pedestrian/bicycle trips.

2.3.2.3 Trip Generation Comparison

As previously noted, the 2021 No-Build analysis scenario assumes the existing vacant space within the Congress Square development site would be leased and occupied to office tenants, consistent with the prior use of the Project site. In order to provide a comparison of the vehicular traffic impacts of the proposed Project versus the reuse of the vacant space as an office use, the peak hour trip generation estimates were compared. Based on the projected trip generation, adjusted for modal split, the proposed development would result

in 7 fewer vehicle trips (14 fewer vehicle trips entering and 7 additional vehicle trips exiting) during the weekday morning peak hour, and 9 additional vehicle trips (14 additional entering and 5 fewer exiting) during the weekday evening peak hour.

2.3.2.4 Vehicle Trip Distribution and Assignment

The directional distribution of automobile trips to and from the Project site was determined based on a review of existing travel patterns within the study area and the roadway network serving the Project site. In general, automobile trips associated with the office, residential and commercial components of the Project were distributed to and from area parking facilities expected to accommodate the Project, specifically the Post Office Square subsurface parking garage and 1 Devonshire Street parking garage. A portion of site-generated traffic was also distributed onto Quaker Lane to account for drop-off and pick-up activity associated with the proposed hotel use.

The additional automobile trips expected to be generated by the Project were assigned on the study area roadway network as shown on Figures 2-13 and 2-14 for the weekday morning and weekday evening peak hours, respectively.

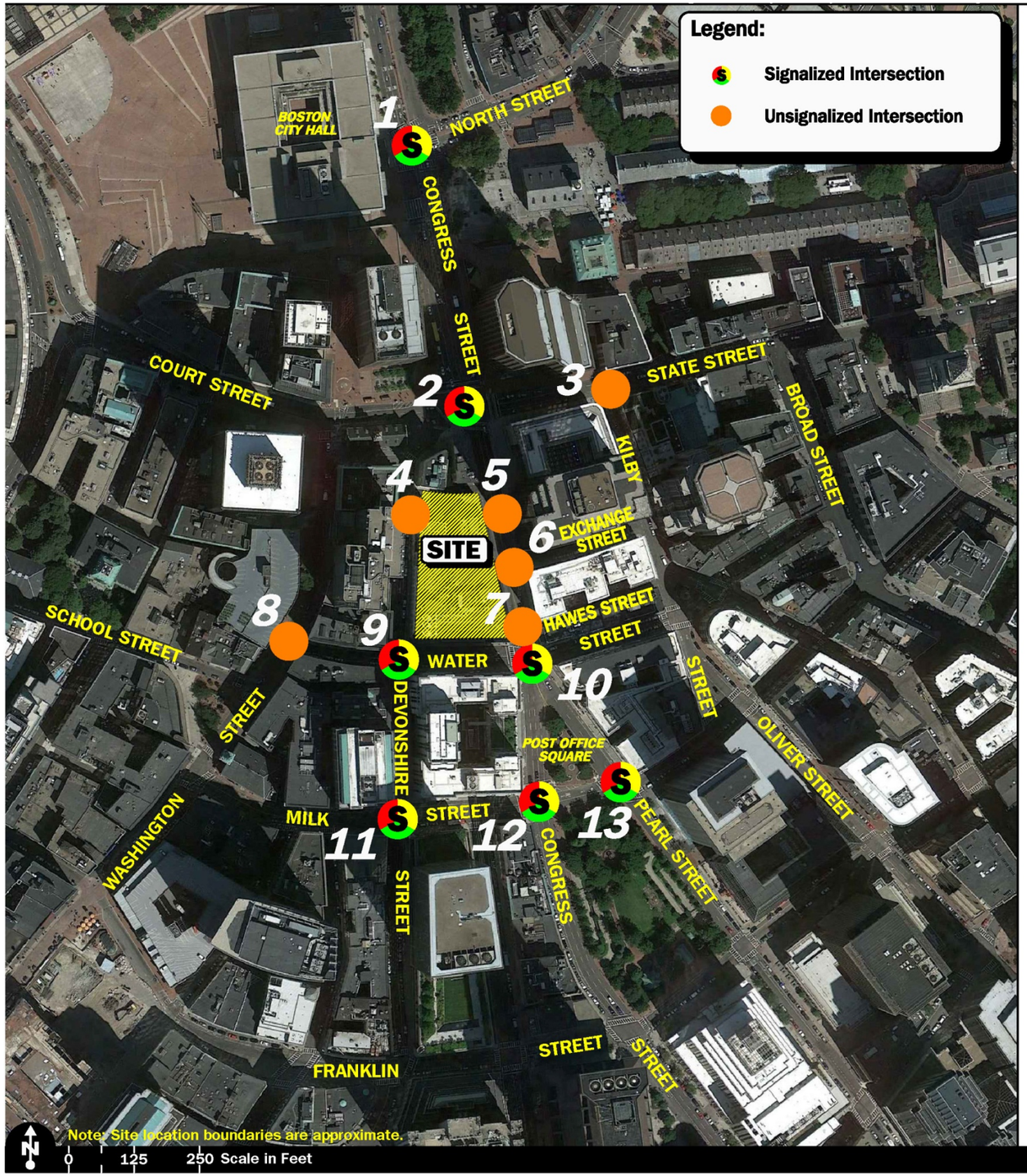
2.3.2.5 Pedestrian Trip Distribution and Assignment

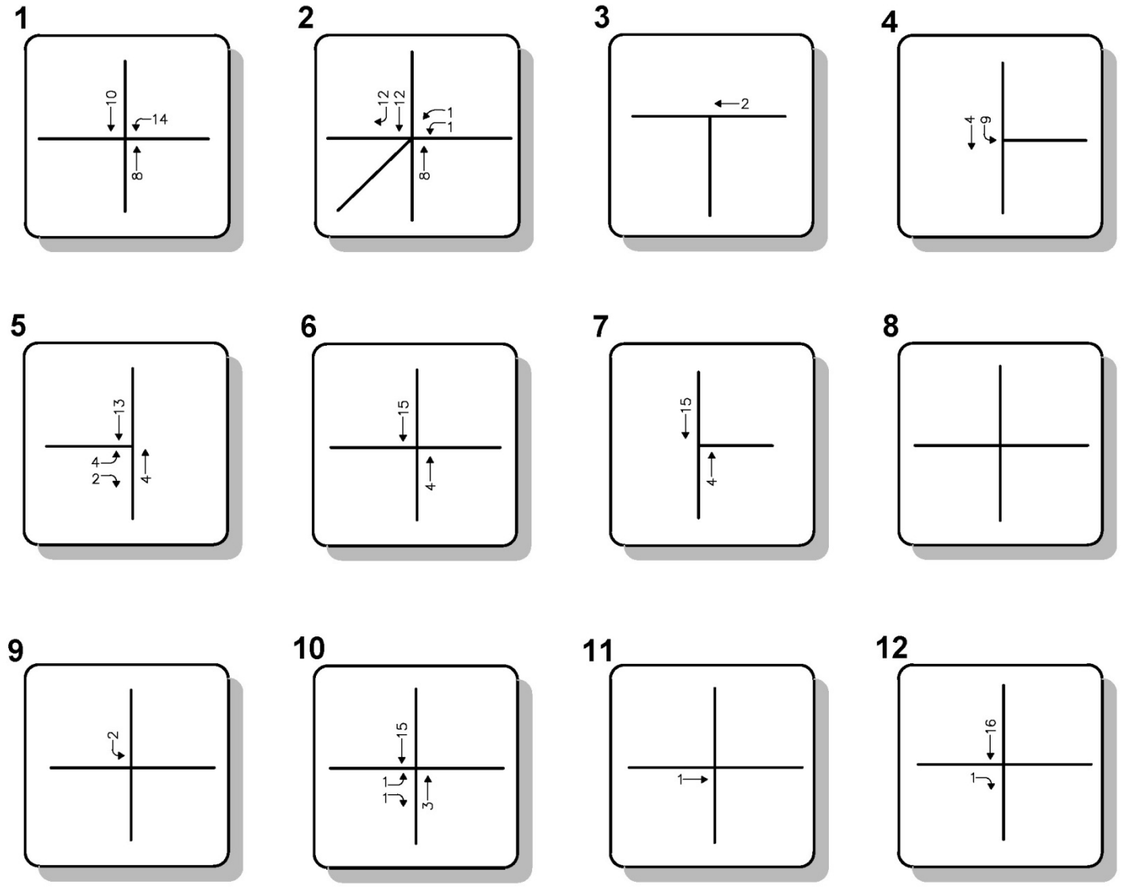
The distribution of pedestrian trips to and from the Project was developed based on a review of existing pedestrian volumes and patterns along Congress Street, Devonshire Street and State Street, and was then refined to include pedestrian trips from nearby MBTA subway stations and area parking garages. The additional pedestrian trips expected to be generated by the Project were assigned on the study area pedestrian network as shown on Figures 2-15 and 2-16 for the weekday morning and weekday evening peak hours, respectively.

2.3.3 Future Build Condition

2.3.3.1 Build Traffic Volumes

The 2021 Build condition traffic volumes were developed by adding the anticipated Project-generated automobile trips to the respective 2021 No-Build condition peak-hour traffic volumes, accounting for the removal of traffic associated with the existing office space that would be converted to commercial and residential uses. The resulting 2021 Build condition weekday morning and weekday evening peak-hour traffic-volume networks are graphically depicted on Figures 2-17 and 2-18, respectively.

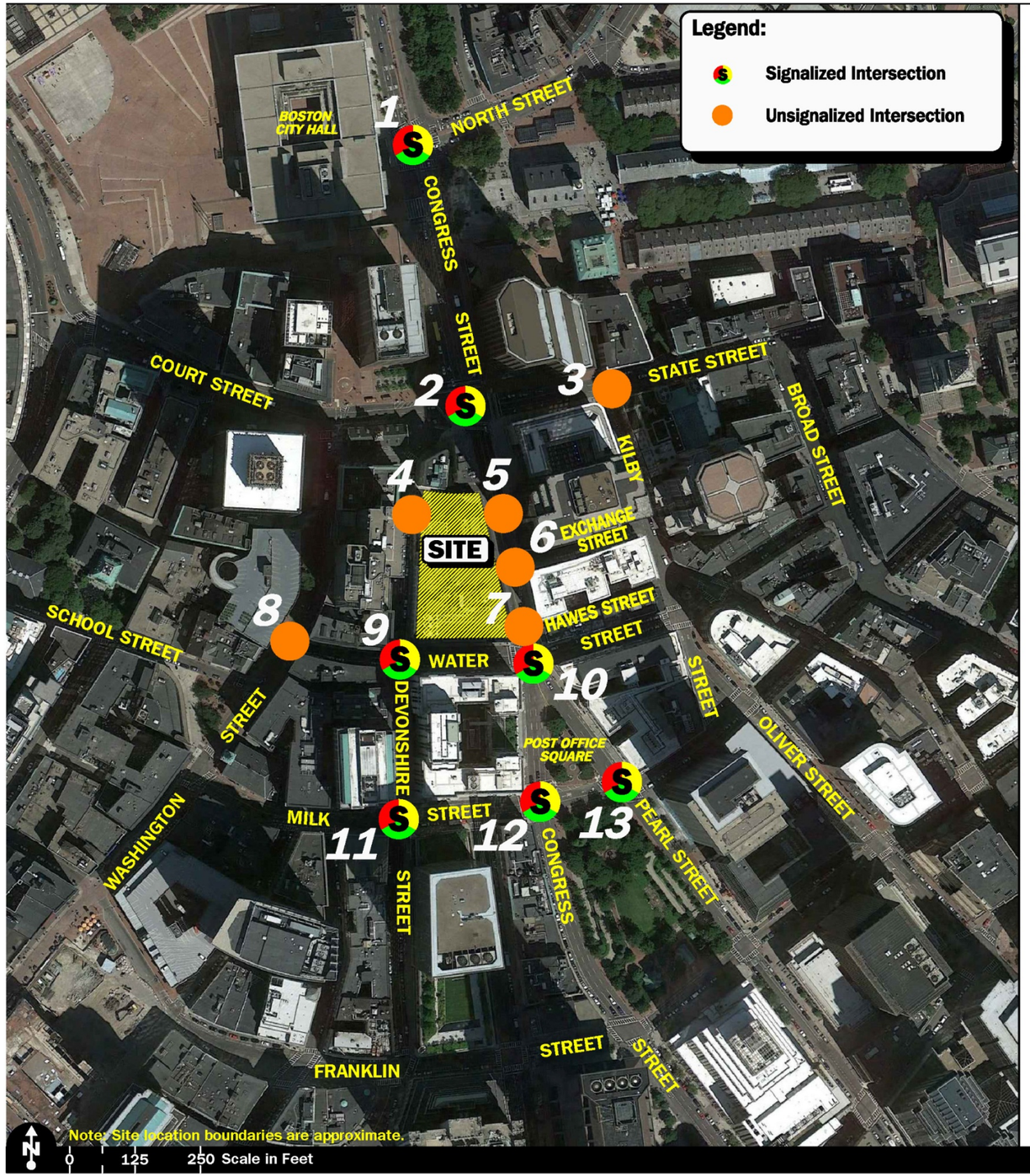


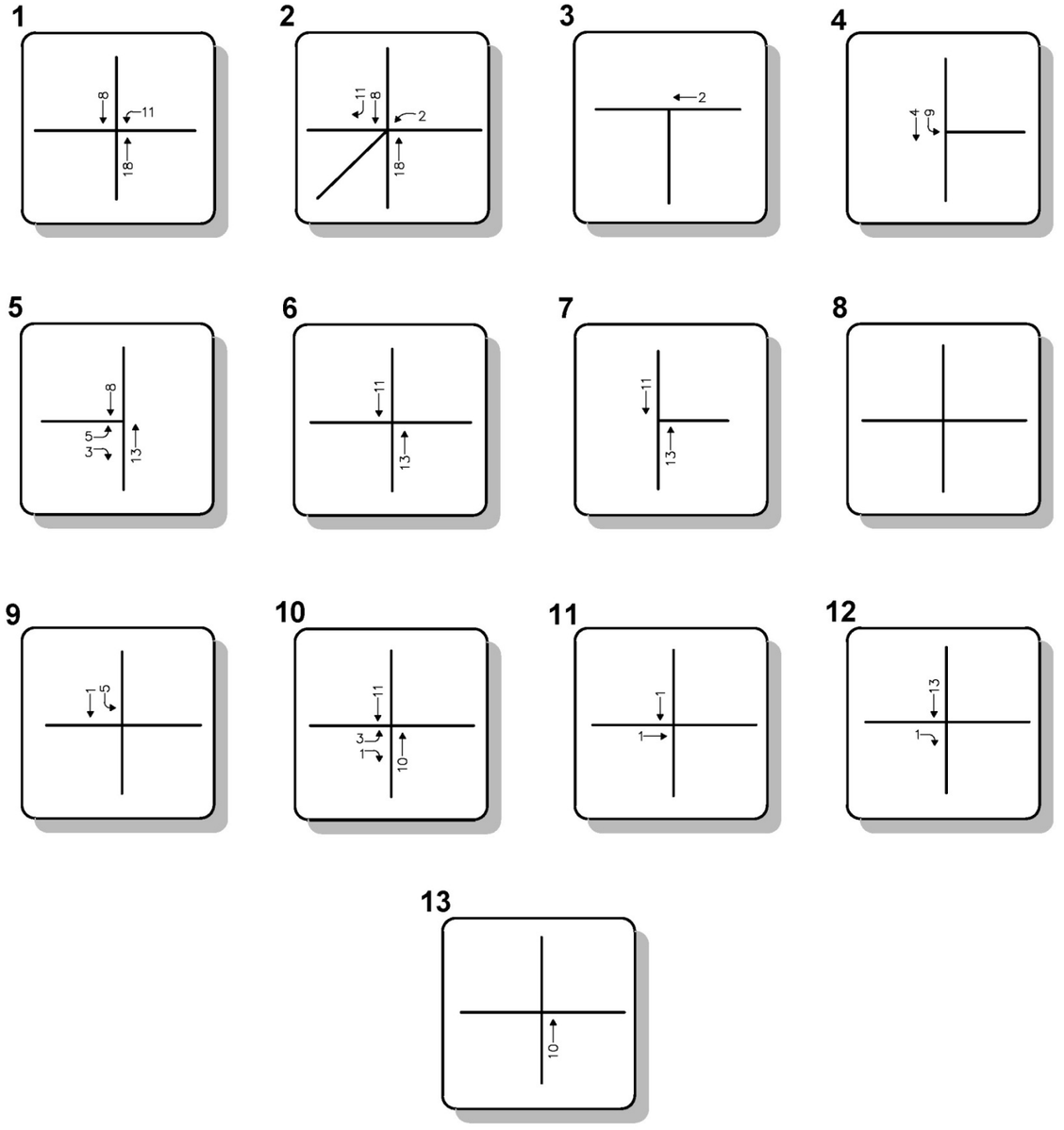


Congress Square Boston, Massachusetts

Figure 2-13

Site-Generated Weekday Morning Peak Hour Traffic Volumes

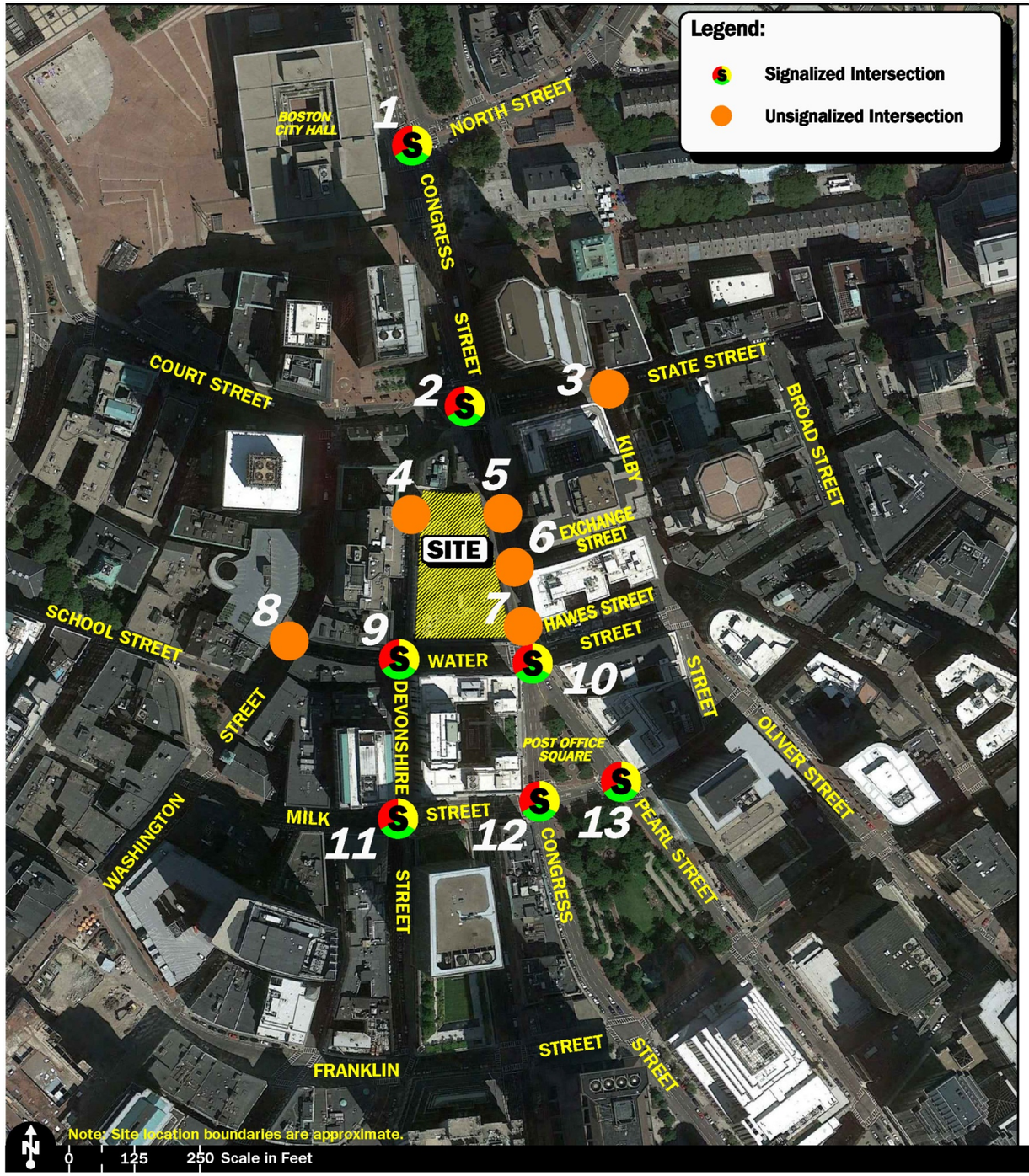


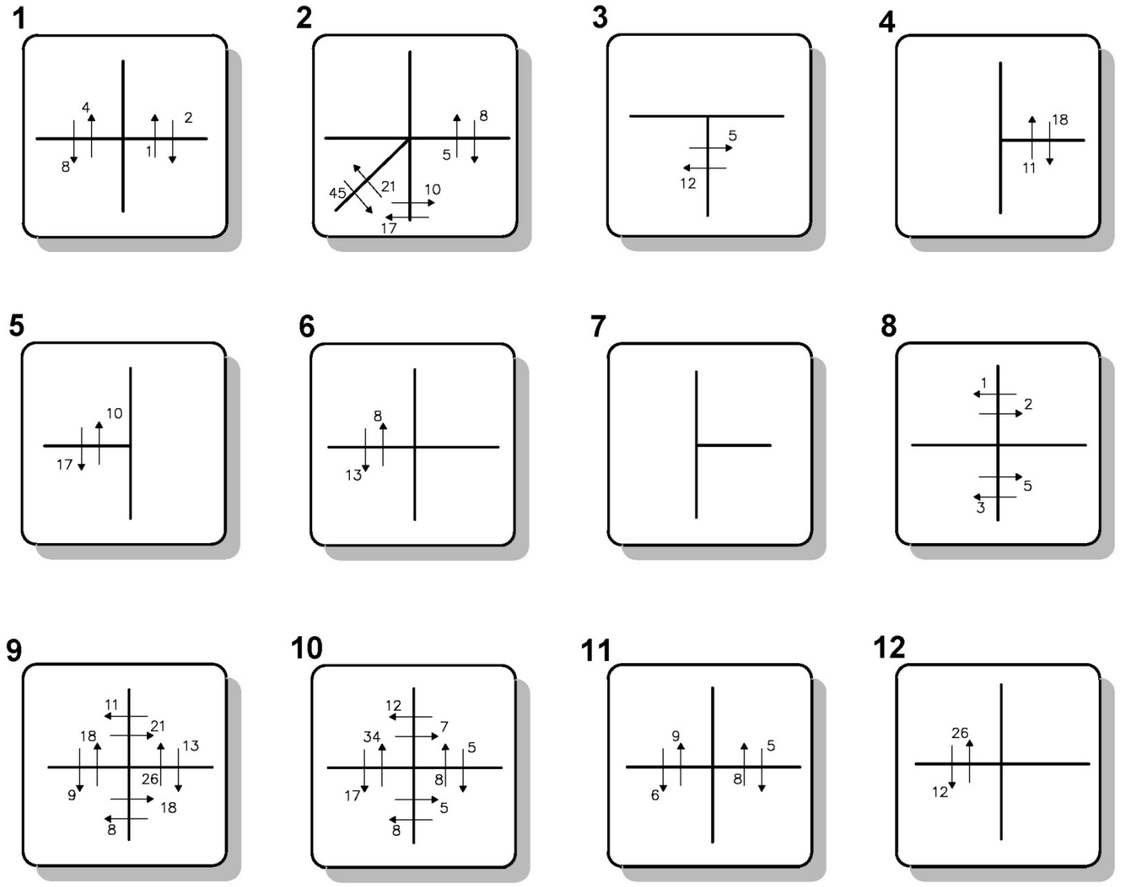


Congress Square Boston, Massachusetts

Figure 2-14

Site-Generated Weekday Evening Peak Hour Traffic Volumes

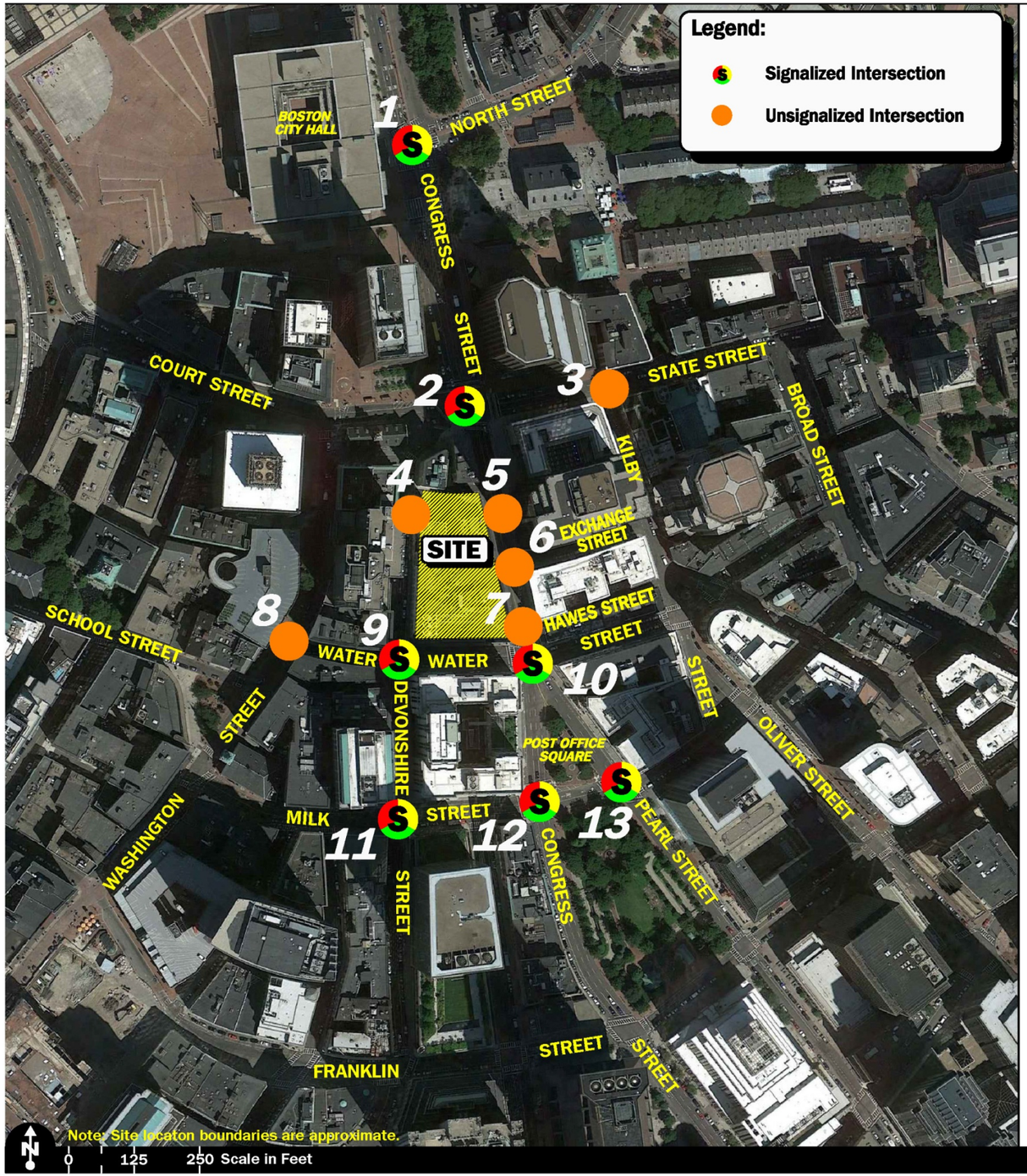


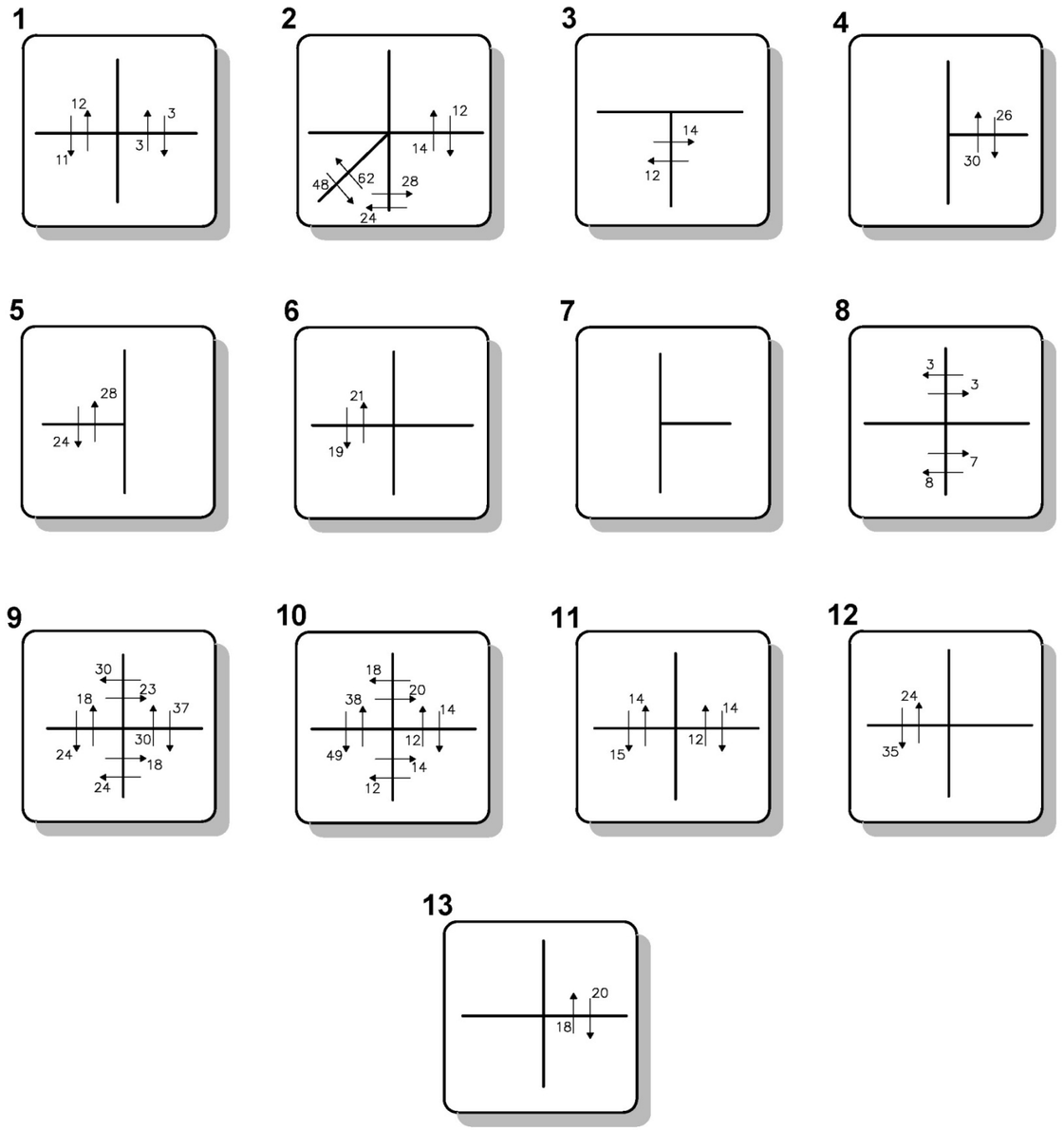


Congress Square Boston, Massachusetts

Figure 2-15

Site-Generated Weekday Morning Peak Hour Pedestrian Volumes



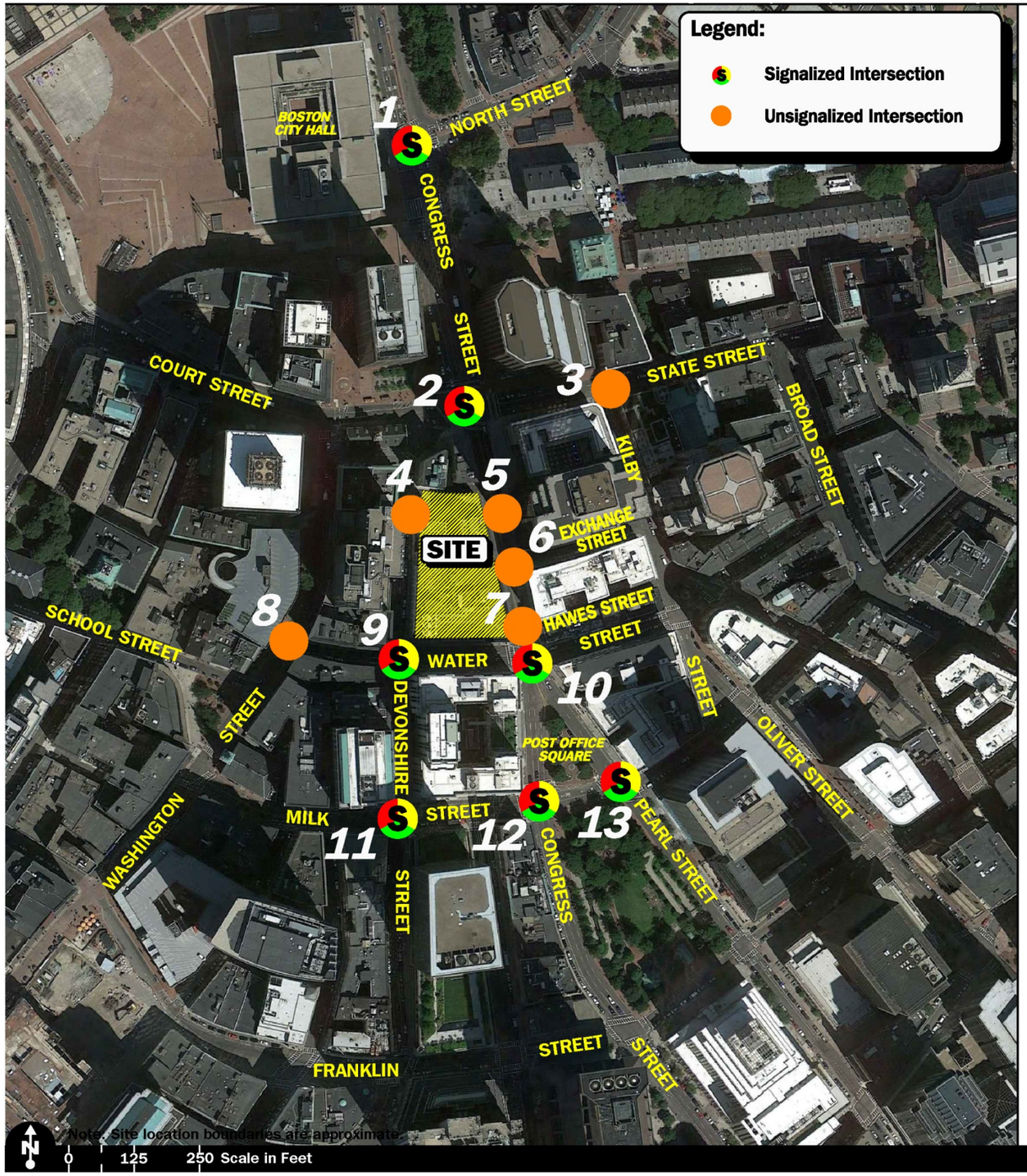


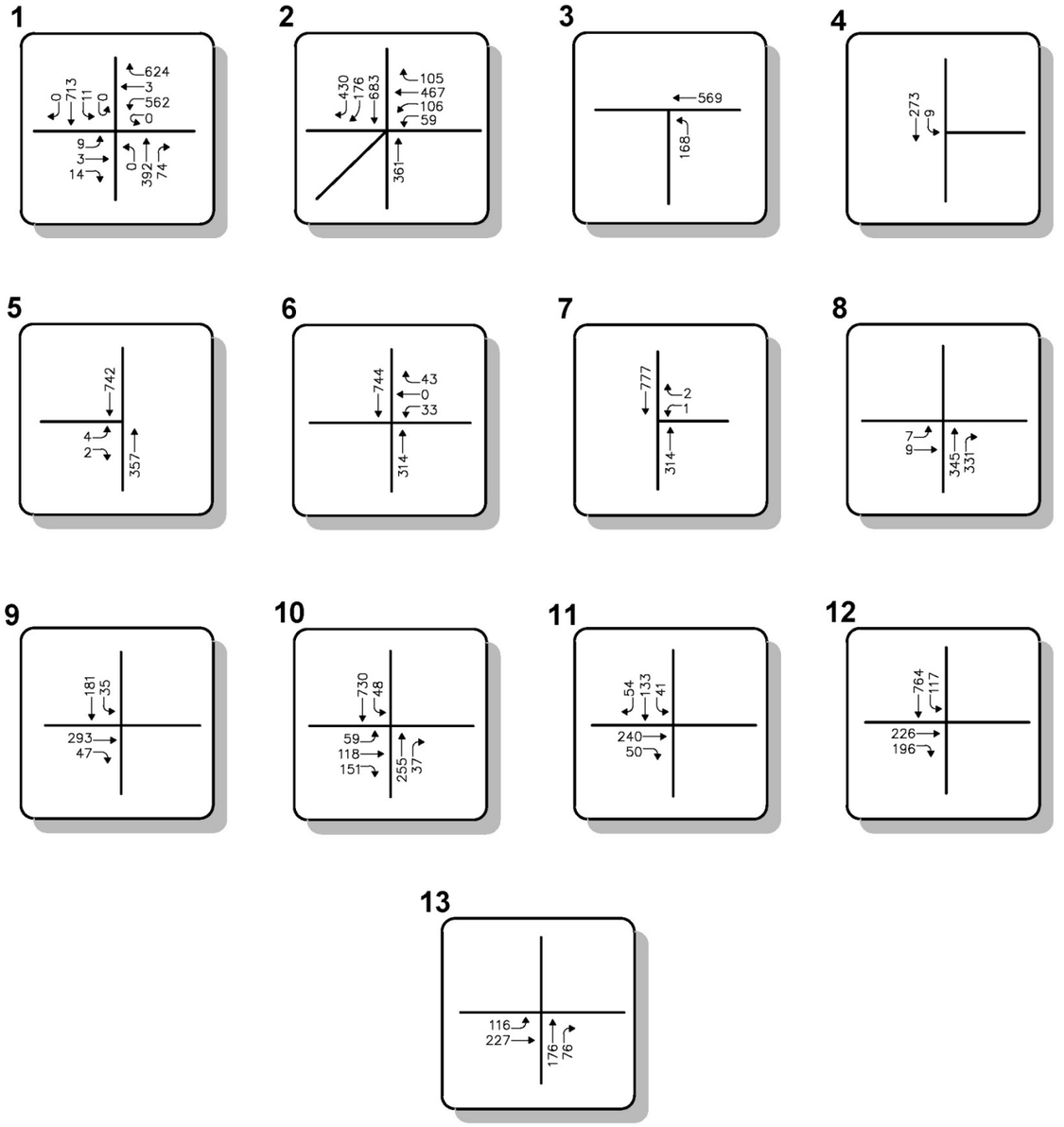
Congress Square Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

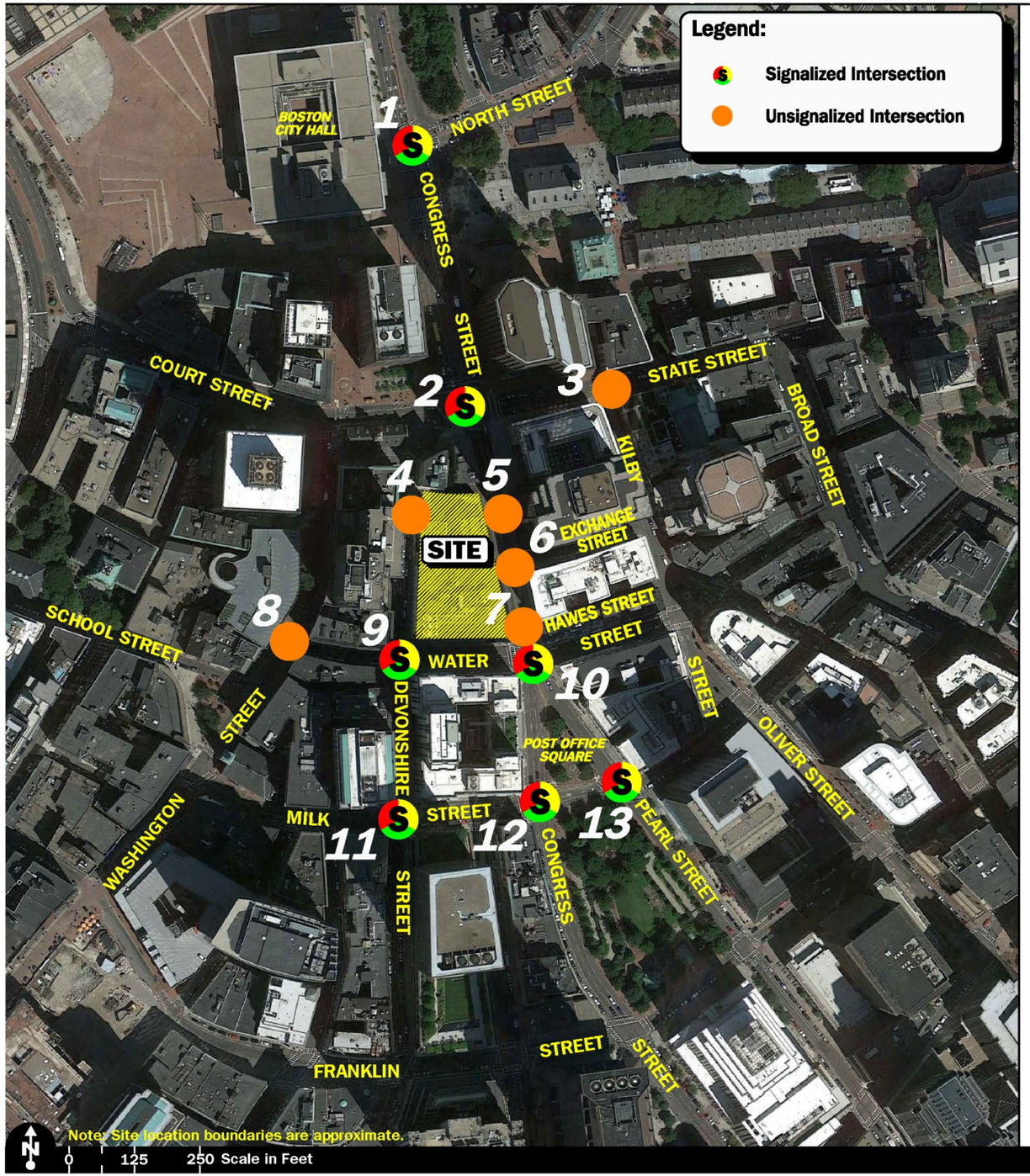
Figure 2-16

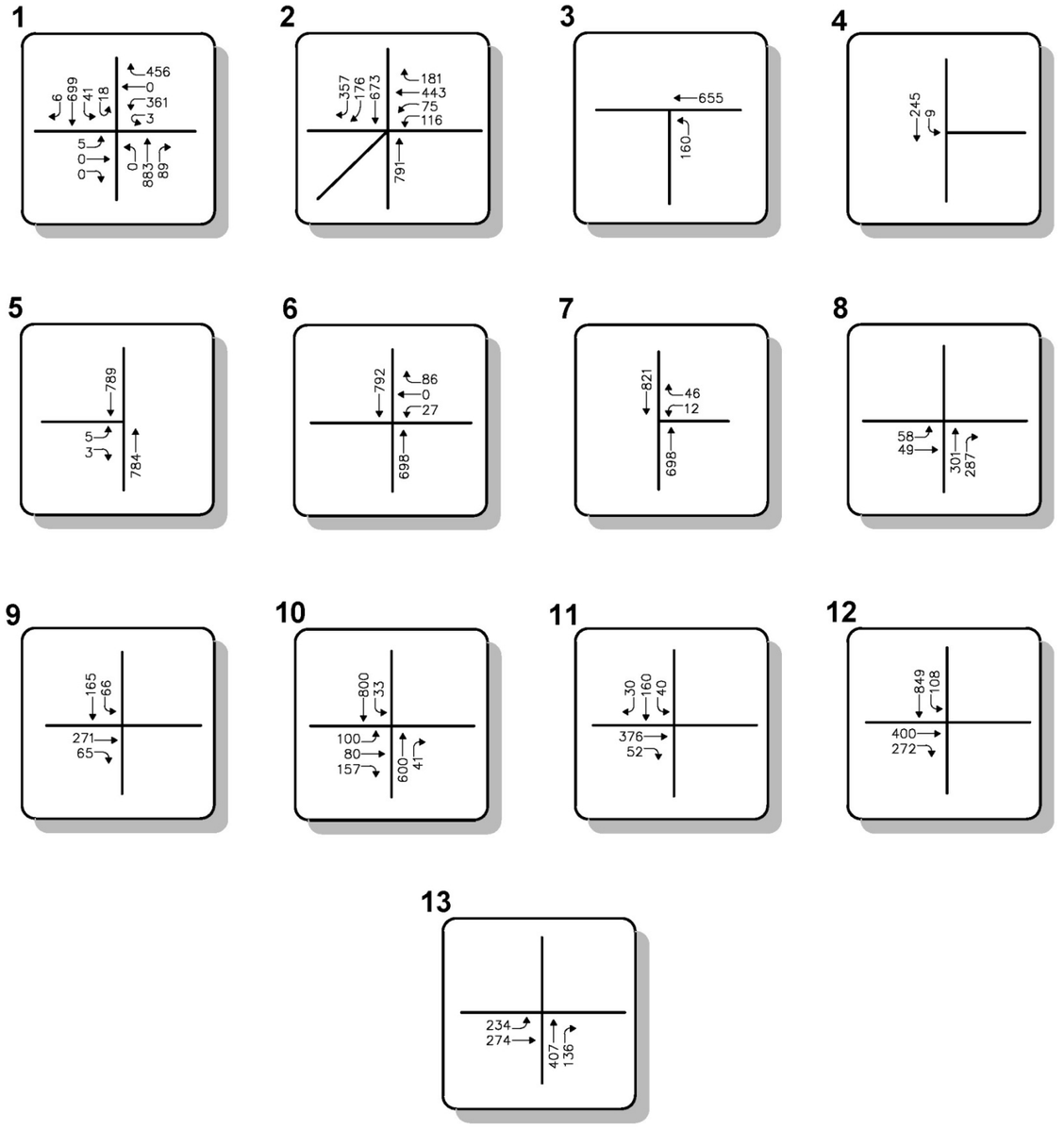
Site-Generated Weekday Evening Peak Hour Pedestrian Volumes





Congress Square Boston, Massachusetts





Congress Square Boston, Massachusetts

Figure 2-18

2021 Build Weekday Evening Peak Hour Traffic Volumes

2.3.3.2 Build Pedestrian Volumes

The 2021 Build condition peak-hour pedestrian volume networks were developed by adding the anticipated peak-hour Project-generated pedestrian volumes to the 2021 No-Build pedestrian volumes. The resulting 2021 Build condition weekday morning and weekday evening peak-hour pedestrian-volume networks are graphically depicted on Figures 2-19 and 2-20, respectively.

2.4 Transportation System Operations Analysis

Measuring existing and future vehicle, pedestrian, bicycle and transit volumes quantifies flow within the study area. To assess the quality of operation of the transportation system, roadway, pedestrian facility and transit capacities were evaluated, as well as vehicle queuing at the study intersections, under Existing, No-Build, and Build conditions. Capacity analyses provide an indication of how well the transportation system serves the demands placed upon the system, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

2.4.1 Intersection Capacity Analysis

2.4.1.1 Methodology

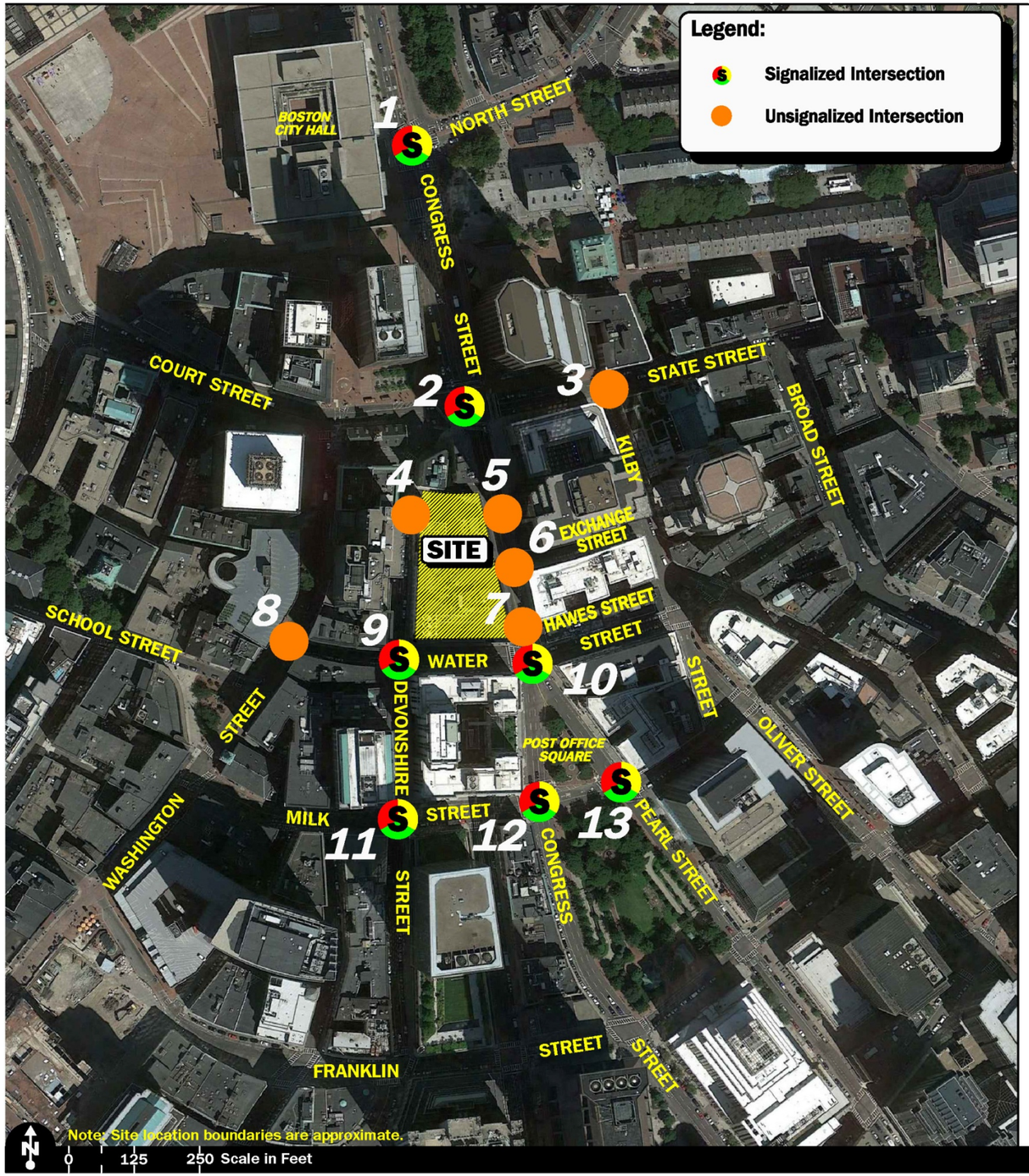
Levels of Service - A primary result of capacity analyses is the assignment of level of service (LOS) to traffic facilities under various traffic-flow conditions.[3] The concept of LOS is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A LOS 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.

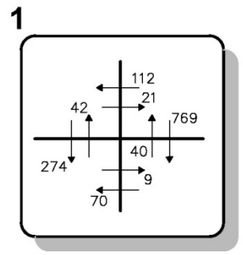
Six levels of service are defined for each type of facility. They are given letter designations from A to F, with LOS A representing the best operating conditions and LOS F representing congested or constrained operating conditions.

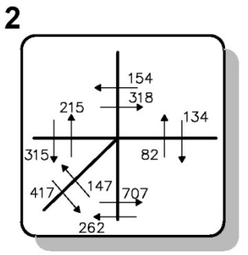
Since the LOS of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year.

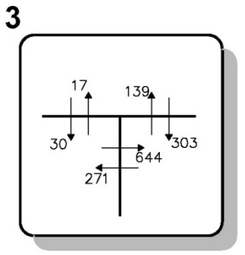
---

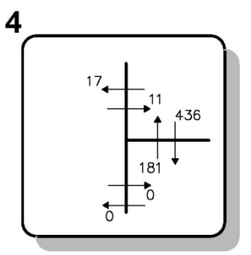
[3] The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual;* Transportation Research Board; Washington, DC; 2000.

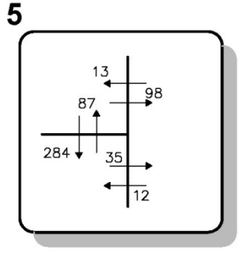


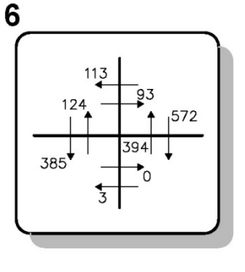


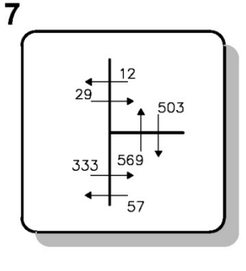


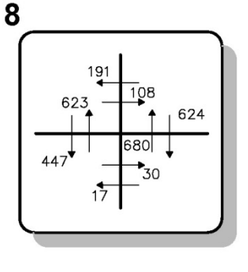


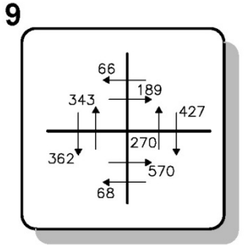


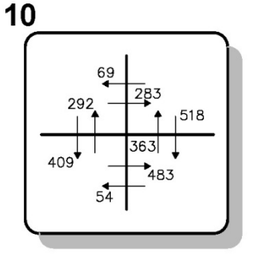


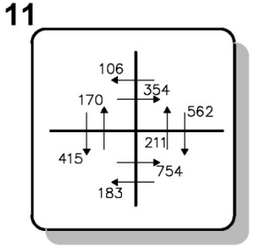


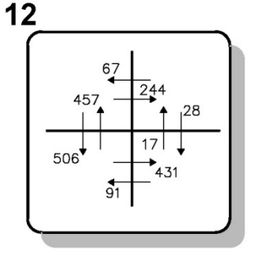


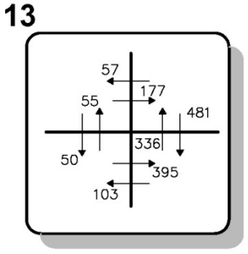








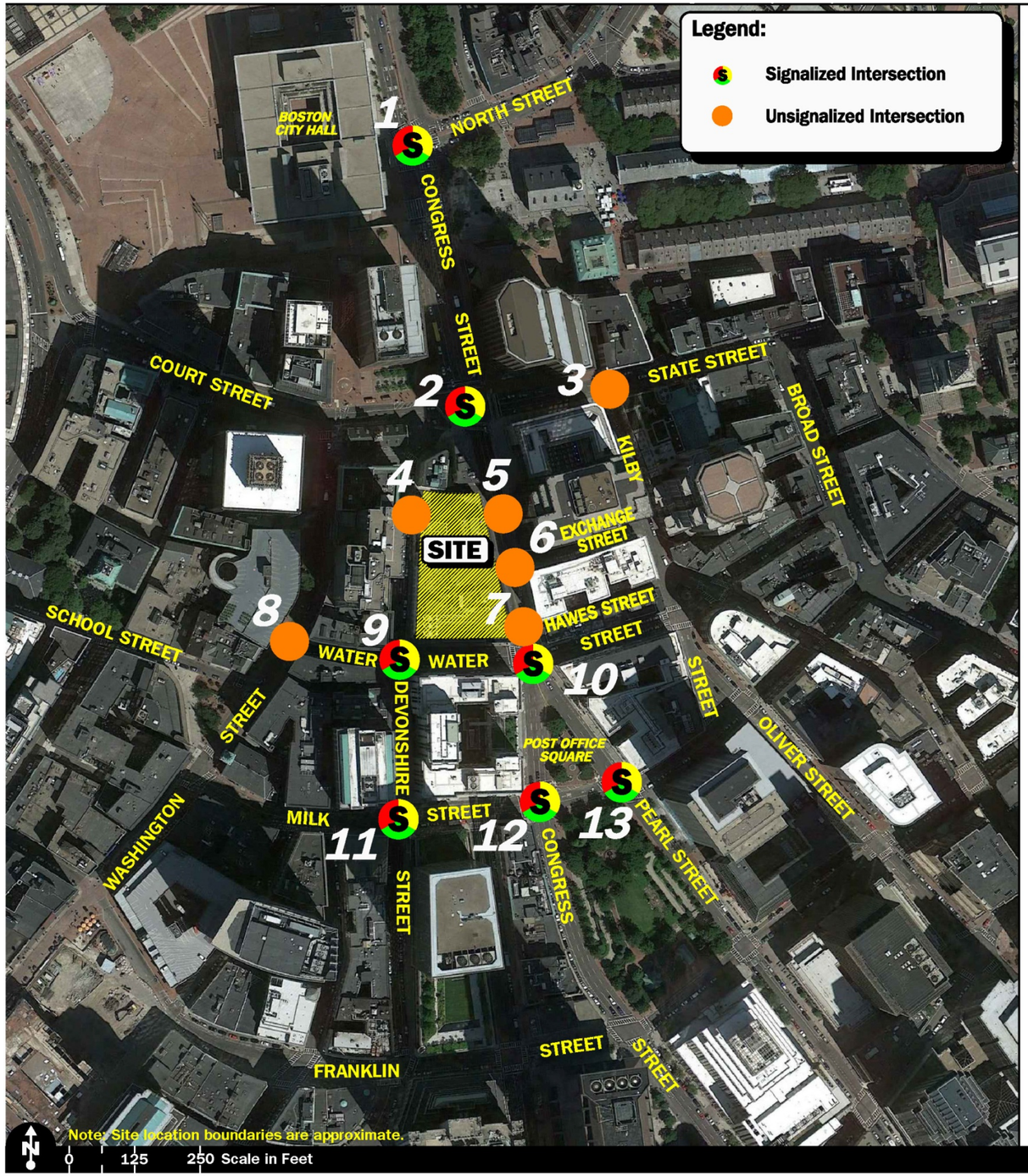


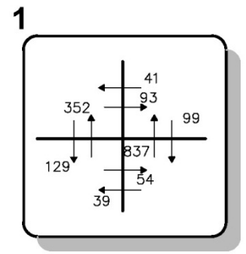


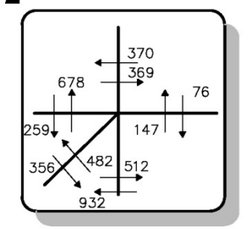
Congress Square Boston, Massachusetts

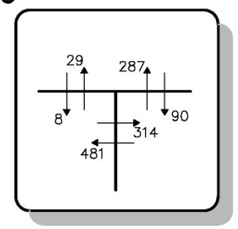
Figure 2-19

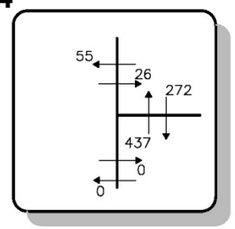
2021 Build Weekday Morning Peak Hour Pedestrian Volumes

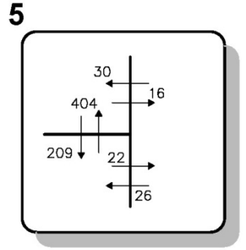


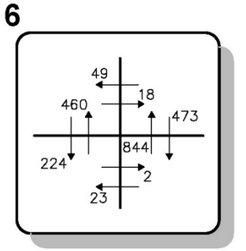


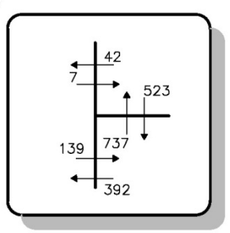


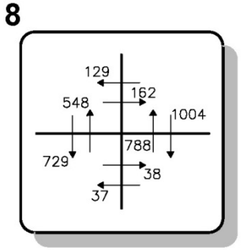


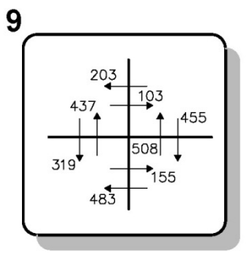


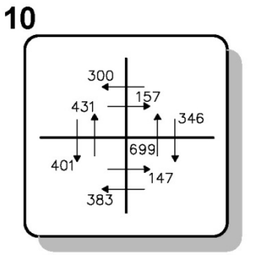


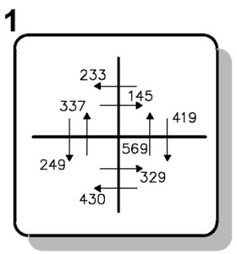


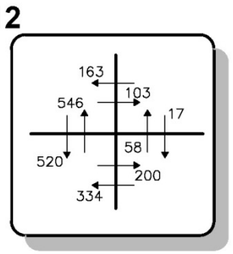


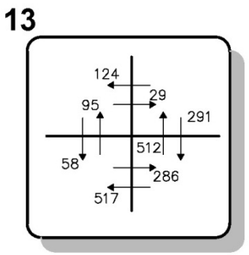












Congress Square Boston, Massachusetts

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*. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. LOS 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 2-8 summarizes the relationship between LOS and control delay. The tabulated control delay criterion may be applied in assigning LOS designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 2-8 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

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 2000 *Highway Capacity Manual.* LOS 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 LOS at unsignalized intersections are also given in the 2000 *Highway Capacity Manual*. Table 2-9 summarizes the relationship between LOS and average control delay for unsignalized intersections.

Table 2-9 Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Seconds Per Vehicle)
A	≤ 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	> 50.0

2.4.1.2 Analysis Results

LOS and vehicle queue analyses were conducted for 2014 Existing, 2021 No-Build, and 2021 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized for the signalized and unsignalized study intersections in Tables 2-10 and 2-11, respectively, and are described in the following sections. The detailed analysis results are presented in Appendix C.

2.4.1.3 Signalized Intersections

The addition of Project-related traffic to the signalized study area intersections is not predicted to result in a reduction to overall levels of service as compared to future No-Build conditions. The majority of study area locations were found to be operating at LOS D or better during the peak hours under all analysis conditions, which is considered acceptable in an urban environment. The following is a summary of the analysis results for each of the signalized study area intersections.

Congress Street at North Street and Boston City Hall Driveway – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, this location is projected to operate at an overall LOS E and C during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, this location is projected to continue to operate at LOS E and C during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Table 2-10 Signalized Intersection Level of Service and Vehicle Queue Summary

Signalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg./95th	V/C	Delay	LOS	Queue Avg./95th
Congress Street at North Street/Boston City Hall Drive												
Weekday Morning:												
City Hall Garage EB LT/TH/RT	0.06	18	B	1/1	0.08	18	B	1/1	0.08	18	B	1/1
North Street WB LT	0.94	54	D	14/23	1.01	80	E	18/27	1.02	75	E	17/26
North Street WB TH/RT	0.74	30	C	11/17	1.16	>80	F	26/36	1.16	>80	F	26/35
Congress Street NB TH/RT	0.22	24	C	3/4	0.23	24	C	4/5	0.23	24	C	4/5
Congress Street SB LT/TH	0.36	18	B	5/6	0.38	18	B	5/6	0.38	18	B	5/6
Overall	**0.69**	**30**	**C**	--	**0.81**	**60**	**E**	--	**0.81**	**59**	**E**	--
Weekday Evening:												
City Hall Garage EB LT/TH/RT	0.06	25	C	0/0	0.13	26	C	0/0	0.13	26	C	0/0
North Street WB LT	0.81	44	D	8/14	0.85	49	D	8/15	0.87	50	D	9/15
North Street WB TH/RT	0.82	43	D	9/12	1.13	>80	F	16/25	1.13	>80	F	16/25
Congress Street NB TH/RT	0.33	5	A	2/3	0.36	5	A	2/3	0.35	5	A	2/3
Congress Street SB LT/TH	0.34	10	A	3/4	0.35	10	A	3/4	0.36	10	A	4/5
Overall	**0.55**	**18**	**B**	--	**0.67**	**33**	**C**	--	**0.68**	**34**	**C**	--
Congress Street at State Street and Devonshire Street												
Weekday Morning:												
State Street WB LT	0.37	34	C	4/61	0.39	35	C	4/6	0.45	35	D	4/7
State Street WB TH/RT	0.76	42	D	8/11	0.79	43	D	9/11	0.79	43	D	9/11
Congress Street NB TH	0.19	9	A	2/3	0.20	9	A	2/3	0.20	9	A	2/3
Congress Street SB TH/BR	0.43	17	B	7/9	0.47	17	B	8/9	0.46	17	B	8/9
Congress Street SB RT	0.35	67	E	4/5	0.36	67	E	4/5	0.36	67	E	4/5
Overall	**0.55**	**33**	**C**	--	**0.58**	**33**	**C**	--	**0.58**	**33**	**C**	--
Weekday Evening:												
State Street WB LT	0.42	33	C	4/6	0.44	33	C	4/6	0.51	34	C	5/7
State Street WB TH/RT	0.75	39	D	7/10	0.77	40	D	8/10	0.77	40	D	8/10
Congress Street NB TH	0.43	4	A	1/2	0.46	4	A	1/2	0.46	4	A	2/2
Congress Street SB TH/BR	0.43	8	A	5/6	0.46	8	A	6/6	0.46	8	A	6/6
Congress Street SB RT	0.31	7	A	1/1	0.32	6	A	1/1	0.32	6	A	0/1
Overall	**0.54**	**15**	**B**	--	**0.57**	**15**	**B**	--	**0.57**	**15**	**B**	--

See notes at end of table.

Table 2-10 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg./95th	V/C	Delay	LOS	Queue Avg./95th
Devonshire Street at Water Street												
Weekday Morning:												
Water Street EB TH/RT	0.52	14	B	3/5	0.54	14	B	3/5	0.54	14	B	3/5
Devonshire SB LT	0.02	9	A	0/1	0.02	9	A	0/1	0.02	9	A	0/1
Devonshire ST TH	0.27	11	B	1/3	0.28	11	B	1/3	0.28	11	B	1/3
Overall	**0.40**	**12**	**B**	--	**0.41**	**13**	**B**	--	**0.41**	**13**	**B**	--
Weekday Evening:												
Water Street EB TH/RT	0.43	9	A	2/4	0.45	9	A	2/4	0.45	9	A	2/4
Devonshire SB LT	0.04	23	C	0/1	0.04	23	C	0/1	0.04	23	C	0/1
Devonshire ST TH	0.34	18	B	2/4	0.35	18	B	3/4	0.35	18	B	3/4
Overall	**0.39**	**13**	**B**	--	**0.41**	**14**	**B**	--	**0.41**	**13**	**B**	--
Congress Street at Water Street												
Weekday Morning:												
Water Street EB LT	0.08	13	B	1/2	0.08	14	B	1/2	0.08	14	B	1/2
Water Street EB TH/RT	0.58	22	C	5/8	0.61	23	C	5/8	0.61	23	C	5/8
Congress Street SB LT/TH	0.56	22	C	7/10	0.63	23	C	8/11	0.62	23	C	8/11
Post Office Square NB TH/RT	0.27	22	C	3/4	0.30	22	C	3/4	0.30	22	C	3/4
Overall	**0.57**	**22**	**C**	--	**0.62**	**22**	**C**	--	**0.61**	**22**	**C**	--
Weekday Evening:												
Water Street EB LT	0.17	20	B	2/3	0.18	20	C	2/3	0.18	21	C	2/3
Water Street EB TH/RT	0.77	40	D	5/9	0.81	43	D	5/11	0.82	45	D	5/11
Congress Street SB LT/TH	0.53	10	A	5/5	0.56	10	A	5/5	0.56	10	A	5/5
Post Office Square NB TH/RT	0.52	19	B	9/9	0.55	20	C	10/10	0.55	20	C	10/10
Overall	**0.62**	**17**	**B**	--	**0.66**	**18**	**B**	--	**0.66**	**18**	**B**	--
Congress Street at Milk Street												
Weekday Morning:												
Milk Street EB TH	0.25	26	C	2/3	0.26	26	C	2/3	0.26	27	C	2/3
Milk Street EB RT	0.32	40	D	1/2	0.45	37	D	1/3	0.43	38	D	1/3
Congress Street SB LT	0.08	44	D	1/2	0.08	47	D	1/2	0.08	47	D	1/2
Congress Street SB TH	0.27	17	B	5/6	0.30	18	B	5/7	0.29	18	B	5/7
Overall	**0.28**	**25**	**C**	--	**0.35**	**25**	**C**	--	**0.34**	**25**	**C**	--
Weekday Evening:												
Water Street EB LT	0.41	29	C	5/6	0.43	30	C	5/7	0.43	30	C	5/7
Water Street EB TH/RT	0.75	50	D	4/10	0.83	59	E	5/11	0.85	61	E	5/11
Congress Street SB LT/TH	0.08	8	A	0/1	0.09	8	A	0/1	0.09	8	A	0/1
Post Office Square NB TH/RT	0.31	10	A	4/4	0.33	10	A	4/5	0.33	10	A	4/5
Overall	**0.46**	**21**	**C**	--	**0.49**	**22**	**C**	--	**0.50**	**22**	**C**	--

See notes at end of table.

Table 2-10 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] Avg/95th	V/C	Delay	LOS	Queue Avg./95th	V/C	Delay	LOS	Queue Avg./95th
Pearl Street at Milk Street												
Weekday Morning:												
Milk Street EB LT	0.08	58	E	1/3	0.09	58	E	1/3	0.09	58	E	1/3
Milk Street EB TH	0.31	19	B	5/7	0.32	19	B	5/7	0.32	19	B	5/7
Pearl Street NB TH/RT	0.20	10	B	1/1	0.22	10	B	1/2	0.22	10	B	1/2
Overall	**0.26**	**23**	**C**	--	**0.27**	**23**	**C**	--	**0.27**	**23**	**C**	--
Weekday Evening:												
Milk Street EB LT	0.19	17	B	0/2	0.19	17	B	0/2	0.19	17	B	0/2
Milk Street EB TH	0.32	18	B	5/7	0.33	18	B	5/7	0.33	18	B	5/7
Pearl Street NB TH/RT	0.45	21	C	5/6	0.48	21	C	5/7	0.47	21	C	5/7
Overall	**0.38**	**19**	**B**	--	**0.40**	**19**	**B**	--	**0.40**	**19**	**B**	--
Devonshire Street at Milk Street												
Weekday Morning:												
Milk Street EB TH/RT	0.24	10	A	1/2	0.25	10	A	1/2	0.25	10	A	1/2
Devonshire Street SB LT/TH/RT	0.40	28	C	2/4	0.42	28	C	2/4	0.42	28	C	2/4
Overall	**0.32**	**18**	**B**	--	**0.33**	**18**	**B**	--	**0.33**	**18**	**B**	--
Weekday Evening:												
Milk Street EB TH/RT	0.32	10	B	2/3	0.33	10	B	2/3	0.33	10	B	2/3
Devonshire Street SB LT/TH/RT	0.40	22	C	3/4	0.42	22	C	3/5	0.42	22	C	3/4
Overall	**0.36**	**14**	**B**	--	**0.37**	**15**	**B**	--	**0.37**	**15**	**B**	--

[a]Volume-to-capacity ratio

[b]Control (signal) delay per vehicle in seconds rounded to nearest second – rounded value may not correspond to LOS designation.

[c]Level of Service

[d]Queue length in vehicles

[e]95th percentile queue is metered by upstream signal

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

Table 2-11 Unsignalized Intersection Level of Service and Vehicle Queue Summary

Unsignalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Kilby Street at State Street												
Weekday Morning:												
State Street WB TH	547	0	A	0	569	0	A	0	569	0	A	0
Kilby Street NB LT	143	11	B	1	148	11	B	1	168	11	B	1
Weekday Evening:												
State Street WB TH	631	0	A	0	653	0	A	0	655	0	A	0
Kilby Street NB LT	132	11	B	1	137	12	B	1	160	12	B	1
Congress Street at Quaker Lane												
Weekday Morning:												
Quaker Lane EB LT/RT	0	0	A	0	0	0	A	0	6	14	B	0
Congress Street NB LT/TH	347	0	A	0	374	0	A	0	357	0	A	0
Congress Street SB TH/RT	710	0	A	0	766	0	A	0	742	0	A	0
Weekday Evening:												
Causeway Street EB TH/RT	4	18	C	0	4	19	C	0	8	21	C	0
Causeway Street WB LT/TH	756	0	A	0	808	0	A	0	784	0	A	0
Causeway Street WB TH	750	0	A	0	790	0	A	0	789	0	A	0
Quaker Lane at Devonshire Street												
Weekday Morning:												
Quaker Lane WB LT	19	10	B	0	20	10	B	0	0	0	A	0
Devonshire Street SB LT/TH	232	0	A	0	250	0	A	0	273	0	A	0
Weekday Evening:												
Quaker Lane WB LT	22	10	B	0	23	11	B	0	0	0	A	0
Devonshire Street SB LT/TH	205	0	A	0	216	0	A	0	254	0	A	0
Congress Street at Quaker Lane/Exchange Street												
Weekday Morning:												
Quaker Lane EB LT/TH/RT	1	9	A	0	1	9	A	0	0	0	A	0
Exchange Street LT/TH/RT	74	13	B	1	76	14	B	1	76	13	B	1
Congress Street NB LT/TH	306	0	A	0	332	0	A	0	314	0	A	0
Congress Street SB TH/RT	702	0	A	0	758	0	A	0	744	0	A	0
Weekday Evening:												
Quaker Lane EB LT/TH/RT	1	9	A	0	1	9	A	0	0	0	A	0
Exchange Street LT/TH/RT	110	20	C	1	113	22	C	2	113	21	C	2
Congress Street NB LT/TH	675	0	A	0	725	0	A	0	698	0	A	0
Congress Street SB TH/RT	748	0	A	0	788	0	A	0	792	0	A	0

See notes at end of table.

Table 2-11 Unsignalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Unsignalized Intersection/Peak Hour/Movement	2014 Existing				2021 No-Build				2021 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Washington Street at Water Street												
Weekday Morning:												
Parking Garage Driveway EB LT/TH	15	14	B	0	16	14	B	0	16	14	B	0
Washington Street NB TH/RT	652	0	A	0	676	0	A	0	676	0	A	0
Weekday Evening:												
Parking Garage Driveway EB LT/TH	107	14	B	1	107	15	B	1	107	15	B	1
Washington Street NB TH/RT	566	0	A	0	588	0	A	0	588	0	A	0
Congress Street at Hawes Street												
Weekday Morning:												
Hawes Street WB LT/RT	3	13	B	0	3	14	B	0	3	13	B	0
Congress Street NB TH	306	0	A	0	332	0	A	0	314	0	A	0
Congress Street SB TH	734	0	A	0	791	0	A	0	777	0	A	0
Weekday Evening:												
Hawes Street WB LT/RT	56	25	C	1	58	29	D	1	58	27	D	1
Congress Street NB TH	675	0	A	0	725	0	A	0	698	0	A	0
Congress Street SB TH	775	0	A	0	816	0	A	0	821	0	A	0

[a]Demand in vehicles per hour

[b]Average control delay per vehicle (in seconds) rounded to nearest second – rounded value may not correspond to LOS designation

[c]Level of Service

[d]Queue length in vehicles

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

Congress Street at State Street and Devonshire Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, this location is projected to continue to operate at LOS C and B during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Devonshire Street at Water Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS B during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS B during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, this location is projected to continue to operate at LOS B during the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Congress Street at Water Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, this location is projected to continue to operate at LOS C and B during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Congress Street at Milk Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS C during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, this location is projected to continue to operate at LOS C during the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Pearl Street at Milk Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS C and B during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, this location is projected to continue to operate at LOS C and B during the weekday morning and

weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Devonshire Street at Milk Street – Under 2014 Existing conditions, this signalized intersection currently operates at an overall LOS B during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, this location is projected to continue to operate at an overall LOS B during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, this location is projected to continue to operate at LOS B during the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

2.4.1.4 Unsignalized Intersections

The addition of Project-related traffic to the unsignalized study area intersections was not shown to result in a change in the overall LOS over anticipated future conditions without the Project (i.e., No-Build conditions). Only one of the eight unsignalized study intersections was found to have a movement that was operating below a LOS D independent of the Project.

Kilby Street at State Street – Under 2014 Existing conditions, critical movements at this intersection (left-turns from Kilby Street) were shown to operate at LOS B during both the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS B during both the weekday morning and weekday evening peak hours. Under 2021 Build conditions, critical movements are projected to continue to operate at LOS B conditions during both the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Devonshire Street at Quaker Lane – Under 2014 Existing conditions, critical movements at this intersection (left-turns from Quaker Lane) were shown to operate at LOS B during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS B during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, it is proposed that this segment of Quaker Lane be converted to a one-way roadway in the eastbound direction thereby eliminating exiting movements onto Devonshire Street.

Congress Street at Quaker Lane (north) – Under 2014 Existing conditions, critical movements at this intersection (left- and right-turns from Quaker Lane) were shown to operate at LOS A and C during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS A and C during the weekday morning and weekday evening

peak hours, respectively. Under 2021 Build conditions, critical movements are projected to operate at LOS B and C conditions during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Congress Street at Quaker Lane (south) and Exchange Street – Under 2014 Existing conditions, critical movements at this intersection (left- and right-turns from Quaker Lane and Exchange Street) were shown to operate at LOS C or better during the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS C or better during the weekday morning and weekday evening peak hours. Under 2021 Build conditions, critical movements are projected to continue to operate at LOS C or better during the weekday morning and weekday evening peak hours. The addition of project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Washington Street at Water Street – Under 2014 Existing conditions, critical movements at this intersection (left-turns and through movements from the parking garage driveway) were shown to operate at LOS B during both the weekday morning and weekday evening peak hours. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS B during both the weekday morning and weekday evening peak hours. Under 2021 Build conditions, critical movements are projected to continue to operate at LOS B conditions during both the weekday morning and weekday evening peak hours. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

Congress Street at Hawes Street – Under 2014 Existing conditions, critical movements at this intersection (left- and right-turns from Hawes Street) were shown to operate at LOS B and D during the weekday morning and weekday evening peak hours, respectively. Under 2021 No-Build conditions, critical movements are projected to continue to operate at LOS B and D during the weekday morning and weekday evening peak hours, respectively. Under 2021 Build conditions, critical movements are projected to continue to operate at LOS B and D conditions during the weekday morning and weekday evening peak hours, respectively. The addition of Project-related traffic is not projected to result in a notable increase to overall vehicular delays as compared to 2021 No-Build conditions.

2.4.2 Pedestrian Impact Analysis

2.4.2.1 Introduction

A LOS analysis at intersection crossings was conducted under Existing, No-Build, and Build conditions in order to assess Project-related impacts on the pedestrian infrastructure.

2.4.2.2 Methodology

In order to analyze the quality of service provided to pedestrians, a pedestrian facility analysis was conducted using the methodologies described in the 2010 *Highway Capacity Manual*. The concept of LOS for pedestrian facilities is similar to that discussed previously for signalized and unsignalized intersections, and is evaluated separately for each crosswalk and intersection corner. A five step evaluation process is used to determine the pedestrian LOS as follows:

1. Determine street corner circulation area;
2. Determine crosswalk circulation area;
3. Determine pedestrian delay;
4. Determine pedestrian LOS score for intersection; and
5. Determine overall LOS.

This five step approach allows for a holistic definition of the pedestrian experience at an intersection between the initial wait on the corner to the crossing within the crosswalk. Aggregating the LOS score for each of these experiences results in an overall pedestrian LOS score for an intersection.

Six levels of service scores are defined for pedestrian facilities and are a measure of the pedestrian's experience as it relates to pedestrian density, crossing delay, crossing distance and perceived exposure to traffic. They are given letter designations from "A" to "F", with LOS A representing the "best" crossing conditions and LOS F representing the "worst" crossing conditions. Table 2-12 summarizes the relationship between LOS and the perceived LOS score for pedestrian facilities at signalized intersections.

Table 2-12 Pedestrian Level of Service Criteria at Signalized Intersections[a]

Level of Service	LOS Score (Seconds)
A	≤ 2.00
B	> 2.00 to 2.75
C	> 2.75 to 3.50
D	> 3.50 to 4.25
E	> 4.25 to 5.00
F	> 5.00

[a]Source: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; Exhibit 18-5.

For two-way Stop-controlled intersections, the pedestrian LOS is related to the average pedestrian delay associated with pedestrian crossings, and follows a six step evaluation procedure as follows:

1. Identify two-stage crossings (i.e., locations where a median refuge island is available);
2. Determine critical headway;
3. Estimate probability of a delayed crossing;
4. Calculate average delay to wait for adequate gap;
5. Estimate delay reduction due to yielding vehicles; and
6. Calculate average pedestrian delay and determine the LOS.

Table 2-13 summarizes the relationship between LOS and average pedestrian delay (control delay) for pedestrian facilities at two-way Stop-controlled intersections.

Table 2-13 Pedestrian Level of Service Criteria at Two-Way Stop-Controlled Intersections[a]

Level of Service	Control Delay (Seconds per Pedestrian)
A	≤ 5
B	> 5 to 10
C	> 10 to 20
D	> 20 to 30
E	> 30 to 45
F	> 45

[a]Source: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; Exhibit 19-2.

The *Highway Capacity Manual* does not provide a definition for pedestrian LOS at all-way Stop-controlled intersections, but does provide general guidance to determine the potential pedestrian delay that may be incurred as a result of intersection geometry, traffic volumes and pedestrian demand. The nature of the operation of all-way Stop-controlled intersections implies that, depending on driver behavior, pedestrian crossing delay should be less than that experienced at a similar intersection that is under two-way Stop-control.

2.4.2.3 Analysis Results

Pedestrian LOS analyses were conducted for 2014 Existing, 2021 No-Build and 2021 Build conditions for the pedestrian crossings within the study area located adjacent to the City block bordered by State Street, Congress Street, Devonshire Street and Water Street, given that pedestrian activity (and impacts) associated with the Project will be concentrated and therefore more pronounced at these crossings providing direct access to the Project site. The results of the analyses are summarized for the signalized and unsignalized study intersections in Tables 2-14 and 2-15, respectively. The detailed analysis results are presented in Appendix C.

Table 2-14 Pedestrian Level of Service Summary Signalized Intersections

	2014 Existing			2021 No-Build			2021 Build		
Intersection/Time Period/Crossing Path	Demand[a]	LOS[b]	LOS[c]	Demand	LOS	LOS	Demand	LOS	LOS
Congress Street at State Street and Devonshire Street									
Weekday Morning:									
Crossing State Street (east)	194	2.16	B	201	2.17	B	214	2.17	B
Crossing State Street (west)	481	1.81	A	530	1.81	A	564	1.85	A
Crossing Congress Street (north)	456	2.53	B	472	2.55	B	472	2.55	B
Crossing Congress Street (south)	910	2.38	B	942	2.40	B	969	2.39	B
Weekday Evening:									
Crossing State Street (east)	185	2.17	B	191	2.17	B	217	2.19	B
Crossing State Street (west)	759	1.80	A	786	1.80	A	838	1.82	A
Crossing Congress Street (north)	713	2.62	B	739	2.62	B	739	2.65	B
Crossing Congress Street (south)	1,288	2.48	B	1,334	2.48	B	1,444	2.50	B
Devonshire Street at Water Street									
Weekday Morning:									
Crossing Water Street (east)	636	1.80	A	658	1.81	A	697	1.81	A
Crossing Water Street (west)	655	1.85	A	678	1.86	A	705	1.86	A
Crossing Devonshire Street (north)	215	1.91	A	223	1.92	A	255	1.92	A
Crossing Devonshire Street (south)	591	1.80	A	612	1.80	A	638	1.80	A
Weekday Evening:									
Crossing Water Street (east)	866	1.81	A	896	1.82	A	963	1.83	A
Crossing Water Street (west)	687	1.90	A	711	1.91	A	753	1.92	A
Crossing Devonshire Street (north)	244	1.89	A	253	1.90	A	306	1.90	A
Crossing Devonshire Street (south)	575	1.79	A	596	1.80	A	638	1.80	A
Congress Street at Water Street									
Weekday Morning:									
Crossing Water Street (east)	838	1.85	A	868	1.86	A	881	1.89	A
Crossing Water Street (west)	628	1.83	A	650	1.83	A	701	1.83	A
Crossing Congress Street (north)	322	2.43	B	333	2.46	B	352	2.48	B
Crossing Congress Street (south)	506	2.56	B	522	2.59	B	537	2.59	B
Weekday Evening:									
Crossing Water Street (east)	984	1.79	A	1,019	1.80	A	1,045	1.84	A
Crossing Water Street (west)	721	1.81	A	747	1.82	A	832	1.82	A
Crossing Congress Street (north)	404	2.54	B	419	2.56	B	457	2.58	B
Crossing Congress Street (south)	486	2.68	B	504	2.71	B	530	2.72	B

[a]Demand in pedestrians per hour.

[b]Seconds.

[c]Level of service.

Table 2-15 Pedestrian Level of Service Summary Unsignalized Intersections

Intersection/Time Period/Crossing Path	2014 Existing			2021 No-Build			2021 Build		
	Demand[a]	Delay[b]	LOS[c]	Demand	Delay	LOS	Demand	Delay	LOS
Devonshire Street at Quaker Lane									
Weekday Morning:									
Crossing Quaker Lane (east)	571	<1	A	591	<1	A	620	<1	A
Crossing Devonshire Street (north)	27	4	A	28	5	A	28	5	A
Weekday Evening:									
Crossing Quaker Lane (east)	631	<1	A	653	<1	A	709	<1	A
Crossing Devonshire Street (north)	78	4	A	81	4	A	81	5	A
Congress Street at Quaker Lane (north)									
Weekday Morning:									
Crossing Quaker Lane (west)	329	<1	A	341	<1	A	368	<1	A
Crossing Congress Street (north)	108	>45	F	111	>45	F	111	>45	F
Crossing Congress Street (south)	46	>45	F	47	>45	F	47	>45	F
Weekday Evening:									
Crossing Quaker Lane (west)	542	<1	A	561	<1	A	613	<1	A
Crossing Congress Street (north)	44	>45	F	46	>45	F	46	>45	F
Crossing Congress Street (south)	46	>45	F	48	>45	F	48	>45	F
Congress Street at Quaker Lane (south) and Exchange Street									
Weekday Morning:									
Exchange Street (east)	932	<1	A	966	<1	A	966	<1	A
Crossing Quaker Lane (west)	471	<1	A	488	<1	A	509	<1	A
Crossing Congress Street (north)	199	>45	F	206	>45	F	206	>45	F
Crossing Congress Street (south)	3	>45	F	3	>45	F	3	>45	F
Weekday Evening:									
Exchange Street (east)	622	<1	A	644	<1	A	684	<1	A
Crossing Quaker Lane (west)	1,272	2	A	1,317	2	A	1,317	2	A
Crossing Congress Street (north)	64	>45	F	67	>45	F	67	>45	F
Crossing Congress Street (south)	24	>45	F	25	>45	F	25	>45	F

[a]Demand in pedestrians per hour.

[b]Average delay per pedestrian.

[c]Level of service.

As shown in Table 2-14, the signalized pedestrian crossings of Congress Street, Devonshire Street, State Street and Water Street, adjacent to the Project site, were shown to operate at a pedestrian LOS B or better under 2014 Existing conditions, and are projected to maintain LOS B operations or better under both 2021 No-Build and 2021 Build conditions, with minimal impacts as a result of the addition of Project-related pedestrian activity.

As shown in Table 2-15, the unsignalized crossings of Quaker Lane at both Congress Street and Devonshire Street are shown to operate at LOS A under 2014 Existing, 2021 No-Build and 2021 Build conditions. Pedestrian crossings of Congress Street at unmarked locations currently operate at LOS F and are projected to continue to operate at LOS F under future conditions.

2.4.3 Public Transportation Impact Analysis

Under the 2021 Build conditions, it is estimated that the Project will generate 75 transit trips during the weekday morning peak hour and 109 transit trips during the weekday evening peak hour. These trips will be distributed across the various public transportation systems that serve the Project site, including the Orange Line, Blue Line, Green Line, commuter rail and bus service. Based on the peak period transit capacity and ridership information provided by the CTPS and documented in Section 2.2.5 above, sufficient capacity exists within the overall public transportation system serving the study area and the Project site to accommodate the additional ridership associated with the Project.

2.4.4 Loading/Delivery Impacts

Primary loading and delivery activities associated with the Project will occur in two designated off-street loading areas: Quaker Lane and Devonshire Street. Loading activities on Quaker Lane will be restricted to occur only during late night or early morning hours, and will not coincide with peak hours of daytime pedestrian activity along the corridor.

As currently planned, trash and recycling removal and loading for the residential, commercial and hotel uses proposed at 15 Congress Street and 68 Devonshire Street will occur off Quaker Lane during late night or early morning hours. Trash and recycling activities will be managed by a private trash and recycling disposal company. No trash removal activities associated with the 15 Congress Street or 68 Devonshire Street properties are proposed via either Congress Street or Devonshire Street.

Trash and recycling removal and loading for 40 Water Street are proposed via designated loading areas on Devonshire Street, as well as the southern leg of Quaker Lane off Congress Street. Consistent with the residential, commercial and hotel uses, trash and recycling activities on Quaker Lane will be managed by a private trash and recycling disposal company and will occur during late night or early morning hours and not coincide with peak hours of daytime pedestrian activity along the corridor.

2.5 Transportation Improvement Program

The previous sections of this assessment have quantified and evaluated in detail the impact of the Project on the transportation infrastructure. This section presents a summary of Project-related improvements that are designed to: 1) address existing deficiencies identified as a part of this assessment; 2) minimize the impact of the Project on the transportation system and proximate neighborhood areas; and 3) provide safe and efficient access to the Project site.

2.5.1 Recommendations

The Proponent is committed to the implementation of a comprehensive transportation improvement program that is designed to reduce the impact of the planned development on the transportation infrastructure. The major elements of the improvement program can be separated into three primary categories: i) Project site access accommodations; ii) off-site improvements; and iii) Transportation Demand Management (TDM) measures. In addition, the framework of a construction traffic management plan have also been developed for the Project. The elements of the planned transportation improvement program are discussed in detail in the following sections.

2.5.1.1 Project Site Access

As previously noted, on-site parking will not be provided for the Project, with Project-related parking demand accommodated within off-site private commercial parking facilities, consistent with the current use of the Project site. Vehicular traffic to and from the Project site is expected to be minimal and consist primarily of trash removal and loading activities, which will occur during late night and early morning hours, and pick-up/drop-off service to the proposed hotel uses. In order to accommodate vehicular access to and from the site and minimize conflicts with pedestrian activity along Quaker Lane, the following recommendations are made:

- The northern east-west segment of Quaker Lane that travels between Devonshire Street and Congress Street should be designated as a one-way roadway in the eastbound direction. Currently, Quaker Lane provides an opportunity for cut-through traffic for vehicles traveling northbound on Congress Street that are destined for Devonshire Street southbound. Furthermore, the narrow width of the corridor is not appropriate to accommodate two-way traffic flow. Conversion of this segment of Quaker Lane to a one-way eastbound roadway would eliminate existing cut-through traffic and minimize conflicts between vehicular and pedestrian traffic under post-development conditions.

- Consideration should be given to providing a designated off-street short-term parking zone area along the northern east-west segment of Quaker Lane in order to accommodate pick-up and drop-off activity associated with the proposed hotel uses at 1 68 Devonshire Street. Consistent with the proposed one-way traffic pattern for this segment of the corridor, the parking zone should be located on the southern side of the roadway adjacent to the hotel use, with a continuous ADA compliant sidewalk provided between the pick-up/drop-off area and the hotel entrance off Devonshire Street. Provision of a parking zone area would serve to ensure that hotel pick-up and drop-off activity does not adversely impact traffic flow along Quaker Lane or result in queuing that impacts Devonshire Street traffic operations.

- Vehicles exiting the Project via Quaker Lane onto Congress Street should be placed under STOP-sign control. Do Not Enter and One-Way signage should be installed at the northern terminus of Quaker Lane with Congress Street to designate this segment of Quaker Lane as one-way in the eastbound direction.

- It is recommended that removable bollards be installed along Quaker Lane to physically prohibit vehicular traffic outside of off-peak hours between the northern east-west portion of the corridor and the north-south segment that travels between 15 Congress Street and 68 Devonshire Street. This measure will serve to designate this segment of Quaker Lane as a pedestrian zone, with vehicular activity in this area consisting primarily of loading and trash removal activities which would occur only during late night and early morning hours.

- All signs and other pavement markings to be installed within the development shall conform to the applicable standards of the Manual on Uniform Traffic Control Devices (MUTCD).

2.5.1.2 Transportation Demand Management Program

Introduction

The Project site is ideally situated in close proximity to transit service offered by the MBTA. The Project site is served by a number of public transportation services, including bus service and subway service via the Orange, Blue, Red and Green Lines. The Orange Line/Blue Line State Street Station head houses are located on the southwest corner of the intersection of Devonshire Street with Water Street as well as the northwest corner of Devonshire Street and Court Street, immediately adjacent to the Project site. In addition, the Government Center Station, which provides access to the Green Line is located in close walking distance to the Project site at City Hall Plaza. Further, Government Center and Post Office Square both offer Hubway bicycle rental stations in walking distance of the site, offering non-automobile travel options to accommodate increased demands associated with the Project.

The following pedestrian and bicycle improvements/accommodations, TDM measures, and trip reduction strategies are proposed with the goal of further minimizing the Project's overall impact.

Pedestrian Improvements

As part of the Project, the Proponent will define and enhance pedestrian facilities as follows:

- Sidewalk and streetscape improvements along the Quaker Lane corridor to transform the corridor from its current loading zone use to a pedestrian friendly environment;

- Conversion of the northern segment of Quaker Lane from a two-way roadway to a one-way roadway in the eastbound direction to minimize the level of vehicular activity along the corridor;

- Installation of removable bollards along the northern east-west segment of Quaker Lane to prohibit vehicular through traffic from the southern segment of the corridor thereby minimizing conflicts between vehicular and pedestrian traffic;

- Expansion of the existing sidewalk area at the intersections of Water Street with Congress Street and Devonshire Street to enhance pedestrian crossings at these locations;

- Reconstruct portions of the existing sidewalks, as necessary, along the Project site frontage on Congress Street, Devonshire Street and Quaker Lane;

- Installation of new lighting along Quaker Lane;

- The Quaker Lane intersections with Congress Street will be constructed so as to be flush so that the sidewalk is maintained at a consistent grade along Congress Street.

Traffic Reduction Strategies

In order to reduce single occupant vehicle (SOV) travel to the Project site and encourage the use of alternative modes of transportation to reach the planned development, the following traffic reduction strategies may be implemented in conjunction with the Project:

- Parking will not be provided on-site for employees, residents, hotel guests or patrons of the Project;

- Promote the use of public transportation to hotel guests and employees in website based materials including links to the appropriate home pages of the MBTA and MassRIDES;

- Participate in the MBTA Corporate T-Pass Program to the extent practical and as allowable pursuant to corporate policies; and

- Promote bicycle use as an alternative to SOV travel by providing promotional material on bicycle commuting and bicycle safety, and offer incentives for bicycle use.

Alternative Work Schedules

Flexible working hours allow employees to choose their own starting and finishing times by establishing a required core time such as 9:00 a.m. to 4:00 p.m.; this allows employees to vary work schedules and reduces peak-hour demand. Project tenants will evaluate the feasibility of implementing a flextime policy and/or telecommuting for clerical/office employees in order to reduce peak-hour traffic demands.

On-Site Banking/Direct Deposit

Project tenants will be encouraged to offer employees the option of direct deposit of paychecks in order to reduce off-site trips and the overall volume of employee traffic.

2.5.1.3 Construction Management Plan (CMP)

An important component of the transportation improvement program is an effective series of measures designed to minimize traffic flow and safety impacts during the Project's construction phase. Summarized below are several measures which the Proponent and the general contractor will undertake during the construction phase of the Project.

- The Proponent will coordinate with BTD regarding all transportation-related construction impacts of the Project.

- Prior to the implementation of any planned construction activities within the public right-of-way, the contractor will submit to BTD for review and approval a traffic and pedestrian management plan.

- The general contractor, through the A Better City TMA, will implement a car/vanpool program in order to reduce construction-related traffic and parking demands associated with the Project.

- The general contractor will be encouraged to offer subsidies to workers that use public transportation to be used toward the purchase of MBTA "Charlie Cards". Employees that participate in the program would also be eligible for the "guaranteed-ride-home" program through the A Better City TMA.

- Designated truck routes will be established to govern how trucks access the Project site. The goal of this commitment is to have construction trucks use only the regional highway system (I-93) and to avoid using residential city streets to the extent practical. Construction contracts for the Project will include notification of this provision.

- Secure fencing and sidewalk staging protection will be provided in areas affected by the construction to protect nearby pedestrian and vehicular traffic. Gate entrances into the construction area(s) will be determined jointly with BTD.

- Secure on-site storage will be provided for tools and equipment in an effort to minimize construction-related vehicle trips to the site.

- Full or partial street closures will be avoided to the extent possible. Should a partial street closure be necessary in order to off-load construction materials and/or complete construction-related activities, the closure will be limited to off-peak periods as defined by the BTD so as to minimize the impact on vehicular and pedestrian flow. Police details will be utilized as required by the BTD.

- During construction activities, as required by BTD, a police detail will be placed on-site within the sidewalk/street area to control pedestrian, bicycle and construction vehicle conflicts.

- Construction worker parking will be prohibited along local roadways in the vicinity of the Project site. Construction contracts for the Project will include notification of this prohibition.

2.5.1.4 Traffic Monitoring Program

The Proponent, by and through the A Better City TMA, 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. The monitoring program will include obtaining traffic volume information at the driveways serving the Project site and an employee and hotel guest survey of commuting modes. The results of the annual monitoring program will be provided to the BRA, BTD and MassDOT. The monitoring program will commence upon full completion and occupancy of the Project and will continue for a period of two-years thereafter.

2.5.2 Conclusion

With implementation of the elements of the transportation improvement program described in the previous section, the Project can be accommodated within the confines of the transportation system in a safe and efficient manner. The Proponent will formalize the commitments to mitigation as a part of the City of Boston Transportation Access Plan Agreement (TAPA) to ensure that proper Project mitigation will be implemented as may be required to accommodate the Project and commensurate with the planned build-out and occupancy of the development.

Draft Project Impact Report

One Bromfield

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
One Bromfield LLC
c/o Midwood Investment and Development
430 Park Avenue, Suite 505
New York, NY 10022

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Adrian Smith + Gordon Gill Architecture LLP
McDermott Ventures
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
Howard Stein Hudson
Stephen Stimson Associates
PositivEnergy Practice, LLC
Haley & Aldrich, Inc.

APRIL 28, 2016

Epsilon
ASSOCIATES INC.

Draft Project Impact Report

Submitted Pursuant to Article 80B of the Boston Zoning Code

One Bromfield

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
One Bromfield LLC
c/o Midwood Investment and Development
430 Park Avenue, Suite 505
New York, NY 10022

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Adrian Smith + Gordon Gill Architecture LLP
McDermott Ventures
Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
Howard Stein Hudson
Stephen Stimson Associates
PositivEnergy Practice, LLC
Haley & Aldrich, Inc.

April 28, 2016

Chapter 3.0

Transportation Component

3.0 TRANSPORTATION

3.1 Introduction

3.1.1 Purpose of the Transportation Component

In accordance with the City of Boston's Transportation Access Plan Guidelines, this section describes roadway, pedestrian, and bicycle conditions; parking and loading; proposed mitigation; and transportation demand management (TDM) strategies for the Project.

3.1.2 Project Description

The Project Site, at One Bromfield Street, is bounded by Bromfield Street to the south, Washington Street to the east, an abutting building to the west that houses a restaurant and other retail stores, and, to the north, Province Court (a public alley), Ordway Place (a private alley) and an abutting mixed-use building. The new Millennium Tower/Burnham Building is located diagonally across the Washington Street/Bromfield Street/Franklin Street intersection to the southeast. Currently, retail stores and restaurants occupy the Project Site, with entrances on Washington Street and Bromfield Street. Some of the ground floor retail space along Washington and Bromfield Streets is currently vacant.

The Project includes the demolition of the existing on-site structures and the construction of a new mixed-use building totaling approximately 605,000 sf, with approximately 419 residential units, approximately 30,000 sf of commercial (retail) space, and an above grade, two-level parking garage with approximately 235 spaces for residents and some retail visitors to the site. No public parking will be provided.

Table 3-1 shows the summary of proposed land uses.

Table 3-1 Project Program

Land Use	Quantity
Residential	Approx. 419 units
Retail	Approx. 30,000 sf
Parking Spaces	Approx. 235 spaces

3.1.3 Methodology

In accordance with the Boston Transportation Department Transportation Access Plan Guidelines, the study team conducted a transportation analysis for the proposed Project. The analysis is summarized in the following sections:

- Section 3.2 includes an inventory of existing transportation conditions, including intersection operation, parking, public transportation, pedestrian conditions, bicycle conditions, and loading and service activity.

- Section 3.3 and Section 3.4 examine future transportation conditions and potential traffic impacts associated with the Project and other neighboring projects that have been approved by the BRA. Based upon the City's guideline of evaluating conditions for a five-year time horizon, long-term impacts are evaluated for the Year 2021. These sections include the following scenarios:

    - No-Build (2021) Conditions includes general background growth and volumes from specific projects expected by 2021 without the Project; and

    - Build (2021) Conditions includes specific travel demand forecasts for the Project.

- Section 3.5 describes the As-of-right Alternative.

- Section 3.6 includes proposed Proponent actions to mitigate the transportation impacts of the Project by improving the roadway, pedestrian, and bicycle environment, as needed.

- Transportation Demand Management is summarized in Section 3.7 and a summary of the proposed Construction Management Plan is included in Section 3.8.

3.1.4 Transportation Evaluation Summary

The Project will have relatively minor traffic impacts to study area intersections, primarily because of the residential nature of the Project. Residential developments generate far fewer trips per square foot than comparably sized office or retail developments and do not produce a large proportion of daily trips during commuter travel periods, thereby minimizing the Project's impacts during peak hours. Additionally, the convenience of the nearby MBTA subway stations at Downtown Crossing, State Street, Government Center (which has re-opened), and Park Street will encourage transit travel to and from the Project Site. Key transportation characteristics of the Project and analysis results include:

- During the a.m. peak hour, the Project will generate 26 entering vehicle trips and 34 exiting vehicle trips and during the p.m. peak hour, the Project will generate 36 entering trips and 36 exiting trips. (Vehicle trips include automobiles and taxicabs.)

- As part of the Project, the Proponent seeks, with City approval, to change the travel direction of Bromfield Street between Washington Street and the Project Site driveway to be one-way eastbound (toward Washington Street). Consequently, some commercial vehicles and taxicabs in the area would travel different routes to reach destinations along Bromfield Street and Province Street. The transportation

analysis in this report studies two street circulations plans: Option 1, which maintains the existing street circulation, and Option 2, which incorporates the change to Bromfield Street travel direction as described above. Reassigned vehicle trips have been accounted for in the transportation analysis.

- Under Option 1, the porte-cochere driveway at the Project will accommodate one-way, southbound travel from Province Court, a public alley, toward Bromfield Street. Under Option 2, the porte-cochere driveway will accommodate one-way, northbound travel from Bromfield Street toward Province Court (exiting to Province Street). Under either option, the porte-cochere will have one travel lane for through traffic and one curbside stopping lane for valet staging and taxicab activity, as well as residential deliveries handled by box trucks, such as UPS and Federal Express. The eastern curb of the internal porte-cochere has the capacity for approximately six vehicles plus one space for a delivery vehicle.

- When arriving at the Project, residents will drive their vehicles to the internal porte-cochere and park in the curbside stopping lane. A garage attendant will then drive the vehicle to the attendant-operated elevators accessed from Province Court. Garage attendants will also retrieve vehicles from the garage for residents when they depart. The staging of vehicles waiting to be picked up by residents or serviced by the garage elevators will occur in the curb lane within the porte-cochere.

- The Project will include approximately 235 on-site parking spaces, primarily for residents. The parking ratio will not be greater than 0.56 spaces/residential unit (assuming 100% residential utilization of the parking spaces). It is expected that many residents will not own an automobile and will instead rely on taxicabs (or other vehicle transport services or ride-sharing services) for trips requiring a vehicle. During the mid-day, when some residential vehicles have vacated the garage, some parking for visitors to the on-site retail business will be available. No public parking will be provided.

- One intersection, Tremont Street/Cambridge Street/Court Street, will experience a change in overall level of service from the No-Build Condition to Build Condition. Under either option, the intersection operation will worsen from LOS D to LOS E during each peak hour. With minor signal timing changes, however, delays and queues would be reduced. Adjacent to the new Project building along Bromfield Street and Washington Street, new sidewalks will be constructed that meet the City's standards and those of the Americans with Disabilities Act and Massachusetts Architectural Access Board (ADA/AAB). The building will be set back from the Bromfield Street right of way to create a wider pedestrian sidewalk condition.

- In accordance with the City of Boston Bicycle Guidelines, and to encourage bicycling as an alternative mode of transportation, the Proponent will provide secure bicycle storage capacity for residents and employees. Residential bicycle storage capacity will be provided for 419 bicycles (one per unit).

- The Project will have one loading bay and one designated curbside loading space within the porte-cochere. The loading bay will be accessed via Province Court. Residential move-in/move-out activity will occur at the loading bay and be managed by an on-site transportation coordinator and subject to City regulation. Trash pick-up will occur along Province Court.

- The Project includes the repaving of Province Court, re-setting the existing curbs, and the re-installation of existing City signage on this public alley.

- The Proponent is committed to implementing Transportation Demand Management (TDM) measures to reduce residents' dependence on automobiles. TDM measures to be undertaken by the Proponent include: providing one free monthly MBTA subway pass per residential unit during the first six months of building operation, promoting transit services in marketing and orientation materials, providing adequate secure bicycle storage, joining the local Transportation Management Association, and designating an on-site transportation coordinator.

- A Transportation Access Plan Agreement (TAPA) will be entered into between the Proponent and BTD and set forth the specific TDM measures and agreements between the Proponent and the City of Boston.

3.1.5 Study Area

The Project's traffic impact study area is generally bounded by Court Street to the north, Bromfield Street/Franklin Street to the south, Washington Street to the east, and Tremont Street to the west. As shown in Figure 3-1, the study area includes the following eight signalized intersections and five unsignalized intersections:

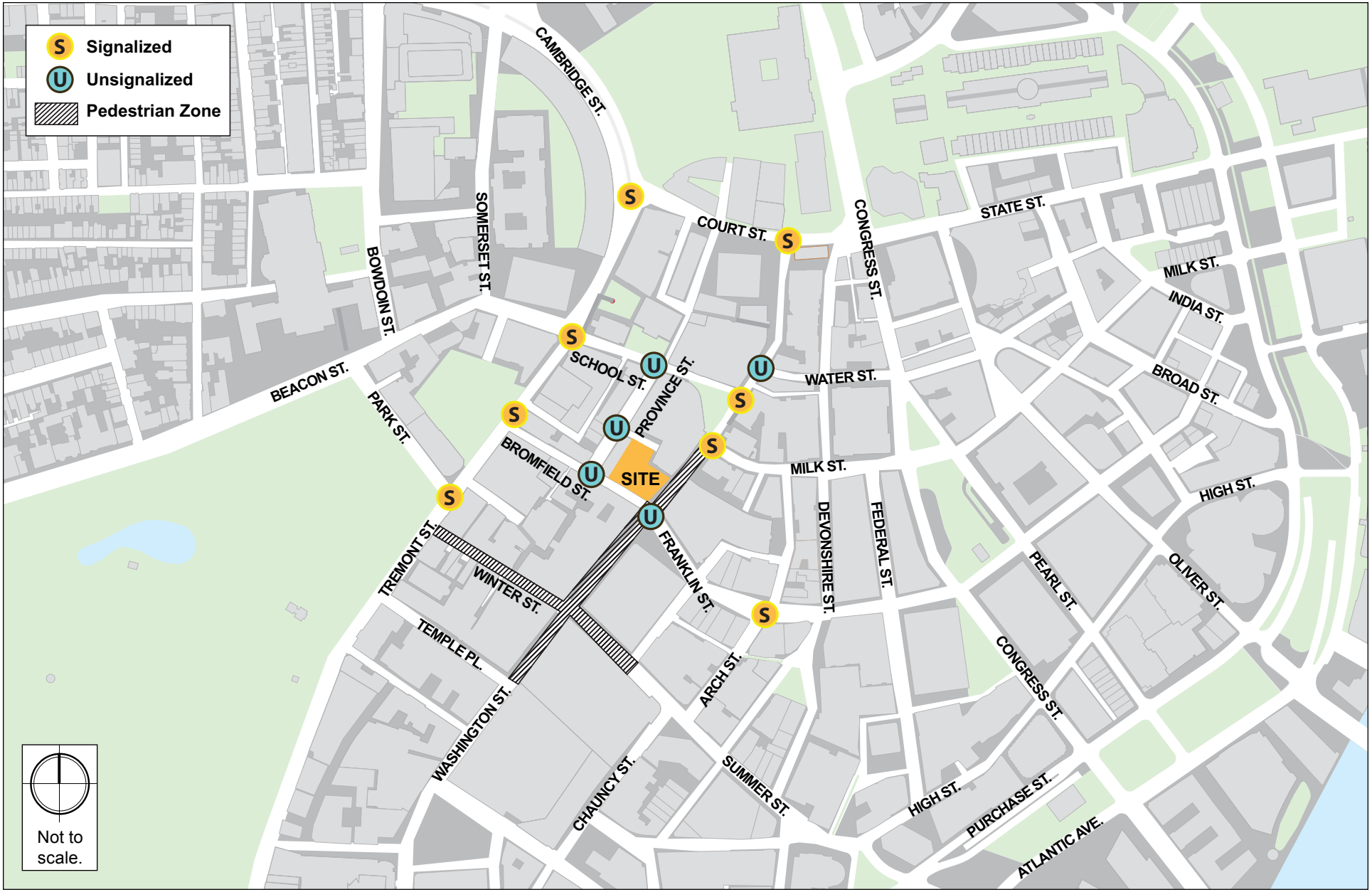
- Tremont Street/Cambridge Street/Court Street (signalized);

- Tremont Street/ Beacon Street/School Street* (signalized);

- Tremont Street/Bromfield Street* (signalized);

- Tremont Street/Park Street* (signalized);

- Washington Street/School Street* (signalized);



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-1
Study Area Intersections

- Franklin Street/Arch Street (signalized);
- Washington Street/Milk Street (signalized);
- Washington Street/Court Street (signalized);
- Washington Street/Water Street/Garage Exit (unsignalized);
- Province Street/School Street* (unsignalized);
- Province Street/Province Court* (unsignalized);
- Bromfield Street/Province Street* (unsignalized); and
- Washington Street/Bromfield Street/Franklin Street* (unsignalized).

The locations marked with an asterisk were initially identified by the Boston Transportation Department (BTD) as study locations during review of the One Bromfield PNF. The remaining locations were subsequently added to the study area, per request of the BTD, to help provide a broader understanding of the wider impacts of street circulation changes proposed under the Build (2021) Condition. The circulation changes are presented in Section 3.4.1.

3.2 Existing (2016) Transportation Condition

This section includes descriptions of existing study area roadway vehicle restrictions, roadway geometries, intersection traffic control, peak-hour vehicular and pedestrian volumes, parking, public transportation availability, curbside regulations, the pedestrian and bicycle environment, and loading conditions.

3.2.1 Vehicle-Restricted Zone

In the Downtown Crossing area, vehicle restrictions have been in place for decades as part of a pedestrian-only zone where general vehicle traffic is always prohibited. Affected roadway segments include:

- Winter Street, between Summer Street and Tremont Street;
- Washington Street, between Temple Place and Milk Street;

- Bromfield Street, between Washington Street and Province Street; and
- Franklin Street, between Hawley Street and Washington Street.[1]

Between 11:00 a.m. and 6:00 p.m., most commercial vehicles (including taxicabs) are not permitted to travel along these roadway segments. The exceptions are Brinks, Wells Fargo, USPS, Boston Globe, and Boston Herald vehicles, which can use these roadways after 2:00 p.m. Within this area, taxicabs are permitted at all times along Franklin Street, north of Hawley Street. From that point, taxicabs can continue west on Bromfield Street toward Tremont Street or turn right onto Washington Street toward Milk Street. Taxicabs are also permitted to travel along Washington Street between 6:00 p.m. and 2:00 a.m. (These vehicle restrictions are depicted on the roadway network shown later in Figure 3-2.) Police, fire, emergency response and emergency utility service vehicles are always permitted in this area.

While general traffic is prohibited from travelling westbound on Franklin Street beyond Hawley Street, vehicle classification counts show that many vehicles moving through the Washington Street/Franklin Street/Bromfield Street intersection are not commercial vehicles or taxicabs and are travelling through this area illegally. This portion of Franklin Street is currently closed for construction of the Millennium Tower project, but based on 2007 counts at the Washington Street/Franklin Street/Bromfield Street intersection, about 15% of a.m. peak hour vehicles were travelling illegally through this location. During the p.m. peak hour, this rate rose to about 60%. Most vehicles travelling illegally are originating on Franklin Street westbound and are destined through to Bromfield Street toward Tremont Street.

The proposed circulation change on Bromfield Street, as discussed later in Section 3.4.1, would help prevent these illegal movements.

3.2.2 Existing Roadway Conditions

The study area includes the roadways described below, which are categorized according to the Massachusetts Department of Transportation Office of Transportation Planning's functional classifications.

---

[1] In August 2015, Franklin Street between Hawley Street and Washington Street was temporarily closed due to construction activity associated with the Millennium Tower project. Recent City agency discussions indicate that this roadway segment may not be re-opened by the City to vehicular travel; that possibility has been accounted for in this transportation analysis in the discussion contained in Section 3.4.7.3.

Cambridge Street is a two-way, four lane roadway with a divided median located to the north of the Project site. Cambridge Street is classified as an urban principal arterial roadway under BTD jurisdiction and runs in a predominately east-west direction (turning into a north-south direction in the vicinity of the Project), between the Longfellow Bridge to the west and Tremont Street to the east. On-street parking and sidewalks are provided on both sides of the roadway.

Tremont Street is a one-way southbound, three lane roadway located to the west of the Project site. Tremont Street is classified as an urban principal arterial roadway under BTD jurisdiction and runs in a predominately north-south direction between Cambridge Street to the north and Marginal Road to the south. In the vicinity of the Project, on-street parking is restricted and sidewalks are provided on both sides of the roadway.

Beacon Street is a two-way, two lane roadway located to the west of the Project Site. Beacon Street is classified as an urban principal arterial roadway under BTD jurisdiction and runs in a predominately east-west direction between Tremont Street to the east and Route 16 Washington Street in Needham to the west. In the vicinity of the Project, on-street parking for commercial vehicles and taxicabs is provided on the south side of the roadway and sidewalks are provided on both sides of the roadway.

Court Street is a one-way westbound, two lane roadway located to the north of the Project Site. Court Street is classified as an urban principal arterial roadway under BTD jurisdiction and runs in a predominately east-west direction between Cambridge Street to the west and State Street to the east. In the vicinity of the Project, on-street parking for commercial vehicles and sidewalks are provided on both sides of the roadway.

Washington Street is a one-way northbound, one lane roadway located adjacent to the eastern boundary of the Project Site. Washington Street runs in a predominately north-south direction between Court Street in downtown Boston to Hyde Park Avenue in the Jamaica Plain neighborhood, about eight miles to the south. In the vicinity of the Project site, Washington Street is classified as an urban minor arterial roadway. Within the study area, Washington Street is under BTD jurisdiction and designated as a pedestrian-only zone (see description under Section 3.2.1). On-street parking is restricted and sidewalks are provided on both sides of the roadway, although most pedestrians walk on the roadway.

School Street is a one-way eastbound, one lane roadway located to the north of the Project Site. School Street is classified as an urban minor arterial roadway under BTD jurisdiction and runs in a predominately east-west direction between Tremont Street to the west and Washington Street to the east. In the vicinity of the Project, on-street parking for commercial vehicles and valet parking for the Omni Parker House Hotel is provided along the south side of the roadway. Sidewalks are provided on both sides of the roadway, although the sidewalk segment adjacent to Kings Chapel and Old City Hall is narrow.

Bromfield Street is a one-way westbound, one lane roadway located adjacent to the southern boundary of the Project Site. Bromfield Street is under BTD jurisdiction and is classified as an urban minor arterial roadway and runs in a predominately east-west direction between Washington Street to the east and Tremont Street to the west. In the vicinity of the Project, on-street parking for commercial vehicles is provided along the south side of the roadway and sidewalks are provided along both sides of the roadway.

Province Street is a two-way, two lane roadway located adjacent to the west side of the Project Site. Province Street is classified as a local roadway under BTD jurisdiction and runs in a predominately north-south direction between School Street to the north and Bromfield Street to the south. On-street parking for commercial vehicles and sidewalks are provided along both sides of the roadway.

Province Court is a dead end roadway located adjacent to the northern boundary of the Project Site. Province Court is classified as a local roadway under BTD jurisdiction and runs in a predominately east-west direction accessible from Province Street. On-street parking is restricted and sidewalks do not exist along either sides of the roadway. Province Court functions as a loading area/trash removal area for adjacent businesses.

Park Street is a two-way, two lane roadway located to the west side of the Project Site. Park Street is classified as an urban principal arterial roadway under BTD jurisdiction and runs in a predominately east-west direction between Tremont Street to the east and Beacon Street to the west. Metered parking spaces are available on one side of the roadway along with commercial vehicle spaces. Sidewalks are provided along both sides of the roadway.

Franklin Street is an urban minor arterial under BTD jurisdiction that connects India Street in the Financial District to Washington Street in Downtown Crossing. Within the study area, Franklin Street is one-way westbound. Near the intersection with Arch Street, Franklin Street contains two medians that are remnants from bus stop islands constructed in the late 1970s as part of the Downtown Crossing auto-restricted zone. Sidewalks are provided on both sides of the street. In August 2015, Franklin Street between Hawley Street and Washington Street was temporarily closed due to construction activity associated with the Millennium Tower project. Recent City agency discussions indicate that this roadway segment may not be re-opened by the City to vehicular travel. When it was open, Franklin Street west of Hawley Street was restricted to commercial vehicles and taxicabs. (See Section 3.4.7.2 for further discussion of vehicle restrictions along the Franklin Street segment between Hawley Street and Washington Street.)

Water Street is a one-way eastbound, one lane roadway located to the north of the Project site. Water Street, under BTD jurisdiction, is classified as an urban minor arterial roadway and runs in a predominately east-west direction between Washington Street to the west and Broad Street to the east. In the vicinity of the Project, on-street parking for commercial vehicles is provided along the south side of the roadway and sidewalks are provided along both sides of the roadway.

Arch Street is a one-way northbound, one lane roadway that runs from Summer Street to Milk Street. Arch Street is classified as an urban minor arterial under BTD jurisdiction. Between Summer Street and Franklin Street, there are metered parking spaces, commercial spaces, and handicapped spaces provided. North of Franklin Street, commercial parking is allowed on the east curb. Sidewalks are provided on both sides of the street.

Milk Street is classified as an urban minor arterial under BTD jurisdiction. It runs between the Surface Artery in the Financial District to Washington Street in Downtown Crossing. This roadway operates two-way between Washington Street and Devonshire Street and one-way eastbound beyond Devonshire Street. Within the study area, no on-street parking is allowed on Milk Street; sidewalks are provided on both sides of the roadway.

3.2.3 Existing Intersection Conditions

The study area includes the following intersections, which are described below:

Tremont Street/Cambridge Street/Court Street is a three-legged, signalized intersection with two approaches, located to the north of the Project Site. The Cambridge Street southbound approach consists of two through only lanes. The Court Street westbound approach consists of three lanes, currently marked as two channelized left-turn only lanes, and one channelized right turn only lane. On-street parking is provided along all approaches to the intersection. Crosswalks, wheelchair ramps, and pedestrian indication equipment are provided across all approaches to the intersection.

Tremont Street/Beacon Street/School Street is a four-legged, signalized intersection with two approaches. The eastbound Beacon Street approach consists of one shared through/right-turn lane with a cabstand. The Tremont Street southbound approach consists of four lanes, a left turn only lane, two through lanes, and a right-turn only lane. On-street parking is restricted along this approach. Right turns on red are allowed on both approaches. Crosswalks, wheelchair ramps, and pedestrian indication equipment are provided across all approaches to the intersection. In January 2016, the Boston Transportation Department implemented a new signal phasing and timing plan at this intersection. These recent changes are incorporated into the existing and future year analysis in this report.

Tremont Street/Bromfield Street is a three-legged, signalized intersection with two approaches. The westbound Bromfield approach consists of one left-turn only lane. The southbound Tremont Street approach consists of three through only lanes. On-street parking is restricted on all approaches. Crosswalks, wheelchair ramps, and pedestrian indication equipment are provided across all approaches to the intersection.

Washington Street/School Street is a three-legged, signalized intersection with two approaches. The eastbound School Street approach consists of one left-turn only lane. The northbound Washington Street approach consists of one through only lane. On-street

parking is prohibited at the intersection, although commercial vehicles were observed loading along both approaches. Crosswalks, wheelchair ramps, and pedestrian indication equipment are provided across all approaches to the intersection.

Franklin Street/Arch Street is a two-legged, signalized intersection with two approaches. The westbound approach on Franklin Street has two travel lanes: a through lane and a shared through/right-turn lane. The northbound approach on Arch Street has a single, shared left-turn/through travel lane. A leftover median from an earlier roadway configuration exists on Franklin Street. Crosswalks and handicapped ramps are provided on all approaches. Pedestrian pushbuttons and indications are provided on all approaches. An exclusive pedestrian phase is provided.

Washington Street/Milk Street is a two-legged, signalized intersection with two approaches. The eastbound approach on Milk Street contains a single right-turn only lane. The northbound approach on Washington Street contains one shared through/right-turn travel lane. Right turns on red are not allowed at this intersection. Crosswalks and handicapped ramps are provided for all approaches. No pedestrian pushbuttons or indications are provided across the Washington Street northbound approach. Exclusive and concurrent pedestrian phases are provided for the crosswalk across Milk Street and the northern crosswalk on Washington Street.

Washington Street/Court Street is a two-legged, signalized intersection with two approaches. The westbound approach on Court Street has two through travel lanes. The northbound approach on Washington Street has a single left-turn only travel lane. On-street public parking is not permitted on the Washington Street approach. However, commercial vehicles are permitted during designated hours for pick-up/drop-off. A taxi stand is also provided at this intersection. Parking is prohibited on Court Street.

Washington Street/Water Street/Garage Exit is a four-legged, unsignalized intersection with two approaches. The eastbound Pi Alley Garage Exit approach consists of two gated exit ramps from the garage. Both exits allow left-turn and through movements. The northbound Washington Street approach consists of one shared through/right-turn lane. On-street parking is restricted along the Washington Street approach. A crosswalk with wheelchair ramps is provided across Water Street and a raised sidewalk is provided across the Pi Alley Garage Exit.

School Street/Province Street is a three-legged, unsignalized intersection with two approaches. The eastbound School Street approach consists of one shared through/right turn lane. The northbound Province Street consists of one right-turn only lane. On-street parking is provided along both approaches to the intersection. Crosswalks with wheelchair ramps are provided along all legs of the intersection.

Province Street/Province Court is a three-legged, unsignalized intersection with three approaches. The westbound Province Court functions as a loading area. The northbound Province Street approach consists of one shared through/right-turn lane. The southbound Province Street approach consists of one shared left-turn/through lane. On-street parking is provided on both Province Street approaches. Crosswalks and wheelchair ramps are not provided across any approach at the intersection, although a raised sidewalk continues across the Province Court approach.

Province Street/Bromfield Street is a three-legged, unsignalized intersection with two approaches. The westbound Bromfield Street approach consists of a shared through/right-turn lane. The southbound Province Street approach consists of a right-turn only lane. Commercial vehicles are permitted during the designated hours for pick-up/drop off and loading along the entire southern side of Bromfield Street. Parking is also provided on both sides of Province Street. Crosswalks and handicapped ramps are provided across the Province Street approach.

Tremont Street/Park Street is a two-legged, signalized intersection with two approaches. The westbound Park Street approach consists of a right-turn only lane. The Southbound Tremont Street approach consists of two through lanes and one shared through/right-turn lane. On-street parking is restricted on the Tremont Street approach. Metered parking is available on Park Street and commercial vehicles are permitted during designated hours for pick-up/drop off.

Washington Street/Bromfield Street/Franklin Street is a three-legged, unsignalized intersection with two approaches. The westbound approach on Franklin Street has a shared through/right-turn travel lane and is controlled with a stop sign. General traffic is not allowed on the segment of Franklin Street between Hawley Street and Washington Street. Taxis, however, may travel through on Franklin Street at any time of the day. Commercial vehicles are allowed on this section of Franklin Street between 6:00 p.m. and 11:00 a.m. While this segment of Franklin Street is currently closed for construction, recent City agency discussions indicate that it may not re-open to vehicular travel. This potential permanent closure has been accounted for in the transportation analysis presented in Section 3.4.7.2. The northbound approach on Washington Street is part of the auto-restricted zone of Downtown Crossing, although commercial vehicles are permitted between 6:00 p.m. and 11:00 a.m. This approach has one shared left-turn/through travel lane. Crosswalks and handicapped ramps are provided for all approaches.

3.2.4 Existing Traffic Volumes

For the initial set of study intersections identified by BTD, turning movement counts were collected on March 25, 2015 and June 3, 2015. Manual turning movement counts (TMCs) and vehicle classification counts were conducted during the weekday morning and afternoon peak periods (7:00-9:00 a.m. and 4:00-6:00 p.m., respectively). The vehicle

classification counts included car, truck, pedestrian, and bicycle movements. Based on the TMCs, the peak hours were identified as 8:00 a.m. – 9:00 a.m. and 5:00 p.m. – 6:00 p.m. For each intersection, data from the hour with the highest TMC was used for analysis.

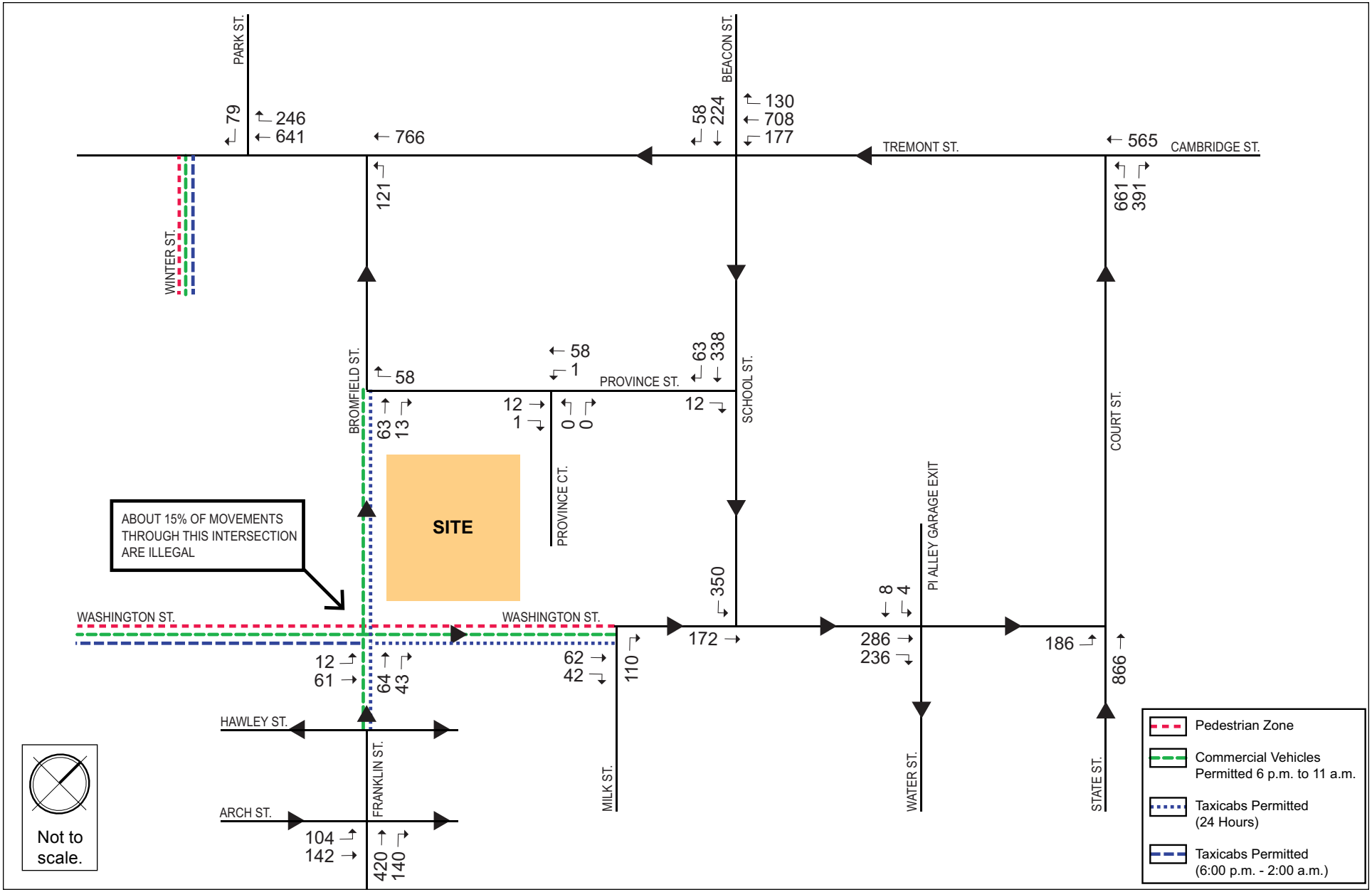
Subsequently, four new intersections (as listed in Section 3.1.5) were added to the study area list to assess the impact of circulation changes under the Build (2021) Condition. TMC data collected within the last year for the Washington Street/Court Street intersection was obtained from the Congress Square project. In August 2015, Franklin Street between Hawley Street and Washington Street was temporarily closed due to construction activity associated with the Millennium Tower project. Because of this street closure, baseline data collection at the remaining three new intersections was not feasible. Therefore, historical TMC data were adopted for the intersections of Washington Street/Bromfield Street/Franklin Street, Washington Street/Milk Street, and Franklin Street/Arch Street. (Note that recent City agency discussions indicate that this Franklin Street segment may not re-open to vehicular travel; that possibility has been accounted for in this transportation analysis in the discussion contained in Section 3.4.7.3.)

The Existing (2016) Condition traffic volumes for weekday a.m. and p.m. peak hours are shown in Figure 3-2 and Figure 3-3, respectively. The detailed traffic counts are provided in Appendix B.

3.2.5 Existing Traffic Operations

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

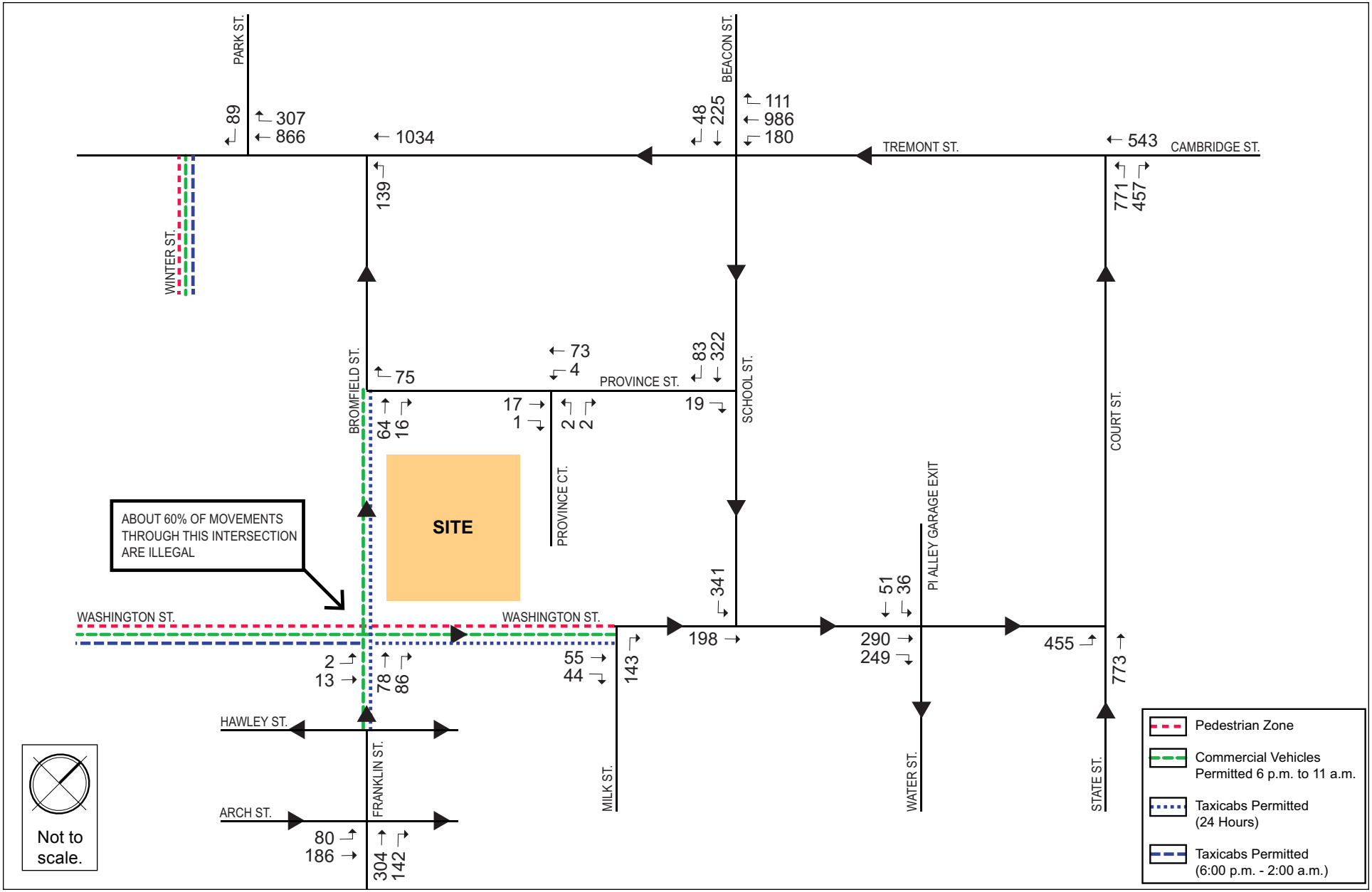
LOS designations are based on average delay per vehicle for all vehicles entering an intersection. Table 3-2 displays the intersection LOS criteria. LOS A indicates the most favorable condition, with minimum traffic delay, while LOS F represents the worst condition. LOS D or better is typically considered acceptable in an urban area. However, LOS E or F is often typical for a stop controlled minor street that intersects a major roadway and does not necessarily indicate that the operations at the intersection are poor or failing.



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-2
Existing (2016) Condition Traf.c Volumes, Weekday a.m. Peak Hour



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-3
Existing (2016) Condition Traf.c Volumes, Weekday p.m. Peak Hour

Table 3-2 Level of Service Criteria

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

Source: 2010 Highway Capacity Manual, Transportation Research Board.

In addition to delay and LOS, the operational capacity and vehicular queues, as described below, are calculated and used to further quantify traffic operations at intersections.

- The volume-to-capacity (v/c) ratio is a measure of congestion at an intersection approach. A v/c ratio below one indicates that the intersection approach has available capacity to process the arriving traffic volumes over the course of an hour. A v/c ratio of one or greater indicates that the traffic volume on the intersection approach exceeds capacity during the peak 15 minute period.

- The 50th percentile queue length, measured in feet, represents the maximum queue length during a cycle of the traffic signal with typical (or median) entering traffic volumes.

- The 95th percentile queue length, measured in feet, represents the farthest extent of the vehicle queue (to the last stopped vehicle) upstream from the stop line during five percent of all signal cycles. The 95th percentile queue will not be seen during each cycle. The queue would be this long only five percent of the time and would typically not occur during off-peak hours. Because volumes fluctuate throughout the hour, the 95th percentile queue represents what can be considered a "worst case" scenario. Queues at the intersection are generally below the 95th percentile queue throughout the course of the peak hour. It is also unlikely that the 95th percentile queues on each approach to the intersection will occur simultaneously.

Table 3-3 and Table 3-4 present the Existing (2016) Condition capacity analysis summary for the study area intersection during the a.m. and p.m. peak hours, respectively.

Complete Synchro reports are provided in Appendix B.

Table 3-3 Existing (2016) Condition, Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Cambridge Street/Court Street	**C**	**28.9**			
Court WB left|left	C	23.4	0.45	227	263
Court WB right	C	30.9	0.58	290	377
Cambridge SB thru|thru	C	34.3	0.61	183	242
Tremont Street/Beacon Street/School Street	**B**	**16.3**			
Beacon EB thru/right	D	41.5	0.77	171	241
Tremont SB left	A	5.4	0.33	0	48
Tremont SB thru | thru	B	10.4	0.44	112	151
Tremont SB right	A	3.4	0.32	0	23
Tremont Street/Bromfield Street	**A**	**9.6**			
Bromfield WB left	D	43.6	0.58	77	120
Tremont SB thru|thru|thru	A	3.7	0.26	39	51
Tremont Street/Park Street	**C**	**21.8**			
Park EB right	D	51.1	0.60	56	91
Tremont SB thru|thru|thru/right	B	18.8	0.61	109	126
Washington Street/School Street	**B**	**12.4**			
School EB left	A	8.7	0.42	63	113
Washington NB thru	B	18.9	0.45	44	67
Franklin Street/Arch Street	**A**	**9.7**			
Franklin WB thru| thru/right	A	5.0	0.30	34	75
Arch NB left/thru	C	20.4	0.65	52	107
Washington Street/Milk Street	**A**	**6.6**			
Milk WB right	A	0.2	0.10	0	0
Washington NB thru/right	B	13.4	0.28	18	52
Washington Street/Court Street	**B**	**11.3**			
Court WB thru | thru	B	10.7	0.46	161	204
Washington NB left	B	14.0	0.33	12	93
Unsignalized Intersections					
Washington Street/Water Street/Garage Exit					
Garage Exit EB left/thru	C	17.3	0.08	-	6
Washington NB thru/right	A	0.0	0.34	-	0
School Street/Province Street					
School EB thru/right	A	0.0	0.24	-	0
Province NB right	C	18.0	0.06	-	5
Province Street/Province Court					
Province Ct WB left/right	A	0.0	0.00	-	0
Province St NB thru/right	A	0.0	0.02	-	0
Province St SB left/thru	A	0.1	0.00	-	0

Table 3-3 Existing (2016) Condition, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Province Street/Bromfield Street					
Bromfield WB thru/right	A	0.0	0.06	-	0
Province SB right	C	18.1	0.26	-	26
Washington Street/Bromfield Street/Franklin Street					
Franklin WB thru/right	A	7.4	0.13	-	-
Washington NB left/thru	A	7.6	0.09	-	-

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates level of service E or F.

Table 3-4 Existing (2016) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Cambridge Street/Court Street	**C**	**23.6**			
Court WB left|left	A	8.6	0.40	115	148
Court WB right	B	12.6	0.52	150	229
Cambridge SB thru|thru	D	51.4	0.84	216	262
Tremont Street/Beacon Street/School Street	**B**	**16.6**			
Beacon EB thru/right	C	34.0	0.59	147	234
Tremont SB left	A	5.7	0.33	1	52
Tremont SB thru | thru	B	15.6	0.59	208	268
Tremont SB right	A	3.4	0.29	0	23
Tremont Street/Bromfield Street	**A**	**7.8**			
Bromfield WB left	D	50.6	0.64	98	148
Tremont SB thru|thru|thru	A	1.6	0.32	3	65
Tremont Street/Park Street	**C**	**27.6**			
Park EB right	D	43.7	0.41	56	107
Tremont SB thru|thru|thru/right	C	26.4	0.68	282	343
Washington Street/School Street	**B**	**12.6**			
School EB left	A	9.3	0.43	65	117
Washington NB thru	B	18.1	0.42	47	80
Franklin Street/Arch Street	**B**	**10.7**			
Franklin WB thru| thru/right	A	4.3	0.24	23	54
Arch NB left/thru	C	21.5	0.68	59	117

Table 3-4 Existing (2016) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

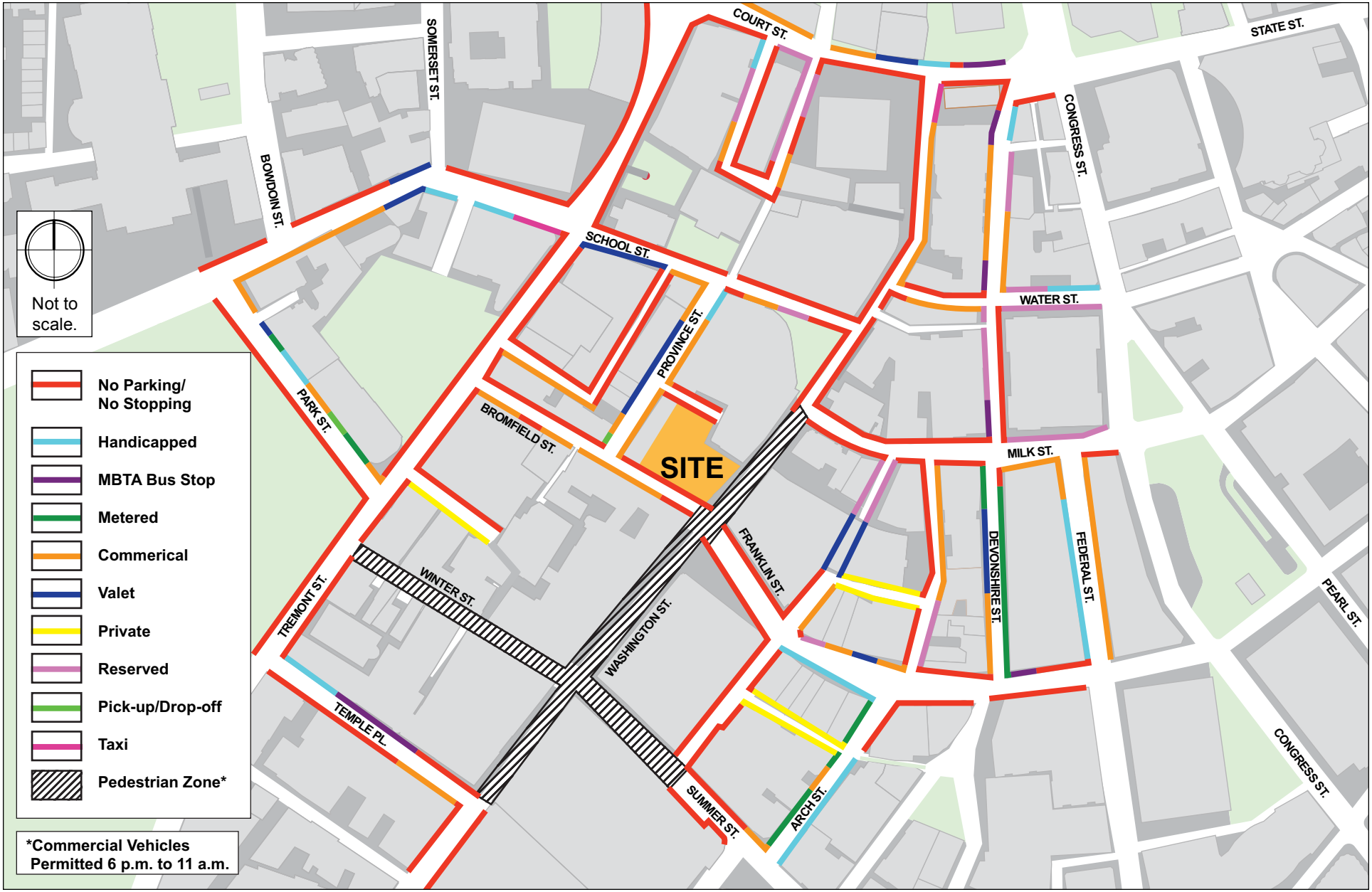
Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th	95th
Washington Street/Milk Street	**A**	**5.4**			
Milk WB right	A	0.2	0.13	0	0
Washington NB thru/right	B	12.8	0.26	16	49
Washington Street/Court Street	**B**	**17.1**			
Court WB thru | thru	B	11.2	0.43	137	178
Washington NB left	C	27.2	0.74	183	310
Unsignalized Intersections					
Washington Street/Water Street/Garage Exit					
Garage Exit EB left/thru	C	21.2	0.33	-	35
Washington NB thru/right	A	0.0	0.34	-	0
School Street/Province Street					
School EB thru/right	A	0.0	0.26	-	0
Province NB right	C	17.0	0.12	-	10
Province Street/Province Court					
Province Ct WB left/right	B	10.6	0.01	-	1
Province St NB thru/right	A	0.0	0.01	-	0
Province St SB left/thru	A	0.4	0.00	-	0
Province Street/Bromfield Street					
Bromfield WB thru/right	A	0.0	0.06	-	0
Province SB right	C	20.0	0.25	-	25
Washington Street/Bromfield Street/Franklin Street					
Franklin WB thru/right	A	7.5	0.18	-	-
Washington NB left/thru	A	7.4	0.02	-	-

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates level of service E or F.

Based on the results shown in Table 3-3 and Table 3-4, all intersections and approaches operate at LOS D or better.

3.2.6 Existing Parking

As shown in Figure 3-4, the on-street curbside regulations adjacent to the Project Site include a mix of no parking, commercial loading, and evening valet spaces. Very little on-street public parking is available and most public spaces in this area are provided in privately owned off-street parking facilities.



One Bromfield Boston, Massachusetts

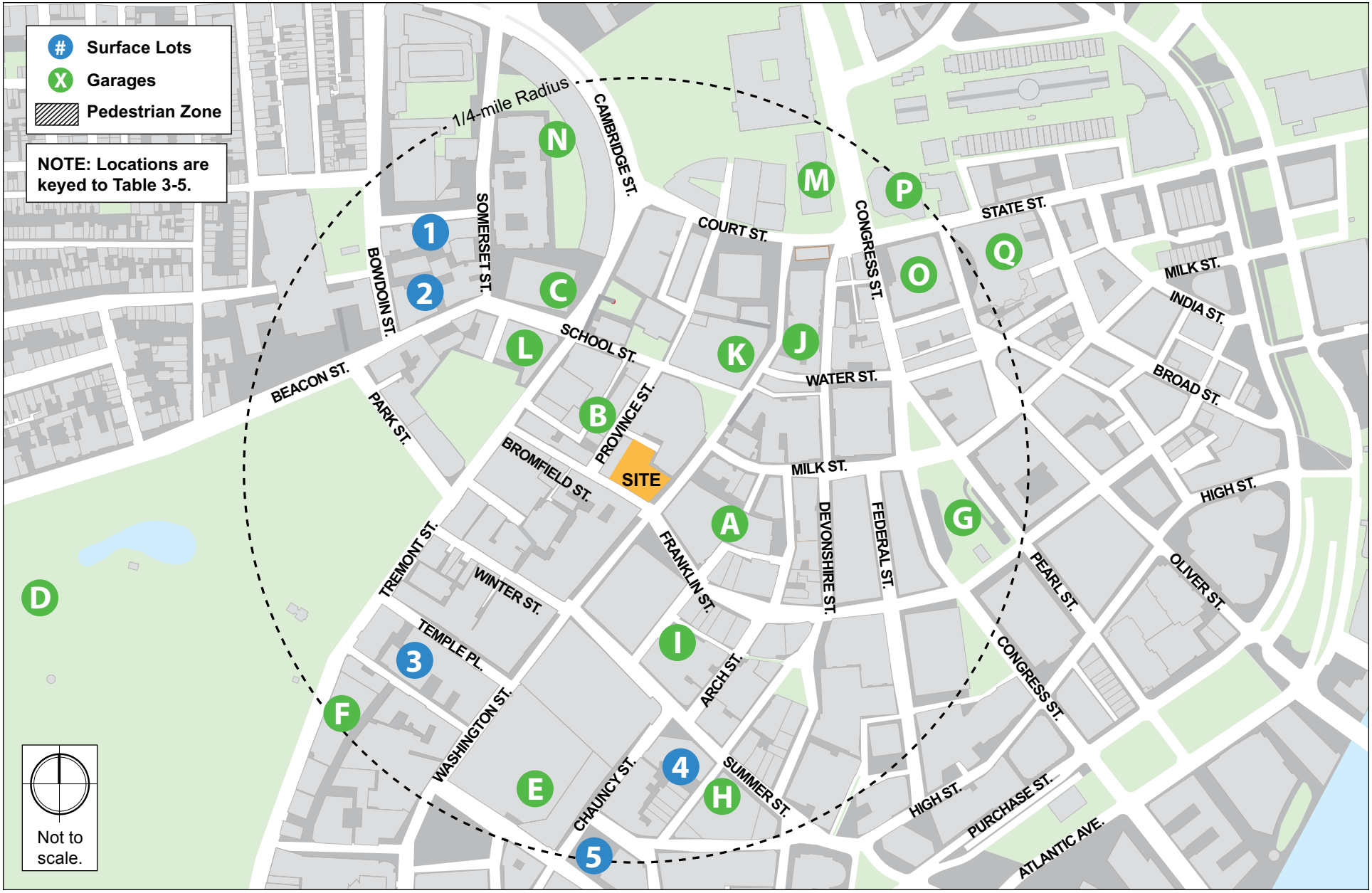
HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-4
Existing Curbside Regulations

Approximately 9,500 off-street parking spaces are provided in garages and lots within a quarter-mile radius of the Project site. Of these, about 1,500 are for private use and about 8,000 spaces are available for public use. These parking facilities and their capacities are identified in Table 3-5 and the locations are mapped in Figure 3-5.

Table 3-5 Off-Street Parking within a Quarter-mile of the Site

Map No.	Facility	Capacity (spaces)	
		Public	Private
	Lots		
1	37 Ashburton Place	38	0
2	VPNE Parking/17 Beacon Street	24	0
3	VPNE Parking/West Street	15	0
4	Essex/Lafayette Lot	0	14
5	Chauncy Street Lot	60	0
Subtotal		**137**	**14**
	Garages		
A	33 Arch Street	900	0
B	45 Province Street	184	110
C	One Beacon Street	150	0
D	Boston Common	1,500	625
E	Lafayette Place Garage	1,276	0
F	Tremont On Common	200	125
G	Post Office Square	1,400	0
H	99 Summer Street	0	120
I	101 Arch Street	0	52
J	One Devonshire Street	87	109
K	Pi Alley/275 Washington Street	600	0
L	LAZ Tremont Street	120	0
M	28 State Street	0	150
N	Center Plaza/50 Cambridge Street	586	0
O	Exchange Place/53 State Street	0	93
P	60 State Street Garage	227	78
Q	75 State Street Garage	700	0
Subtotal		**7,930**	**1,462**
Total Off-street Parking Spaces		**8,067**	**1,476**
		9,543	



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-5
Existing Off-Street Parking

3.2.7 Existing Car Sharing

The increasingly popular car-sharing services provide easy access to vehicular transportation for urban residents who do not own cars. Vehicles are rented on an hourly or daily basis, and all vehicle costs (gas, maintenance, insurance, and parking) are included in the rental fee. Vehicles are checked out for a specific time period and returned to their designated location.

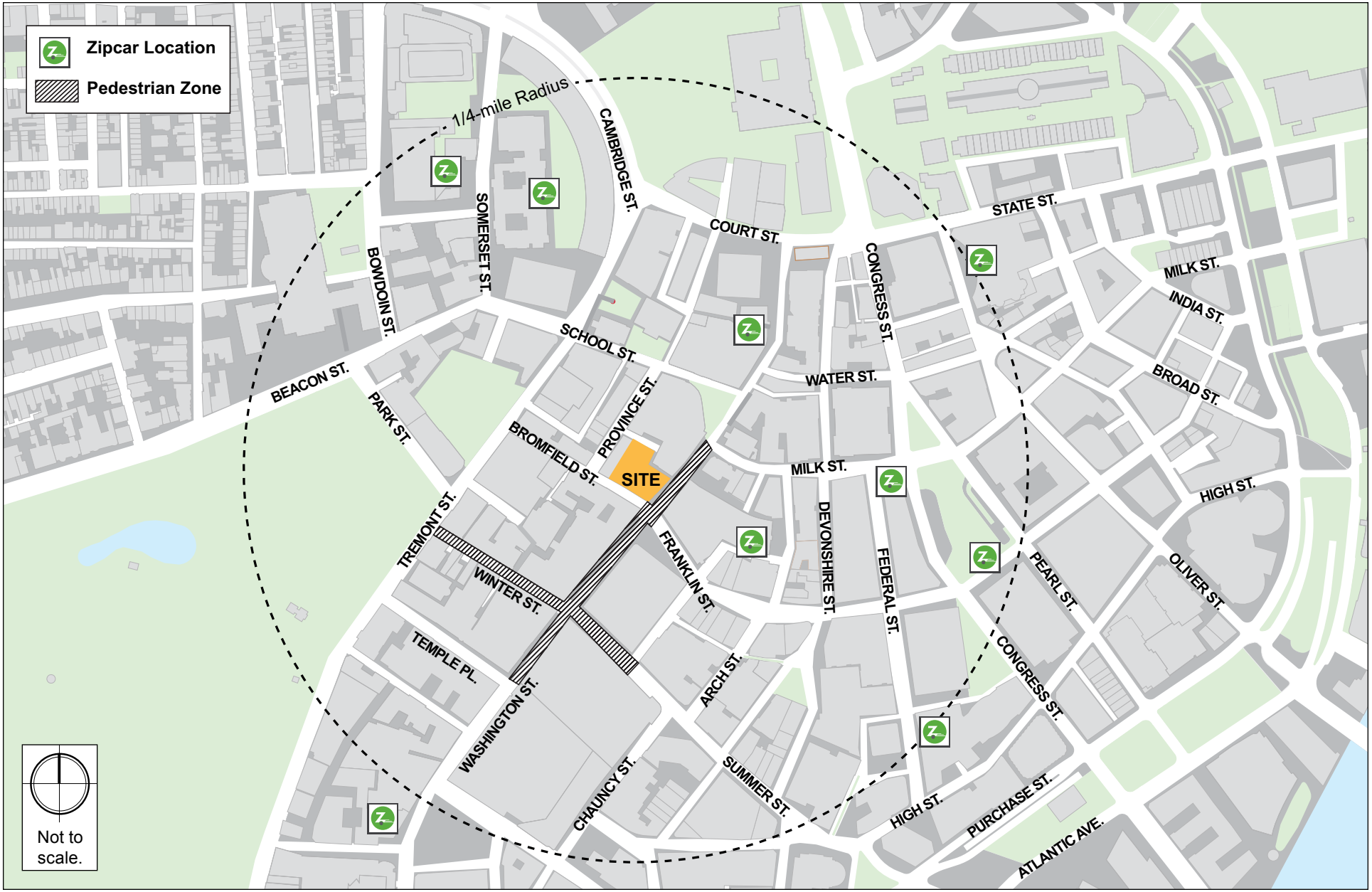
In Boston, car sharing activity is predominantly served by Zipcar. Figure 3-6 shows the nearby Zipcar locations.

3.2.8 Existing Public Transportation

The study area is well served by public transportation. There are four Massachusetts Bay Transportation Authority (MBTA) subway stations within a five-minute walk (less than ¼ mile) of the Project site: Downtown Crossing, Park Street, State Street, and Government Center.

At Downtown Crossing Station, passengers can access both the Orange Line rapid transit service and Red Line rapid transit service. At Park Street Station, passengers can access both the Red Line rapid transit service and all four branches of the Green Line rapid transit service. State Street Station serves both the Orange Line rapid transit service and the Blue Line rapid transit service. Government Center Station continues to provide access to all four branches of the Green Line rapid transit service and the Blue Line rapid transit service. The Silver Line route SL5 operates between Dudley Station and Downtown Crossing; the primary stop in the downtown area is on Temple Place, a few blocks from the Project Site.

Seven local bus routes and ten express bus routes have stops within ¼ mile of the Project Site. The MBTA services in the study area are summarized in Table 3-6 and shown in Figure 3-7.



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-6
Existing Car Sharing Locations

Table 3-6 MBTA Transit Service in the Study Area

Transit Service	Description	Peak-hour Headway (in minutes)[1)]
	Rapid Transit Routes	
Orange Line	Forest Hills–Oak Grove	4-5
Green Line	Lechmere–Boston College, Cleveland Circle, Riverside, or Heath St.	6-7
Red Line	Alewife–Braintree/Mattapan	9
Blue Line	Wonderland–Bowdoin	5
Silver Line	Silver Line 5 (SL5): Dudley Station – Downtown (Temple Place)	7
	Local Bus Routes	
4	North Station–World Trade Center via Federal Courthouse and South Station	15-18
7	City Point - Otis & Summer Streets via Summer Street & South Station	4-6
11	City Point - Downtown BayView Route	6
43	Ruggles Station - Park & Tremont Sts. via Tremont St.	18
55	Jersey & Queensberry - Copley Sq. or Park & Tremont Sts. via Ipswich St.	15-20
92	Assembly Sq. Mall–Downtown via Sullivan Sq., Main St. and Haymarket Station	7-8
93	Sullivan Sq. Station–Downtown via Bunker Hill Street and Haymarket Station	7-10
	Express Bus Routes	
448	Marblehead-Downtown Crossing via Paradise Rd. or Humphrey St., Lynnway, & Airport	60
449	Marblehead-Downtown Crossing via Paradise Rd. or Humphrey St., Lynnway, & Airport	60
459	Salem Depot - Downtown Crossing via Logan Airport & Central Square, Lynn	70-75
501	Brighton Center–Downtown via Oak Square and Masspike	15-20
504	Watertown/Newton Corner–Downtown via Masspike	10
505	Central Sq., Waltham - Downtown via Moody St. & Mass. Turnpike	10-15
553	Roberts - Downtown Boston via Newton Corner & Central Sq., Waltham	20-25
554	Waverley Square – Downtown Boston	60
556	Waltham Highlands - Downtown Boston via Newton Corner & Central Sq., Waltham & Newtonville	30
558	Riverside - Downtown Boston via Newton Corner & Turnpike	30-45

1) Headway is the time between trains or buses, as applicable.

One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-7
Public Transportation

3.2.9 Existing Pedestrian Conditions

The Project Site is located in the dense Downtown Crossing area and is surrounded by a mix of commercial, retail, and residential buildings; educational and governmental organizations; theaters; and restaurants. A pedestrian-only zone, as shown on Figure 3-1, exists along Washington Street, Winter Street, and a segment of Summer Street. The associated vehicle restrictions are shown in Figure 3-2.

Sidewalks are provided along all streets in the area, although in the pedestrian only zones, pedestrians also walk along the roadway. Crosswalks are provided at most of the study area signalized intersections.

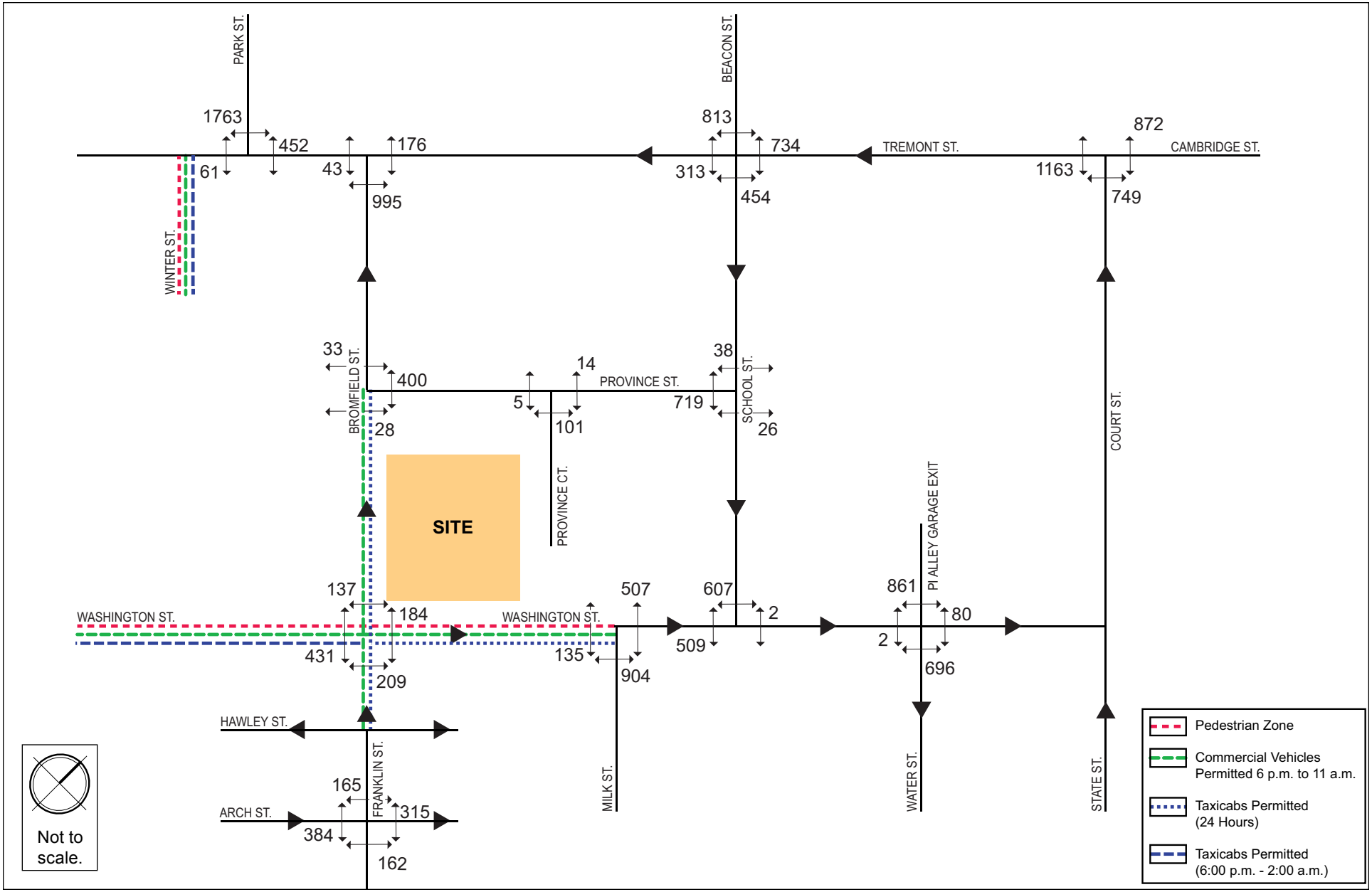
Pedestrian counts were conducted concurrently with the TMCs, as described in Section 3.2.4, and are presented in Figure 3-8 and Figure 3-9 for the a.m. and p.m. peak hours respectively.

3.2.9.1 Pedestrian Level of Service Methodology

As requested by the BTD, pedestrian level of service analysis was conducted along Bromfield Street, Province Street, and at four unsignalized study intersections based on the methodology of the Transportation Research Board's 2000 Highway Capacity Manual (HCM). Pedestrian level of service is determined through analysis of crosswalk geometry, signal timing, and pedestrian volumes.

Pedestrian LOS at an unsignalized intersection is computed for approaches where pedestrians do not have the right-of-way or any stop control device, and is based on the critical gap, the vehicular flow rate, and the mean vehicle headway. The critical gap is the minimum amount of time (in seconds) required for one vehicle to enter the intersection. The vehicular flow rate is the number of vehicles per hour (vph) that move through a particular location. The mean vehicle headway (in seconds) is the average amount of time between vehicles passing a particular point. Input includes pedestrian volumes, vehicular volumes, walking speed, crosswalk width, and street width. According to the HCM, this method for unsignalized intersections does not apply to zebra-striped crosswalks, because pedestrians (by Massachusetts state law) have the right-of-way.

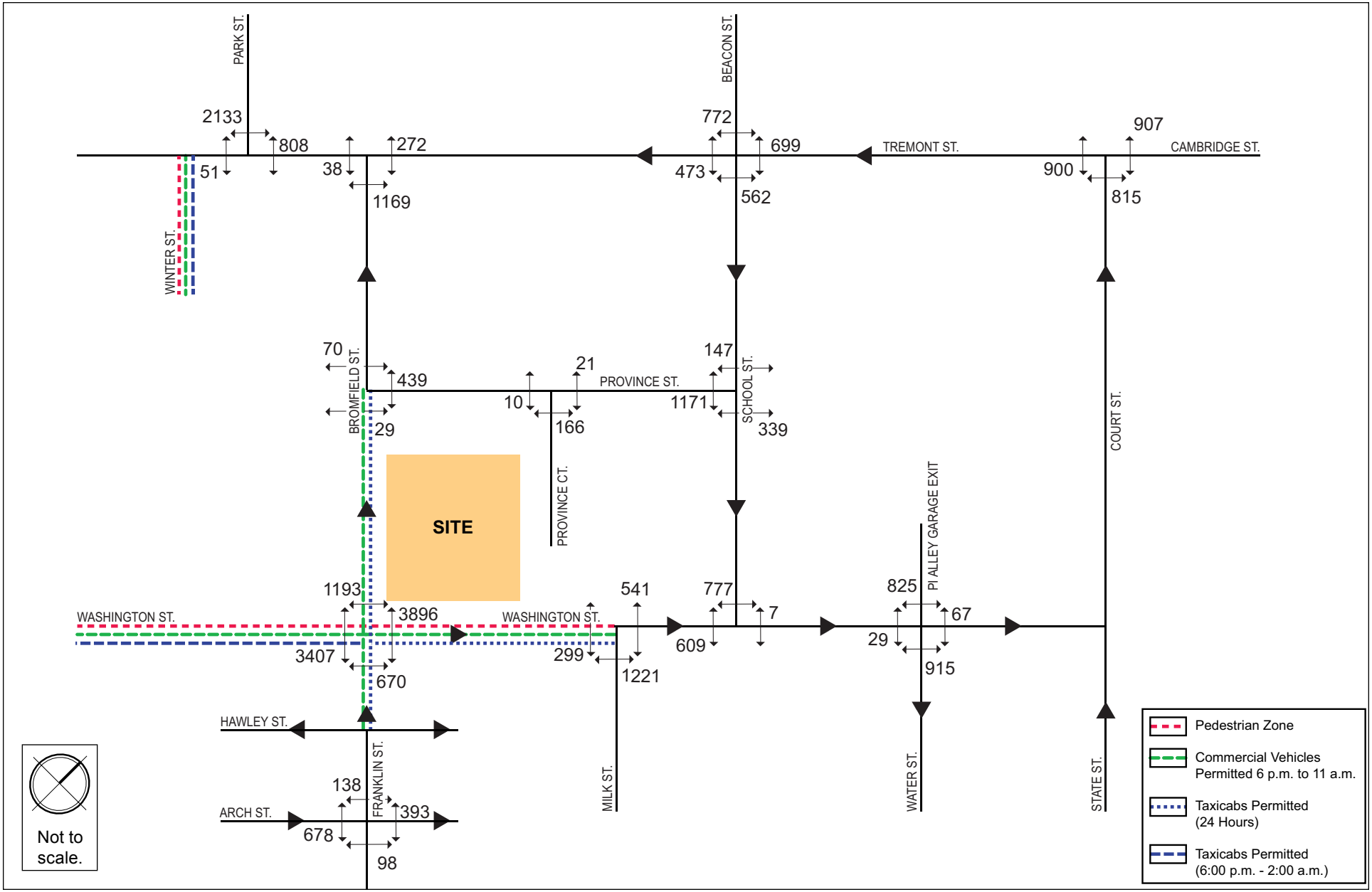
Table 3-7 is excerpted from the HCM and shows the LOS criteria for delay experienced by pedestrians at unsignalized intersections.



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-8
Existing (2016) Condition Pedestrian Volumes, a.m. Peak Hour



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-9
Existing (2016) Condition Pedestrian Volumes, p.m. Peak Hour

Table 3-7 Level of Service Criteria for Pedestrian Delay at Intersections

Level of Service	Delay thresholds at unsignalized Intersections (seconds/person)	Likelihood of non-compliance
A	≤5	Low
B	>5 and ≤10	
C	>10 and ≤20	Moderate
D	>20 and ≤30	
E	>30 and ≤45	High
F	>45	

At unsignalized intersections, the LOS is based on average delay per pedestrian, obtained from the vehicular volumes and potential gaps. LOS A defines the most favorable condition, with minimum delay to cross. LOS F represents the worst condition, with significant delay. Similar to vehicular traffic, LOS D is generally considered acceptable in the urban environment of the study area.

Table 3-8 shows the LOS criteria for average flow of pedestrians on walkways and sidewalks to determine the "space LOS."

Table 3-8 Level of Service Criteria (Space) for Average Flow of Walkways and Sidewalks

Space Level of Service	Average Stopped Delay (sec./veh.)			
	Space (sf/person)	Flow rate (persons/min/ft)	Speed (ft/sec)	v/c ratio
A	>60	≤5	>4.25	≤0.21
B	>40–60	>5–7	>4.17–4.25	>0.21–0.31
C	>24–40	>7–10	>4.00–4.17	>0.31–0.44
D	>15–24	>10–15	>3.75–4.00	>0.44–0.65
E	>8–15	>15–23	>2.50–3.75	>0.65–1.0
F	<8	variable	≤2.50	variable

sf/person = square feet per person
persons/min/ft = persons per minute per linear foot
ft/sec = linear feet per second

Space LOS is derived from pedestrian walking speed, pedestrian start-up time, and pedestrian space requirements. LOS A defines the most favorable condition, with maximum space per pedestrian. LOS F represents the worst condition, with minimum space. LOS D is generally considered acceptable for urban environments like the study area.

3.2.9.2 Pedestrian Operations

The associated pedestrian level of service for the identified segments, crossings, and crosswalks is shown in Table 3-9 for the a.m. and p.m. peak hours.

Table 3-9 Pedestrian Level of Service

Location	a.m. peak hour	p.m. peak hour
Province Street segment		
East sidewalk, between Bromfield St. and Province Ct.	A	A
Bromfield Street segment		
North sidewalk, between Washington St. and Province St.	A	A
Bromfield Street/Province Street		
Bromfield Street, east crossing [1)]	A	A
Bromfield Street, west crossing [1)]	A	A
Province Street north crosswalk [2)]	A	A
Province Street/Province Court		
Province Court east crosswalk [2)]	A	A
Province Street north crossing [1)]	A	A
Province Street south crossing [1)]	A	A
School Street/Province Street		
School Street, east crosswalk [2)]	B	B
School Street, west crosswalk [2)]	B	B
Province Street, south crosswalk [2)]	A	A
Washington Street/Bromfield Street/Franklin Street		
Franklin Street, east crossing [1)]	A	A
Bromfield Street, west crossing [1)]	A	A
Washington Street, north crossing [1)]	A	A
Washington Street, south crossing [1)]	A	A

1) No crosswalk. Pedestrians should yield to vehicles and methodology is applicable.
2) Crosswalk. Because pedestrians have right of way per Massachusetts state law, methodology is not applicable. For reference, LOS is still calculated as if pedestrians did not have the right of way.

The peak hour pedestrian levels of service are LOS A or LOS B, indicating that adequate pedestrian capacity exists in the study area. The pedestrian level of service analysis sheets are provided in Appendix B.

3.2.10 Existing Bicycle Conditions

In recent years, bicycle use has increased dramatically throughout the City of Boston. The following roadways within the study area are designated bicycle routes on the City of Boston's "Bike Routes of Boston" map:

- Washington Street is designated as a beginner route suitable for all types of cyclists including newer cyclists with limited on-road experience.

- Tremont Street, Court Street, and Washington Street are designated as intermediate routes suitable for riders with some on-road experience.

- Beacon Street and Bromfield Street are designated as advanced routes suitable for traffic-confident cyclists with on-road experience.

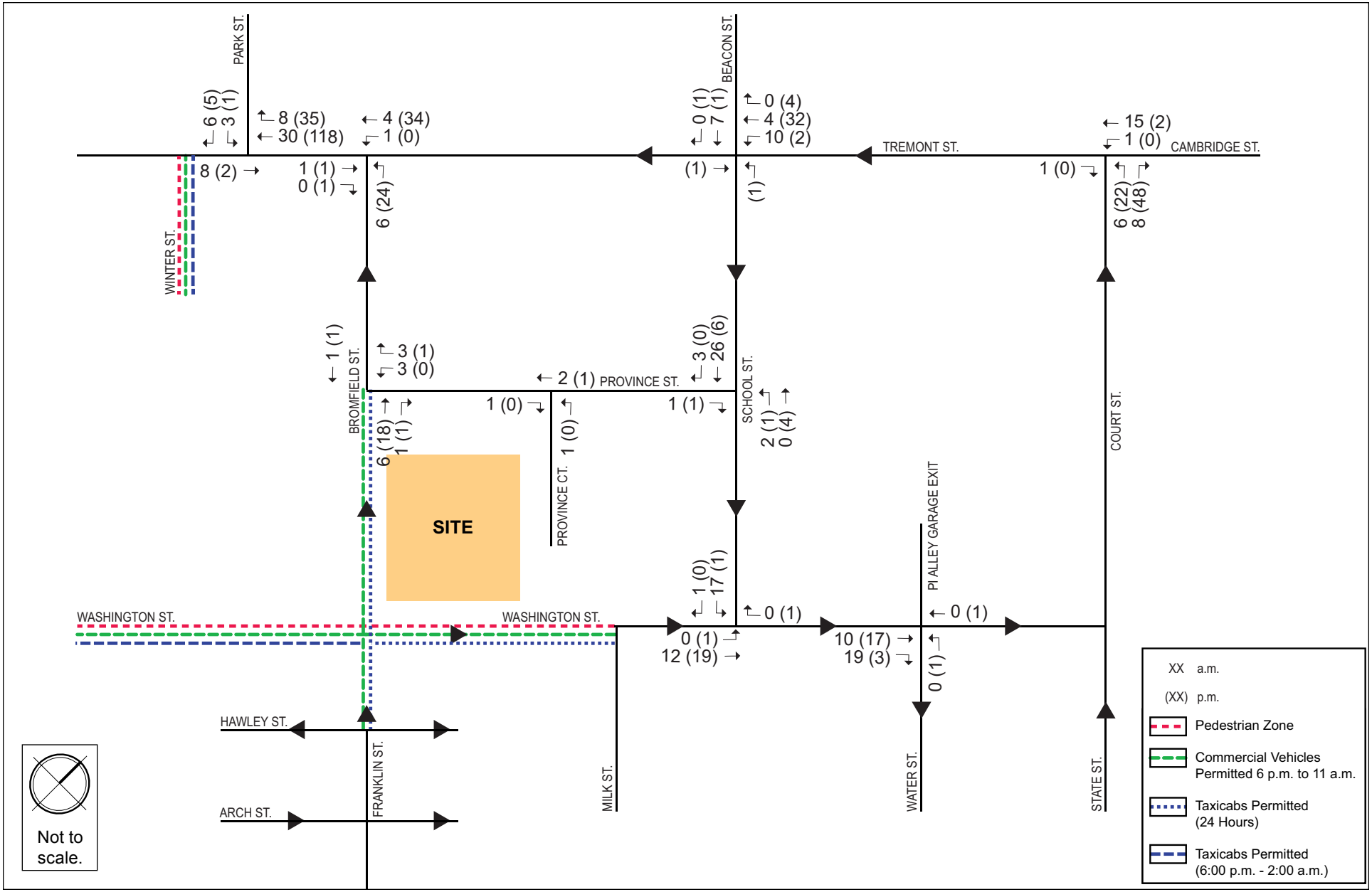
Overall, the bicycle volumes are higher in the p.m. peak hour than during the a.m. peak hour. The highest number of bicycles (>50 cyclists per hour) was observed on Court Street. Other major bike corridors are on Tremont Street southbound, School Street eastbound, and Washington Street northbound. Bicycle counts were taken as part of the Project's data collection effort and are presented in Figure 3-10. Bicycle counts are included as part of the traffic count data in Appendix B.

The City's five-year bicycle plan includes the construction of protected bicycle lanes in portions of the study area, including Tremont Street and the Winter Street/Summer Street corridor.

Hubway, launched in July 2011, is a bicycle sharing system with more than 140 stations and 1,300 bicycles available throughout Boston, Brookline, Cambridge, and Somerville. As shown in Figure 3-11, six Hubway stations are located near the Project Site. Table 3-10 lists the locations of these facilities. At the current time, bicycles are not available during the winter months at these stations.

Table 3-10 Hubway Bicycle Sharing Stations

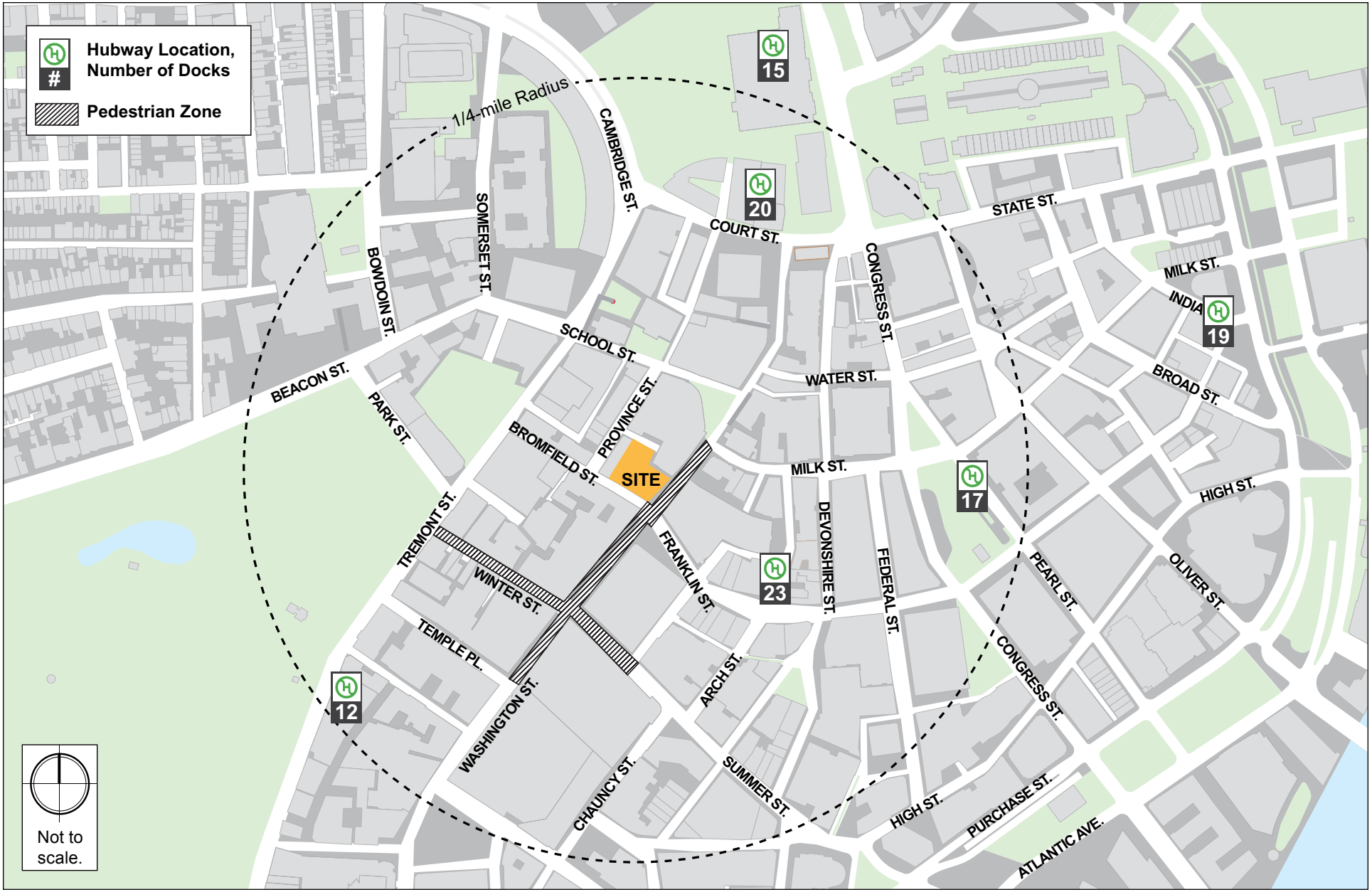
Station Location	Bicycle Capacity
Franklin Street at Arch Street	23
Post Office Square	17
Tremont Street near West Street	12
Government Center near Court Street	15
Faneuil Hall: Union Street at North Street	15
John Fitzgerald Surface Road at India Street	19



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-10
Existing (2016) Condition Bicycle Volumes, a.m. and p.m. Peak Hours



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-11
Existing Bicycle Sharing Locations

3.2.11 Existing Loading and Service

Province Court is a dead-end, service alley (publicly owned) that abuts the Project Site, the 333 Washington Street building, and the 52 Province Street building. The current use of this alley is for deliveries and trash pick-up for businesses within these adjacent buildings. Delivery doorways to 333 Washington Street, two of the existing buildings on the Project Site, and the adjacent 52 Province Street building are located on Province Court. A City regulatory sign at the alley entry reads "Tow Zone – No Stopping – Fire Lane – Either Side" and a private "No Parking – Loading Zone – Cars will be Towed" sign is posted near the loading door for 333 Washington Street. When the Project Site is redeveloped, Province Court will be used as access/egress for the Project's loading areas and access/egress for the Project's vehicle elevators (which will only be used by garage attendants).

While the existing Project Site does have some retail tenants, none currently uses the Province Court alley for loading. With available commercial parking zones, delivery activity for these existing businesses occurs mostly on-street along Washington Street and Bromfield Street.

To better understand the existing activity in this public alley generated by the abutting buildings, observations were made of Province Court via 24/7 video footage (placed on the Proponent's property) from Tuesday, September 8, through Thursday, September 10, 2015. Most of the activity in the alley was short-term parking by automobiles, single-unit trucks, vans, and pick-up trucks that parked at the end of Province Court, closest to Province Street. Drivers were observed exiting their vehicle, sometimes gathering goods from their vehicles, and proceeding along Province Street out of view of the video camera. Some drivers were likely delivering/picking-up small packages at businesses with front doors along Province Street, including those at 333 Washington Street rear. Alternatively, some drivers may have been running personal errands. Whether the activity for these vehicles was related to deliveries or to personal business could not be determined from the video footage. While Province Court is clearly signed as a "No-Parking – Loading Zone", it is apparent that the end of Province Court close to Province Street is well-used (about 20 vehicles per day) as an illegal, short-term parking area for nearby deliveries and errands.

During this three-day period, only three vehicles delivered/picked-up goods through the loading dock door at 333 Washington Street (three on Tuesday and none on the other days).

3.3 No-Build (2021) Condition

For transportation impact analyses, it is standard practice to evaluate two future conditions: No-Build Conditions (without the proposed project) and Build Conditions (with the proposed project). In accordance with BTD guidelines, Year 2021 was selected as the horizon year for the future conditions analyses.

The No-Build (2021) Conditions reflects a future scenario that incorporates any anticipated traffic volume changes independent of the Project and any planned infrastructure improvements that will affect travel patterns throughout the study area. Infrastructure improvements include roadway, public transportation, pedestrian and bicycle improvements. Traffic volume changes are based on two factors: an annual background traffic growth and vehicle trips associated with specific developments near the Project.

3.3.1 Background Traffic Growth

The methodology to account for future traffic growth, independent of the Project, consists of two parts. The first part of the methodology accounts for general background traffic growth that may be affected by changes in demographics, automobile usage, and automobile ownership. Based upon a review of recent traffic studies conducted for nearby projects and to account for any additional unforeseen traffic growth, a 0.5% annual traffic growth rate was used to develop the future conditions traffic volumes.

The second part of the methodology identifies any specific planned developments that are expected to affect traffic patterns throughout the study area within the future analysis time horizon. The projects listed below are located in the vicinity of the study area. The traffic volumes associated with these projects were specifically accounted for in the future conditions.

- Millennium Tower/Burnham Building. The One Franklin Project initially proposed in 2006 has been updated and is now called Millennium Tower and Burnham Building. The new Project includes the preservation of, and renovations to, the Burnham Building and the development of a new mixed-use residential building, the Tower. The Burnham Building will contain approximately 122,000 - 231,000 sf of retail space on the ground floor and first basement level, and at least one upper floor. Above the retail floors will be approximately 125,000 - 218,000 sf of office space. The parking garage will extend below the entire project site, including the use of two existing basement floors beneath the Burnham Building. The Tower will contain approximately 600 residential units. While much of the Burnham Building was occupied at the time of the traffic counts for this Project, the Tower was still under construction. Trip generation and distribution data were obtained from the transportation component of *Millennium Tower & Burnham Building Notice of Project Change,* prepared by Howard Stein Hudson in August 2012.

- 59 Temple Place/Godfrey Hotel. This project includes the redevelopment of the site at 59-63 Temple Place and 501-507 Washington Street in the Downtown Crossing area. The project consists of converting a six-story building and an 11-story building, comprising mostly office space, into a new 242 room hotel with ground floor retail. New trips to be generated by this project were assigned to the

study area intersections. Trip generation and distribution data were obtained from the transportation component of the *59 Temple Place Expanded Project Notification Form* prepared by Howard Stein Hudson in October 2012.

- **Government Center Garage** – This project includes construction of a 2.4 million sf development including 771 residential units, 204 new hotel rooms, 1.3 million sf of offices, 82,500 sf of retail space and 1,159 parking spaces. While the project will be built in several phases, all trips expected to be generated by this project were assigned to the study area intersections. Trip generation and distribution data were obtained from the transportation component of the *Redevelopment of the Government Center Garage Project Notification Form* prepared by Howard Stein Hudson in June 2013.

The following planned projects are within the One Bromfield study area, but will not generate significant volumes through the study area intersections. Additional traffic from the study area projects described below is reflected in the background growth rate:

- **Suffolk University-20 Somerset.** Suffolk University has demolished the existing building at the 20 Somerset Street site and constructed a new academic building with approximately 156,000 sf of classroom and supporting academic space. This building opened in September 2015 (the building was not opened when traffic data was collected.)

- ***17 Court Street Renovations.*** This BRA approved project by the New England Center for Homeless Veterans includes renovation of the existing facility at 17 Court Street to improve and expand the Center's services by approximately 5,000 sf. The renovation will create 35 units for permanent residents as well and relocate existing offices and services within the Center.

- **Congress Square.** This BRA approved project includes the redevelopment of six existing buildings along Congress Street, including additions to three of them, to repurpose the existing office buildings to a mix of ground floor and lower level retail/restaurant use with residential or hotel uses on upper floors. The project includes approximately 458,300 sf, of which 92,700 sf is new construction.

- **55 India Street.** This BRA approved project proposes the development of a 67,000 sf building with ground floor commercial space and 44 residential units at 55 India Street.

- **110 Broad Street.** This BRA approved project calls for the redevelopment of two buildings at 102 and 112 Broad Street. The historic Bulfinch Building at 102 Broad Street will be restored and serve as a lobby and residential space while the second commercial building at 110-112 Broad Street will be demolished and rebuilt with 52 residential units.

- **Haymarket Hotel** – This project includes the construction of a 225 key hotel with approximately 15,000 sf of ground-floor retail. The project will have no parking on-site, and will valet vehicles in the nearby Dock Square garage located on Clinton Street. This project is currently under review by the BRA.

The above background projects are mapped in Figure 3-12. The resulting No-Build (2021) Condition volumes are shown on Figure 3-13 and Figure 3-14, respectively.

3.3.2 Proposed Infrastructure Improvements

The MBTA's Government Center Station has recently opened after a two-year reconstruction project. As part of this station improvement project, the MBTA will upgrade pavement markings and signage and implement a new signal phasing and timing plan at the Tremont Street/Cambridge Street/Court Street intersection. The new plan will provide an exclusive pedestrian phase when pedestrians can cross all legs of this intersection, as opposed to conditions today, where pedestrians cross the intersection in two stages and must often wait in the median island. While these improvements have not yet been implemented, construction is expected to start in the near future. Therefore, they have been incorporated into the No-Build (2021) Conditions and Build (2021) Condition analysis.

3.3.3 No-Build (2021) Traffic Operations

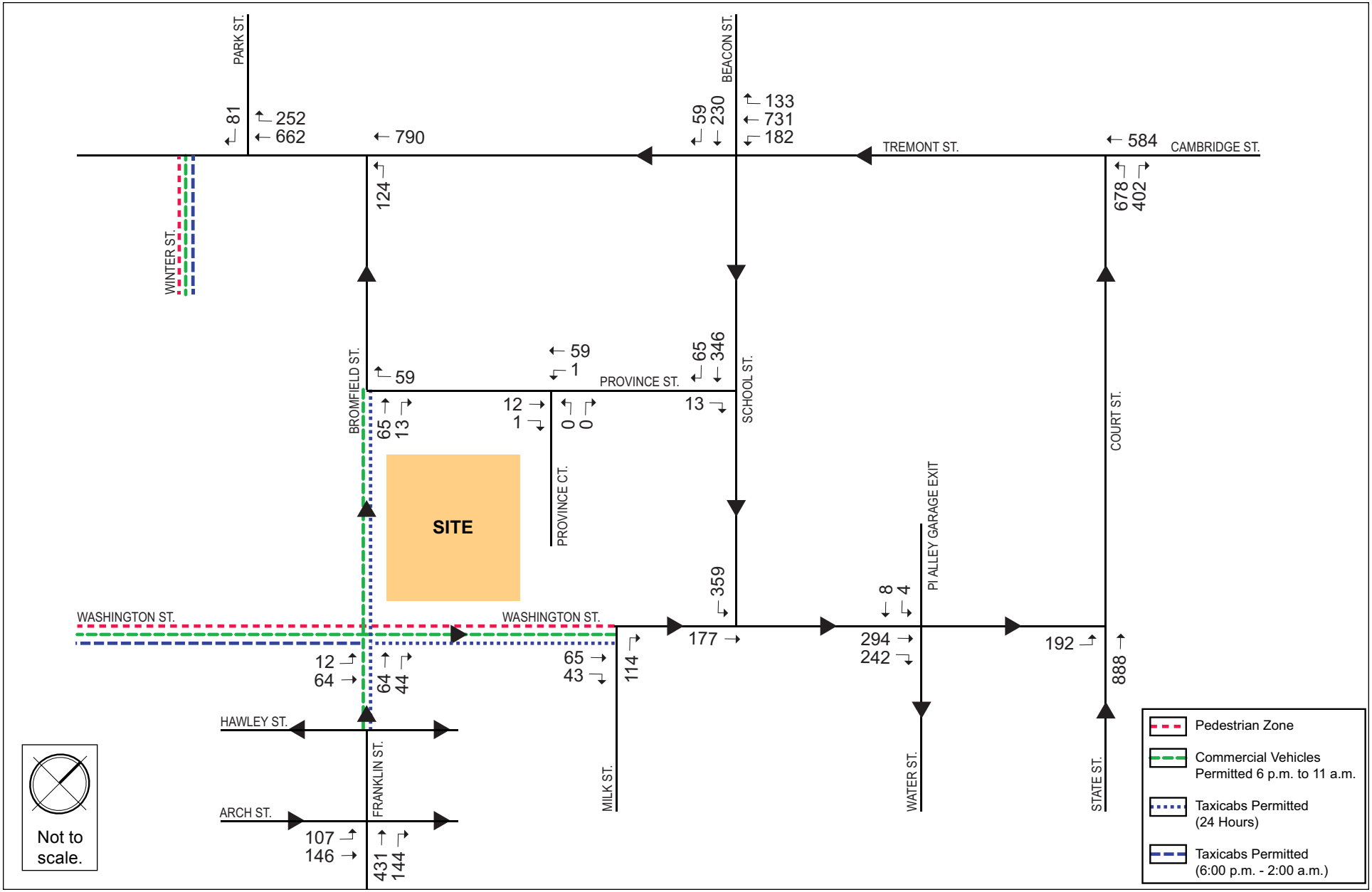
The No-Build (2021) Conditions capacity analysis summary uses the same methodology as described for the Existing Condition. Table 3-11 and Table 3-12 present the No-Build (2021) Condition capacity analysis summary for the a.m. and p.m. peak hours, respectively. The tables show level of service, average delay, volume to capacity ratio, and 50th and 95th percentile queue lengths (feet) for the overall intersection and each approach. Complete Synchro reports are provided in Appendix B.

Under No-Build (2021) Conditions, all intersections and approaches will continue to operate at LOS D or better, with the exception of one approach at the Tremont Street/Cambridge Street/Court Street intersection. During each peak hour, the overall intersection would operate at LOS D under No-Build (2021) Conditions. During the a.m. peak hour, the Court Street westbound right turn lane would worsen from LOS C under Existing Conditions to LOS E under No-Build (2021) Conditions and during the p.m. peak hour, the same movement would worsen from LOS D under Existing Conditions to LOS E under No-Build (2021) Conditions.

One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

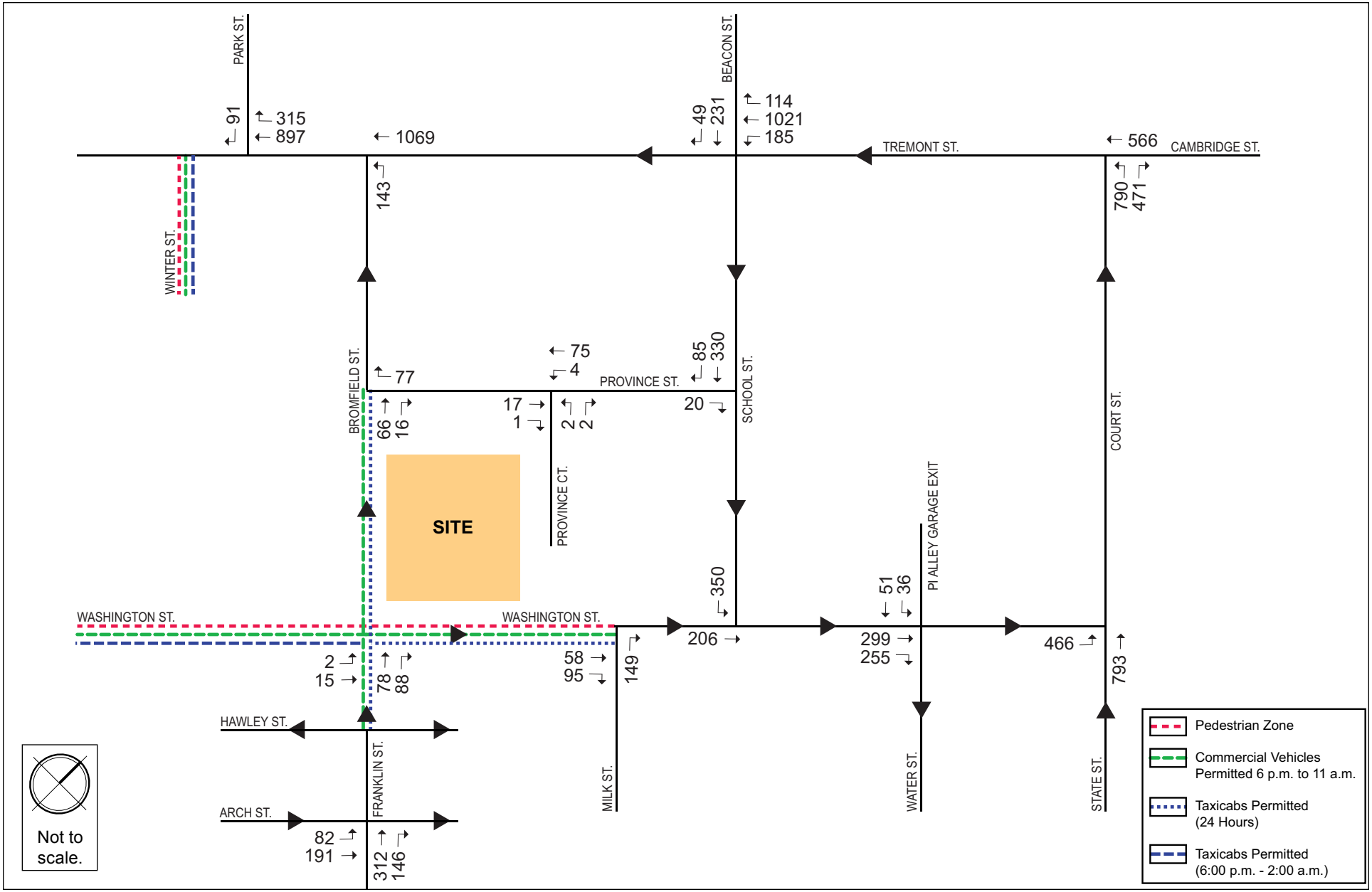
Figure 3-12
Area Development Projects



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-13
No-Build (2021) Condition Traf.c Volumes, Weekday a.m. Peak Hour



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-14
No-Build (2021) Condition Traf.c Volumes, Weekday p.m. Peak Hour

Table 3-11 No-Build (2021) Conditions, Capacity Analysis Summary, a.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Cambridge Street/Court Street	**D**	**52.1**			
Court WB left|left/right	D	41.1	0.87	269	#338
Court WB right	E	75.5	0.98	290	#484
Cambridge SB thru|thru	D	52.5	0.89	197	#288
Tremont Street/Beacon Street/School Street	**B**	**16.7**			
Beacon EB thru/right	D	43.0	0.79	177	#250
Tremont SB left	A	5.3	0.34	0	48
Tremont SB thru | thru	B	10.6	0.45	116	157
Tremont SB right	A	3.5	0.33	0	24
Tremont Street/Bromfield Street	**A**	**9.8**			
Bromfield WB left	D	43.9	0.59	79	122
Tremont SB thru|thru|thru	A	3.9	0.27	41	53
Tremont Street/Park Street	**C**	**22.1**			
Park EB right	D	52.3	0.61	58	93
Tremont SB thru|thru|thru/right	B	19.0	0.63	112	130
Washington Street/School Street	**B**	**12.5**			
School EB left	A	8.9	0.43	65	117
Washington NB thru	B	19.1	0.46	46	68
Franklin Street/Arch Street	**A**	**10.0**			
Franklin WB thru| thru/right	A	5.2	0.31	36	79
Arch NB left/thru	C	20.8	0.66	55	111
Washington Street/Milk Street	**A**	**6.7**			
Milk WB right	A	0.2	0.10	0	0
Washington NB thru/right	B	13.6	0.29	19	54
Washington Street/Court Street	**B**	**11.7**			
Court WB thru | thru	B	10.8	0.47	166	211
Washington NB left	B	15.8	0.35	17	104
Unsignalized Intersections					
Washington Street/Water Street/Garage Exit					
Garage Exit EB left/thru	C	17.5	0.08	-	6
Washington NB thru/right	A	0.0	0.35	-	0
School Street/Province Street					
School EB thru/right	A	0.0	0.25	-	0
Province NB right	C	18.3	0.07	-	5

Table 3-11 No-Build (2021) Conditions, Capacity Analysis Summary, a.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Unsignalized Intersections					
Province Street/Province Court					
Province Ct WB left/right	A	0.0	0.00	-	0
Province St NB thru/right	A	0.0	0.02	-	0
Province St SB left/thru	A	0.1	0.00	-	0
Province Street/Bromfield Street					
Bromfield WB thru/right	A	0.0	0.06	-	0
Province SB right	C	18.2	0.27	-	26
Washington Street/Bromfield Street/Franklin Street					
Franklin WB thru/right	A	7.5	0.13	-	-
Washington NB left/thru	A	7.7	0.10	-	-

= 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.

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

Grey shading indicates a decrease in level of service into LOS E or LOS F as compared to the Existing (2016) Condition.

Table 3-12 No-Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Cambridge Street/Court Street	**D**	**52.0**			
Court WB left|left/right	D	50.5	0.94	320	#455
Court WB right	E	63.8	0.95	287	m#489
Cambridge SB thru|thru	D	46.6	0.84	198	244
Tremont Street/Beacon Street/School Street	**B**	**10.2**			
Beacon EB thru/right	C	34.6	0.60	152	242
Tremont SB left	B	10.1	0.34	33	m44
Tremont SB thru | thru	A	5.0	0.61	38	m46
Tremont SB right	A	1.1	0.29	0	m0
Tremont Street/Bromfield Street	**A**	**7.9**			
Bromfield WB left	D	50.7	0.65	101	150
Tremont SB thru|thru|thru	A	1.6	0.33	3	74

Table 3-12 No-Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Park Street	**C**	**24.7**			
Park EB right	D	43.9	0.42	57	108
Tremont SB thru|thru|thru/right	C	23.3	0.70	249	327
Washington Street/School Street	**B**	**12.8**			
School EB left	A	9.5	0.44	67	120
Washington NB thru	B	18.4	0.44	49	83
Franklin Street/Arch Street	**B**	**11.0**			
Franklin WB thru| thru/right	A	4.5	0.25	24	57
Arch NB left/thru	C	22.0	0.69	62	121
Washington Street/Milk Street	**A**	**5.4**			
Milk WB right	A	0.2	0.13	0	0
Washington NB thru/right	B	13.0	0.27	16	51
Washington Street/Court Street	**B**	**18.1**			
Court WB thru | thru	B	11.4	0.44	142	185
Washington NB left	C	29.5	0.77	198	329
Unsignalized Intersections					
Washington Street/Water Street/Garage Exit					
Garage Exit EB left/thru	C	21.7	0.33	-	36
Washington NB thru/right	A	0.0	0.35	-	0
School Street/Province Street					
School EB thru/right	A	0.0	0.26	-	0
Province NB right	C	17.3	0.13	-	11
Province Street/Province Court					
Province Ct WB left/right	B	10.6	0.01	-	1
Province St NB thru/right	A	0.0	0.01	-	0
Province St SB left/thru	A	0.4	0.00	-	0
Province Street/Bromfield Street					
Bromfield WB thru/right	A	0.0	0.06	-	0
Province SB right	C	20.2	0.26	-	26
Washington Street/Bromfield Street/Franklin Street					
Franklin WB thru/right	A	7.5	0.18	-	-
Washington NB left/thru	A	7.4	0.02	-	-

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates a decrease in level of service into LOS E or LOS F as compared to the Existing (2016) Condition.

3.4 Build (2021) Condition

The Project includes demolition of the existing buildings on the Project Site and the construction of a new mixed-use building with approximately 419 residential units, approximately 30,000 sf of retail space, and approximately 235 parking spaces for residents and some mid-day retail visitors to the Project. No public parking will be provided.

3.4.1 Site Access and Circulation

The primary residential pedestrian entrances to the Project Site will be located in the porte-cochere near Bromfield Street. The ground floor retail uses will have doors along Washington Street and Bromfield Street. For vehicular access, two roadway circulation options, as described below, have been analyzed in this report.

3.4.1.1 Option 1 – Existing Circulation

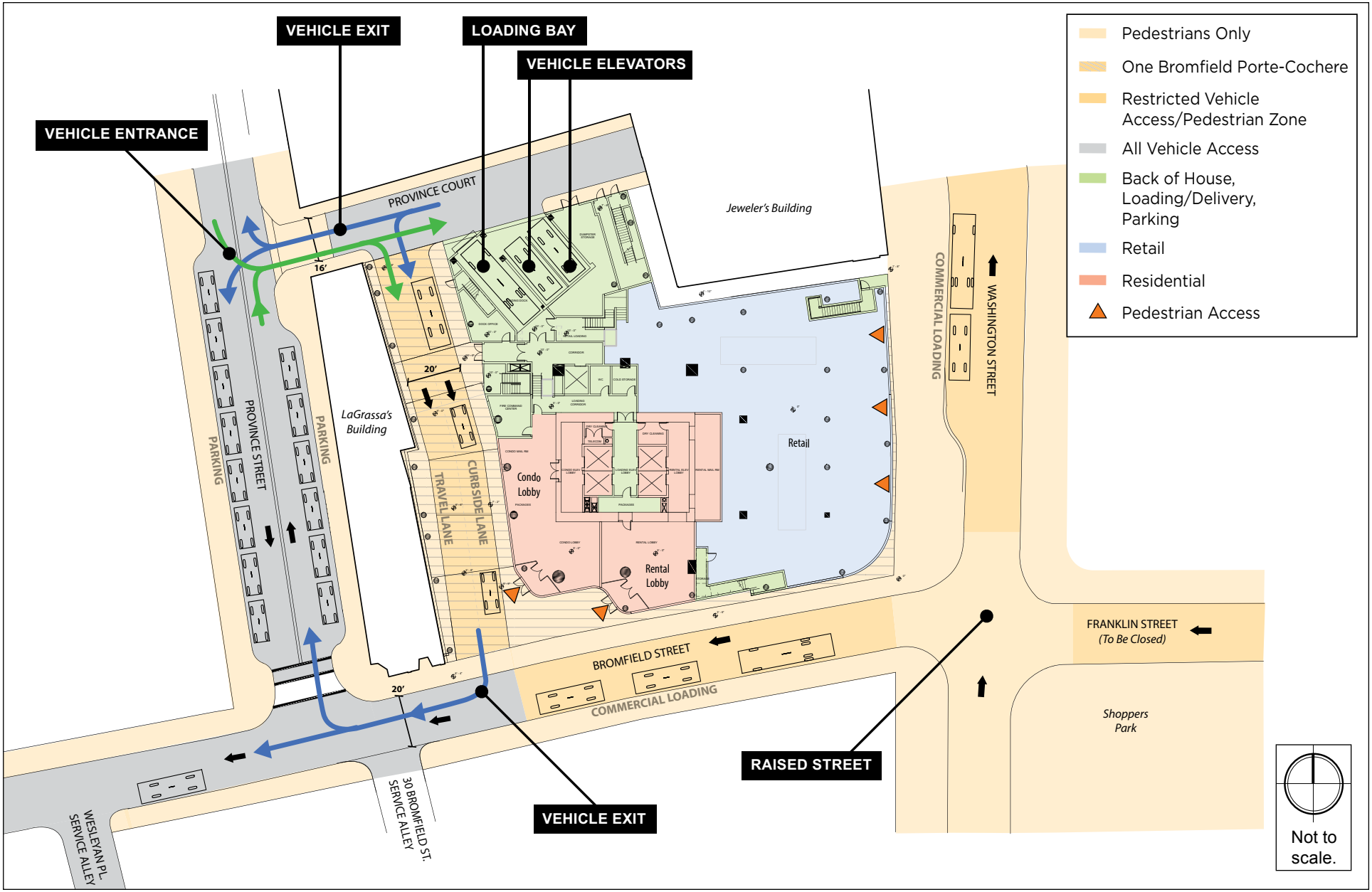
The Project site plan with Option 1 circulation is shown in Figure 3-15. Under Option 1, roadway circulation in the area would remain unchanged. The porte-cochere driveway will accommodate one-way, southbound travel from Province Court, a public alley, to Bromfield Street. Vehicular access to the Project Site will be via Province Court to the internal porte-cochere, where one travel lane will be provided for through traffic and one curbside lane will be provided for valet staging and taxicab activity. The eastern curb of the internal porte-cochere has a capacity for approximately six vehicles plus one space for a delivery vehicle.

Residential vehicles will enter the porte-cochere via Province Court and garage attendants will take and park the vehicle. Vehicles will be taken via Bromfield Street and Province Street to the attendant-operated vehicular elevators accessed from Province Court. Garage attendants will also retrieve vehicles from the garage for residents when they depart. As needed, staging of vehicles waiting to be picked-up by residents or serviced by the garage elevators will occur curbside within the porte-cochere. Only garage attendants will drive vehicles to and from the vehicle elevators. Taxicab drop-offs and pick-ups will occur within the porte-cochere.

Vehicles exiting the porte-cochere will turn right onto Bromfield Street and continue west on Bromfield Street toward Tremont Street or turn right onto Province Street.

3.4.1.2 Option 2 – Proposed Circulation

As part of the Project, the Proponent seeks, with City approval, to change the travel direction of Bromfield Street between the Project Site driveway and Washington Street to be one-way eastbound (toward Washington Street). Consequently, some commercial vehicles and taxicabs in the area would travel different routes to reach destinations along Bromfield Street and Province Street. Under Option 2, the porte-cochere driveway will accommodate one-way, northbound travel from Bromfield Street to Province Court. As shown on the



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-15
Site Plan - Option 1, Existing Circulation

Project site plan in Figure 3-16, vehicular access to the Project Site will be via Bromfield Street. Within the porte-cochere, one travel lane will be provided for through traffic and one curbside lane will be provided for valet staging and taxicab activity. The eastern curb of the internal porte-cochere has a capacity for approximately six vehicles plus one space for a delivery vehicle.

Residential vehicles will enter the porte-cochere via Bromfield Street and garage attendants will take and park the vehicle. Vehicles will be transported via attendant-operated vehicular elevators accessed from Province Court. Garage attendants will also retrieve vehicles from the garage for residents when they depart. As needed, staging of vehicles waiting to be picked-up by residents or serviced by the garage elevators will occur curbside within the porte-cochere. Only garage attendants will drive vehicles to and from the vehicle elevators. Taxicab drop-offs and pick-ups will occur within the porte-cochere.

Vehicles exiting the porte-cochere will turn onto Province Court, either right toward the garage or left toward Province Street.

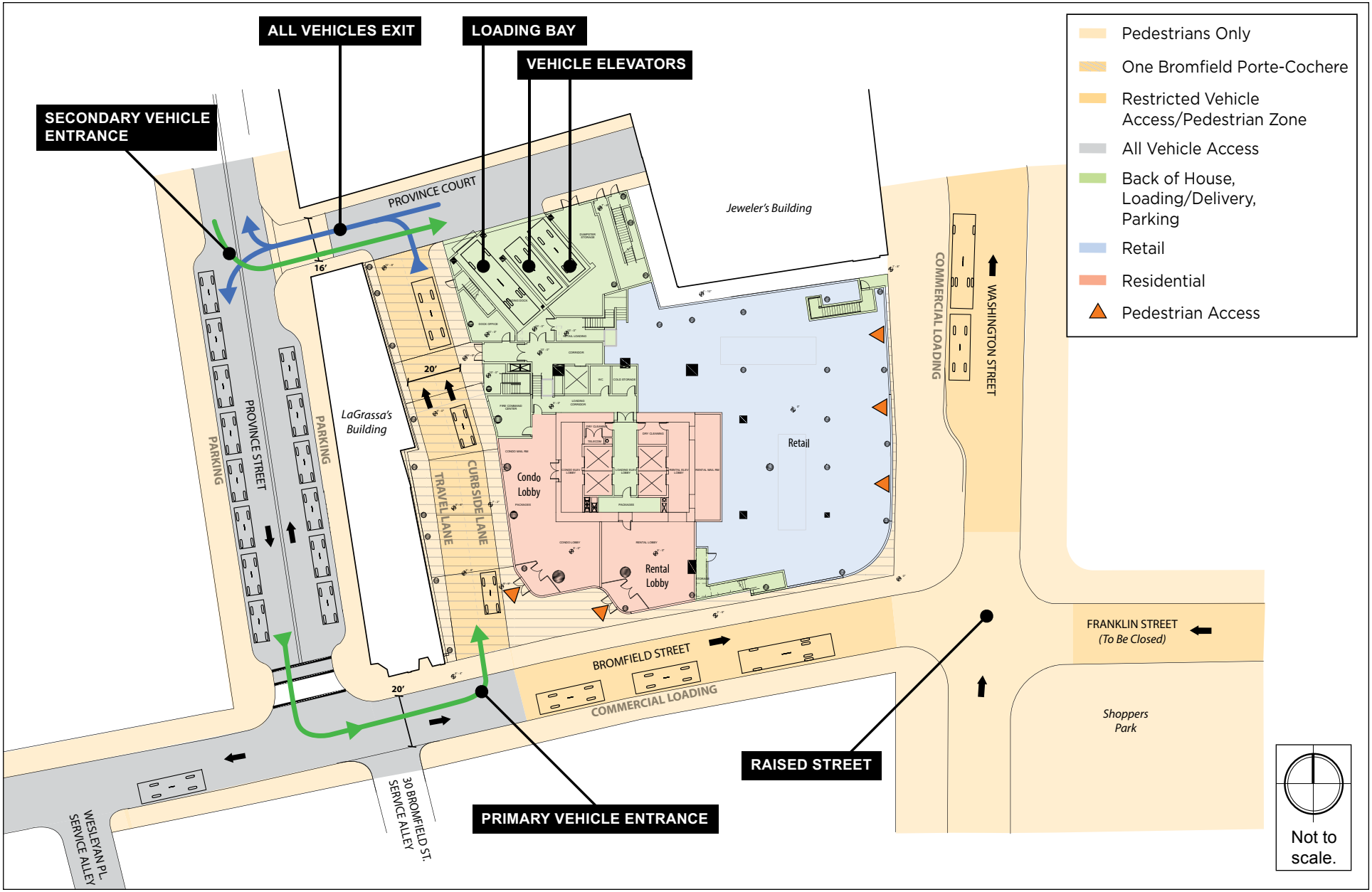
3.4.1.3 Delivery Vehicles

Delivery vehicles will utilize the loading bay on Province Court or the designated delivery space in the porte-cochere. Delivery vehicles to the Project's loading dock will need to back into Province Court to access the loading dock. This same maneuver is required under existing conditions. Delivery trucks can also travel through the porte-cochere and park in the designated curbside loading space.

The proposed vehicle (automobile and truck) travel paths circulating into and out of the porte-cochere, the garage elevators, the loading bays, and Province Court, have been assessed using AUTOTURN, software that allows engineers to model vehicular maneuvers to ensure that all movements can be safely completed.

3.4.2 Trip Generation Methodology

Trip generation is a complex, multi-step process that produces an estimate of vehicle, transit, walk, and bicycle trips associated with a proposed development and a specific land use program. Following standard industry practice, and as required by the BTD, trip generation for the Project was derived from the Institute of Transportation Engineers' (ITE) Trip Generation (9th edition, 2012). The ITE rates produce vehicle trip estimates, which are converted to person trips based on vehicle occupancy rates (VOR). Using appropriate mode split information for this specific study area, the total person trips are then allocated to vehicle, transit, and walk/bicycle trips.



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-16
Site Plan - Option 2, Proposed Circulation

When assessing a site with existing, active land uses, it is standard practice to estimate existing trips and subtract those trips from the projected future new trips. The result of this process yields "net new" trips that become the basis for traffic analysis and allows the study team to "take credit" for existing trip activity. Although the existing site at One Bromfield has both active and vacant space, no reduction has been applied to future trips. This approach yields the most conservative (higher impact) analysis results.

Trips associated with the new land uses on the site are based on the following land use codes (LUC):

Residential

- **Land Use Code 222 – High Rise Apartment.** High-rise apartments (rental dwelling units) are units located in rental buildings that have more than 10 levels (floors) and most likely have one or more elevators.

- **Land Use Code 232 – High Rise Condominium.** High-rise residential condominiums/townhouses are units located in buildings that have three or more levels (floors). Both condominiums and townhouses are included in this land use.

Retail

- **Land Use Code 820 – Shopping Center/Retail.** 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. Of the ITE retail categories, this one best suits the retail component proposed within the Project.

3.4.3 Travel Mode Share

The BTD publishes vehicle, transit, and travel mode shares specific to each area of Boston. The Project site is located within BTD Area 2. As is standard practice, these specific neighborhood mode shares are used to estimate the number of new vehicle trips, transit trips, and walk/bicycle trips generated by the Project. BTD's travel mode share data for Area 2 are shown in Table 3-13.

Table 3-13 Travel Mode Shares

Land Use	Direction	Walk Share	Transit Share	Vehicle Share[1)]	Vehicle Occupancy Rate [2)]
Daily					
Residential	In	42%	30%	28%	1.1
	Out	42%	30%	28%	1.1
Retail	In	59%	20%	21%	1.8
	Out	59%	20%	21%	1.8
a.m. Peak Hour					
Residential	In	7%	52%	41%	1.1
	Out	51%	18%	31%	1.1
Retail	In	14%	46%	40%	1.8
	Out	58%	10%	32%	1.8
p.m. Peak Hour					
Residential	In	51%	18%	31%	1.1
	Out	7%	52%	41%	1.1
Retail	In	58%	10%	32%	1.8
	Out	14%	46%	40%	1.8

1) includes automobiles and taxicabs
2) average persons per vehicle

3.4.4 Project Trip Generation

The Project's downtown location is close to many transit services and within walking distance to many employers, retail shops and restaurants, and cultural and educational institutions. As such, auto ownership rates for residents are expected to be low, with a correspondingly higher demand for taxicab (or other pay-for-service automobile transport) travel. As discussed later in Section 3.4.8, on-site parking will be provided at about 0.56 space/residential unit. Therefore, about 44% of units will not be provided with on-site parking and the associated residents will likely not own an automobile, instead relying on taxicabs (or other vehicle transport services) to make trips requiring a vehicle. To reflect this demand, the vehicle trips have been further disaggregated into private automobile trips and taxicab trips by assuming 56% of Project vehicle trips will be via private automobile and 44% via taxicab.

Table 3-14 shows the projected trip generation by land use and travel mode share for the proposed Project. The detailed trip generation is shown in Appendix B.

Table 3-14 Project Trip Generation

Land Use	Direction	Walk/ Bicycle Person Trips	Transit Person Trips	Vehicle Trips		
				Autos	Taxicabs	Total
Daily						
Residential	In	417	298	140	106	246
	Out	417	298	140	106	246
Retail	In	628	213	72	54	126
	Out	628	213	72	54	126
Total Daily	**In**	**1,045**	**511**	**212**	**160**	**372**
	Out	**1,045**	**511**	**212**	**160**	**372**
a.m. Peak Hour						
Residential	In	3	17	8	11	19
	Out	57	21	18	11	29
Retail	In	4	13	4	3	7
	Out	10	2	2	3	5
Total a.m. Peak Hour	**In**	**7**	**30**	**12**	**14**	**26**
	Out	**67**	**23**	**20**	**14**	**34**
p.m. Peak Hour						
Residential	In	40	14	12	9	21
	Out	4	29	12	9	21
Retail	In	46	8	8	7	15
	Out	10	33	8	7	15
Total p.m. Peak Hour	**In**	**86**	**22**	**20**	**16**	**36**
	Out	**14**	**62**	**20**	**16**	**36**

As shown, the estimated new daily vehicle trips generated by the Project will be 372 trips in and 372 trips out. Trip activity related to the Project will generally occur throughout the day, without a heavy concentration of trips during peak commuter travel periods. The Project is expected to generate 60 new vehicle trips during the a.m. peak hour and 72 new vehicle trips during the p.m. peak hour.

3.4.5 Vehicle Trip Distribution and Assignment

The trip distribution patterns for new vehicle trips generated by the Project were based on origin-destination data from BTD for Area 2 and knowledge of the local roadway network.

(Note that the on-site parking garage will be for residents and some mid-day retail visitors to the Project. Many of the new vehicle trips generated by the retail component of the Project (which are expected to be limited, given the transit-rich Project site) are expected to park in nearby public parking facilities, as shown in Figure 3-5. However, to provide a conservative (higher impact) traffic analysis, the vehicle trip distribution assigns retail trips to the Project Site rather than dispersing them throughout the study area.)

Two distribution patterns were developed to reflect vehicle circulation under Option 1 and Option 2, as described below.

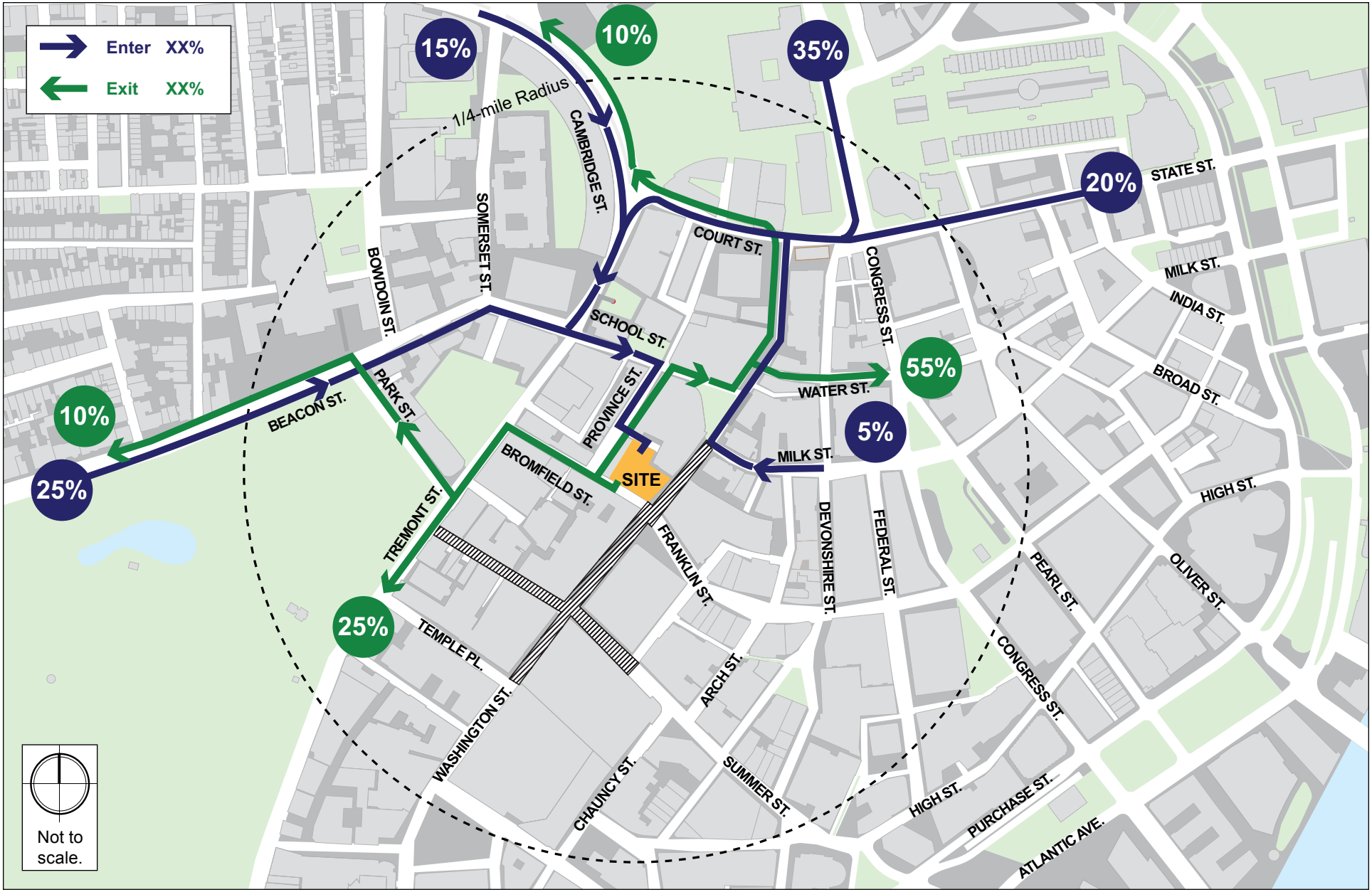
3.4.5.1 Option 1 – Existing Circulation

Option 1 would maintain the existing street circulation, with Bromfield Street one-way westbound between Washington Street and Tremont Street. Because of upstream restrictions on Washington Street and Franklin Street, general traffic cannot legally travel to Bromfield Street via the Washington Street/Franklin Street intersection. The only vehicles legally permitted on the segment of Bromfield Street between Washington Street and Province Street are commercial vehicles (when permitted) and taxicabs. While travel regulations on this segment would continue to allow only commercial vehicles and taxicabs, historical traffic counts show that some general traffic does travel through this restricted zone unlawfully.

The automobile trip and taxicab trip distributions under Option 1 are mapped in Figure 3-17 and Figure 3-18, respectively. The two distributions are slightly different because taxicabs would be permitted to use Bromfield Street westbound, between Washington Street and Province Street.

3.4.5.2 Option 2 – Proposed Circulation

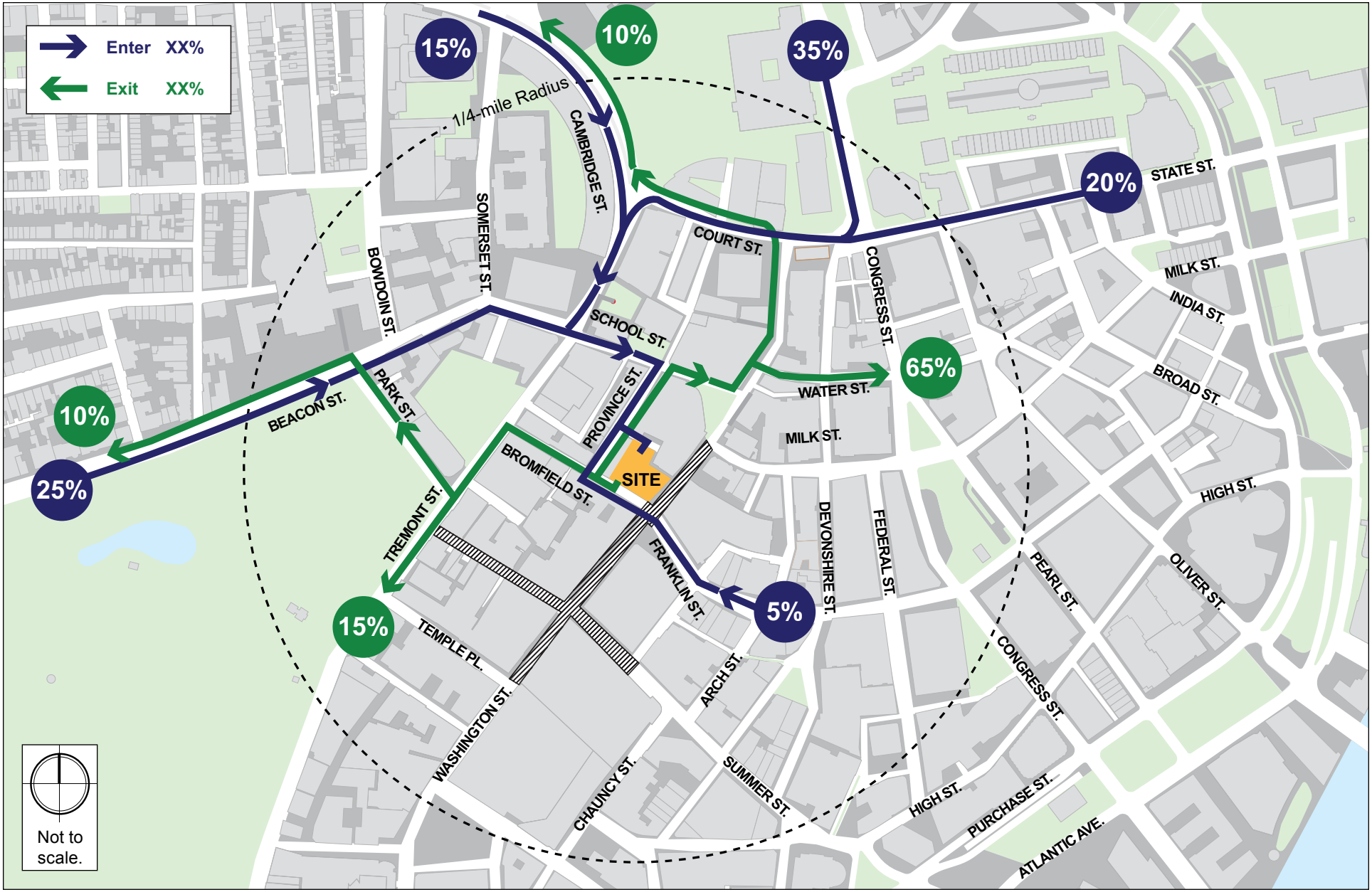
Under Option 2, the travel direction of Bromfield Street between the Project Site driveway and Washington Street would change to one-way eastbound. Travel on this segment would continue to be restricted to commercial vehicles and taxicabs. This change would allow commercial vehicles and taxicabs to turn left from Province Street onto Bromfield Street and



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-17
Automobile Trip Distribution - Option 1



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-18
Taxicab Trip Distribution - Option 1

either turn left into the Project driveway or continue on Bromfield Street and turn left onto Washington Street. The segment of Bromfield Street between Province Street and Tremont Street would remain one-way westbound (toward Tremont Street) and would continue to be open to general traffic.

Under Option 2, the travel paths of some non-Project vehicles would be affected. The reassignment of these trips has been incorporated into the vehicle trip distribution process and the Build (2021) Condition volumes for Option 2. See Appendix B for the a.m. and p.m. peak hour volume reassignment.

The automobile trip and taxicab trip distributions under Option 2 are mapped in Figure 3-19 and Figure 3-20, respectively. The two distributions are slightly different because taxicabs would be permitted to use Bromfield Street eastbound, between the Project Site driveway and Washington Street; however, general vehicles would be prohibited from using this roadway segment.

3.4.5.3 Vehicle Trip Assignment

For Option 1, the Project generated automobile vehicle trips are shown in Figure 3-21 and Figure 3-22, for the a.m. and p.m. peak hours, respectively. The associated taxicab trips are shown in Figure 3-23 and Figure 3-24 for the a.m. and p.m. peak hours, respectively.

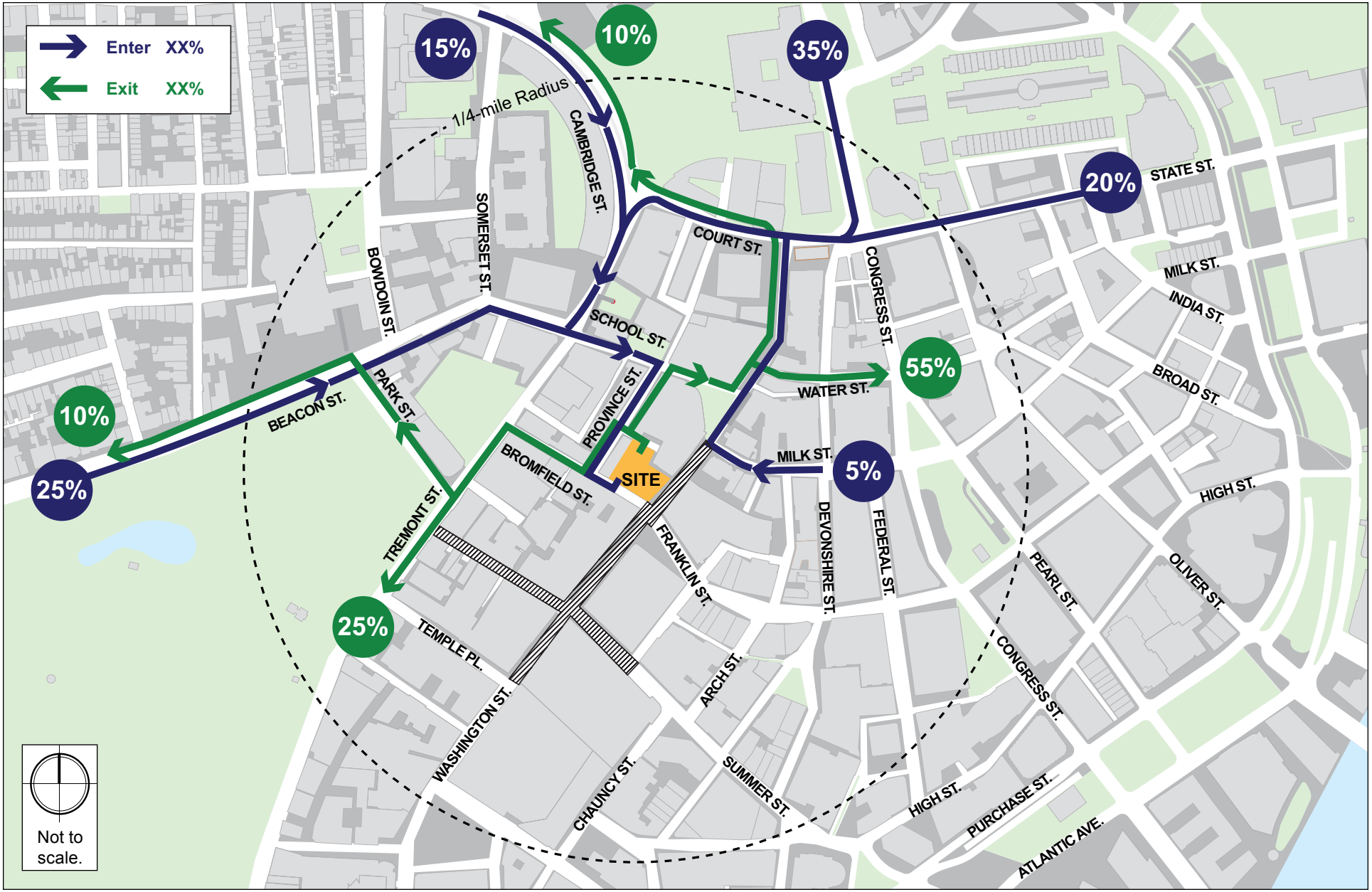
Under Option 2, the Project generated automobile vehicle trips are shown in Figure 3-25 and Figure 3-26, for the a.m. and p.m. peak hours, respectively. The associated taxicab trips are shown in Figure 3-27 and 3-28 for the a.m. and p.m. peak hours, respectively.

3.4.6 Build (2021) Traffic Volumes

The peak hour Project generated trips for each option were assigned to the roadway network and added to the No-Build (2021) Condition volumes to develop the Build Condition volumes. Option 1 Build (2021) Condition traffic volumes are shown in Figure 3-29 and Figure 3-30 for the a.m. and p.m. peak hours, respectively. Option 2 Build (2021) Condition traffic volumes are shown in Figure 3-31 and Figure 3-32, respectively.

3.4.7 Build (2021) Condition Traffic Operations

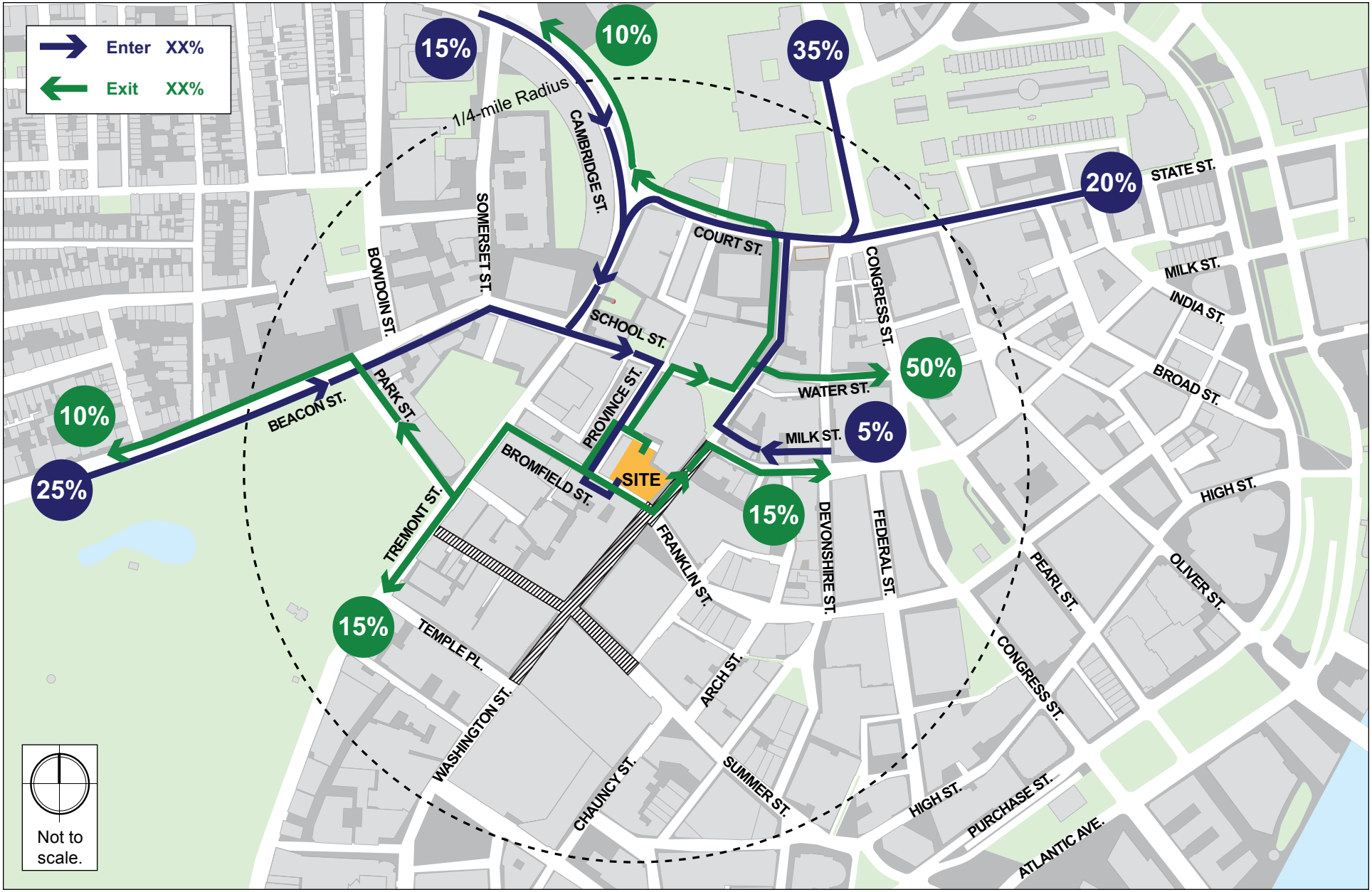
The Build (2021) Condition analysis was based on the same methodology as the Existing Condition and No-Build (2021) Condition analysis. The resulting intersection capacity analysis summaries for Option 1 Build (2021) Condition are shown in Table 3-15 and Table 3-16 for a.m. and p.m. peak hours, respectively. The Option 2 Build (2021) Conditions are shown in Table 3-17 and Table 3-18, for a.m. and p.m. peak hours, respectively.



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

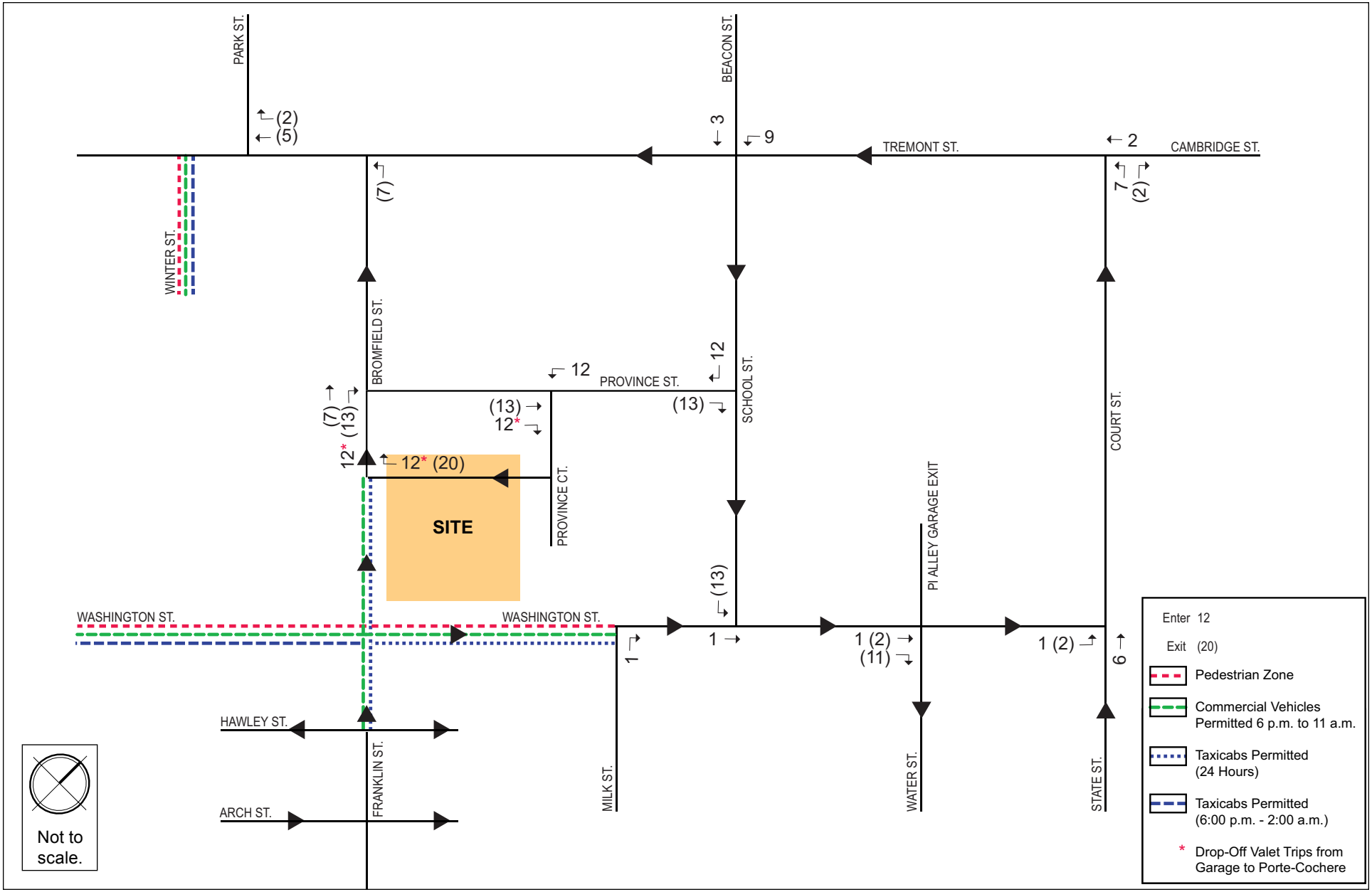
Figure 3-19
Automobile Trip Distribution - Option 2



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

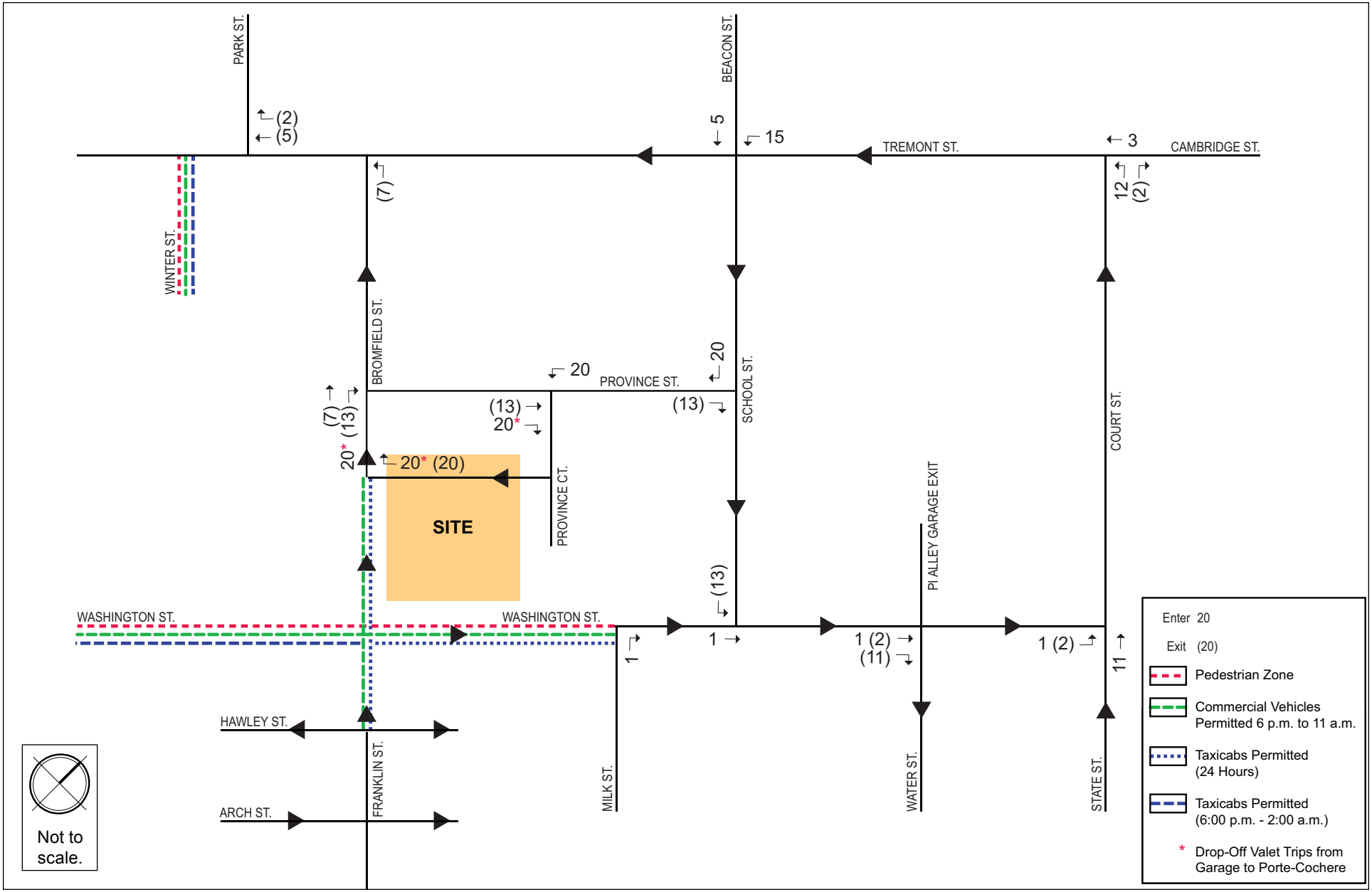
Figure 3-20
Taxicab Trip Distribution - Option 2



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

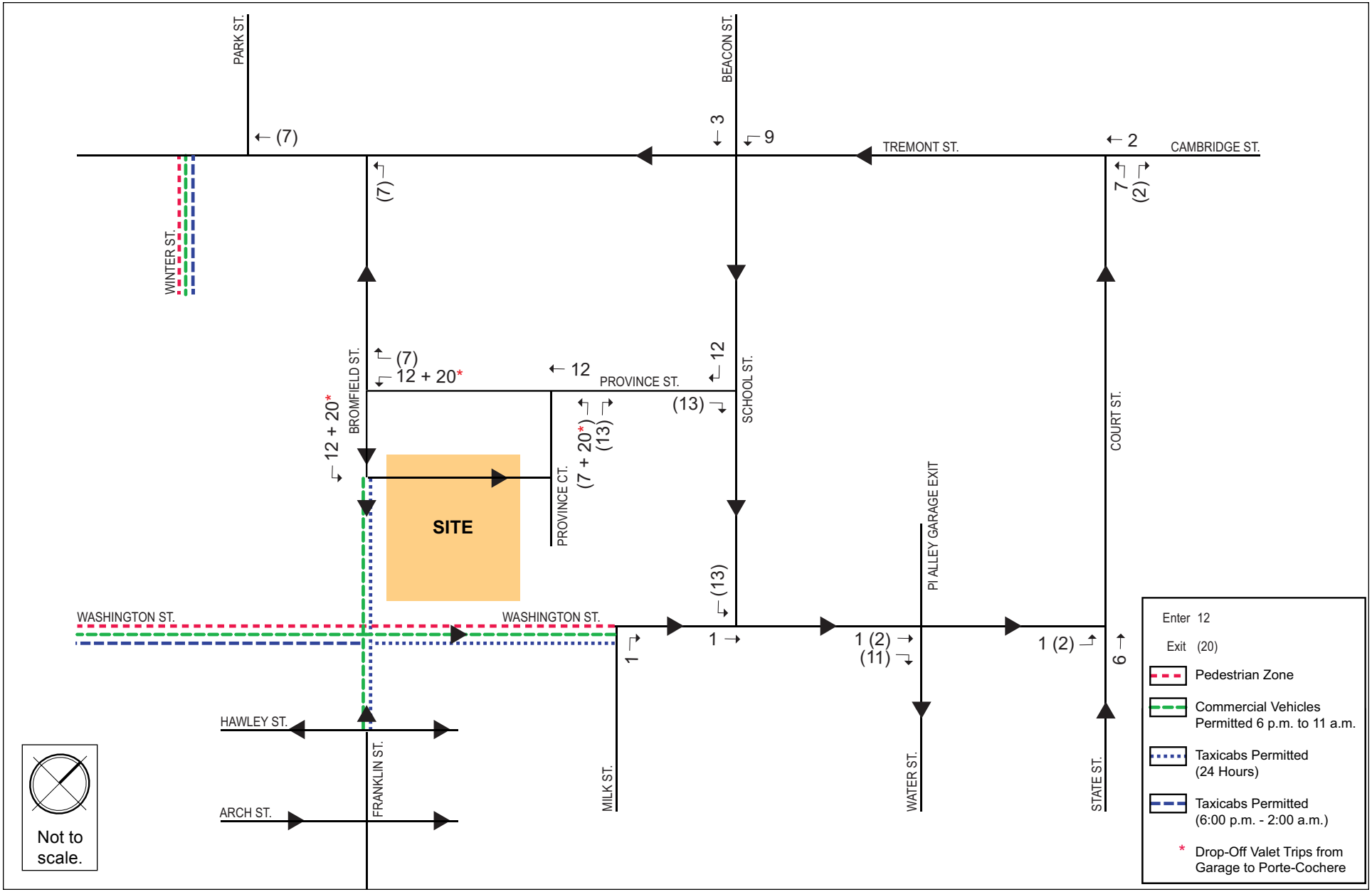
Figure 3-21
Project Generated Vehicle Trips - Automobile, a.m. Peak Hour - Option 1



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

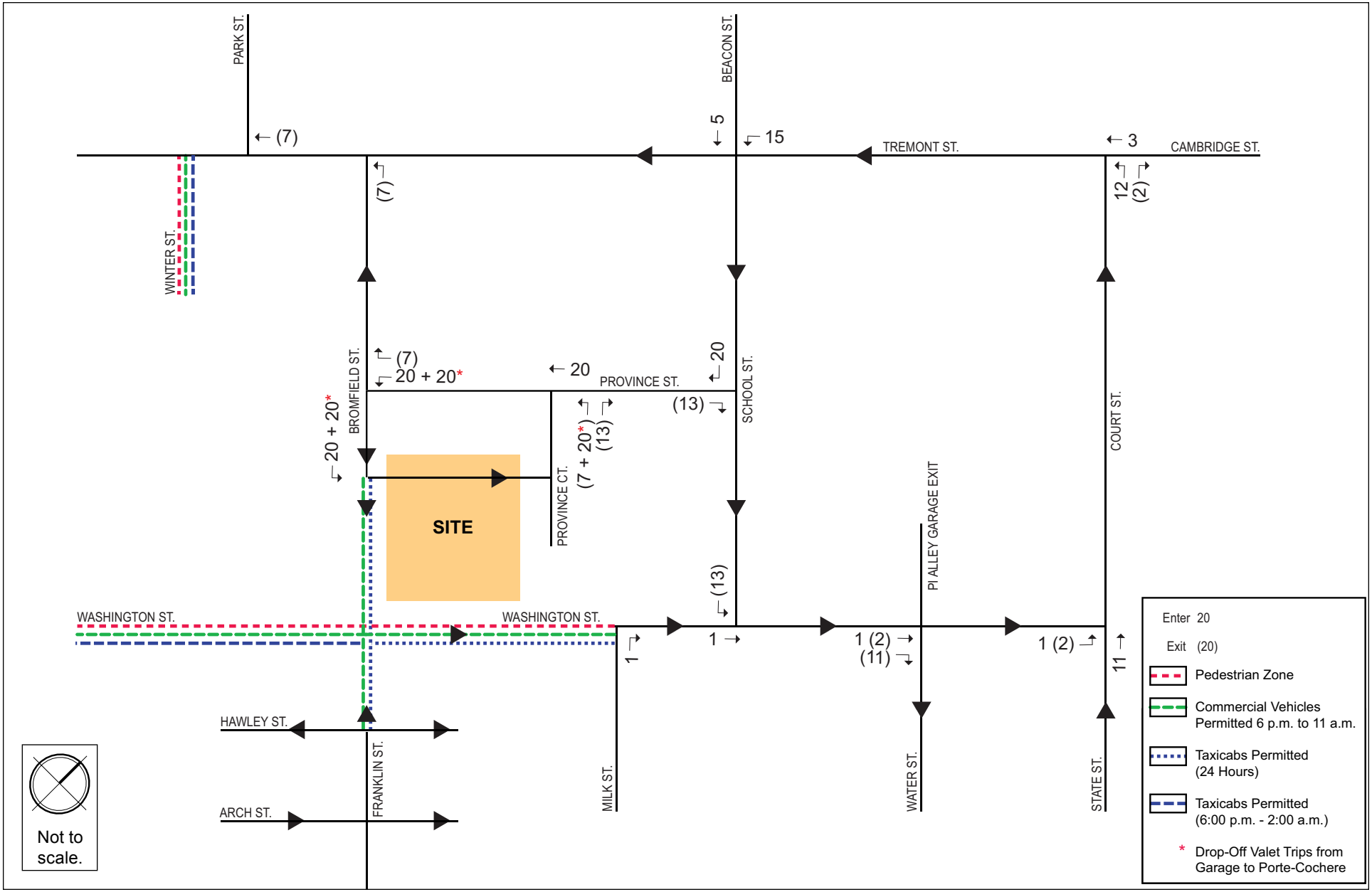
Figure 3-22
Project Generated Vehicle Trips - Automobile, p.m. Peak Hour - Option 1



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

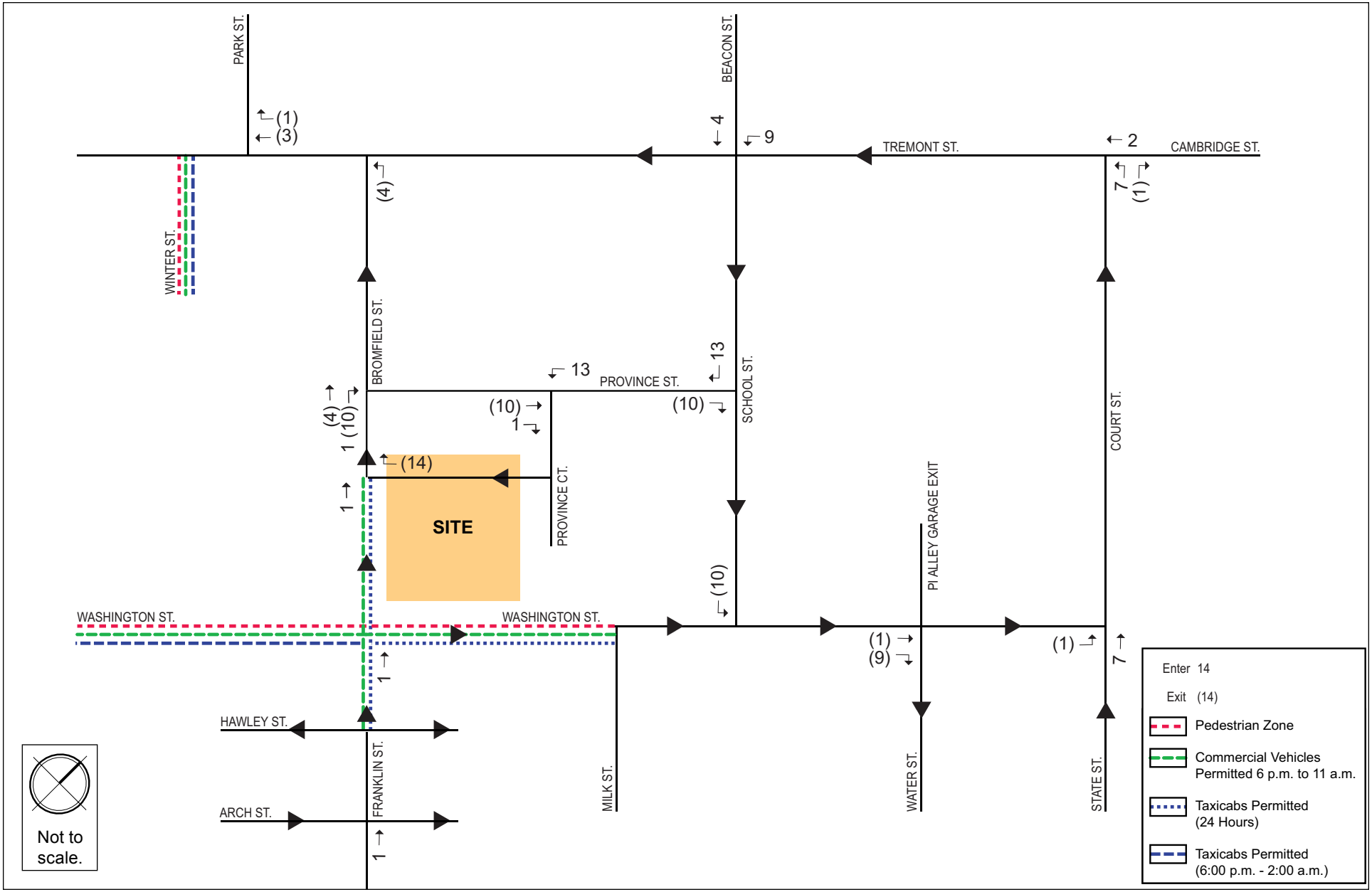
Figure 3-25
Project Generated Vehicle Trips - Automobile, a.m. Peak Hour - Option 2



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

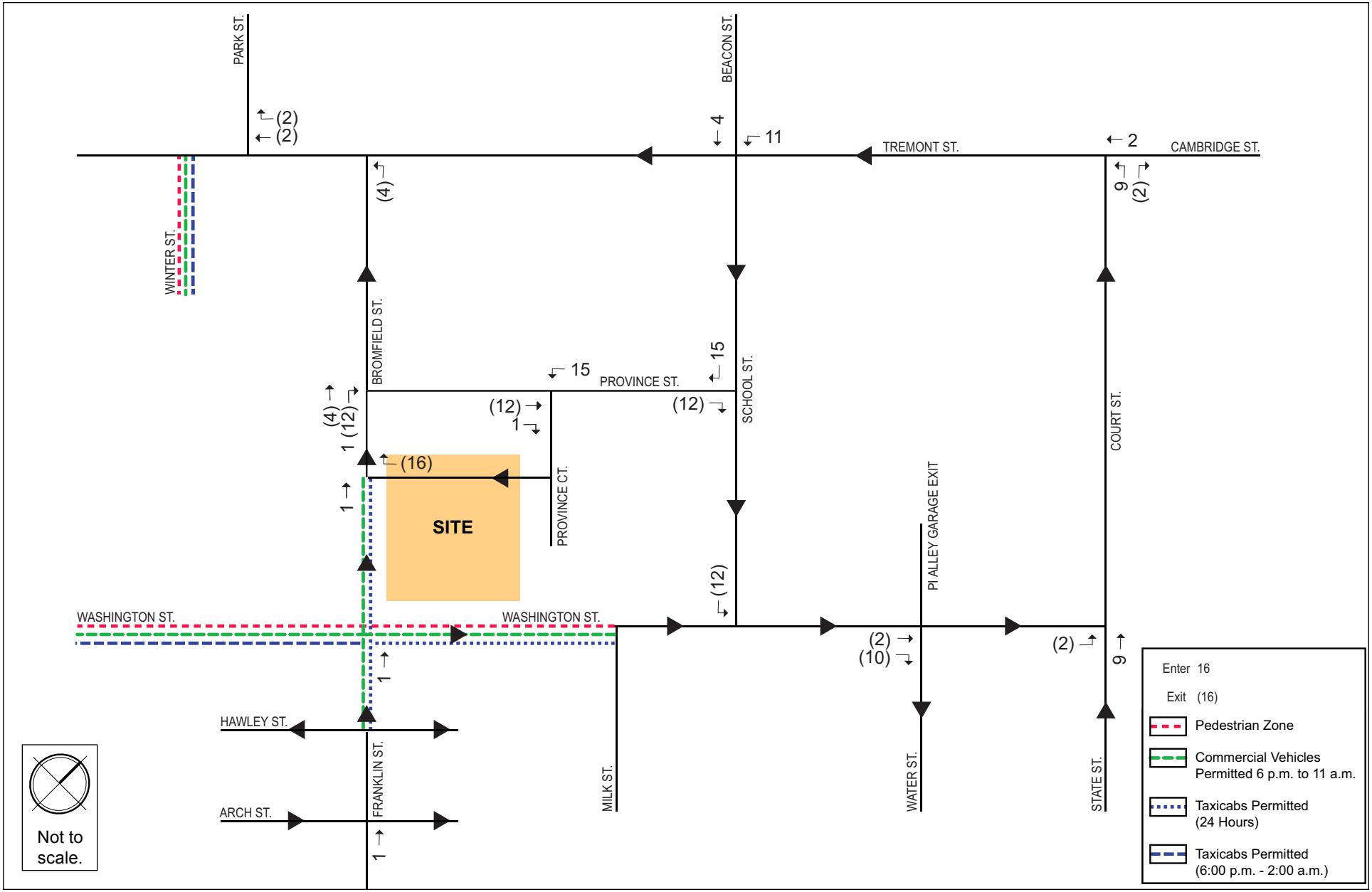
Figure 3-26
Project Generated Vehicle Trips - Automobile, p.m. Peak Hour - Option 2



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

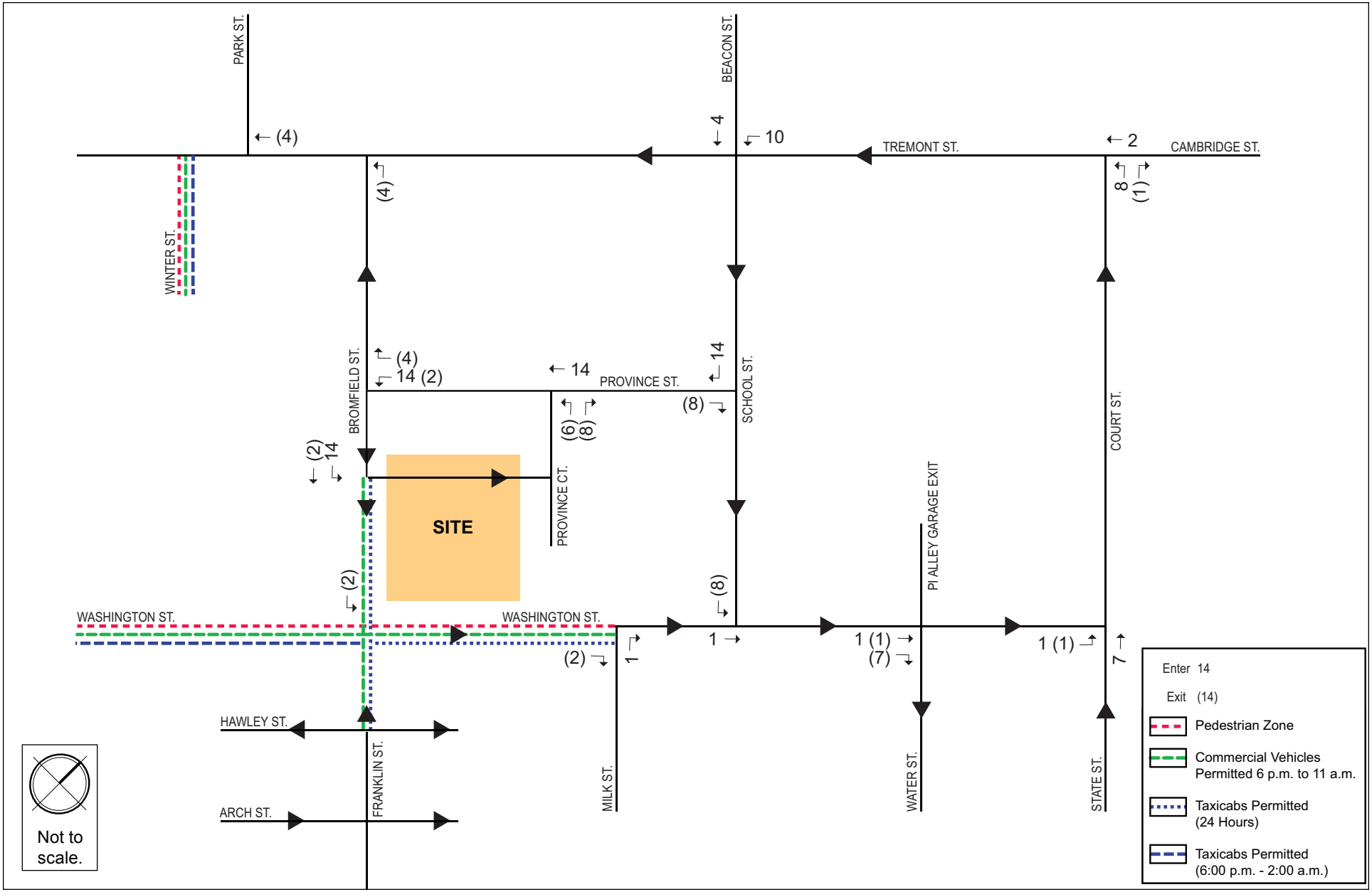
Figure 3-23
Project Generated Vehicle Trips - Taxicabs, a.m. Peak Hour - Option 1



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

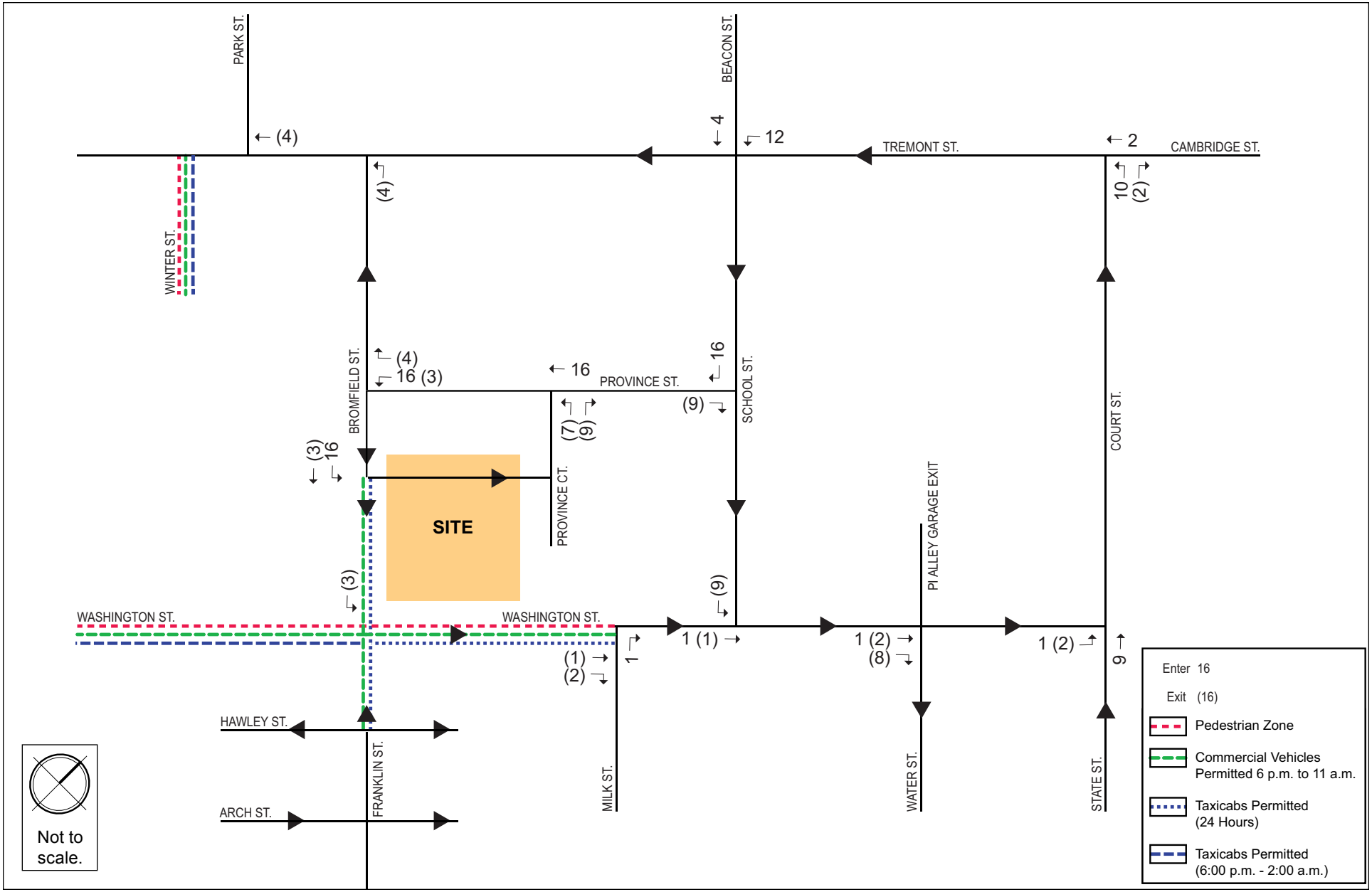
Figure 3-24
Project Generated Vehicle Trips - Taxicabs, p.m. Peak Hour - Option 1



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

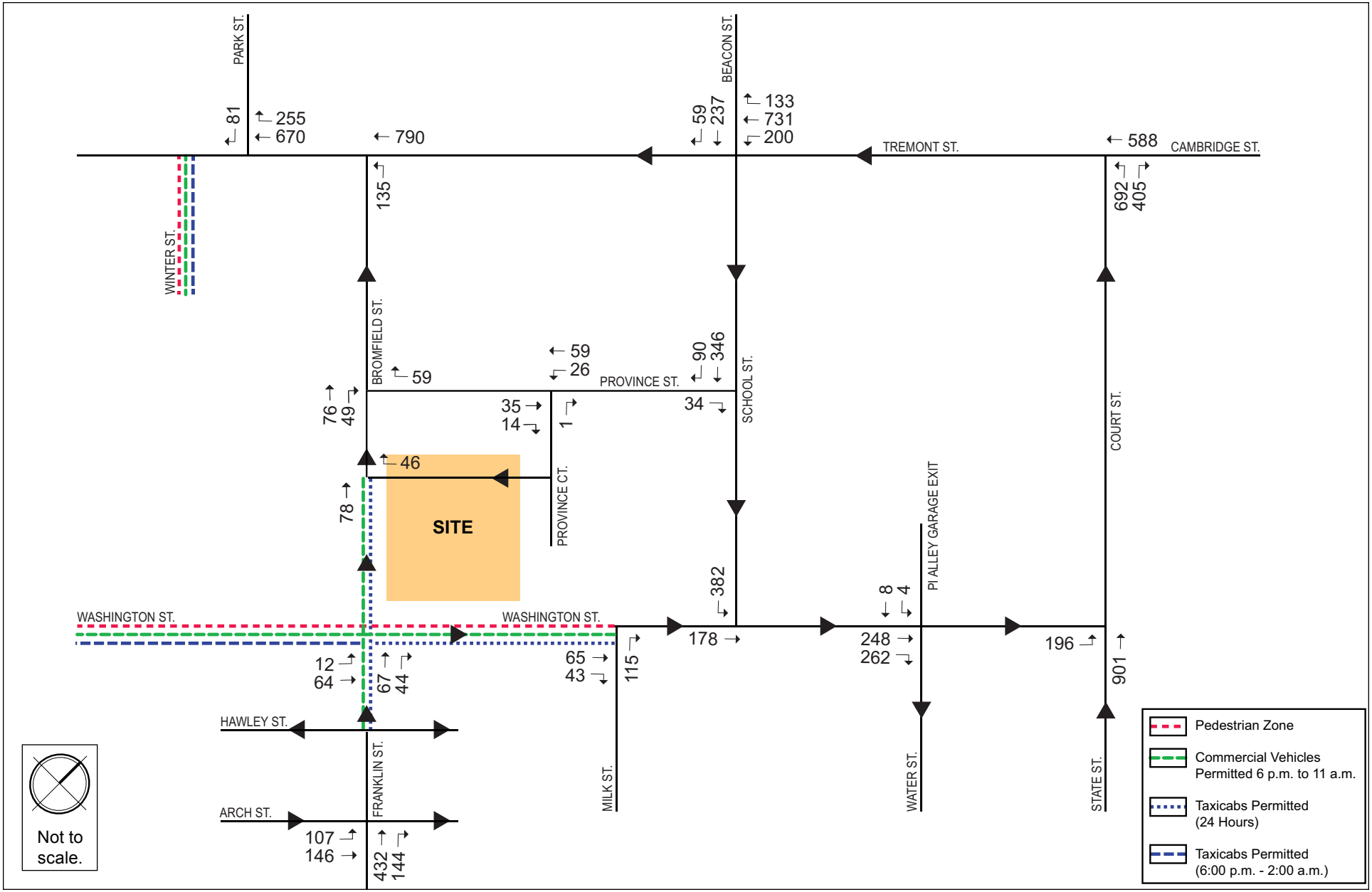
Figure 3-27
Project Generated Vehicle Trips - Taxicabs, a.m. Peak Hour - Option 2



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

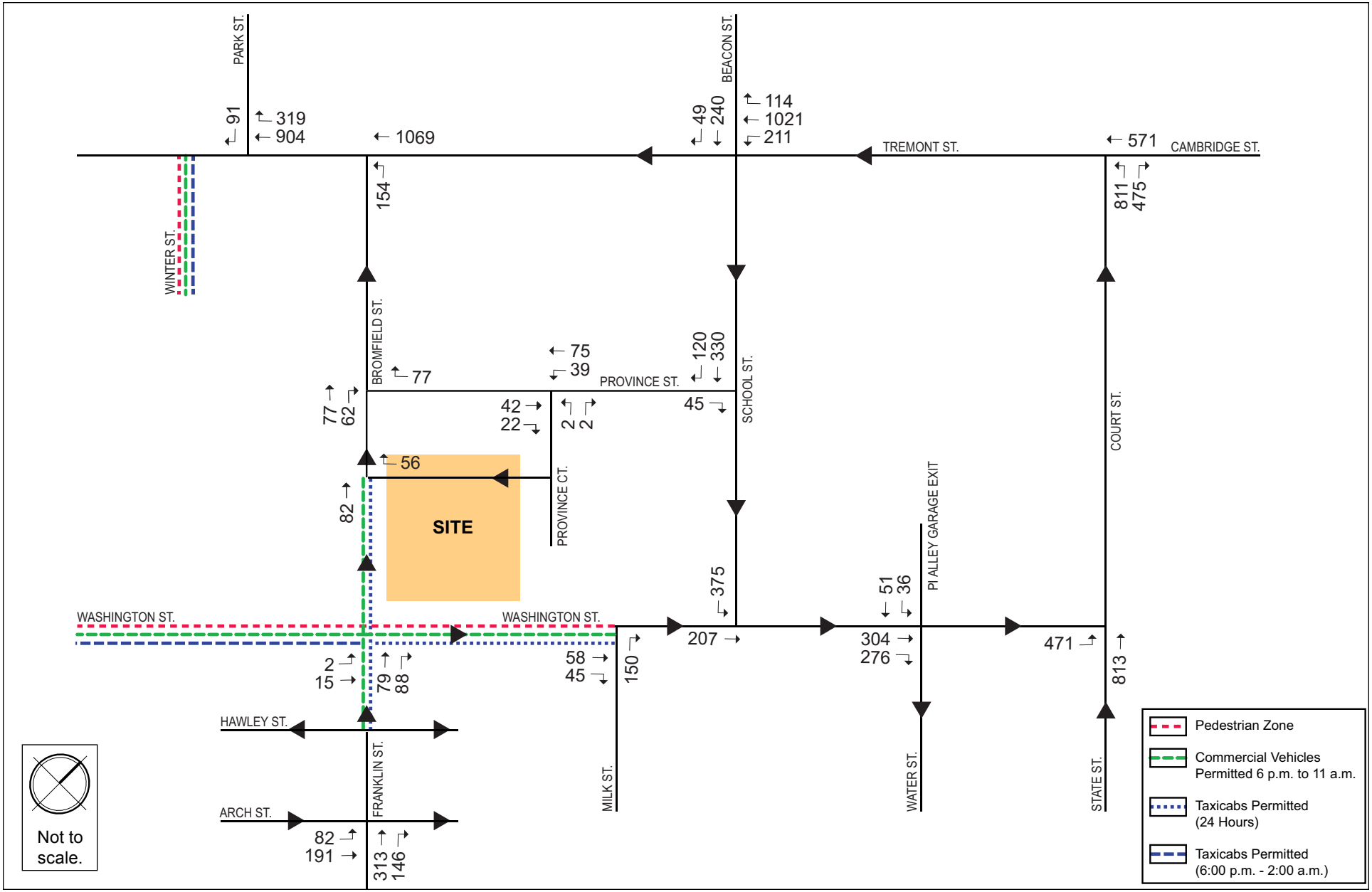
Figure 3-28
Project Generated Vehicle Trips - Taxicabs, p.m. Peak Hour - Option 2



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

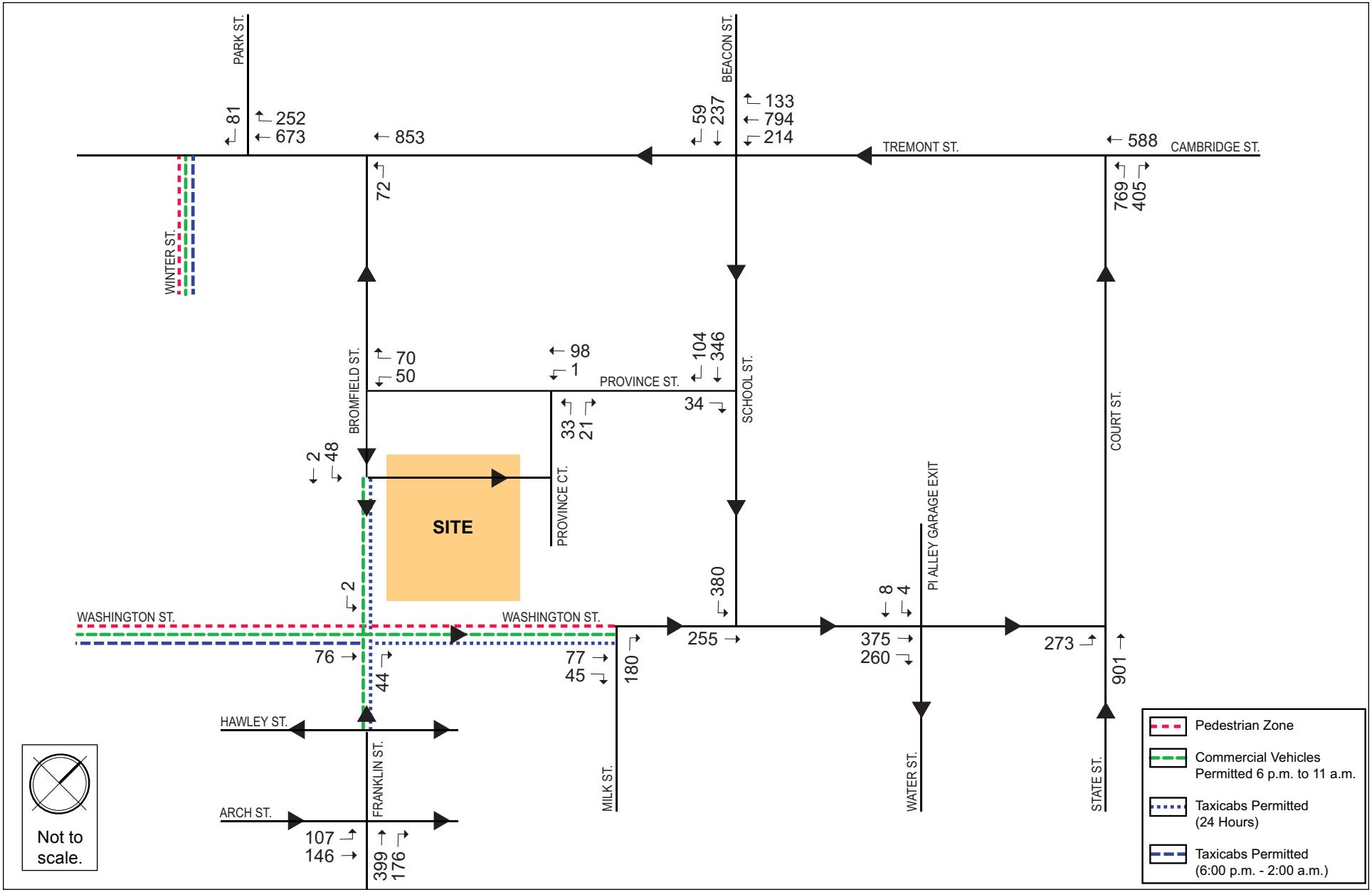
Figure 3-29
Build (2021) Condition Traf.c Volumes, Weekday a.m. Peak Hour - Option 1



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

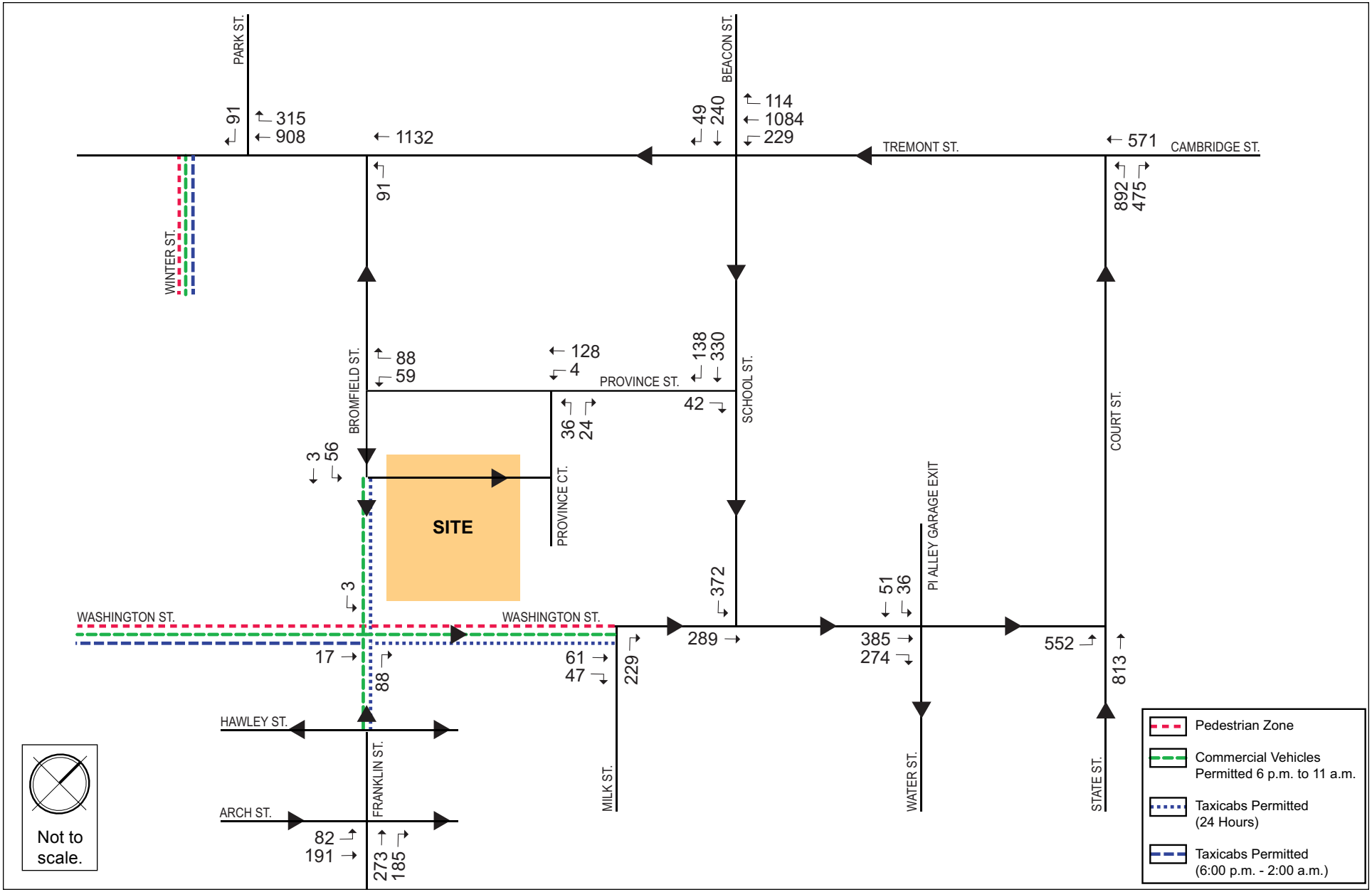
Figure 3-30
Build (2021) Condition Traf.c Volumes, Weekday p.m. Peak Hour - Option 1



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-31
Build (2021) Condition Traf.c Volumes, Weekday a.m. Peak Hour - Option 2



One Bromfield Boston, Massachusetts

HOWARD STEIN HUDSON
Engineers + Planners

Figure 3-32
Build (2021) Condition Traf.c Volumes, Weekday p.m. Peak Hour - Option 2

The tables show level of service, average delay, volume to capacity ratio, and 50th and 95th percentile queue lengths (feet) for the overall intersection and each approach. Complete Synchro reports are provided in Appendix B.

3.4.7.1 Option 1

During the a.m. peak hour, there would be no change in intersection level of service between No-Build and Build Conditions. However, during the p.m. peak hour, the Tremont Street/Court Street/Cambridge Street intersection overall level of service will worsen from LOS D to LOS E. Additionally, the Court Street westbound left | left/right turn lane would worsen from LOS D to LOS E. Further discussion of this intersection is presented in Section 3.6, Mitigation.

3.4.7.2 Option 2

Under Option 2, the Tremont Street/Court Street/Cambridge Street intersection would experience a minor change in level of service from No-Build (2021) Conditions. Overall operations at this intersection will remain at LOS D during the a.m. peak hour and worsen from LOS D to LOS E during the p.m. peak hour. Additionally, the Court Street westbound right turn lane would worsen to LOS E during the a.m. peak hour and LOS F during the p.m. peak hour. Further discussion of this intersection is presented in Section 3.6, Mitigation.

Table 3-15 Build (2021) Condition, Capacity Analysis Summary, a.m. Peak Hour – Option 1

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Cambridge Street/Court Street	**D**	**48.7**			
Court WB left|left/right	D	42.8	0.89	276	#364
Court WB right	D	54.9	0.89	249	#407
Cambridge SB thru|thru	D	52.9	0.89	198	#290
Tremont Street/Beacon Street/School Street [1]	**B**	**17.2**			
Beacon EB thru/right	D	44.5	0.81	183	#264
Tremont SB left	A	6.3	0.43	0	50
Tremont SB thru | thru	B	10.6	0.45	116	157
Tremont SB right	A	3.5	0.33	0	24

Table 3-15 Build (2021) Condition, Capacity Analysis Summary, a.m. Peak Hour – Option 1 (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Bromfield Street	**B**	**10.4**			
Bromfield WB left	D	44.6	0.62	87	130
Tremont SB thru|thru|thru	A	4.0	0.27	41	53
Tremont Street/Park Street	**C**	**22.4**			
Park EB right	D	52.3	0.61	58	93
Tremont SB thru|thru|thru/right	B	19.4	0.64	115	133
Washington Street/School Street	**B**	**12.7**			
School EB left	A	9.2	0.46	70	126
Washington NB thru	B	19.2	0.47	46	68
Franklin Street/Arch Street	**A**	**10.0**			
Franklin WB thru| thru/right	A	5.2	0.31	36	80
Arch NB left/thru	C	20.8	0.66	55	111
Washington Street/Milk Street	**A**	**6.7**			
Milk WB right	A	0.2	0.10	0	0
Washington NB thru/right	B	13.6	0.29	19	54
Washington Street/Court Street	**B**	**12.0**			
Court WB thru | thru	B	10.9	0.48	171	216
Washington NB left	B	16.8	0.35	26	111
Unsignalized Intersections					
Washington Street/Water Street/Garage Exit					
Garage Exit EB left/thru	C	18.0	0.08	-	6
Washington NB thru/right	A	0.0	0.37	-	0
School Street/Province Street					
School EB thru/right	A	0.0	0.26	-	0
Province NB right	C	20.4	0.18	-	16
Province Street/Province Court					
Province Ct WB left/right	A	9.7	0.01	-	0
Province St NB thru/right	A	0.0	0.07	-	0
Province St SB left/thru	A	2.7	0.04	-	3
Province Street/Bromfield Street					
Bromfield WB thru/right	A	0.0	0.10	-	0
Province SB right	C	19.1	0.28	-	28
Bromfield Street/Site Driveway					
Bromfield WB thru	A	0.0	0.05	-	0
Site Driveway SB right	A	8.9	0.05	-	4

Table 3-15 Build (2021) Condition, Capacity Analysis Summary, a.m. Peak Hour – Option 1 (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Washington Street/Bromfield Street/Franklin Street					
Franklin WB thru/right	A	7.5	0.13	-	-
Washington NB left/thru	A	7.7	0.10	-	-

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates a decrease in level of service from No-Build (2021) Condition.

Table 3-16 Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour – Option 1

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Cambridge Street/Court Street	**E**	**55.2**			
Court WB left|left/right	E	55.1	0.97	~330	#470
Court WB right	E	69.3	0.97	~298	m#498
Cambridge SB thru|thru	D	46.4	0.84	200	247
Tremont Street/Beacon Street/School Street [1]	**B**	**10.5**			
Beacon EB thru/right	D	35.1	0.62	158	250
Tremont SB left	B	10.1	0.38	38	m50
Tremont SB thru | thru	A	5.1	0.61	42	m46
Tremont SB right	A	1.1	0.29	0	m0
Tremont Street/Bromfield Street	**A**	**8.7**			
Bromfield WB left	D	51.2	0.67	108	159
Tremont SB thru|thru|thru	A	2.0	0.33	4	94
Tremont Street/Park Street	**C**	**24.9**			
Park EB right	D	43.9	0.42	57	108
Tremont SB thru|thru|thru/right	C	23.5	0.71	256	332
Washington Street/School Street	**B**	**13.0**			
School EB left	A	9.9	0.47	73	131
Washington NB thru	B	18.5	0.44	49	84
Franklin Street/Arch Street	**B**	**11.0**			
Franklin WB thru| thru/right	A	4.5	0.25	24	57
Arch NB left/thru	C	22.0	0.69	62	121
Washington Street/Milk Street	**A**	**5.4**			
Milk WB right	A	0.2	0.13	0	0
Washington NB thru/right	B	13.0	0.27	16	51

Table 3-16 Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour – Option 1 (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Washington Street/Court Street	**B**	**18.7**			
Court WB thru | thru	B	11.5	0.46	147	191
Washington NB left	C	31.1	0.78	207	#349
Unsignalized Intersections					
Washington Street/Water Street/Garage Exit					
Garage Exit EB left/thru	C	22.6	0.35	-	37
Washington NB thru/right	A	0.0	0.36	-	0
School Street/Province Street					
School EB thru/right	A	0.0	0.28	-	0
Province NB right	C	20.5	0.29	-	29
Province Street/Province Court					
Province Ct WB left/right	B	11.4	0.01	-	1
Province St NB thru/right	A	0.0	0.05	-	0
Province St SB left/thru	A	3.0	0.04	-	3
Province Street/Bromfield Street					
Bromfield WB thru/right	A	0.0	0.10	-	0
Province SB right	C	21.3	0.28	-	28
Bromfield Street/Site Driveway					
Bromfield WB thru	A	0.0	0.05	-	0
Site Driveway SB right	A	9.0	0.06	-	5
Washington Street/Bromfield Street/Franklin Street					
Franklin WB thru/right	A	7.5	0.18	-	-
Washington NB left/thru	A	7.4	0.02	-	-

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates a decrease in level of service from No-Build (2021) Condition.

Table 3-17 Build (2021) Condition, Capacity Analysis Summary, a.m. Peak Hour – Option 2

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Cambridge Street/Court Street	**D**	**54.3**			
Court WB left|left/right	D	49.9	0.94	304	#405
Court WB right	E	66.0	0.95	276	#449
Cambridge SB thru|thru	D	52.9	0.89	198	#290
Tremont Street/Beacon Street/School Street [1]	**B**	**17.1**			
Beacon EB thru/right	D	44.5	0.81	183	#264
Tremont SB left	A	6.0	0.43	0	52
Tremont SB thru | thru	B	11.3	0.49	131	176
Tremont SB right	A	3.5	0.33	0	24
Tremont Street/Bromfield Street	**A**	**6.6**			
Bromfield WB left	D	39.7	0.38	44	83
Tremont SB thru|thru|thru	A	3.5	0.28	45	54
Tremont Street/Park Street	**C**	**20.4**			
Park EB right	D	52.3	0.61	58	93
Tremont SB thru|thru|thru/right	B	17.2	0.64	104	120
Washington Street/School Street	**B**	**18.8**			
School EB left	A	9.2	0.46	70	125
Washington NB thru	C	31.5	0.67	72	106
Franklin Street/Arch Street	**A**	**9.7**			
Franklin WB thru| thru/right	A	4.9	0.31	33	74
Arch NB left/thru	C	20.8	0.66	55	111
Washington Street/Milk Street	**A**	**6.0**			
Milk WB right	A	0.3	0.16	0	0
Washington NB thru/right	B	14.3	0.32	22	60
Washington Street/Court Street	**B**	**13.4**			
Court WB thru | thru	B	10.9	0.48	171	216
Washington NB left	C	21.5	0.49	90	167
Unsignalized Intersections					
Washington Street/Water Street/ Garage Exit					
Garage Exit EB left/thru	C	20.0	0.09	-	7
Washington NB thru/right	A	0.0	0.42	-	0
School Street/Province Street					
School EB thru/right	A	0.0	0.27	-	0
Province NB right	C	20.4	0.17	-	15

Table 3-17 Build (2021) Condition, Capacity Analysis Summary, a.m. Peak Hour – Option 2 (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Province Street/Province Court					
Province Ct WB left/right	B	12.4	0.31	-	33
Province St SB left/thru	A	0.1	0.00	-	0
Province Street/Bromfield Street					
Province SB left/right	C	22.1	0.49	-	66
Washington Street/Bromfield Street/ Franklin Street					
Bromfield EB left	A	7.4	0.00	-	-
Franklin WB right	A	6.7	0.05	-	-
Washington NB thru	A	7.4	0.09	-	-

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates a decrease in level of service from No-Build (2021) Condition.

Table 3-18 Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour – Option 2

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Tremont Street/Cambridge Street/Court Street	**E**	**64.9**			
Court WB left|left/right	E	68.8	1.03	~383	m#487
Court WB right	F	83.5	1.03	~345	m#494
Cambridge SB thru|thru	D	46.4	0.84	200	247
Tremont Street/Beacon Street/School Street [1]	**B**	**11.0**			
Beacon EB thru/right	D	35.1	0.62	158	250
Tremont SB left	B	11.9	0.41	50	m60
Tremont SB thru | thru	A	5.8	0.65	46	m49
Tremont SB right	A	1.0	0.29	0	m0
Tremont Street/Bromfield Street	**A**	**4.5**			
Bromfield WB left	D	47.0	0.48	63	109
Tremont SB thru|thru|thru	A	0.8	0.34	3	7
Tremont Street/Park Street	**C**	**23.4**			
Park EB right	D	43.9	0.42	57	108
Tremont SB thru|thru|thru/right	C	21.9	0.71	239	321
Washington Street/School Street	**B**	**18.3**			
School EB left	A	9.8	0.47	73	130
Washington NB thru	C	29.2	0.61	77	125

Table 3-18 Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour – Option 2 (Continued)

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Franklin Street/Arch Street	**B**	**10.5**			
Franklin WB thru| thru/right	A	3.6	0.25	18	47
Arch NB left/thru	C	22.0	0.69	62	121
Washington Street/Milk Street	**A**	**4.5**			
Milk WB right	A	0.4	0.21	0	0
Washington NB thru/right	B	13.0	0.28	17	52
Washington Street/Court Street	**C**	**25.8**			
Court WB thru | thru	B	11.6	0.46	147	191
Washington NB left	D	46.9	0.92	281	#500
Unsignalized Intersections					
Washington Street/Water Street/Garage Exit					
Garage Exit EB left/thru	D	26.5	0.39	-	45
Washington NB thru/right	A	0.0	0.41	-	0
School Street/Province Street					
School EB thru/right	A	0.0	0.30	-	0
Province NB right	C	20.4	0.27	-	27
Province Street/Province Court					
Province Ct WB left/right	A	0.2	0.00	-	0
Province St SB left/thru	B	12.0	0.19	-	17
Province Street/Bromfield Street					
Province SB left/right	C	23.0	0.45	-	56
Washington Street/Bromfield Street/Franklin Street					
Bromfield EB left	A	7.3	0.00	-	-
Franklin WB right	A	6.7	0.09	-	-
Washington NB thru	A	7.2	0.02	-	-

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.
Grey shading indicates a decrease in level of service from No-Build (2021) Condition.

3.4.7.3 Alternative for Franklin Street Operation

In August 2015, Franklin Street between Hawley Street and Washington Street was temporarily closed due to construction activity associated with the Millennium Tower project. The Build (2021) Condition analysis results presented in Table 3-15 through Table 3-18 reflect a condition where Franklin Street reopens with its current vehicle restrictions (as described in Section 3.2.1).

Recent City agency discussions indicate, however, that when the Millennium Tower construction is complete, this segment of Franklin Street may not be reopened by the City to any vehicular traffic. The impacts associated with this possibility have been evaluated by reassigning Franklin Street traffic through adjacent intersections and conducting intersection level of service for the affected study intersections.

The operational results of closing Franklin Street under Option 1 are shown in Table 3-19 and Table 3-20 for the a.m. and p.m. peak hours, respectively. Similarly, the results under Option 2 are shown in Table 3-21 and Table 3-22, for the a.m. and p.m. peak hours, respectively. Under either option, all movements would operate at LOS C or better.

Table 3-19 Build (2021) Condition with Franklin Street Closed, Capacity Analysis Summary, a.m. Peak Hour – Option 1

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Franklin Street/Arch Street	**A**	**9.8**			
Franklin WB thru| thru/right	A	4.4	0.28	27	63
Arch NB left/thru	C	20.8	0.66	55	111
Washington Street/Milk Street	**A**	**4.2**			
Milk WB right	A	0.2	0.12	0	0
Washington NB thru/right	B	11.2	0.22	10	40

Table 3-20 Build (2021) Condition with Franklin Street Closed, Capacity Analysis Summary, p.m. Peak Hour – Option 1

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Franklin Street/Arch Street	**B**	**11.0**			
Franklin WB thru| thru/right	A	3.0	0.21	12	35
Arch NB left/thru	C	22.0	0.69	62	121
Washington Street/Milk Street	**A**	**2.4**			
Milk WB right	A	0.3	0.16	0	0
Washington NB thru/right	A	9.2	0.17	4	29

Table 3-21 Build (2021) Condition with Franklin Street Closed, Capacity Analysis Summary, a.m. Peak Hour – Option 2

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Franklin Street/Arch Street	**A**	**9.6**			
Franklin WB thru| thru/right	A	4.4	0.29	27	64
Arch NB left/thru	C	20.8	0.66	55	111
Washington Street/Milk Street	**A**	**5.2**			
Milk WB right	A	0.4	0.17	0	0
Washington NB thru/right	B	13.7	0.29	19	54

Table 3-22 Build (2021) Condition with Franklin Street Closed, Capacity Analysis Summary, p.m. Peak Hour – Option 2

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
Signalized Intersections					
Franklin Street/Arch Street	**B**	**10.8**			
Franklin WB thru| thru/right	A	3.0	0.22	13	37
Arch NB left/thru	C	22.0	0.69	62	121
Washington Street/Milk Street	**A**	**3.2**			
Milk WB right	A	0.5	0.22	0	0
Washington NB thru/right	B	11.3	0.22	11	40

3.4.8 Build (2021) Parking Conditions

Approximately 235 on-site parking spaces will be provided for residents. While the maximum recommended BTD parking demand ratio for residential developments in this area is 0.5 to 1.0 spaces per unit, HSH has conducted parking supply and demand surveys and observations at existing residential buildings throughout Boston indicating that demand is often less than 0.5 spaces per unit. This trend, combined with the Project site's proximity to transit and other downtown destinations, supports the plan to supply only a limited number of parking spaces for on-site residential use.

On-site parking will be provided for residents at about 0.56 space/residential unit. Therefore, about 44% of units will not be provided with on-site parking. These residents will likely not own an automobile, and instead will rely on taxicabs, or other vehicle transport services, such as Uber or Zipcar to make trips requiring a vehicle.

Residents will drive to the porte-cochere (see Figure 3-15 and Figure 3-16) and garage attendants will take and park their vehicles. Vehicles will be transported via attendant-operated vehicular elevators accessed from Province Court. Garage attendants will also retrieve vehicles from the garage for residents when they depart. The garage elevators will have capacity for two vehicles. As needed, staging of vehicles waiting to be picked-up by residents or serviced by the garage elevators will occur curbside within the porte-cochere. The curbside lane of the internal porte-cochere has capacity for approximately six vehicles plus one space for delivery vehicle, as discussed in Section 3.4.1.

During the mid-day, when some residential vehicles have vacated the garage, some parking for visitors to the on-site retail businesses will be available. Visitors will drop-off their vehicle within the porte-cochere and it will be parked by garage attendants. The remaining retail parkers generated by on-site retail are expected to use nearby public parking facilities in the area, as shown in Figure 3-5. No public parking will be provided on-site.

Any additional parking activity generated by the net increase in retail space can be accommodated at publicly available parking facilities in the area, as shown in Figure 3-5.

3.4.9 Build (2021) Public Transportation Conditions

As shown in Table 3-14, the Project will generate an estimated 1,022 public transportation person trips daily, with 53 new trips during the a.m. peak hour and 84 new trips during the p.m. peak hour. Given the variety and frequency of transit services in the area, including the Green Line, Orange Line, Red Line, and MBTA bus routes, the estimated increase in transit riders can adequately be served by existing transit options.

3.4.10 Build (2021) Pedestrian Conditions

The Project's main residential access will be located in the porte-cochere and can be accessed from Bromfield Street. Storefront retail will have doors along Washington Street and Bromfield Street.

As shown in Table 3-14, the Project will generate 3,112 new pedestrian trips (walk and transit trips) over the course of the day, 127 trips during the a.m. peak hour, and 184 trips during the p.m. peak hour. These pedestrian trips will be distributed among the building's residential entrance as well as street-level doorways that will serve the retail businesses. These additional pedestrian trips will not affect the pedestrian environment in the Downtown Crossing area.

3.4.11 Build (2021) Bicycle Conditions

Table 3-23 presents a summary of the Project's on-site bicycle accommodations.

Table 3-23 On-site Bicycle Accommodations

Use	Capacity of Secure Bicycle Storage for Residents/Employees (# of bicycles)
Residential	419
Retail	6
Total	425

In accordance with BTD guidelines, the Proponent will provide 419 secure/covered bicycle parking spaces for residents (one per residential unit) and six for retail employees (one per 5,000 sf of retail).

Bicycle storage will be provided in the underground garage and bicycle racks will be provided near primary entrances. Bicycle racks, signs, and parking areas will conform to BTD standards.

Because the closest Hubway bicycle-sharing station is about 500 feet from the Project site (on Franklin Street at Arch Street), no new Hubway station is proposed at or adjacent to the Project.

3.4.12 Build (2021) Condition Loading and Service Activity

The Project will have one loading bay and one designated curbside loading space within the internal porte-cochere. The loading bay will be accessed via Province Court. Delivery vehicles may also use the internal curbside space within the porte-cochere. Residential move-in/move-out activity will occur at the loading bay and be managed by an on-site transportation coordinator. Trash pick-up will occur along Province Court.

Delivery trip estimates for the new land uses were developed based on Central Transportation Planning Staff[2] data for the identified land uses. A summary of anticipated loading/service activity is presented in Table 3-24.

[2] Truck Trip Generation Rates by Land Use in the Central Artery/Tunnel Project Study Area; Central Transportation Planning Staff; September 1993.

Table 3-24 Delivery Activity by Land Use

Land Use	New Daily Deliveries
Residential	3
Retail	3
Total	6

It is anticipated that the majority of these six daily deliveries will occur between 7:00 a.m. and 1:00 p.m. The low number of deliveries will have minimal impact on the vehicular operations in the study area.

3.5 As-of-right Alternative

The As-of-right alternative includes approximately 190 residential units and approximately 23,744 sf of retail space as compared to the proposed Project with 419 residential units and 29,000 sf of retail space. The associated vehicle trip comparison generation is shown in Table 3-25.

Table 3-25 Vehicle Trip Comparison – Proposed Project vs. As-of-Right Alternative

Time Period	Proposed Program	As-of-right Alternative
Daily	744	436
a.m. peak hour	60	34
p.m. peak hour	72	42

The proposed development program will generate more vehicle trips than the As-of-right Alternative. Over the course of a weekday, the As-of-right Alternative building program would be expected to generate 436 daily vehicle trips compared to 744 for the proposed Project. During the a.m. peak hour, the As-of-right Alternative would be expected to generate about 34 vehicle trips (26 fewer than the proposed Project) and about 42 vehicle trips (30 fewer than the proposed Project) during the p.m. peak hour.

3.6 Mitigation

While the traffic impacts associated with the new trips are minimal (generating approximately one vehicle trip per minute during the peak hours), the Proponent will continue to work with the City of Boston to ensure that the Project efficiently serves vehicle trips, improves the pedestrian environment, and encourages transit and bicycle use.

Operations at most study intersections would not be impacted by the proposed Project. As presented in Section 3.4.7.1, only the Tremont Street/Court Street/Cambridge Street intersection would experience a change in level of service between No-Build and Build Conditions under Option 1. Overall operations at this intersection will remain at LOS D during the a.m. peak hour and worsen from LOS D to LOS E during the p.m. peak hour.

Under Option 2, the same location, Tremont Street/Court Street/Cambridge Street intersection, would experience a minor change in level of service from No-Build (2021) Conditions. Overall operations at this intersection will remain at LOS D during the a.m. peak hour and worsen from LOS D to LOS E during the p.m. peak hour. Additionally, the Court Street westbound right turn lane would worsen to LOS E during the a.m. peak hour and LOS F during the p.m. peak hour.

As part of the MBTA's Government Center Station improvement project, the MBTA has provided the City with a new intersection design and signal phasing/timing plan for the Tremont Street/Cambridge Street/Court Street intersection. The signal plan, which was incorporated into the future year analysis of the Project, will provide an exclusive pedestrian phase during which pedestrians can cross all legs of this intersection in one phase, as opposed to conditions today, where pedestrians cross the intersection in two phases and must usually wait in the median island. The new intersection and signal plan will improve pedestrian safety and reduce pedestrian delay.

It is standard practice for the BTD to monitor and adjust timings at a new signal, such as the one that will be installed at the Tremont Street/Cambridge Street/Court Street intersection, to minimize vehicle delay while providing safe crossing times for pedestrians. Although the BTD will ultimately optimize the new traffic signal operation to reflect field conditions, the Project study team has developed minor timing changes to improve intersection operations projected under Build (2021) Conditions.

During the peak hour, the recommended change under either option is to allocate a few seconds of green time from the Cambridge Street approach to the Court Street approach, which would eliminate the LOS F on the Court Street westbound right turn, better balance the volume to capacity ratios, and reduce the projected queues. The resulting delays are similar to those projected under No-Build Conditions without the Project. Table 3-26 and Table 3-27 shows the associated operational results for Option 1and Option 2, respectively.

The detailed analysis sheets associated with the results are provided in Appendix B.

Table 3-26 Tremont Street/Cambridge Street/Court Street, Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour – Option 1

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
without timing changes					
Tremont Street/Cambridge Street/Court Street	**E**	**55.2**			
Court WB left|left/right	E	55.1	0.97	330	#470
Court WB right	F	69.3	0.97	298	m#498
Cambridge SB thru|thru	D	46.4	0.84	200	247
with timing changes					
Tremont Street/Cambridge Street/Court Street	**D**	**53.5**			
Court WB left|left/right	D	50.8	0.94	327	#454
Court WB right	D	63.8	0.95	294	m#485
Cambridge SB thru|thru	E	50.6	0.88	206	#269

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.

Table 3-27 Tremont Street/Cambridge Street/Court Street, Build (2021) Condition, Capacity Analysis Summary, p.m. Peak Hour – Option 2

Intersection	LOS	Delay (seconds)	V/C Ratio	Queue length (feet)	
				50th percentile	95th percentile
without timing changes					
Tremont Street/Cambridge Street/Court Street	**E**	**64.9**			
Court WB left|left/right	E	68.8	1.03	~383	m#487
Court WB right	F	83.5	1.03	~345	m#494
Cambridge SB thru|thru	D	46.4	0.84	200	247
with timing changes					
Tremont Street/Cambridge Street/Court Street	**E**	**62.8**			
Court WB left|left/right	E	61.7	0.95	355	m#455
Court WB right	E	64.5	0.95	320	m#465
Cambridge SB thru|thru	E	63.1	0.95	212	#290

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is the maximum after 2 cycles.
m = Volume for the 95th percentile queue is metered by the upstream signal.

3.7 Transportation Demand Management

The Proponent is committed to implementing Transportation Demand Management (TDM) measures to reduce dependence on autos. TDM will be facilitated by the Project's proximity to available transit services, including the Orange Line (at Downtown Crossing and State Street stations), Red Line (Downtown Crossing and Park Street stations), and Green Line (Park Street Station and Government Center Station) and local MBTA bus routes.

Because the Project is primarily residential, its trip generation is already lower than that of an office or retail use project. TDM will be facilitated by the nature and location of the proposed Project. The site's proximity to workplaces, shopping, and transit will help reduce auto use by residents and visitors alike. The Proponent is committed to implementing a TDM program that supports the City's efforts to reduce dependency on the automobile by encouraging travelers to use alternatives to driving alone, especially during peak time periods, through the following TDM commitments listed below:

- Limited Parking: The Project will have approximately 235 parking spaces for residents. With 419 residential units, the resulting parking ratio rate is 0.56 spaces per unit.

- Public Transportation:

  - The Proponent will provide one free monthly MBTA subway pass per residential unit during for the first six months of building operation.

  - Include language in new commercial tenant leases to encourage tenants to promote public transportation and consider subsidizing employee use of public transit.

  - The Proponent will provide orientation packets to new residents containing information on the available transportation choices, including transit routes and schedules.

- Bicycle Spaces: Secure bicycle storage will be made available to tenants and visitors to encourage bicycling as an alternative mode of transportation. In accordance with BTD guidelines, the Proponent will provide 419 secure/covered bicycle parking spaces (one per residential unit) for residents and nine spaces for employees. Bicycle racks, signs, and parking areas will conform to BTD standards and be sited in safe, secure locations.

- Transportation Management Association (TMA): The Proponent will join the local TMA, A Better City (ABC).

- Transportation Coordinator: The Proponent will designate a transportation coordinator to manage loading and service activities and provide alternative transportation materials to residents and building tenants.

- A Transportation Access Plan Agreement (TAPA) will be entered into between the Proponent and BTD. The TAPA will codify the specific measures and agreements between the Proponent and the City of Boston.

3.8 Construction Management Plan

Details of the overall construction schedule, working hours, number of construction workers, worker transportation and parking, number of construction vehicles, and routes will be addressed in detail in a Construction Management Plan (CMP) to be filed with and approved by BTD in accordance with the City's traffic maintenance plan requirements. The CMP will also address the need for pedestrian detours, lane closures, and/or parking restrictions, if necessary, to accommodate a safe and secure work zone.

To minimize transportation impacts during the construction period, the following measures will be incorporated into the Construction Management Plan:

- Construction workers will be encouraged to use public transportation and/or carpool.

- Secure spaces will be provided on-site for workers' supplies and tools so they do not have to be brought to the site each day.

NOTICE OF PROJECT CHANGE

SOUTH STATION AIR RIGHTS

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
South Station Phase I Owner LLC
c/o Hines Interests Limited Partnership
One International Place, 11th Floor
Boston, MA 02110

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Pelli Clarke Pelli Architects
Kendall/Heaton Associates, Inc.
Goulston & Storrs
Vanasse & Associates, Inc.
Howard Stein Hudson
Noresco

July 29, 2016

Epsilon
ASSOCIATES INC.

NOTICE OF PROJECT CHANGE

SOUTH STATION AIR RIGHTS

Submitted to:
Boston Redevelopment Authority
One City Hall Square
Boston, MA 02201

Submitted by:
South Station Phase I Owner LLC
c/o Hines Interests Limited Partnership
One International Place, 11th Floor
Boston, MA 02110

Prepared by:
Epsilon Associates, Inc.
3 Clock Tower Place, Suite 250
Maynard, MA 01754

In Association with:
Pelli Clarke Pelli Architects
Kendall/Heaton Associates, Inc.
Goulston & Storrs
Vanasse & Associates, Inc.
Howard Stein Hudson
Noresco

July 29, 2016

Epsilon
ASSOCIATES INC.

Chapter 2.0

Transportation Component

2.0 TRANSPORTATION COMPONENT

2.1 Introduction

Vanasse & Associates, Inc. (VAI) has completed a detailed assessment of the changes to the development program for the South Station Air-Rights Project as these changes relate to trip-generation and the associated impacts on the transportation infrastructure. The scope of work was developed in consultation with the BRA and the Boston Transportation Department (BTD), and consisted of the following specific elements:

- Assessing existing operating conditions and pedestrian and vehicle accommodations along Atlantic Avenue, Purchase Street and Surface Road using the BTD traffic model (2014 base-year);
- Providing updated transit ridership and capacity information for South Station;
- Evaluating motor vehicle, pedestrian and bicycle safety within the study area;
- Reviewing future operating conditions and transit use with and without the Project consistent with the horizon year (2025) and future conditions that were defined in the Traffic Analysis that was submitted in support of the South Station Expansion project;[1,2]
- Comparing impacts associated with the proposed Project to those of the previously approved development program; and
- Refining and expanding the elements of the transportation improvement program to reflect the transportation resources and opportunities that are available to the Project site and within the study area.

Based on this assessment, the impacts on the transportation infrastructure that are associated with the Project are generally consistent with, or reduced from, the conditions that were assessed in the Transportation Component of the February 28, 2006 Final PIR, which concluded that the transportation infrastructure afforded sufficient capacity to accommodate the 2006 Final PIR Project.

As noted in the February 28, 2006 Final PIR, the planning and design of the Central Artery/Tunnel (CA/T) project contemplated the construction of the 2006 Project and, as such, the associated transportation infrastructure, including the I-90/I-93 interchange, the ramps serving the South Station Bus Terminal and the surface street system proximate to the Project site, were constructed in a manner to support the development of the Project.

---

[1] Traffic Analysis Technical Report, South Station Expansion; MassDOT; October 2014.

[2] Note that the South Station Expansion project FEIR and the associated improvements to South Station reflect a larger South Station Air Rights project than is being proposed.

2.1.1 Project Impact Summary

Several potential development scenarios have been considered for the Project, all of which include the same program for Phases 1 and 3, but reflect alternatives for Phase 2. The option with the anticipated highest overall number of trips (375 Phase 2 residential units) was used for the analysis as the associated trips and the impacts on the transportation infrastructure would be less for the other scenarios considered. Depending on market conditions and other factors, Phase 2 may ultimately be a mix of residential and hotel, but it is anticipated that the impacts will be similar or less as those described in the transportation analysis.

2.1.1.1 Trip-Generation

Prior to dissemination of Project-related trips to the various modes of travel that are available to the Project site, the Project is projected to result in 11,830 unadjusted vehicle trips on an average weekday (again, two-way, 24-hour volume), with 1,616 unadjusted vehicle trips expected during the weekday morning peak-hour and 1,682 unadjusted vehicle trips expected during the weekday evening peak-hour.

After dissemination of Project-related trips to the available modes of transportation, the Project is projected to result in 3,144 automobile trips on an average weekday, with 5,242 transit trips and 4,572 pedestrian/bicycle trips. During the weekday morning peak hour, the Project is projected to generate 558 automobile trips, with 951 transit trips and 244 pedestrian/bicycle trips. During the weekday evening peak hour, the Project is projected to generate 601 automobile trips, with 959 transit trips and 262 pedestrian/bicycle trips.

NPC Project Trip Comparison

A comparison of the trips (all modes) was made between the 2016 NPC option that will result in the most trips (office space in Phases 1 and 3 and up to 550 residential units in Phases 1 and 2) and the option described in the Final PIR that resulted in the most trips (all office Phase 1). This comparison indicates that the 2016 NPC Project will result in 26 fewer automobile trips on an average weekday when compared to the approved Final PIR Option A, with 1,634 fewer transit trips and 882 fewer pedestrian/bicycle trips. During the weekday morning peak-hour, the 2016 NPC Project was shown to result in 12 additional automobile trips, with 400 fewer transit trips and 39 additional pedestrian/bicycle trips. During the weekday evening peak-hour, the 2016 NPC Project was shown to result in 14 additional vehicle trips, with 478 fewer transit trips and 31 additional pedestrian/bicycle trips.

Traffic Operations

The addition of the 2016 NPC Project traffic to the 17 signalized study area intersections is predicted to result in a change in the overall level of service (LOS) at only two of the intersections studied between the 2025 No Build and 2025 Build condition. Eleven of the 17 signalized intersections were found to be generally operating at LOS D or better during the peak hours under all analysis conditions.

All movements at the two unsignalized study area intersections (the access points to the Project site from Atlantic Avenue) are predicted to operate at LOS A during both the weekday morning and evening peak hours, with vehicle queues of no more than one vehicle.

Pedestrian and Bicycle Conditions

The Project is expected to result in up to 4,572 pedestrian/bicycle trips on an average weekday, and between 200 and 260 pedestrian/bicycle trips during the weekday peak commuter hours. The Project site is served by an interconnected sidewalk infrastructure that links the Project to Downtown Boston and the South Boston Waterfront, with the signalized intersections within the study area providing marked crosswalks, pedestrian traffic signal equipment and phasing. A Hubway bicycle sharing station is provided at South Station, and bicycle accommodations are provided along Atlantic Avenue, Surface Road, Purchase Street and Seaport Boulevard, which link the Project site to other bicycle facilities in the City and the region.

Planned improvements to these accommodations in conjunction with the Project (discussion follows) and as a part of the South Station Expansion project will improve and expand pedestrian and bicycle access to the Project site, and ensure that sufficient capacity is provided to accommodate the increased pedestrian and bicycle activity associated with the Project. It is important to note that the capacity analyses and the associated pedestrian and bicycle improvements that have been defined for the South Station Expansion project reflect a larger development proposal for the Project than is currently proposed.

Public Transportation

The additional weekday peak-hour transit trips expected to be generated by the Project were distributed to each of the public transportation modes operated by the MBTA and the private bus lines that serve the South Station Bus Terminal based on ridership information provided by the Central Transportation Planning Staff (CTPS). Based on the peak period transit capacity and ridership information provided by the CTPS, the majority of the transit trips associated with the Project are expected to use the subway system, with a projected increase in peak-hour ridership of up to 117 passengers on any one subway line (including the Silver Line). Peak-hour ridership on the Commuter Rail system is expected to increase by up to 41 passengers on any individual train. Increases in bus and commuter boat

ridership associated with the Project are expected to be relatively modest and a similar increase to that indicated in the FPIR. As indicated previously, the South Station Expansion project and the associated improvements to South Station reflect a larger South Station Air Rights project and associated increase in transit ridership for the Project than is currently proposed.

2.1.1.2 Transportation Improvement Program

As a result of the analyses presented herein, a comprehensive transportation improvement program has been developed for the Project that is consistent with the improvements that were outlined in the Transportation Access Plan Agreement (TAPA) that was executed between the Proponent and BTD for the 2006 Final PIR Project that was to occupy the Project site. These improvements are designed to: i) address the potential impact of the Project on the transportation infrastructure; ii) encourage the use of alternative modes of transportation for those accessing the Project; and iii) address transportation infrastructure deficiencies identified as a part of this study or by the City.

The planned improvements encompass the following general elements:

- Sidewalk and streetscape improvements along the Project site frontage on Atlantic Avenue;
- Pedestrian and bicycle access and safety improvements, including providing funds and data for a South Station/Leather District Pedestrian Access Study;
- Advancement of a comprehensive Transportation Demand Management (TDM) program to include specific elements designed to encourage the use of public transportation services, car and vanpooling, and pedestrian and bicycle use;
- Implementation of a detailed Construction Management Plan (CMP) that is designed to reduce impacts during the construction phase of the Project; and
- Integration of a traffic monitoring and reporting program that will be used to document the trip characteristics of the Project under operating conditions, and allow for adjustments to the elements of the TDM program or associated aspects of the transportation improvement program as necessary.

The implementation of the identified improvements will serve to provide additional capacity and enhancements to the transportation system to accommodate the Project, and to facilitate access to the Project site in a safe and efficient manner.

2.1.2 Project Description

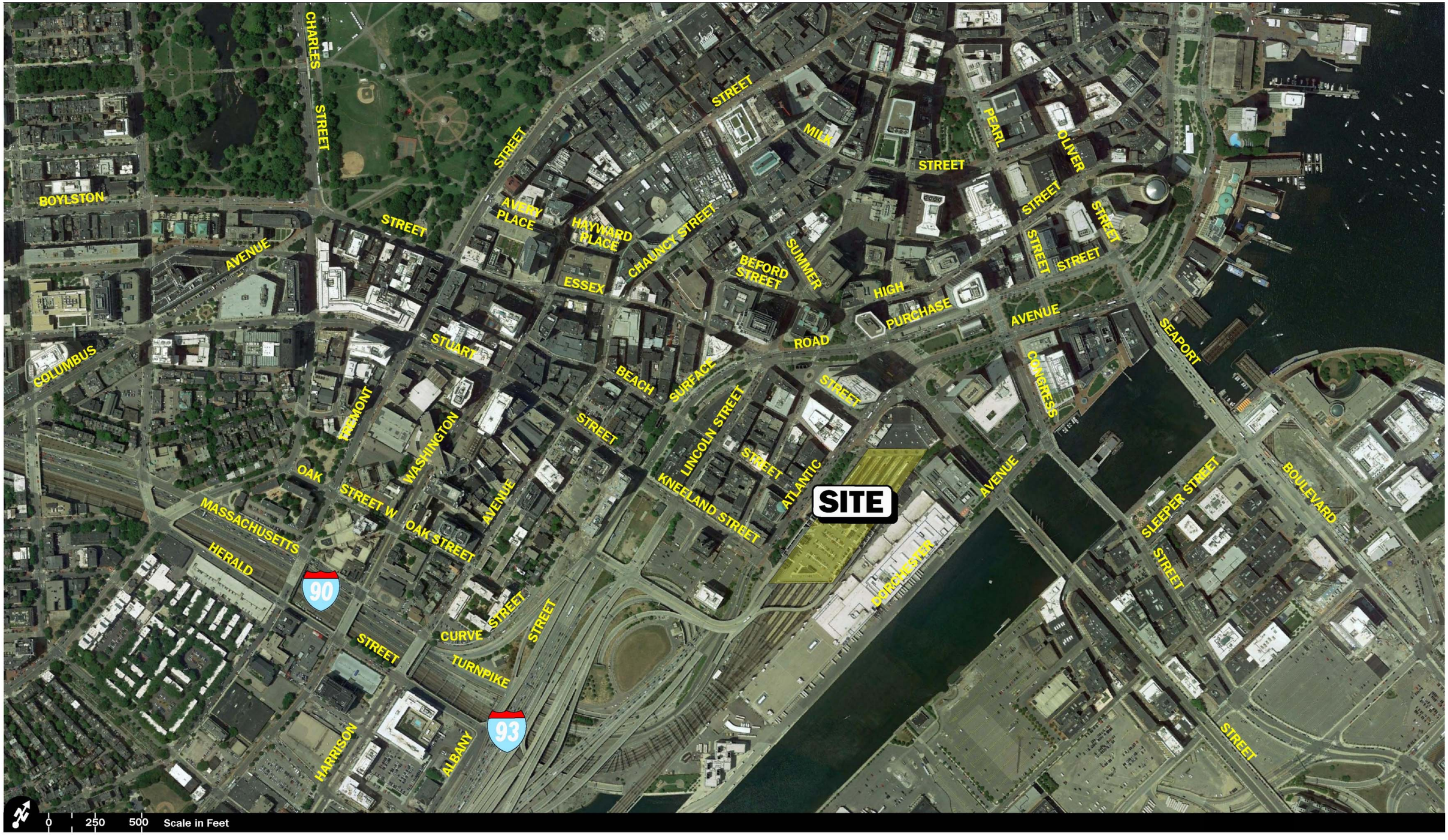
As currently proposed, the Project will entail the construction of a mixed-use, transit oriented development that will encompass a mix of office, residential/hotel and accessory retail space located on the air rights between the South Station Head House and the southern end of the Michael S. Dukakis Transportation Center at South Station including the MBTA's South Station Bus Terminal and the railroad tracks for the MBTA commuter rail and Amtrak. The site is generally bounded by Atlantic Avenue to the west, the South Station Head House to the north and the U.S. Postal Service to the east, and is depicted on Figure 2-1 in the context of the existing transportation infrastructure.

As previously described, several potential development programs are under consideration for the Project, all of which will include the same program in Phases 1 and 3, as well as the accessory retail in Phase 2 (1,147,347 sf of office[3] including approximately 19, 350± sf of conference center space and 27,000± sf of accessory retail space, as well as 175 residential units) but may include different use alternatives for Phase 2. One Phase 2 alternative includes all residential/retail space with up to 375 residential units (either 260 condominiums or 375 rental units) and another Phase 2 alternative includes an all hotel alternative with 360 keys/rooms. The option with the highest overall number of trips (375 Phase 2 residential units) was used for the analysis as the associated trips and the impacts on the transportation infrastructure would be less for the other scenarios considered. Depending on market conditions and other factors, Phase 2 may ultimately be a mix of residential and hotel, but it is anticipated that the impacts will be similar or less as those described in the transportation analysis.

In conjunction with the Project, the South Station Bus Terminal will be expanded by approximately 106,000 sf on property owned by the MBTA and a new parking garage will be constructed above the bus terminal which will include approximately 895 spaces in addition to the existing MBTA parking garage. After construction of the new garage, the combined parking garages (new garage and MBTA garage) will provide 1,083 parking spaces.

---

[3] The floor area of the office component, inclusive of mechanical, podium, service and circulating space within the podium, is 1,222,000 sf as described in Chapter 1.



South Station Air Rights Boston, Massachusetts

Figure 2-1
Site Location Map

The approved development program for the Project site as defined in the Transportation component of the February 28, 2006 Final PIR also included two potential development programs which were defined as follows:

Option A - 1.375 million sf of office space; a 220,000 sf, 200-room hotel; and 127 residential units encompassing approximately 170,000 sf.

Option B - 1.075 million sf of office space; a 225,000 sf, 200-room hotel; and 329 residential units encompassing approximately 450,000 sf.[4]

Under both Final PIR development options, the South Station Bus Terminal was to be expanded by approximately 90,000 sf on property owned by the MBTA, and a new parking garage was to be constructed above the bus terminal which would include 755 spaces in addition to the MBTA parking garage. After construction of the new garage, the combined parking garages (new garage and MBTA garage) were to provide 905 parking spaces.

The South Station Air Rights Project was reflected in the traffic volume projections and planning that formed the basis of the constructed elements of the Central Artery/Tunnel (CA/T) project and the South Station Bus Terminal. As such, the planned and constructed elements of the transportation system that serves the South Station area incorporate the infrastructure required to support this transit-oriented development.

Consistent with the 2006 Final PIR Project, access to the parking garage of the Project will be provided by the South Station Connector and the ramp system that serves the South Station Bus Terminal, as well as by way of vehicle entrances (one entering drive and one exiting drive) located off Atlantic Avenue.

2.1.3 Study Methodology

This study is responsive to the scope of work that was identified in consultation with the BRA and BTD, and was conducted 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; on-street parking; observations of traffic flow; and peak period pedestrian, bicycle and vehicle counts, which were provided by BTD for an established 2014 baseline condition.

In the second stage of the study, future conditions were projected and analyzed. Specific travel demand forecasts for the Project were assessed along with future demands due to expected growth independent of the Project. Pursuant to the scope of work identified by

---

[4] Similar to the current Project, the Final PIR development programs included approximately 27,000 sf of accessory retail space in the office space totals.

the BRA and BTD for the Project, a 2025 future condition horizon year was established consistent with the Traffic Analysis that was conducted in support of the South Station Expansion project.[5] 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 the projected impact of the Project on the transportation infrastructure as identified in stage two of the study, and to facilitate safe and efficient access to the Project site.

2.2 Existing Conditions

A comprehensive field inventory of the study area roadways and intersections was conducted in June 2016. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; on and off-street parking; public transportation services; traffic volumes; and operating characteristics; as well as posted speed limits and land use information within the study area.

2.2.1 Study Area

The study area assessed for the Project was developed in consultation with the BRA and BTD, and was selected to contain the major roadways providing access to the Project site including: Atlantic Avenue, Purchase Street and Surface Road; as well as 17 major intersections located along these roadways, through which Project-related traffic will travel. The 17 study intersections, as shown in Figure 2-2, are:

1. Surface Road at Kneeland Street
2. Kneeland Street at Lincoln Street
3. Atlantic Avenue at Kneeland Street, Frontage Road and the I-90 Eastbound Off-Ramp
4. Atlantic Avenue at Beach Street
5. Atlantic Avenue at Essex Street
6. Atlantic Avenue at Summer Street
7. Summer Street at Dorchester Avenue
8. Congress Street at Dorchester Avenue
9. Atlantic Avenue at Congress Street

[5] Ibid.

10. Atlantic Avenue at Pearl Street

11. Atlantic Avenue at Oliver Street, Seaport Boulevard and the I-93 Northbound On-Ramp

12. Purchase Street at Oliver Street

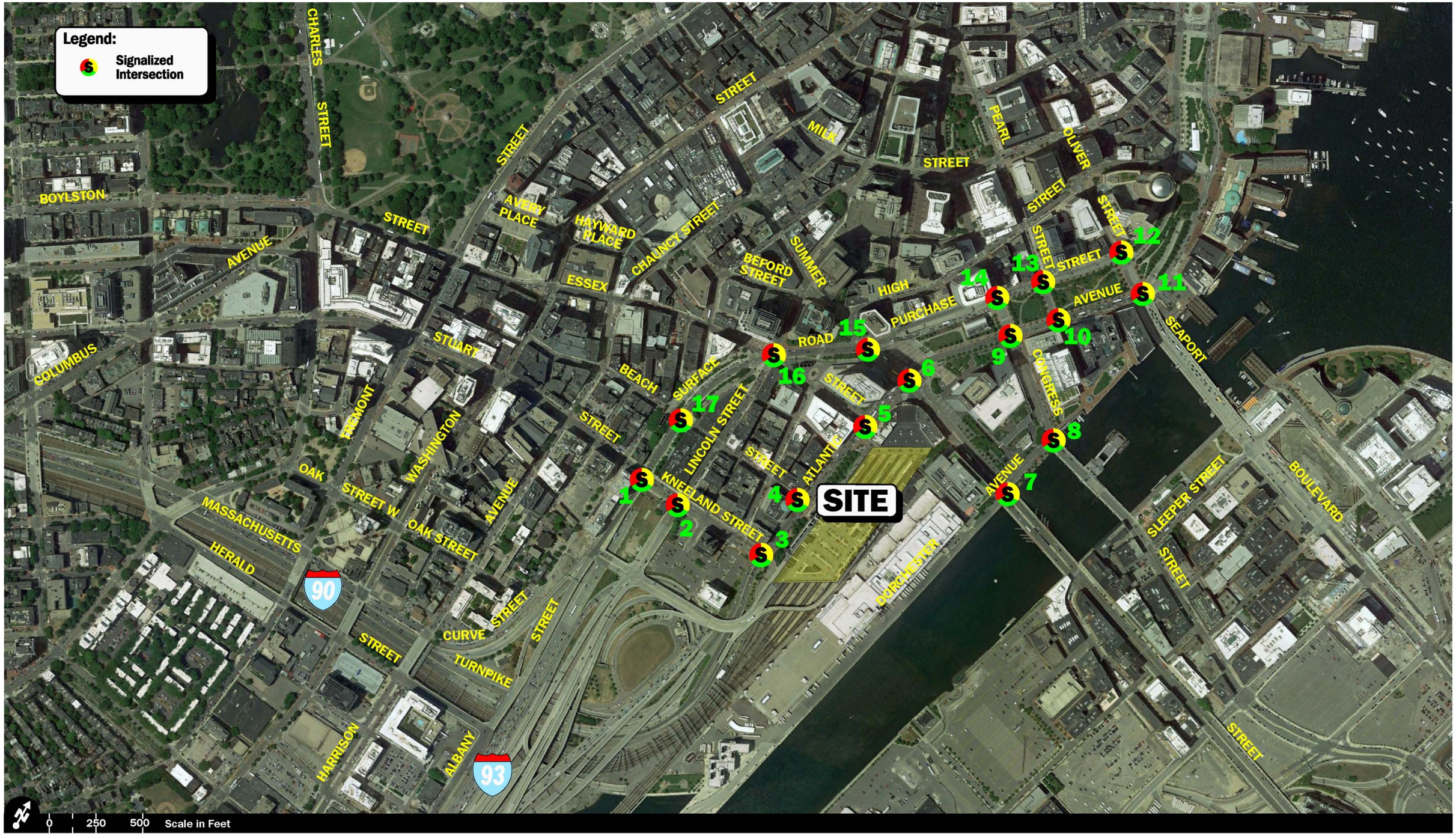
13. Purchase Street at Pearl Street

14. Purchase Street at Congress Street

15. Purchase Street and the I-93 Southbound Off-Ramp at Summer Street

16. Surface Road at Essex Street, Lincoln Street and the I-93 Ramps

17. Surface Road at Beach Street



South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-2
Study Area Map

2.2.2 Geometry

A field inventory of the study area roadways, intersection geometrics, pedestrian accommodations and bicycle facilities was conducted in June 2016 and is summarized in the following sections.

2.2.2.1 Roadways

Atlantic Avenue – Within the study area, Atlantic Avenue is a three-lane urban principal arterial roadway (MassDOT Function Classification) that is under City jurisdiction and traverses a general one-way northbound alignment between Kneeland Street and Mercantile Street. Sidewalks are generally provided along both sides of Atlantic Avenue with on-street parking accommodated in designated areas, and a marked bicycle lane provided along the east side. Within the study area, MBTA bus stops are provided at Congress Street, Summer Street and Seaport Boulevard, as well as at the South Station Bus Terminal and South Station. Land use along Atlantic Avenue consists of the Project site, South Station, the South Station Bus Terminal, the Rose Kennedy Greenway, residential and commercial properties, the New England Aquarium, and areas of open space.

Purchase Street – Purchase Street is a three-lane, urban principal arterial roadway that is under City jurisdiction and traverses a general one-way southbound alignment between High Street and Summer Street, linking the north and south sections of Surface Road. Sidewalks are provided along both sides of Purchase Street with a marked bicycle lane provided along the west side. An MBTA bus stop is provided at Pearl Street. Land use along Purchase Street consists of residential and commercial properties, and areas of open space as a part of the Rose Kennedy Greenway.

Surface Road – Surface Road is a three-lane, urban principal arterial roadway that is under City jurisdiction and traverses a general one-way southbound alignment between New Chardon Street and High Street in the north, and between Summer Street and Kneeland Street in the south, with Purchase Street linking the two segments. Sidewalks are generally provided along both sides of Surface Road with a marked bicycle lane provided along the west side. MBTA bus stops are provided at Kneeland Street, State Street and at Haymarket Square. Land use along Surface Road consists of residential and commercial properties, and areas of open space as a part of the Rose Kennedy Greenway.

2.2.2.2 Intersections

Table 2-1 and Figure 2-3 summarize lane use, traffic control, pedestrian and bicycle accommodations and other existing features at the study area intersections as observed in June 2016.

Table 2-1 Study Area Intersection Description

Intersection	Traffic Control Type[a]	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/ Description)	Bus Stop? (Yes/No and Location)	On-Street Parking? (Yes/No/ Location)	Loading Zone? (Yes/No/ Location)	Other Defining Feature
Surface Rd/Kneeland St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes - bicycle lane on Surface Rd	Yes – northwest corner	No	No	Surface Rd. is one-way southbound
Kneeland St/Lincoln St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	No	No	Yes – both sides of Lincoln St	No	Lincoln Street is one-way northbound
Atlantic Ave/Kneeland St/Frontage Rd/I-90 Eastbound Off-Ramp	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	No	No	Yes – both sides of Atlantic Ave	No	Atlantic Ave is one-way northbound
Atlantic Ave/Beach St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	No	South Station Bus Terminal is located opposite Beach Street	Yes – both sides of Atlantic Ave and Beach St (Leather District resident permit parking)	Yes- both sides of Beach St	Atlantic Ave is one-way northbound; Beach St is one-way westbound
Atlantic Ave/Essex St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Essex St and Atlantic Ave north of intersection	Yes- southwest corner; South Station is located opposite Essex Street	Yes – both sides of Atlantic Ave south of intersection and north side of Essex St	Yes – north side of Essex St	Atlantic Ave is one-way northbound; "Do Not Block Intersection" signs and markings provided
Atlantic Ave/Summer St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Atlantic Ave	South Station located in southeast corner of intersection	No	No	Atlantic Ave is one-way northbound; "Do Not Block Intersection" signs and markings provided; MBTA headhouses for the Red Line and Silver Line located on corners

[a] See notes at end of table.

Table 2-1 Study Area Intersection Description (Continued)

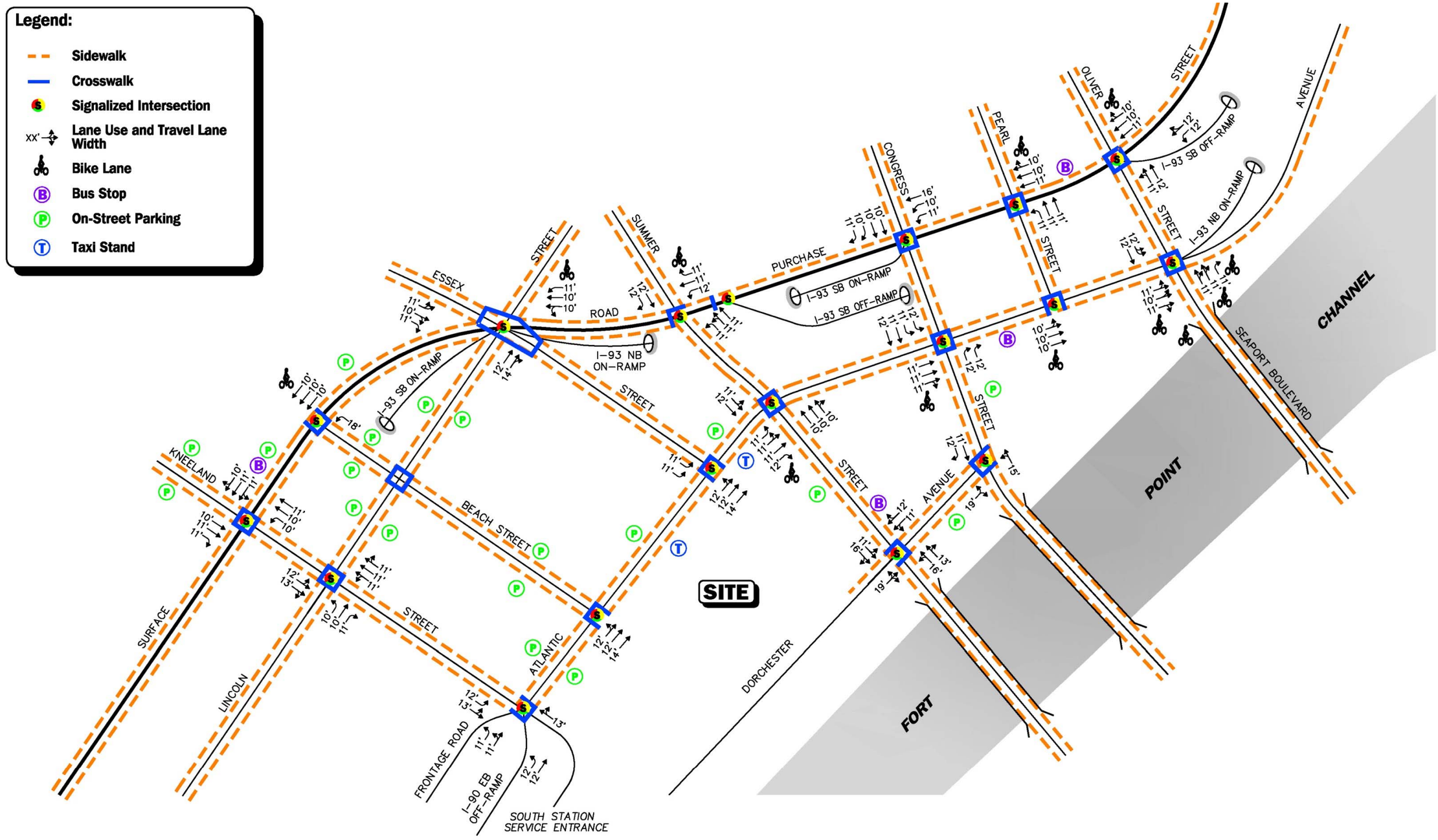
Intersection	Traffic Control Type[a]	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/ Description)	Bus Stop? (Yes/No and Location)	On-Street Parking? (Yes/No/ Location)	Loading Zone? (Yes/No/ Location)	Other Defining Feature
Summer St/Dorchester Ave	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	No	Yes – northwest corner	Yes – south side of Summer St west of intersection; east side of Dorchester Ave	No	15-min USPS parking on Dorchester Ave south of intersection
Congress St/Dorchester Ave	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	No	No	Yes – north side of Congress St west of intersection; east side of Dorchester Ave	Yes – north side of Congress St west of intersection	
Atlantic Ave/Congress St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Atlantic Ave; "sharrow" markings on Congress St west leg	No	Yes – north and east legs of intersection	Yes – north side of Congress St east of intersection	Atlantic Ave is one-way northbound; Congress St west leg is one-way eastbound; "Do Not Block Intersection" signs and markings provided
Atlantic Ave/Pearl St	NC	Yes –sidewalks and crosswalks provided	Yes – bicycle lane on Atlantic Ave; "sharrow" markings on Pearl St	No	No	Yes – east side of Atlantic Ave north of intersection	Atlantic Ave is one-way northbound; Pear St is one-way eastbound
Atlantic Ave/Oliver St/ Seaport Blvd/ I-93 Northbound On-Ramp	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Atlantic Ave and Seaport Blvd east leg; "sharrow" markings on Seaport Blvd west leg	Yes – northeast corner	No	Yes – east side of Atlantic Ave south of intersection	Atlantic Ave is one-way northbound

[a] See notes at end of table.

Table 2-1 Study Area Intersection Description (Continued)

Intersection	Traffic Control Type[a]	Pedestrian Accommodations? (Yes/No/Description)	Bicycle Accommodations? (Yes/No/ Description)	Bus Stop? (Yes/No and Location)	On-Street Parking? (Yes/No/ Location)	Loading Zone? (Yes/No/ Location)	Other Defining Feature
Purchase St/Oliver St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Purchase St; "sharrow" markings on Seaport Blvd and Oliver St	No	No	Yes – both sides of Oliver St	Purchase St is one-way southbound; Oliver St is one-way westbound
Purchase St/Pearl St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Purchase St and Pearl St west leg; "sharrow" markings on Purchase St east leg	Yes – northwest corner	Yes – both sides of Pearl St west of intersection	Yes – north side of Pearl St west of intersection	Purchase St is one-way southbound; Pearl St is one-way westbound
Purchase St/Congress St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Purchase St and "sharrow" markings on Congress St	No	No	No	Purchase St is one-way southbound; Congress St is one-way eastbound
Purchase St/I-93 Southbound Off-Ramp/Summer St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Purchase St and "sharrow" markings on Congress St	No	No	No	Purchase St is one-way southbound
Surface Rd/Essex St/Lincoln St/I-93 Ramps	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Surface Rd and "sharrow" markings on Essex St	No	Yes – west side of Surface Road and east side of Lincoln St south of intersection	No	Surface Rd is one-way southbound; Lincoln St is one-way northbound; Essex St is one-way eastbound
Surface Rd/Beach St	TS	Yes – sidewalks, crosswalks, and traffic signal equipment/phasing provided	Yes – bicycle lane on Surface Rd	No	Yes – west side of Surface Road and both sides of Beach St	No	Surface Rd is one-way southbound; Beach St is one-way westbound

[a] TS = traffic signal; F = flashing beacon; P = pedestrian signal; S = STOP-sign control; Y = Yield-sign control; R = rotary/roundabout; NC = no control present.



South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-3

Existing Intersection Lane Use, Travel Lane Width and Pedestrian Facilities

2.2.3 Traffic Volumes

To determine existing traffic-volume demands and flow patterns within the study area, manual turning movement counts (TMCs) and vehicle classification counts were provided by BTD for a 2014 base year for use in completing this assessment. The TMCs were conducted at the study intersections during the weekday morning (7:00 a.m. to 9:00 a.m.) and evening (4:00 p.m. to 6:00 p.m.) peak periods, the peak traffic volume hours for both the Project and the adjacent roadways. The 2014 Existing weekday morning and evening peak-hour traffic volumes are depicted on Figures 2-4 and 2-5, respectively.

A review of the peak period traffic counts indicates that the weekday morning peak-hour generally occurs between 8:00 a.m. and 9:00 a.m. and the weekday evening peak-hour generally occurs between 5:00 p.m. and 6:00 p.m.

2.2.4 Pedestrian and Bicycle Facilities

A comprehensive field inventory of pedestrian and bicycle facilities was performed in June 2016. 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. Pedestrian and bicycle counts were also provided by BTD for the study area and were collected in conjunction with the TMCs. A description of pedestrian and bicycle facilities within the study area is provided in Table 2-2 and on Figure 2-3. Figures 2-6 and 2-7 depict the 2014 pedestrian crossing volumes within the study area during the weekday morning and evening peak hours, respectively, with Figures 2-8 and 2-9 depicting the corresponding weekday peak-hour bicycle volumes.

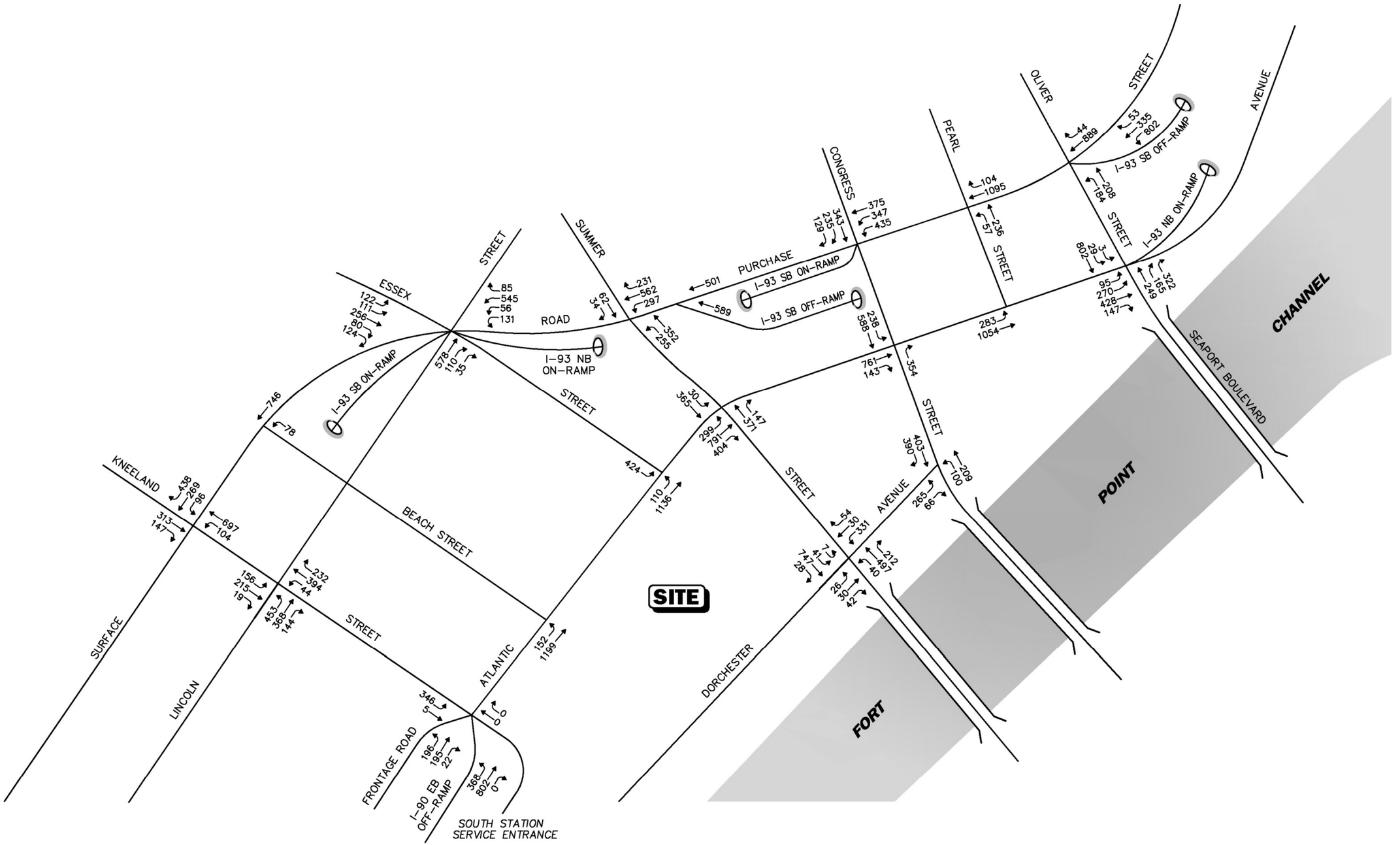
A Hubway bicycle sharing station is located at South Station, which recorded up to 8,200 bicycle trips (combined origin and destination) in 2013.[6]

Planned future pedestrian and bicycle improvements were identified in conjunction with the South Station Expansion project that would include the following measures:

- Extending the Harborwalk along the entire Fort Point Channel in conjunction with the reopening of Dorchester Avenue as a public street to Summer Street.
- Constructing a separated bikeway (cycle track) along the reopened Dorchester Avenue to connect to the South Bay Harbor Trail, the Summer Street Corridor cycle track and bicycle lanes on Atlantic Avenue and Surface Road/Purchase Street.
- Implementing concurrent pedestrian phasing where appropriate.
- Adding and realigning crosswalks to improve pedestrian access and circulation.

---

[6] Ibid 1.



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

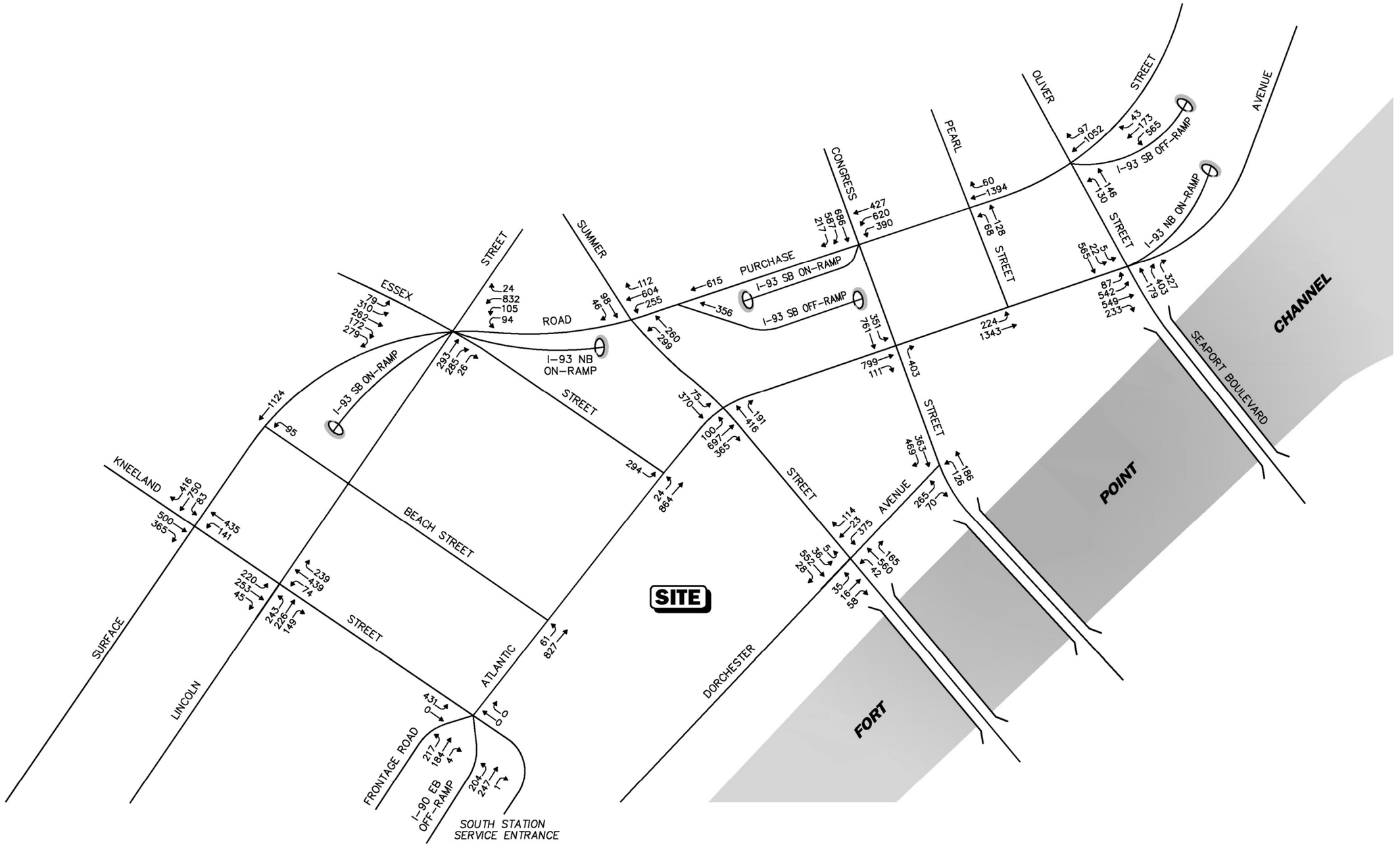
Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-4

2014 Existing Weekday Morning Peak Hour Traffic Volumes



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

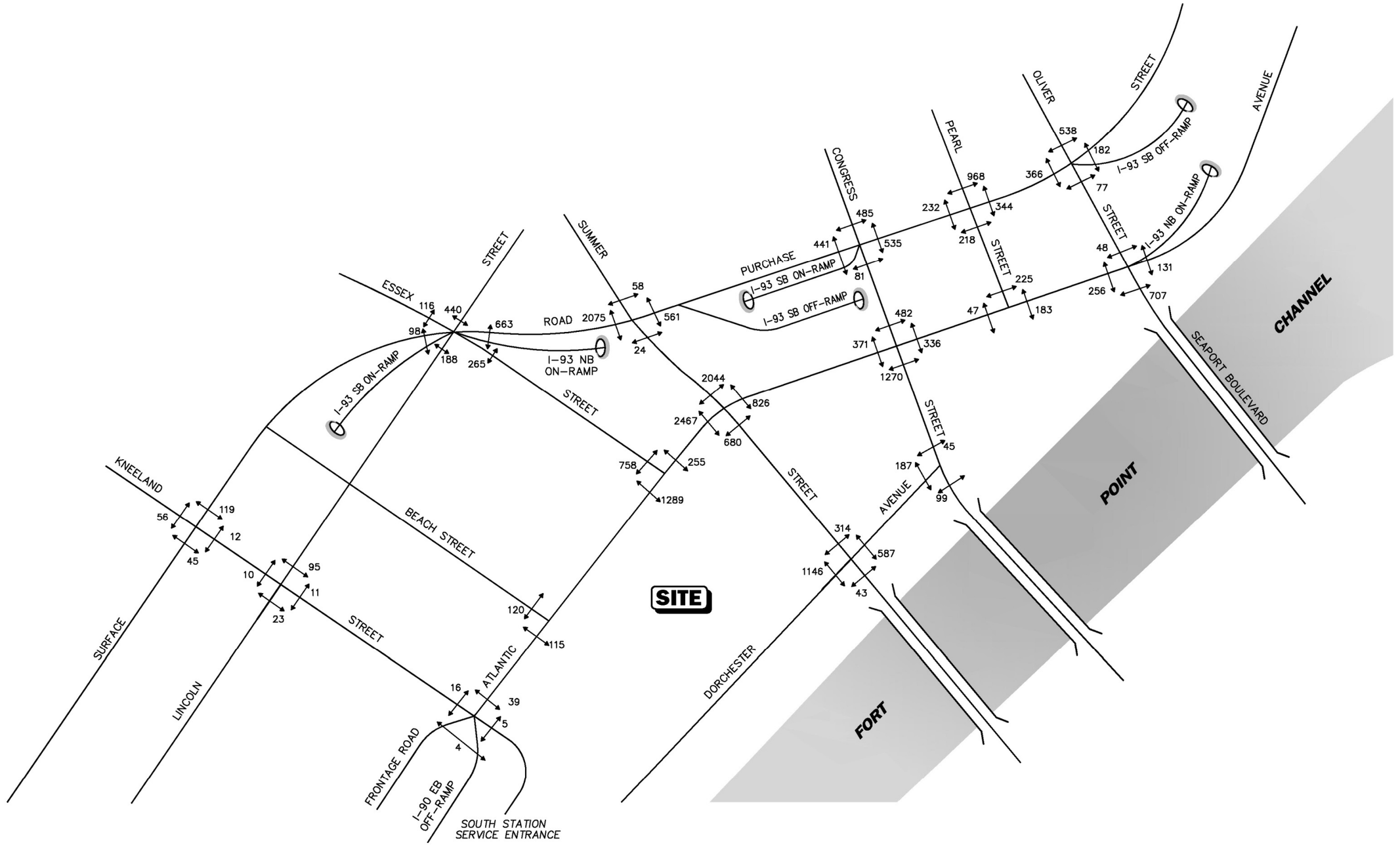
Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-5

2014 Existing Weekday Evening Peak Hour Traffic Volumes



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

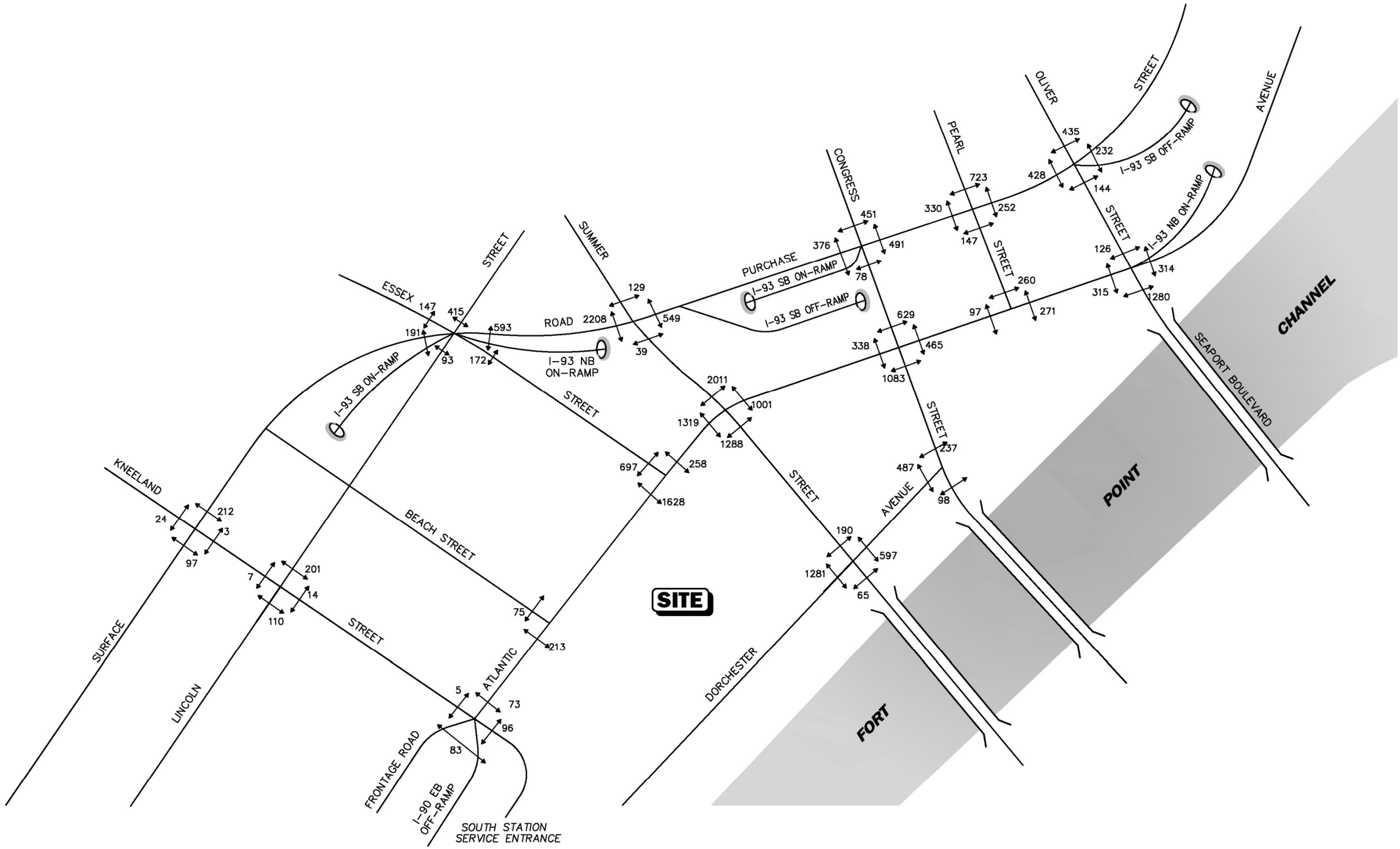
Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-6

2014 Existing Weekday Morning Peak Hour Pedestrian Volumes



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

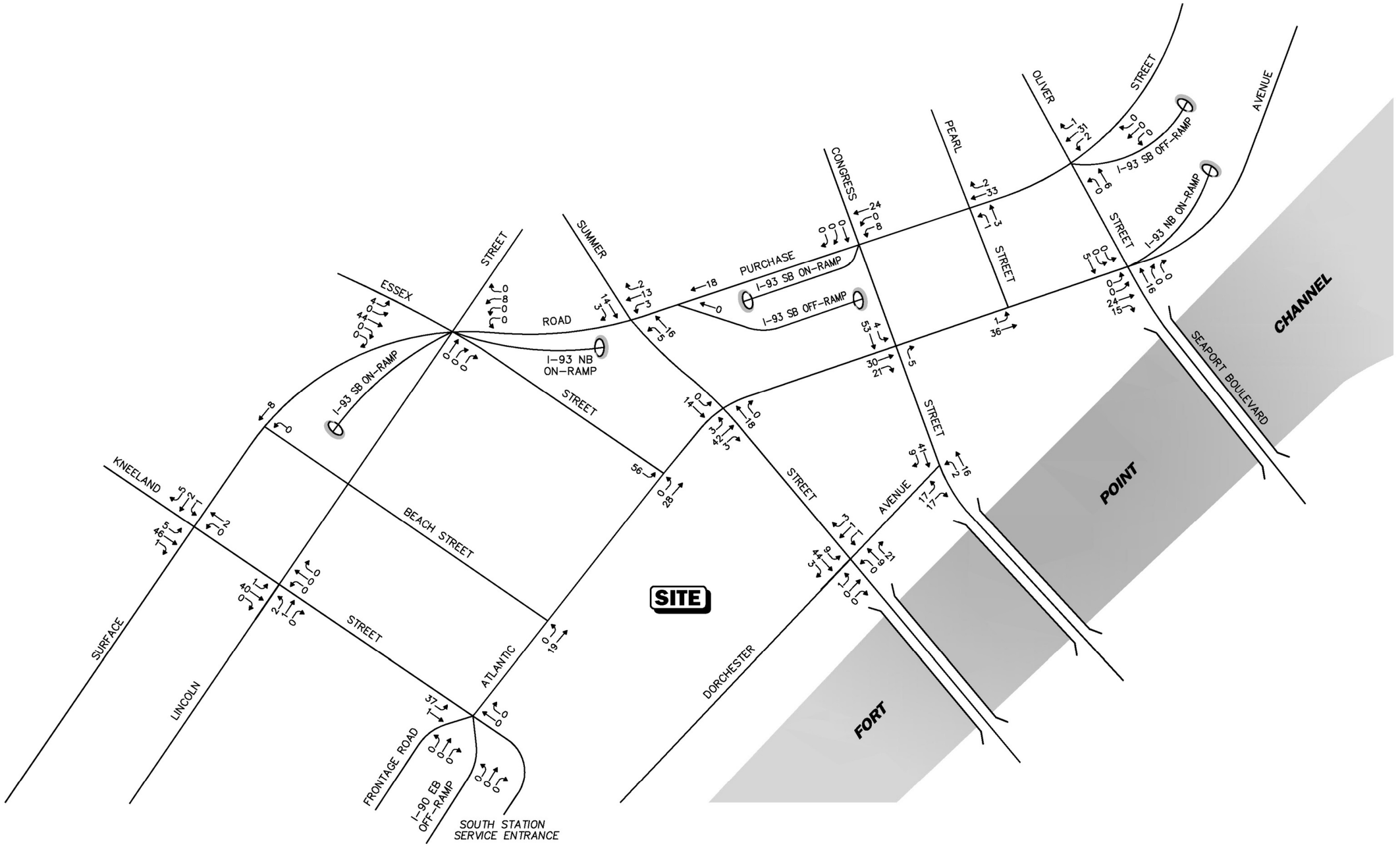
Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-7

2014 Existing Weekday Evening Peak Hour Pedestrian Volumes



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

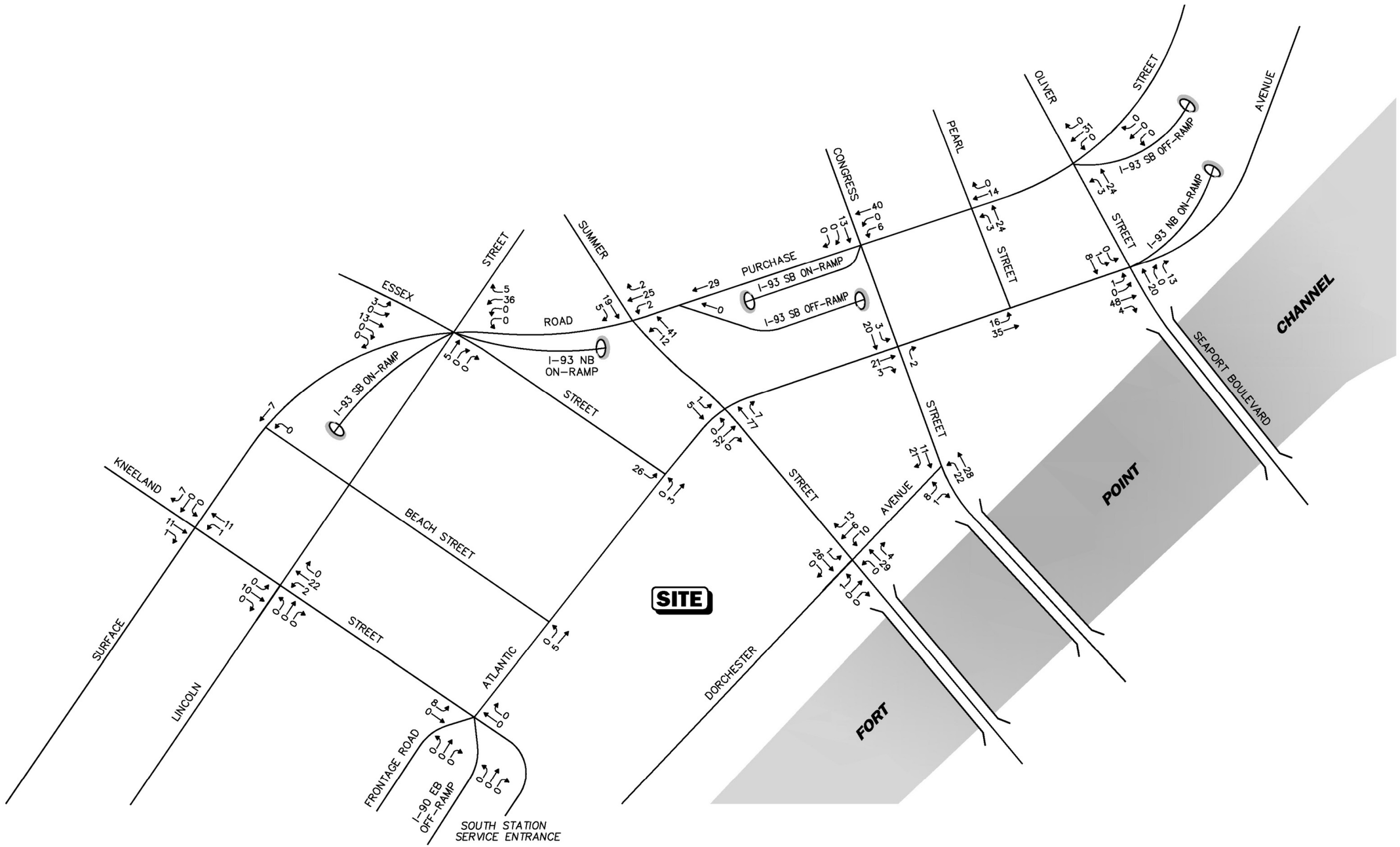
Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-8

2014 Existing Weekday Morning Peak Hour Bicycle Volumes



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

Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-9

2014 Existing Weekday Evening Peak Hour Bicycle Volumes

2.2.5 Public Transportation

The Project site affords superior access to public transportation given its location at the southern hub of the MBTA Commuter Rail system at South Station and the South Station Bus Terminal. In addition to the MBTA Commuter Rail system, these important transportation nodes afford connections to intercity and interstate bus lines, MBTA bus services, Amtrak train services, and MBTA subway service via the Silver Line and Red Line. Headhouses for the Silver Line and Red Line are located on the corners of the Atlantic Avenue/Summer Street intersection and immediately adjacent to the Project site. Figure 2-10 depicts the available public transportation services in the area. The following sections describe the available public transportation services within the study area that serve the Project site, with detailed system maps, schedules and fare information provided in Appendix A.

2.2.5.1 Bus Service

The MBTA operates the following six public bus routes within the study area:

- **Route 4: North Station - World Trade Center** via Federal Courthouse & South Station.
- **Route 7: City Point - Otis & Summer Streets** via Summer Street & South Station.
- **Route 11: City Point - Downtown BayView Route**.
- **Route 448: Marblehead - Downtown Crossing** via Paradise Road or Humphrey Street, Lynnway, & Airport.
- **Route 449: Marblehead - Downtown Crossing** via Paradise Road or Humphrey Street, Lynnway, & Airport.
- **Route 459**: **Salem Depot - Downtown Crossing** via Logan Airport & Central Square, Lynn.

Table 2-2 summarizes the MBTA bus service capacity and ridership information as provided by the CTPS for the six public buses serving the study area.

South Station Air Rights Boston, Massachusetts

Figure 2-10
Public Transportation Map

Table 2-2 MBTA Bus Service and Capacity

Bus Route Number	Bus Route	Weekday Morning Peak Period			Weekday Evening Peak Period		
		Peak Period Headway (minutes)	Ridership[a] (Inbound and Outbound Total)	Maximum Load Capacity[b] (Inbound and Outbound Total)	Peak Period Headway (minutes)	Ridership[a] (Inbound and Outbound Total)	Maximum Load Capacity[b] (Inbound and Outbound Total)
4	North Station – World Trade Center	12-16	278	1,140	19-22	154	912
7	City Point – Otis & Summer Streets	3-10	1,901	4,104	7-8	1,037	2,584
11	City Point – Downtown Bayview Route	6-12	1,026	2,204	12-25	504	1,520
448	Marblehead – Downtown Crossing	60	150	304	--	--	--
449	Marblehead – Downtown Crossing	60	48	152	60	100	152
459	Salem Depot – Downtown Crossing	70-75	194	300	70	167	300

Source: MBTA/CTPS; 2014 data.

[a]Ridership for a two-hour peak period (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.). Maximum load capacity is equal to 76 passengers.

2.2.5.2 Subway Service

The Project site and the immediate study area are served by MBTA subway service provided by way of the Silver Line and Red Line. Headhouses for the Silver Line and Red Line are located on the corners of the Atlantic Avenue/Summer Street intersection and immediately adjacent to the Project site. Connections to the MBTA Orange Line can be made from the Red Line at Downtown Crossing Station and to the Green Line at Park Street Station.

Table 2-3 summarizes the service capacity and ridership information for the Silver Line and Red Line at South Station.

Table 2-3 MBTA South Station Subway Service and Capacity

Subway Line	Peak Period Headway (Minutes)	Policy Load Capacity (Passengers)[a]	Crush Load Capacity (Passengers)[b]	Weekday Daily Ridership (Passengers)
Silver Line	8-10	65	96	12,700
Red Line	9 (each branch)	1,002	1,602	54,000

Source: MBTA/CTPS; 2012

[a]Ridership for a two-hour peak period (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).

2.2.5.3 Commuter Rail Service

The Project site is located at the southern hub of the MBTA Commuter Rail system at South Station, which is served by eight MBTA Commuter Rail lines:

- Fairmount
- Framingham/Worcester
- Franklin
- Greenbush
- Kingston/Plymouth
- Middleborough/Lakeville
- Needham
- Providence/Stoughton

Table 2-4 summarizes the service capacity and ridership information for the Commuter Rail lines that serve South Station.

Table 2-4 MBTA South Station Commuter Rail Service and Capacity

Commuter Rail Line	Weekday Morning Peak Period Ridership[a]	Weekday Morning Peak Period Maximum Load Capacity[b]	Weekday Evening Peak Period Ridership[a]	Weekday Evening Peak Period Maximum Load Capacity[b]
Fairmount:				
Inbound	254	1,710	22	1,710
Outbound	6	1,710	169	1,710
Total	260	3,420	291	3,420
Framingham/Worcester:				
Inbound	1,258	4,080	153	2,316
Outbound	105	2,316	2,139	4,872
Total	1,363	6,396	2,292	7,188
Franklin:				
Inbound	1,246	4,284	100	1,896
Outbound	38	948	1,804	5,232
Total	1,284	5,232	1,904	7,128
Greenbush:				
Inbound	1,176	2,106	13	702
Outbound	7	702	1,392	2,808
Total	1,183	2,808	1,405	3,510
Kingston/Plymouth:				
Inbound	1,565	2,502	22	834
Outbound	29	1,602	1,710	2,502
Total	1,594	4,104	1,732	3,336
Middleborough/Lakeville:				
Inbound	757	1,602	9	834
Outbound	26	768	1,437	2,370
Total	783	2,370	1,446	3,204
Needham:				
Inbound	982	2,184	53	1,368
Outbound	147	2,184	1,206	2,184
Total	1,129	4,368	1,259	3,552
Providence/Stoughton:				
Inbound	1,871	5,700	117	2,736
Outbound	221	2,052	3,338	5,700
Total	2,092	7,752	3,455	8,436

Source: CTPS counts, Spring 2012.

[a]Ridership for a two-hour peak period (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).

[b]Passenger capacity for a two-hour peak period (7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.).

2.2.5.4 Regional Train Service

In addition, to the MBTA Commuter Rail service at South Station, Amtrak operates the Acela Express, Northeast Regional and Lake Shore Limited train services. Both Northeast Regional and Acela Express provide train service between South Station in Boston and Union Station in Washington, D.C., with stops in Providence, RI; New London and New Haven, CT; New York City; New Jersey; Baltimore, MD; and Philadelphia, PA. Connections to other regional train routes are provided at Back Bay Station in Boston; New Haven Station in New Haven, CT; Penn Station in New York City; 30th Street Station in Philadelphia, PA; and at Union Station in Washington, D.C. The Lake Shore Limited provides train service between South Station and Chicago, IL, with stops in Albany and Buffalo, NY, and Cleveland and Toledo, OH.

2.2.5.5 Regional Bus Service

The South Station Bus Terminal provides access to intercity and interstate bus lines that serve the New England/New York region with connections to destinations throughout the United States, Canada and Mexico. Regional bus lines that serve the South Station Bus Terminal include: Greyhound, Peter Pan, Plymouth & Brockton, C&J, Dattco, Concord Coach, Boston Express, Lucky Star, Bolt Bus, and Megabus.

2.2.6 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 three-year period available (2011 through 2013, inclusive) in order to examine motor vehicle crash trends occurring within the study area. The data is summarized by intersection, type, and severity, and presented in Table 2-5.

As can be seen in Table 2-5, the study area intersections were found to have experienced an average of approximately four or fewer reported motor vehicle crashes per year over the three-year review period, and all of the intersections were found to have a motor vehicle crash rate below both the MassDOT statewide and District 6 averages for a signalized or unsignalized intersection, as appropriate. No fatal motor vehicle crashes were reported to have occurred at the study area intersections over the three-year review period. The detailed MassDOT Crash Rate Worksheets are provided in Appendix A.

A review of the MassDOT statewide Highway Safety Improvement Program (HSIP) listing indicates that the Atlantic Avenue and Surface Road corridors extending from just south of Congress Street to and including Kneeland Street are eligible for HSIP funding as "high pedestrian crash cluster" locations, with portions of Atlantic Avenue between and including East Street and Summer Street and proximate to the Federal Reserve listed as HSIP eligible "high crash cluster" locations. MassDOT defines a HSIP eligible cluster as: *"...a cluster in which the total number of 'equivalent property damage only' crashes is within the top 5*

percent of all clusters in that region. 'Equivalent property damage only' is a method of combining the number of crashes with the severity of crashes based on a weighted scale where a fatal crash is worth 10, an injury crash is worth 5 and a property damage only crash is worth 1." The improvements that have been identified in conjunction with the South Station Expansion project (discussion follows) will serve to enhance pedestrian and bicycle safety within the study area and at the high crash cluster locations.

Table 2-5 Motor Vehicle Crash Data Summary[a]

	Surface Road/ Kneeland Street	Kneeland Street/ Lincoln Street	Kneeland Street/ Atlantic Avenue/ Frontage Road/ I-90 Eastbound Off-Ramp	Atlantic Avenue/ Beach Street	Atlantic Avenue/ Essex Street	Atlantic Avenue/ Summer Street	Summer Street/ Dorchester Avenue	Congress Street/ Dorchester Avenue	Atlantic Avenue/ Congress Street	Atlantic Avenue/ Pearl Street	Atlantic Avenue/ Seaport Boulevard/ Oliver Street	Purchase Street/ Oliver Street/ I-93 Southbound Off-Ramp	Purchase Street/ Pearl Street
Traffic Control Type:[b]	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS	TS
Year:													
2011	2	2	4	2	3	1	2	0	1	0	3	1	0
2012	3	4	3	1	4	4	2	0	2	0	1	0	0
2013	2	0	0	1	0	0	0	0	0	0	8	0	0
Total	7	6	7	4	7	5	4	0	3	0	12	1	0
Average	2.33	2.00	2.33	1.33	2.33	1.67	1.33	0.00	1.00	0.00	4.00	0.33	0.00
Rate[c]	0.21	0.27	0.45	0.37	0.49	0.19	0.17	0.00	0.12	0.00	0.34	0.04	0.00
Significant?[d]	No	No	No	No	No	No	No	No	No	No	No	No	No
Type:													
Angle	3	1	0	1	0	1	0	0	0	0	0	1	0
Rear-End	1	1	3	1	2	0	1	0	1	0	4	0	0
Head-On	0	1	0	0	1	0	0	0	1	0	0	0	0
Sideswipe	1	1	2	1	1	3	0	0	1	0	2	0	0
Fixed Object	0	0	0	0	0	0	1	0	0	0	0	0	0
Pedestrian/Bicycle	0	0	0	1	0	0	1	0	0	0	1	0	0
Unknown/Other	2	2	2	0	3	1	1	0	0	0	5	0	0
Total	7	6	7	4	7	5	4	0	3	0	12	1	0
Severity:													
Property Damage Only	7	4	2	4	5	4	1	0	3	0	7	0	0
Personal Injury	0	2	5	0	2	1	3	0	0	0	5	1	0
Fatality	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	7	6	7	4	7	5	4	0	3	0	12	1	0
Day of Week:													
Monday through Friday	5	3	6	3	5	3	3	0	1	0	9	1	0
Saturday	0	1	0	1	2	2	0	0	1	0	1	0	0
Sunday	2	2	1	0	0	0	1	0	1	0	2	0	0
Total	7	6	7	4	7	5	4	0	3	0	12	1	0

See notes at end of table.

Table 2-5 Motor Vehicle Crash Data Summary[a] (Continued)

	Congress Street/ Purchase Street	Summer Street/ Purchase Street/ I-93 Southbound Off-Ramp	Surface Road/ Essex Street/ Lincoln Street	Surface Road/ Beach Street
Traffic Control Type:[b]	TS	TS	TS	TS
Year:				
2011	4	1	2	1
2012	4	8	3	1
2013	2	0	1	1
Total	10	9	6	3
Average	3.33	3.00	2.00	1.00
Rate[c]	0.28	0.41	0.21	0.20
Significant?[d]	No	No	No	No
Type:				
Angle	7	0	1	2
Rear-End	1	5	3	0
Head-On	0	0	0	0
Sideswipe	0	1	1	1
Fixed Object	0	0	0	0
Pedestrian/Bicycle	0	1	0	0
Unknown/Other	2	2	1	0
Total	10	9	6	3
Severity:				
Property Damage Only	6	6	6	2
Personal Injury	4	3	0	1
Fatality	0	0	0	0
Total	10	9	6	3
Day of Week:				
Monday through Friday	7	7	3	2
Saturday	1	1	1	0
Sunday	2	1	2	1
Total	10	9	6	3

NOTES:

[a]Source: MassDOT Safety Management/Traffic Operations Unit records, 2011 through 2013.

[b]Traffic Control Type: U = unsignalized; TS = traffic signal; R = rotary/roundabout.

[c]Crash rate per million vehicles entering the intersection.

[d]The intersection crash rate is significant if it is found to exceed 0.53 crashes per million vehicles entering an intersection for an unsignalized intersection, and 0.70 crashes per million vehicles entering an intersection for a signalized intersection as defined by MassDOT for the MassDOT District (District 6) in which the Project is located, or 0.58 crashes per million vehicles entering an intersection for an unsignalized intersections and 0.77 crashes per million vehicles entering an intersection for a signalized intersection based on MassDOT statewide crash data.

2.3 Future Conditions

Pursuant to the scope of work identified by the BRA and BTD for the Project, existing (2014) conditions in the study area were projected to the year 2025, consistent with the Traffic Analysis that was conducted in support of the South Station Expansion project.[7] Independent of the Project, conditions on the transportation system in the year 2025 under No Build conditions are influenced by changes in the transportation system resulting from: i) specific development projects by others; ii) population and demographic shifts; and iii) capital investments made by the local, state and/or federal government or private interests. Anticipated Project-generated trips superimposed upon the 2025 No Build condition transportation network reflect 2025 Build conditions with the Project.

2.3.1 Future Growth

Future 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 volumes (traffic, pedestrian and bicycle) under study. The drawback to such a procedure is that some 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 trips that are to be generated, and assigns the resultant values to the area transportation network. This procedure produces a more realistic estimate of growth for local conditions; however, the drawback of this procedure is that potential growth in population and development external to the study area would not be accounted for in the projections.

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

2.3.1.1 Specific Development by Others

As requested by the BRA and consistent with the traffic volume projections developed for the South Station Expansion project, the following specific development projects by others were identified for inclusion in this study:

[7] Ibid 1.

- *Millennium Tower and Burnham Building (former Filene's site).* This project consists of the construction of a mixed-use development that includes approximately 450 residential units, approximately 127,000 sf of office space, and approximately 220,000 sf of retail space to include a health club and restaurant. The project also includes the construction of approximately 550 parking spaces, including 250 spaces available to the public. Construction is complete.
- *Millennium Place.* This project consists of the construction of a mixed-use development that includes approximately 256 residential units and 12,000 sf of retail space. Construction is complete.
- *45 Stuart Street.* This project consists of the construction of a 384,000 sf residential development. Construction is complete.
- *Kensington Place.* This project consists of the construction of a mixed-use residential, retail and office development encompassing 405,200 sf of space. Construction is complete.
- *120 Kingston Street.* This project consists of the construction of a 228,900 sf residential development with ground flood retail. Construction is complete.
- *Hong Lok House.* This project consists of the construction of a 62,218 sf residential development. Construction is complete.
- *Oxford Ping Affordable Housing.* This project consists of the construction of a 56,400 sf residential development. Construction is complete.
- *Fan Pier – Vertex.* This project consists of the construction of a 1.1 million sf office development. Construction is complete.
- *381 Congress Street.* This project consists of the construction of a 43,700 sf residential development. Construction is complete.
- *One Greenway.* This project consists of the construction of a mixed-use development encompassing 325 residential units, 5,500 sf of retail space and 6,000 sf of community space. Construction is complete.
- *Ink Block.* This project consists of the construction of a mixed-use residential, retail and hotel development encompassing 548,900 sf of space. Construction is complete.
- *275 Albany Street.* This project consists of the construction of a mixed-use residential and retail development encompassing 330,000 sf of space (excluding parking). Construction is complete.
- *368 Congress Street.* This project consists of the construction of a mixed-use development encompassing a 120 room hotel and 6,000 sf of retail space. Construction is complete.

- *316-322 Summer Street.* This project consists of the construction of a mixed-use office and retail/restaurant development encompassing 140,000 sf of space. Construction is complete.
- *49-63 Melcher Street.* This project consists of the construction of a mixed-use office and retail development encompassing 221,500 sf of space. Construction is complete.
- *319 A Street Rear.* This project consists of the construction of a residential development encompassing 257,000 sf of space. Construction is complete.
- *Eleven West Broadway.* This project consists of the construction of a mixed-use development encompassing 50 residential units and 8,000 sf of retail space. Construction is complete.
- *One Channel Center.* This project consists of the construction of a 901,430 sf office development that includes parking and a park. Construction is complete.
- *Seaport Square – Parcel A.* This project consists of the construction of an 85,000 sf hotel. Construction is complete.
- *22-26 West Broadway.* This project consists of the construction of mixed use development encompassing 31 residential units and approximately 3,834 sf of retail space. Construction is complete.
- *Seaport Square.* This project consists of the construction of a mixed-use residential, office, hotel and retail/restaurant development that will encompass 6.5 million sf of space. Construction is partly complete.
- *Fan Pier.* This project consists of the construction of a mixed-use residential, office, hotel, retail and cultural/educational development that will encompass 3.3 million sf of space. Construction is partly complete.
- *Pier 4.* This project consists of the construction of a mixed-use residential, office, hotel and retail/restaurant development that will encompass 1.0 million sf of space. Construction is partly complete.
- *100 Acres Master Plan (remaining build-out).* This project consists of the construction of a mixed-use residential, office, retail/entertainment, cultural/education and hotel development that will encompass approximately 5 million sf of space. The plan has been approved by the BRA.
- *Parcel P-7a.* This project consists of the construction of a mixed-use residential and retail development that will encompass 125,000 sf of space. The project has been approved by the BRA.

- *399 Congress Street.* This project consists of the construction of a mixed-use development that will encompass approximately 414 residential units, approximately 12,000 sf of ground floor lobby, retail, and innovation space, and parking for approximately 144 vehicles. The project has been approved by the BRA.
- *Congress Street Hotel.* This project consists of the construction of a mixed-use residential, hotel and retail development that will encompass 372,000 sf of space.
- *Convention Center Phase 2.* This project consists of the construction of a 337,300 sf hotel with ground floor retail space
- *South Station Expansion.* This project consists of the expansion of South Station to support existing Northeast Corridor and commuter rail services, and to accommodate future service expansions by Amtrak and the MBTA. The project includes five primary elements: 1) expansion of the South Station terminal facilities to include the addition of up to seven tracks and four platforms, and the construction of a new passenger concourse and other amenities; 2) acquisition and demolition of the U.S. Postal Service general mail facility; 3) creation of an extension of the Harborwalk along a reopened Dorchester Avenue; 4) providing for the possibility of a future joint public/private development adjacent to and over an expanded South Station; and 5) providing adequate rail layover space for existing and future intercity and commuter rail service needs. The Traffic Analysis prepared in support of the South Station expansion project provided an analysis of three (3) build alternatives:
  - *Alternative 1 – Transportation Improvements Only.* This alternative would entail specific roadway, intersection, traffic control and parking/curbside management improvements to improve traffic operations, enhance safety and facilitate pedestrian and bicycle activity in the South Station area. Alternative 1 would include the restoration of Dorchester Avenue as a public way to Summer Street.
  - *Alternative 2 – Joint/Private Development Minimum Build.* This alternative would expand upon the elements of Alternative 1 to include a private development along Dorchester Avenue that would encompass approximately 660,000 sf of residential, office and commercial uses, including hotel and retail uses, and approximately 235 parking spaces. Alternative 2 would also include an extension of the South Station Connector into the back of the joint/private development.
  - *Alternative 3 – Joint/Private Development Maximum Build.* This alternative would expand upon the elements of Alternative 1 to include provisions for future private development by incorporating structural foundations into the overall station and track design to support the development of up to two million sf of mixed-use development along Dorchester Avenue consisting of

residential, office and commercial uses, including hotel and retail uses, and approximately 506 parking spaces. Similar to Alternative 2, Alternative 3 would include an extension of the South Station Connector into the back of the joint/private development.

Based on discussions with the consultant for the South Station Expansion project, *Alternative 1, Transportation Improvements Only*, was identified as the preferred alternative and is included as a part of this assessment.

No other development projects were identified at this time that are expected to impact future traffic volumes within the study area beyond the general background traffic growth rate.

2.3.1.2 General Background Traffic Growth

Consistent with the traffic volume projections completed in support of the South Station Expansion project,[8] a 0.5 percent per year compounded annual background traffic growth rate was determined to be appropriate to account for future traffic growth and presently unforeseen development within the study area. This growth rate was also noted as being consistent with traffic volume projections for the area developed by the CTPS.

2.3.1.3 Planned Transportation Infrastructure Improvement Projects

The following transportation infrastructure improvement projects were identified to support Alternative 1 of the South Station Expansion project, and are reflected in the future No-Build and Build condition analyses presented herein:

- Reopen Dorchester Avenue as a public street to Summer Street to include an extension of the Harborwalk by approximately one-half mile along the entire stretch of the Fort Point Channel, street furniture, landscaping and a separated bikeway (cycle track).

- Provide dedicated curbside space for taxicab, passenger drop-off, passenger pick-up, and shuttles along the reopened portion of Dorchester Avenue to address excessive curbside congestion along Atlantic Avenue.

- Remove six parking meters along Atlantic Avenue at Kneeland Street and reprogram the curb to accommodate drop-off or taxicabs

- Improve bicycle connectivity into Dewey Square along Atlantic Avenue by providing a bicycle lane along the west side of Atlantic Avenue from Kneeland Street to Essex Street.

---

[8] Ibid 1.

- Implement upgrades at the following intersections to improve traffic flow, reduce queuing, and improve pedestrian and bicycle mobility:

  - Atlantic Avenue at Summer Street:

    - Eliminate the pedestrian crossing conflict by restriping the Atlantic Avenue northbound approach (convert the shared left-turn/though lane to a through lane) and providing diagonal crossing markings in the intersection;
    - Improve concurrent pedestrian phase timings at Summer Street/Purchase Street intersection to adequately accommodate pedestrians; and
    - Optimize all intersection signal splits and offsets.

  - *Purchase Street at Summer Street* – Provide a crosswalk across Summer Street on the westbound approach of the Summer Street/Purchase Street intersection to better accommodate the pedestrian desire line from South Station to Dewey Square.

  - *Summer Street at Dorchester Avenue* – Optimize signal timing and phasing, and incorporate bicycle-specific signal equipment, pavement markings, and detection into the intersection layout.

  - Surface Road/Essex Street/Lincoln Street:

    - Provide additional walk time through pedestrian lead intervals during the concurrent pedestrian phases;
    - Provide a more direct east-west pedestrian connection along Essex Street by installing a new crosswalk along the southern east-west crossing from Essex Street to the large median; and
    - Optimize the signal timings and phasing sequence.

  - *Congress Street at Dorchester Avenue* – Optimize signal timing and phasing, and incorporate bicycle-specific signal equipment, pavement markings, and detection into the intersection layout.

  - *Atlantic Avenue at Kneeland Street/Frontage Road/I-90 Off-Ramp* – Update the MBTA access drive detection system to allow for the access drive phase to be skipped if there is no vehicle present, and optimize the intersection timing, phasing and offset.

  - *Dorchester Avenue/West Broadway/Traveler Street* – Change the pedestrian operations to concurrent pedestrian phases and modify the West Broadway westbound approach lane configuration to accommodate one left-turn/through travel lane and one through/right-turn lane.

- *Dorchester Avenue/West 4th Street* – Optimize the traffic signal timing and the offset with Dorchester Avenue/West Broadway/Traveler Street intersection, and add concurrent pedestrian walk time.

- Transportation Demand Management (TDM) Measures:
  - Incorporate bicycle parking in the new headhouse on Dorchester Avenue.
  - Participate in the U.S. Environmental Protection Agency (EPA) SmartWay Transport Program to increase energy efficiency and reduce greenhouse gas emissions.
  - Provide electronic signage displaying transit schedule information.
  - Accommodate curbside space for a shuttle stop along Dorchester Avenue for shuttles that currently serve the South Boston Waterfront/Innovation District.
  - Work with the City of Boston to improve bicycle accommodations along Atlantic Avenue from Kneeland Street to Summer Street.
  - Prepare a Construction Mitigation Plan (CMP) for BTD to minimize disruption in the area throughout construction.

No other roadway improvement projects, aside from routine maintenance activities, were identified to be planned within the study area at this time.

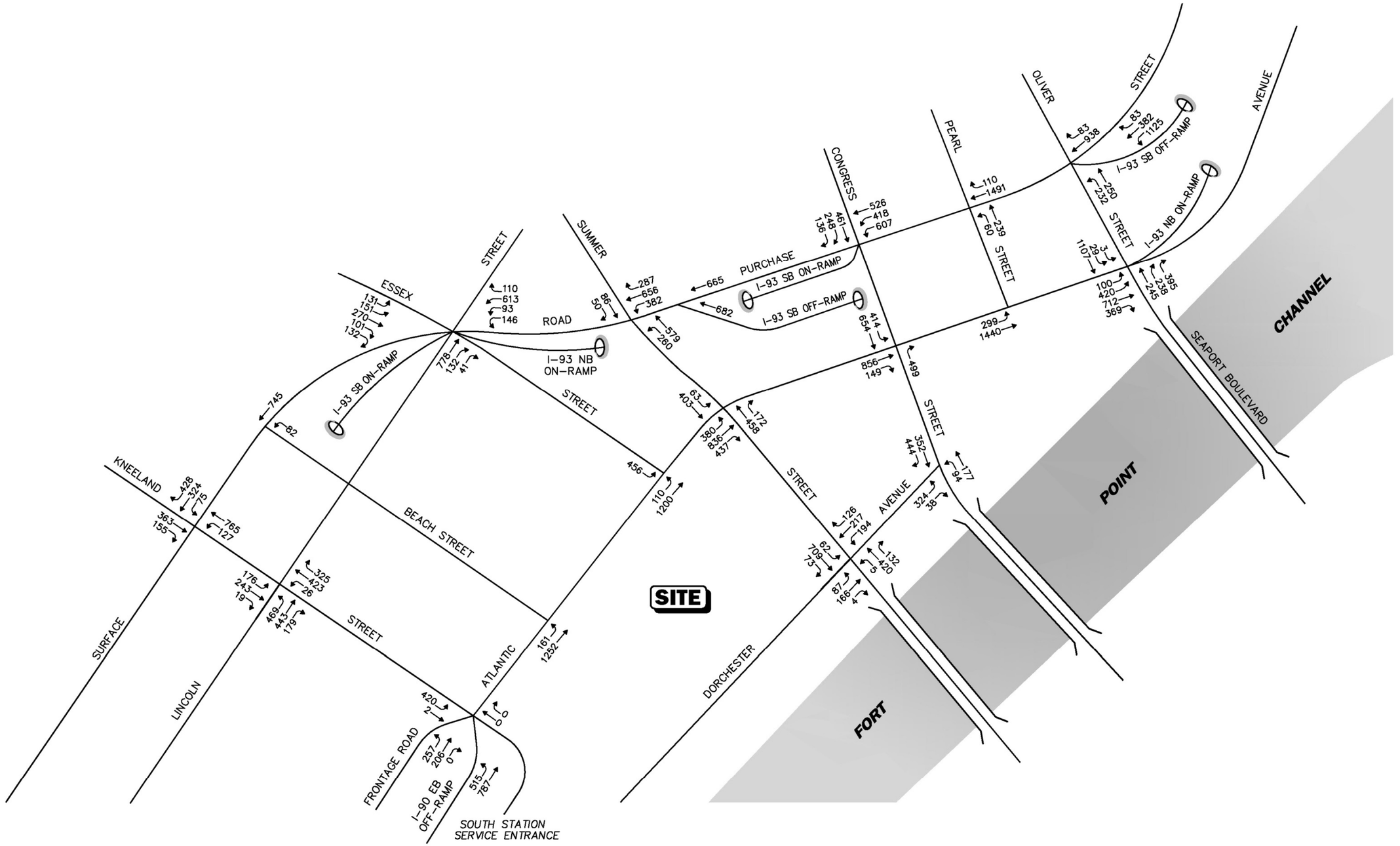
2.3.1.4 No Build Traffic Volumes

The 2025 No Build condition peak-hour traffic-volumes were obtained from the Traffic Analysis prepared in support of the South Station Expansion project[9] and were developed by removing the trips associated with the Project that were included in the 2025 Build Condition traffic volume networks presented therein.[10] The resulting 2025 No-Build condition weekday morning and evening peak-hour traffic-volumes are shown on Figures 2-11 and 2-12, respectively.

---

[9] Ibid 1.

[10] The Traffic Analysis prepared in support of the South Station Expansion project included traffic volumes for the approved development program for the Project site as defined in the February 28, 2006 Final PIR for Option A (all-office Phase 1).



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

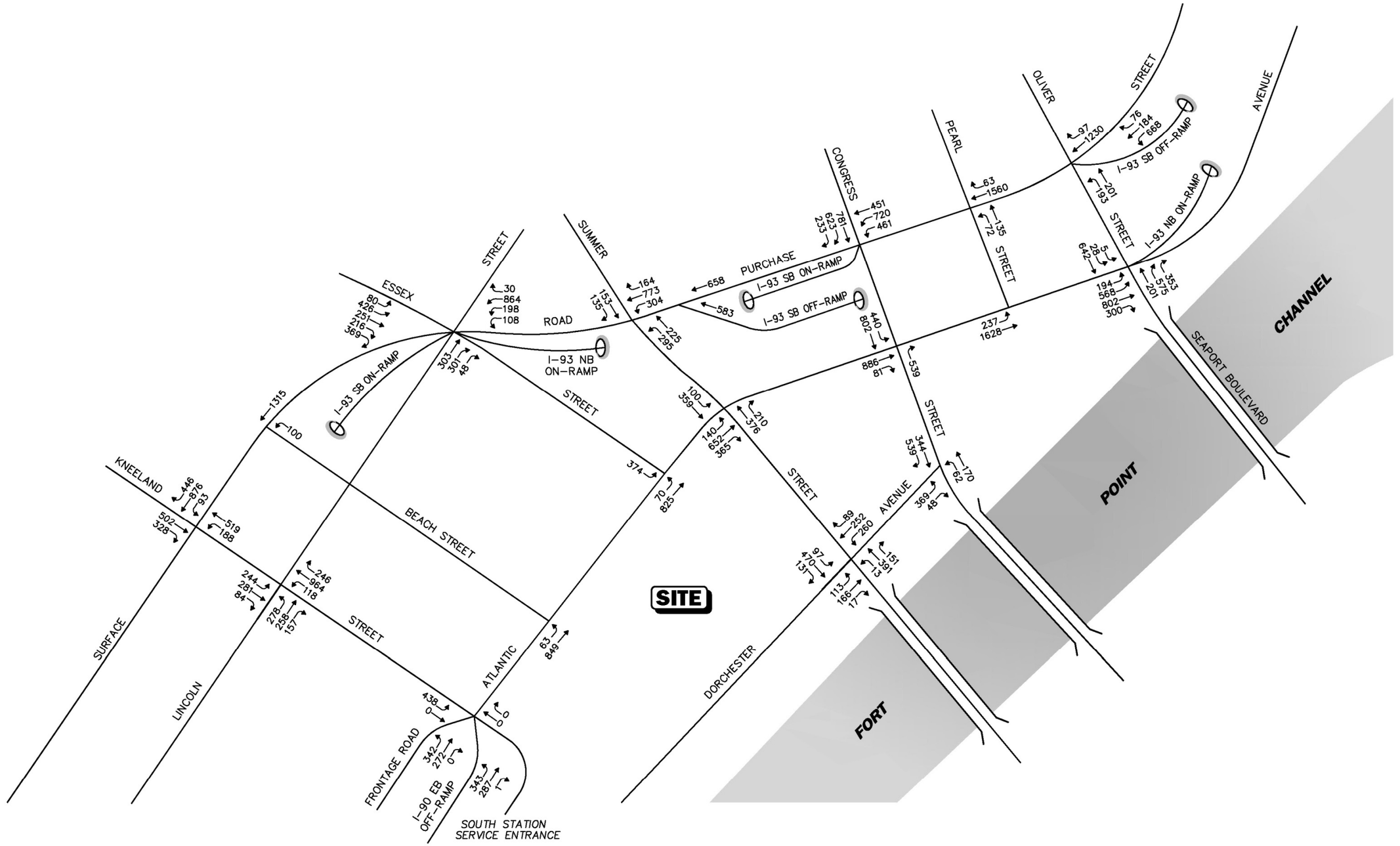
Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-11

2025 No-Build Weekday Morning Peak Hour Traffic Volumes



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

Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-12

2025 No-Build Weekday Evening Peak Hour Traffic Volumes

2.3.2 Project-Generated Trips

Design year (2025 Build) automobile, pedestrian/bicycle and public transportation (transit) trips for the study area were determined by estimating the trip characteristics of the Project and assigning these volumes on the transportation system. The following sections describe the procedures used to develop Build conditions (with the Project) within the study area.

2.3.2.1 Methodology

As described previously, several potential development programs are under consideration for the Project, all of which will include the same program for Phases 1 and 3 as well as the accessory retail in Phase 2, but may include different use alternatives for Phase 2. One Phase 2 alternative includes all residential/retail space with up to 375 residential units (either 260 condominiums or 375 rental units) and another Phase 2 alternative includes an all hotel alternative with 360 keys/rooms. The option with the highest overall number of trips (375 Phase 2 residential units) was used for the analysis as the associated trips and the impacts on the transportation infrastructure would be less for the other scenarios considered. A discussion of the trip-generation for this option follows, with the trip-generation calculations for the other options provided in the Appendix A.

In order to develop the base (unadjusted) trip characteristics of the Project, trip-generation statistics published by the Institute of Transportation Engineers (ITE)[11] for Land Use Codes (LUCs) 220, *Apartment*; 230, *Residential Condominium/Townhouse*; and 710, *General Office Building*; were used.

Given the availability of public transportation to the Project site, the extensive sidewalk network that links the Project site to Downtown Boston and the South Boston Waterfront, and the existing and proposed bicycle network, it is expected that a significant portion of the trips generated by the Project will be made by public transportation or will include pedestrian/bicycle trips. In order to disseminate the base ITE trip characteristics of the Project, which are expressed in vehicle trips, to the modes of travel that will be available to the Project site (automobile, public transportation and pedestrian/bicycle), vehicle occupancy ratios (VORs) were obtained from the *2009 National Household Travel Survey* published by the Federal Highway Administration (FHWA) and travel mode data was obtained from BTD. Table 2-6 summarizes the VOR and travel mode data that was used to distribute trips for the individual components of the Project to the modes of transportation that are available to the Project site.

Table 2-7 summarizes the anticipated trip characteristics for the NPC Project with the highest overall trips [office/residential development with up to 550 residential units (175 units in Phase 1 and up to 375 in Phase 2)] using the above methodology, with the detailed trip-generation calculations for the individual components of the Project and the other development options provided in Appendix A.

---

[11] Trip Generation, 9th Edition; Institute of Transportation Engineers; Washington, DC; 2012.

Table 2-6 Travel Mode Split and Vehicle Occupancy Ratio[a]

	Mode of Travel									
	Automobile (Percent)			Transit (Percent)			Pedestrian/Bicycle (Percent)			
Land Use	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour	Weekday Daily	AM Peak Hour	PM Peak Hour	VOR (Persons per Vehicle)
Residential:										
Entering	28	41	31	30	52	18	42	7	51	1.13
Exiting	28	31	41	30	18	52	42	51	7	1.13
Office:										
Entering	26	32	56	43	63	18	31	5	26	1.13
Exiting	26	56	32	43	18	63	31	26	5	1.13

[a]Source: *Summary of Travel Trends: 2009 National Household Travel Survey;* FHWA; Washington, D.C.; June 2011.

Table 2-7 NPC Project - Trip-Generation Summary

Time Period/Direction	ITE Vehicle Trips	Person Trips				
		Automobile Trips	Transit Trips	Pedestrian /Bicycle Trips	Total Person Trips	Automobile Trips
Average Weekday Daily:						
Entering	5,915	1,777	2,621	2,286	6,684	1,572
Exiting	5,915	1,777	2,621	2,286	6,684	1,572
Total	11,830	3,554	5,242	4,572	13,368	3,144
Weekday Morning Peak Hour:						
Entering	1,237	453	874	71	1,398	401
Exiting	379	178	77	173	428	157
Total	1,616	631	951	244	1,826	558
Weekday Evening Peak Hour:						
Entering	442	220	90	189	499	195
Exiting	1,240	459	869	73	1,401	406
Total	1,682	679	959	262	1,900	601

2.3.2.2 Project-Generated Trip Summary

As can be seen in Table 2-7, prior to dissemination of Project-related trips to the various modes of travel that are available to the Project site, the NPC Project is projected to result in 11,830 unadjusted vehicle trips on an average weekday (again, two-way, 24-hour volume), with 1,616 unadjusted vehicle trips expected during the weekday morning peak-hour and 1,682 unadjusted vehicle trips expected during the weekday evening peak-hour.

After dissemination of Project-related trips to the available modes of transportation, the NPC Project is projected to result in 3,144 automobile trips (1,572 vehicles entering and 1,572 exiting) on an average weekday, with 5,242 transit trips and 4,572 pedestrian/bicycle trips. During the weekday morning peak hour, the NPC Project is projected to generate 558 automobile trips (401 vehicles entering and 157 exiting), with 951 transit trips and 244 pedestrian/bicycle trips. During the weekday evening peak hour, the NPC Project is projected to generate 601 automobile trips (195 vehicles entering and 406 exiting), with 959 transit trips and 262 pedestrian/bicycle trips.

The option with the highest overall number of trips [office/residential development with up to 550 residential units (175 in Phase 1 and 375 in Phase 2)] was used for the analysis. Should the reduced residential option (up to 260 residential units in Phase 2) or the Phase 2 360 key/room hotel move forward, the associated trips and the impacts on the transportation infrastructure would be less than the scenario studied.

2.3.2.3 NPC Trip-Generation Comparison

Table 2-8 presents a comparison of the trips (all modes) for the NPC and approved Final PIR development options that were shown to result in the highest overall number of trips (2016 NPC Project with up to 550 residential units in Phases 1 and 2 vs. PIR all office Option A).

As can be seen in Table 2-10, the NPC Project was shown to result in 26 fewer automobile trips on an average weekday when compared to the approved Final PIR Option A, with 1,634 fewer transit trips and 882 fewer pedestrian/bicycle trips. During the weekday morning peak-hour, the NPC Project was shown to result in 12 additional automobile trips, with 400 fewer transit trips and 39 additional pedestrian/bicycle trips. During the weekday evening peak-hour, the NPC Project was shown to result in 14 additional vehicle trips, with 478 fewer transit trips and 31 additional pedestrian/bicycle trips.

Table 2-8 Trip Generation Comparison – NPC Project vs. Final PIR Option A

Time Period	NPC Project			Final PIR Option A[a]			Change		
	(A) Automobile Trips	(B) Transit Trips	(C) Pedestrian/ Bicycle Trips	(D) Automobile Trips	(E) Transit Trips	(F) Pedestrian/ Bicycle Trips	(A-D) Automobile Trips	(B-E) Transit Trips	(C-F) Pedestrian/ Bicycle Trips
Average Weekday Daily:	3,144	5,242	4,572	3,170	6,876	5,454	-26	-1,634	-882
Weekday Morning Peak Hour:	558	951	244	546	1,351	205	+12	-400	+39
Weekday Evening Peak Hour:	601	959	262	587	1,437	231	+14	-478	+31

[a]Final PIR; South Station Air Rights; February 28, 2006.

2.3.2.4 Vehicle Trip Distribution and Assignment

The directional distribution of automobile trips to and from the Project site was determined based on a review of existing travel patterns within the study area and the roadway network serving the Project site. The trip assignment for the Project is consistent with that presented in the February 28, 2006 Final PIR which was based on the regional traffic model developed for the CA/T project. The general trip distribution for the Project is summarized in Table 2-9. The additional automobile trips expected to be generated by the Project were assigned on the study area roadway network as shown on Figures 2-13 and 2-14 for the weekday morning and evening peak hours, respectively.

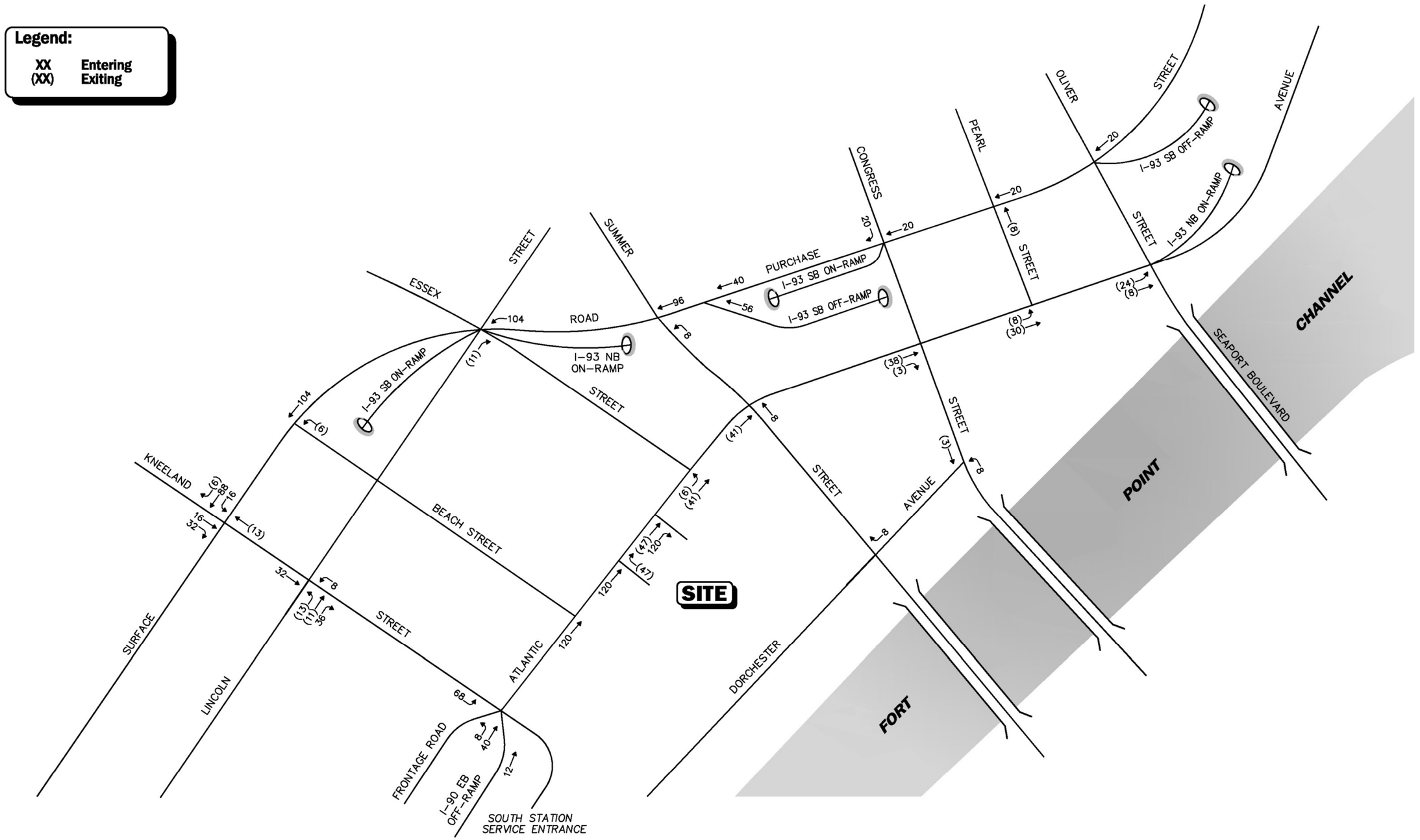
Table 2-9 General Trip Distribution

Direction To/From	Roadway	Percentage
North	I-93	14
	Local Streets	10
South	I-93	12
	Local Streets	18
West	I-90	22
	Local Streets	12
East	Ted Williams Tunnel	10
	Local Street	2
TOTAL		100

2.3.3 Future Build Condition

2.3.3.1 Build Traffic Volumes

The 2025 Build condition traffic volumes were developed by adding the anticipated Project-generated (NPC Option B) automobile trips to the 2025 No-Build condition peak-hour traffic volumes. The resulting 2025 Build condition weekday morning and evening peak-hour traffic-volumes are graphically depicted on Figures 2-15 and 2-16, respectively.



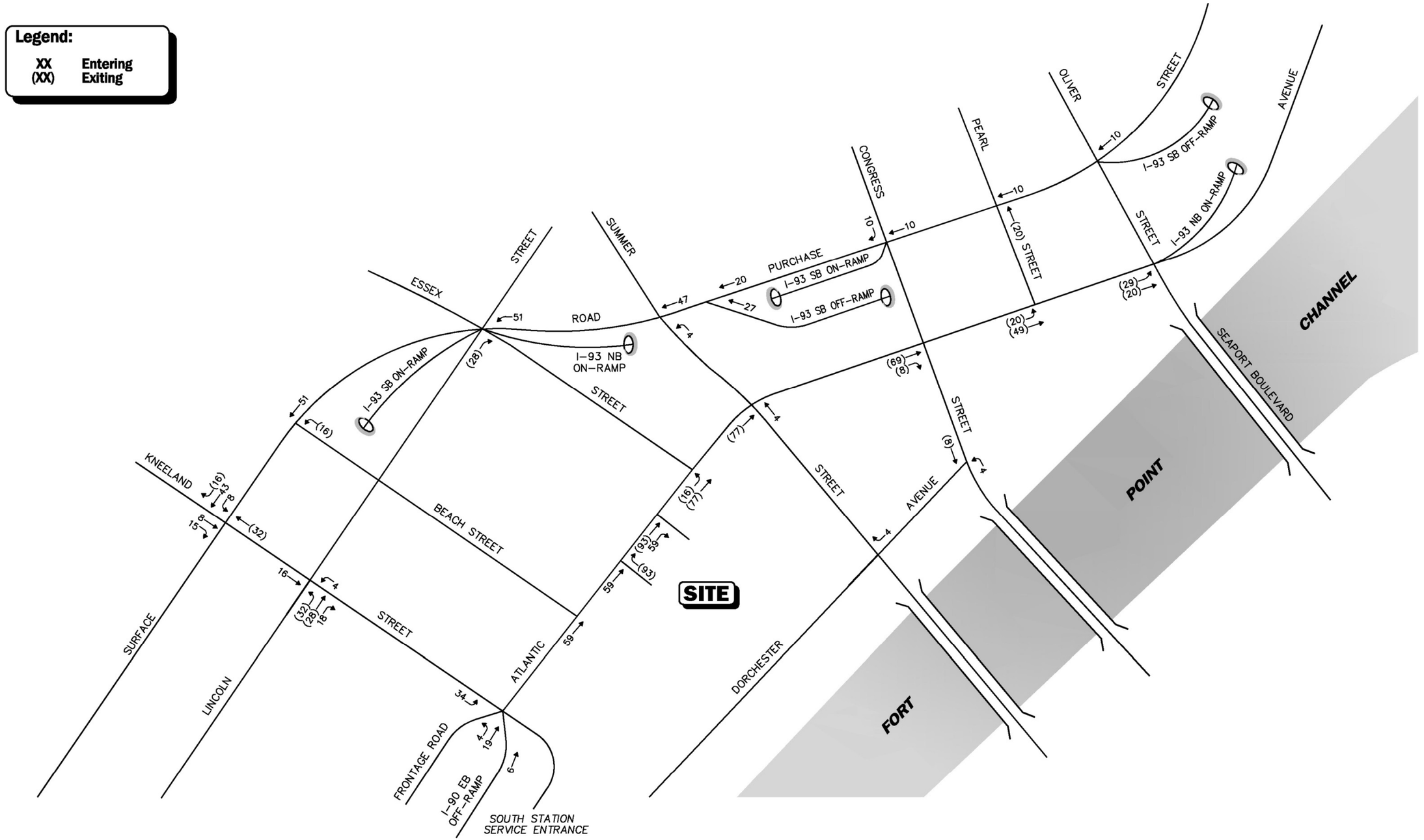
Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-13

Project-generated Weekday Morning Peak Hour Traffic Volumes

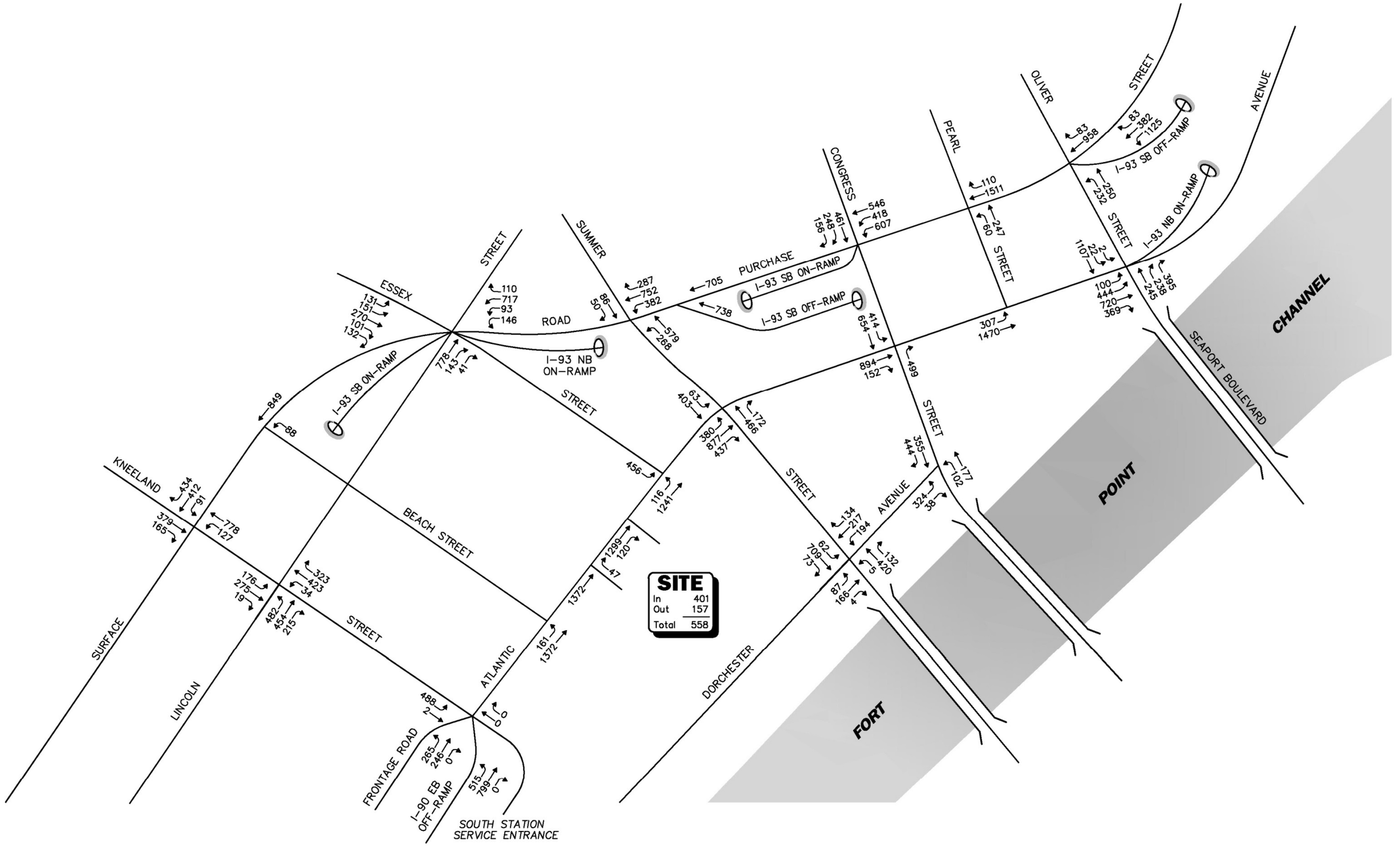


South Station Air Rights **Boston, Massachusetts**

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-14

Project-generated Weekday Evening Peak Hour Traffic Volumes



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

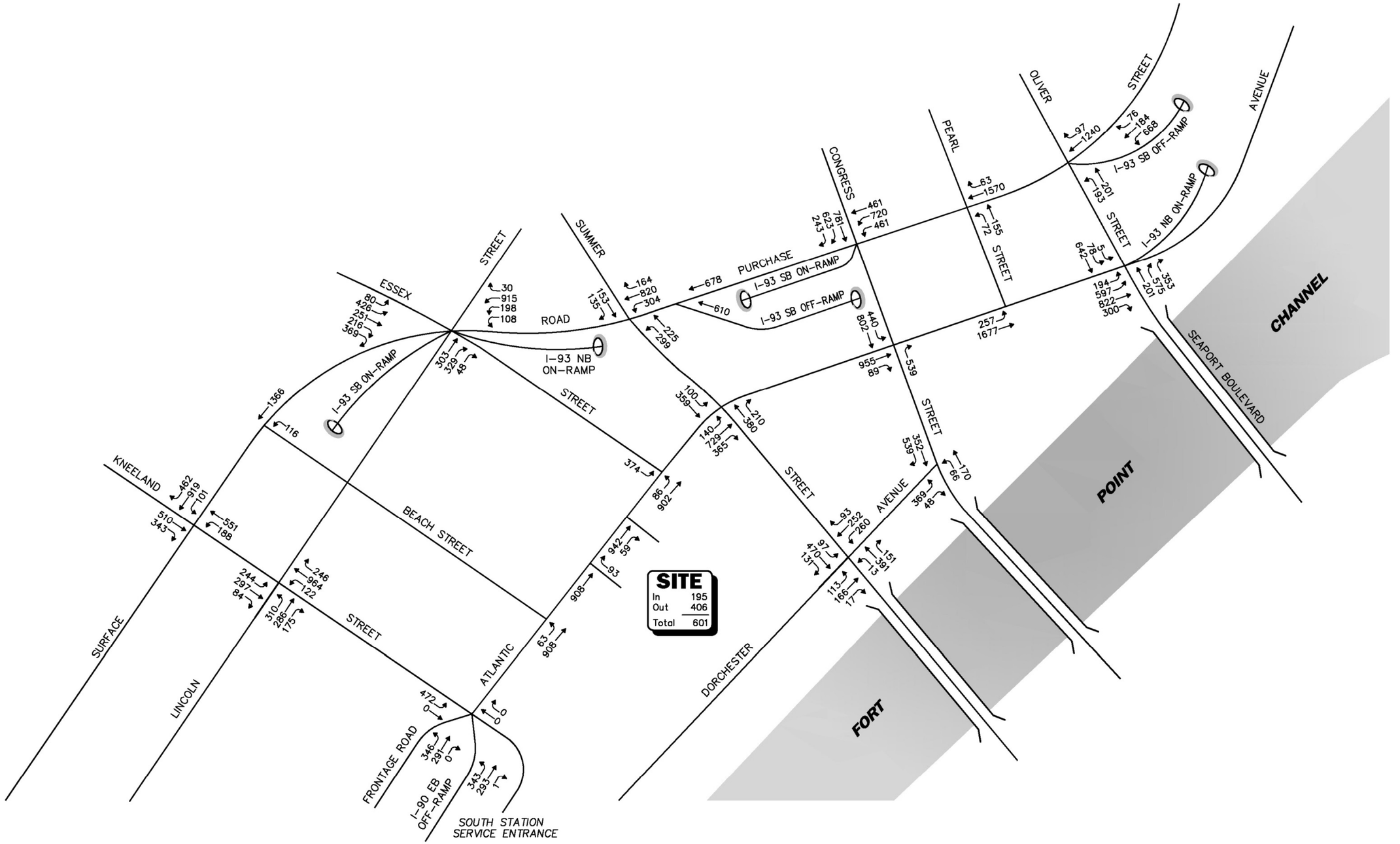
Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-15

2025 Build Weekday Morning Peak Hour Traffic Volumes



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

Not To Scale

South Station Air Rights Boston, Massachusetts

Vanasse & Associates, Inc.
Transportation Engineers & Planners

Figure 2-16

2025 Build Weekday Evening Peak Hour Traffic Volumes

2.4 Transportation System 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.

2.4.1 Intersection Capacity Analysis

2.4.1.1 Methodology

Levels of Service - A primary result of capacity analyses is the assignment of level of service (LOS) to traffic facilities under various traffic-flow conditions.[12] 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 LOS 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 LOS A representing the best operating conditions and LOS F representing congested or constrained operating conditions.

Since the LOS 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.

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.

[12] The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual;* Transportation Research Board; Washington, DC; 2000.

- *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.

In general, a level-of-service of D or better is considered acceptable in an urban area. Levels of service for signalized intersections are calculated using the operational analysis methodology of the 2000 *Highway Capacity Manual*. This method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on delay. LOS 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 2-10 summarizes the relationship between LOS and control delay. The tabulated control delay criterion may be applied in assigning LOS designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 2-10 Level of Service Criteria for Signalized Intersections

Level of Service	Control (Signal) Delay Per Vehicle (Seconds)
A	$\leq$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

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 2000 *Highway Capacity Manual.* LOS 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 LOS at unsignalized intersections are also given in the 2000 *Highway Capacity Manual*. Table 2-11 summarizes the relationship between LOS and average control delay for unsignalized intersections.

Table 2-11 Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Seconds Per Vehicle)
A	$\leq$ 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	$>$50.0

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 2000 *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) and the 95th percentile vehicle queue. For unsignalized intersections, Synchro™ reports the 95th percentile vehicle queue; however, for all-way STOP-control intersections, Synchro™ does not report vehicle queues and it is necessary to use the associated SimTraffic™ traffic model to obtain vehicle queue data. 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 five percent of the time, or approximately three minutes out of 60 minutes during the peak one hour of the day (during the remaining 57 minutes, the vehicle queue length will be less than the 95th percentile queue length).

2.4.1.2 Analysis Results

LOS and vehicle queue analyses were conducted for 2014 Existing, 2025 No-Build and 2025 Build conditions for the intersections within the study area. The results of the intersection capacity and vehicle queue analyses are summarized for the signalized and unsignalized study intersections in Tables 2-12 and 2-13, respectively, and are described in the following sections. The detailed analysis results are presented in Appendix A.

2.4.1.3 Signalized Intersections

Eleven of the 17 signalized intersections were found to be generally operating at LOS D or better during the peak hours under all analysis conditions.

The addition of NPC Project traffic to the 17 signalized study area intersections is predicted to result in a change in the overall LOS at only two of the intersections studied between the 2025 No-Build and 2025 Build condition, as described below.

Atlantic Avenue at Congress Street – This signalized intersection was predicted to operate at an overall LOS D during both the weekday morning and evening peak hours under 2025 No-Build conditions. The addition of NPC Project traffic was shown to result in no change in overall operating conditions predicted to occur during the weekday morning peak-hour, and a degradation in overall operating conditions at the intersection over 2025 No-Build conditions during the weekday evening peak-hour from LOS D to LOS E. Vehicle queues at the intersection were predicted to increase by no more than two vehicles with the addition of NPC Project traffic.

Purchase Street at Summer Street and the I-93 Southbound Off-Ramp – This signalized intersection was predicted to operate at an overall LOS E during the weekday morning peak-hour and at LOS D during the weekday evening peak-hour under 2025 No-Build conditions. No change in overall operating conditions was predicted to occur during the weekday morning peak-hour. The addition of NPC Project traffic was shown to result in a degradation in overall operating conditions at the intersection over 2025 No-Build conditions during the weekday evening peak-hour from LOS D to LOS E. Vehicle queues at the intersection were predicted to increase by no more than two vehicles with the addition of NPC Project traffic.

The following is a summary of the analysis results for the signalized intersections (in addition to the two described above) that were found to be operating at or over their design capacity (defined as LOS E or F). It is important to note that adding the NPC Project trips did not result in a change in LOS to the intersections described below.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary

Signalized Intersection/Peak Hour	2014 Existing V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	2025 No-Build V/C	Delay	LOS	Queue[d] 50th/95th	2025 Build V/C	Delay	LOS	Queue[d] 50th/95th
Surface Road at Kneeland Street												
Weekday Morning:												
Kneeland Street EB TH	0.60	41.5	D	5/6	0.64	40.7	D	6/7	0.65	40.8	D	6/8
Kneeland Street EB RT	0.14	36.5	D	0/2	0.15	35.0	C	0/2	0.16	35.0	C	0/2
Kneeland Street WB LT	0.30	35.6	D	2/4	0.38	33.9	C	3/5	0.38	33.9	C	3/5
Kneeland Street WB TH	0.60	39.1	D	11/12	0.63	37.0	D	11/12	0.64	38.1	D	12/13
Surface Road SB LT/TH	0.40	15.8	B	3/6	0.46	16.9	B	3/7	0.59	19.3	B	4/12
Surface Road SB RT	0.42	26.7	C	0/1	0.52	19.9	B	0/2	0.45	19.4	B	0/2
Overall	**0.45**	**30.3**	**C**	--	**0.50**	**30.4**	**C**	--	**0.56**	**30.4**	**C**	--
Weekday Evening:												
Kneeland Street EB TH	0.85	51.7	D	8/11	0.85	51.8	D	8/12	0.86	52.4	D	8/12
Kneeland Street EB RT	0.51	39.6	D	2/7	0.46	38.7	D	2/7	0.50	39.2	D	2/7
Kneeland Street WB LT	0.83	58.5	E	3/6	1.11	125.8	F	5/8	1.12	132.8	F	6/8
Kneeland Street WB TH	0.50	30.3	C	5/7	0.59	35.0	C	6/7	0.62	35.3	D	7/8
Surface Road SB LT/TH	0.77	16.5	B	6/10	0.90	25.2	C	14/21	0.95	30.9	C	19/23
Surface Road SB RT	0.40	17.2	B	0/2	0.47	25.6	C	2/4	0.52	28.1	C	2/6
Overall	**0.65**	**30.5**	**C**	--	**0.80**	**39.3**	**D**	--	**0.83**	**42.0**	**D**	--
Kneeland Street at Lincoln Street												
Weekday Morning:												
Kneeland Street EB LT/TH/RT	0.61	20.1	C	1/2	0.66	21.8	C	1/2	0.70	25.1	C	1/3
Kneeland Street WB LT/TH/RT	0.71	27.3	C	4/6	0.74	22.6	C	4/7	0.75	26.2	C	4/7
Lincoln Street NB LT	0.71	25.1	C	9/23	0.77	28.9	C	9/24	0.80	31.6	C	11/25
Lincoln Street NB TH	0.53	19.1	B	7/16	0.66	24.1	C	9/21	0.69	25.8	C	9/22
Lincoln Street NB RT	0.11	21.1	C	1/3	0.14	24.5	C	1/5	0.17	26.9	C	1/5
Overall	**0.65**	**23.4**	**C**	--	**0.69**	**24.1**	**C**	--	**0.72**	**25.1**	**C**	--
Weekday Evening:												
Kneeland Street EB LT/TH/RT	0.94	45.6	D	7/9	1.08	60.5	E	8/11	1.08	60.9	E	8/11
Kneeland Street WB LT/TH/RT	0.82	31.3	C	7/8	0.93	29.9	C	5/9	0.93	31.8	C	10/11
Lincoln Street NB LT	0.54	24.3	C	6/12	0.64	29.2	C	714	0.72	33.4	C	8/17
Lincoln Street NB TH	0.49	23.0	C	6/9	0.58	27.4	C	7/13	0.65	30.6	C	7/15
Lincoln Street NB RT	0.14	16.6	B	1/1	0.14	16.7	B	1/1	0.16	16.7	B	1/1
Overall	**0.68**	**32.1**	**C**	--	**0.80**	**37.4**	**D**	--	**0.83**	**38.4**	**D**	--

See notes at end of table.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour	2014 Existing V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	2025 No-Build V/C	Delay	LOS	Queue[d] 50th/95th	2025 Build V/C	Delay	LOS	Queue[d] 50th/95th
Kneeland Street at Atlantic Avenue, I-93 Northbound Ramps and I-90 Eastbound Ramps												
Weekday Morning:												
Kneeland Street EB LT	0.71	36.3	D	6/9	0.81	42.0	D	7/11	0.88	49.8	D	8/14
Kneeland Street EB LT/TH	0.67	33.0	C	6/9	0.73	34.8	C	7/11	0.80	39.0	D	8/13
Driveway WB TH/RT	0.00	0.0	A	0/0	0.00	0.0	A	0/0	0.00	0.0	A	0/0
I-93 Northbound Off-Ramp NB LT	0.47	34.7	C	4/12	0.76	54.4	D	7/16	0.87	67.6	E	7/17
I-93 Northbound Off-Ramp NB LT/TH	0.60	38.3	D	6/17	0.69	48.2	D	7/16	0.85	62.8	E	8/19
I-90 Westbound Off-Ramp NB LT	0.87	57.7	E	11/17	1.00	74.4	E	15/24	1.00	74.4	E	15/24
I-90 Westbound Off-Ramp NB TH	0.90	33.7	C	13/35	0.89	32.7	C	14/35	0.93	38.4	D	15/35
Overall	**0.82**	39.0	**D**	--	**0.87**	**47.4**	**D**	--	**0.90**	**53.6**	**D**	--
Weekday Evening:												
Kneeland Street EB LT	0.82	40.0	D	5/10	0.83	39.4	D	5/10	0.85	41.8	D	6/11
Kneeland Street EB LT/TH	0.75	32.7	C	4/9	0.75	32.1	C	5/10	0.77	33.5	C	5/10
Driveway WB TH/RT	0.04	48.4	D	0/0	0.00	0.0	A	0/0	0.00	0.0	A	0/0
I-93 Northbound Off-Ramp NB LT	0.50	32.6	C	5/9	0.90	63.0	E	10/19	0.97	77.7	E	11/20
I-93 Northbound Off-Ramp NB LT/TH	0.51	32.7	C	6/10	0.88	58.4	E	10/19	0.94	69.8	E	11/20
I-90 Westbound Off-Ramp NB LT	0.72	51.7	D	7/10	0.54	69.2	E	11/18	0.94	69.2	E	11/18
I-90 Westbound Off-Ramp NB TH	0.33	14.0	B	3/8	0.38	14.0	B	4/8	0.40	14.7	B	4/9
Overall	**0.61**	**33.4**	**C**	--	**0.84**	**48.0**	**D**	--	**0.87**	**53.3**	**D**	--
Atlantic Avenue at Beach Street												
Weekday Morning:												
Atlantic Avenue NB LT/TH	0.41	3.8	A	5/12	0.43	3.9	A	5/12	0.47	3.9	A	7/12
Overall	**0.41**	**3.8**	**A**	--	**0.43**	**3.9**	**A**	--	**0.47**	**3.9**	**A**	--
Weekday Evening:												
Atlantic Avenue NB LT/TH	0.39	5.8	A	2/4	0.40	5.9	A	2/4	0.40	5.9	A	2/4
Overall	**0.39**	**5.8**	**A**	--	**0.40**	**5.9**	**A**	--	**0.40**	**5.9**	**A**	--

See notes at end of table.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour	2014 Existing V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	2025 No-Build V/C	Delay	LOS	Queue[d] 50th/95th	2025 Build V/C	Delay	LOS	Queue[d] 50th/95th
Atlantic Avenue at Essex Street												
Weekday Morning:												
Essex Street EB LT	0.67	32.6	C	5/7	1.06	89.1	F	9/12	1.06	89.4	F	9/12
Atlantic Avenue NB LT/TH	0.62	14.3	B	8/12	0.65	14.3	B	9/12	0.67	14.4	B	10/12
Overall	**0.53**	**18.1**	**B**	--	**0.63**	**34.0**	**C**	--	**0.65**	**34.7**	**C**	--
Weekday Evening:												
Essex Street EB LT	0.61	33.6	C	5/6	0.78	43.4	D	7/8	0.78	43.4	D	7/8
Atlantic Avenue NB LT/TH	0.81	29.1	C	9/11	0.85	32.5	C	10/11	0.94	41.2	D	11/14
Overall	**0.63**	**30.3**	**C**	--	**0.69**	**35.9**	**D**	--	**0.75**	**41.8**	**D**	--
Atlantic Avenue at Summer Street												
Weekday Morning:												
Summer Street EB LT/TH	0.51	30.4	C	6/7	0.73	34.7	C	8/8	0.73	34.7	C	8/8
Summer Street WB TH/RT	0.71	57.2	E	6/7	0.85	50.1	D	6/8	0.86	50.1	D	7/8
Atlantic Avenue NB LT	0.60	23.1	C	5/11	0.78	28.0	C	8/13	0.78	28.0	C	8/13
Atlantic Avenue NB LT/TH	0.92	35.1	D	12/19	--	--	--	--	--	--	--	--
Atlantic Avenue NB TH	--	--	--	--	0.89	30.6	C	11/15	0.94	33.4	C	11/17
Atlantic Avenue NB RT	0.79	31.9	C	7/16	1.06	73.8	E	15/20	1.06	73.8	E	15/20
Overall	**0.62**	**37.4**	**D**	--	**0.74**	**42.3**	**D**	--	**0.74**	**42.4**	**D**	--
Weekday Evening:												
Summer Street EB LT/TH	0.97	63.3	E	8/10	1.01	66.0	E	8/9	1.01	68.6	E	8/10
Summer Street WB TH/RT	0.99	47.8	D	6/10	0.98	57.1	E	7/10	0.99	58.3	E	7/10
Atlantic Avenue NB LT	0.21	17.9	B	2/3	0.30	18.5	B	2/4	0.30	20.0	C	3/4
Atlantic Avenue NB LT/TH	0.79	24.8	C	7/13	--	--	--	--	--	--	--	--
Atlantic Avenue NB TH	--	--	--	--	0.70	32.7	C	7/11	0.78	25.9	C	9/11
Atlantic Avenue NB RT	0.88	35.6	D	8/17	0.88	35.0	C	9/16	0.88	35.0	C	10/16
Overall	**0.72**	**40.6**	**D**	--	**0.73**	**43.0**	**D**	--	**0.73**	**44.3**	**D**	--

See notes at end of table.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour	2014 Existing V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	2025 No-Build V/C	Delay	LOS	Queue[d] 50th/95th	2025 Build V/C	Delay	LOS	Queue[d] 50th/95th
Summer Street at Dorchester Avenue												
Weekday Morning:												
Summer Street EB LT/TH/RT	1.09	89.7	F	17/20	1.06	72.2	E	17/18	1.06	72.2	E	17/18
Summer Street WB LT/TH/RT	0.86	19.2	B	6/10	0.55	10.2	B	2/4	0.55	10.2	B	2/4
Dorchester Avenue NB LT	--	--	--	--	0.69	50.6	D	4/4	0.69	50.6	D	4/4
Dorchester Avenue NB LT/TH/RT	0.38	35.8	D	3/4	--	--	--	--	--	--	--	--
Dorchester Avenue NB LTH/RT	--	--	--	--	0.70	45.4	D	7/7	0.70	45.4	D	7/7
Dorchester Avenue SB LT	1.28	194.1	F	13/20	0.85	66.8	E	6/11	0.85	66.8	E	6/11
Dorchester Avenue SB TH/RT	0.16	46.2	D	2/3	0.95	73.9	E	12/15	0.97	79.0	E	12/15
Overall	**0.93**	**73.1**	**E**	--	**0.81**	**53.2**	**D**	--	**0.81**	**54.2**	**D**	--
Weekday Evening:												
Summer Street EB LT/TH/RT	0.87	36.5	D	11/12	1.06	72.3	E	15/17	1.06	72.4	E	15/17
Summer Street WB LT/TH/RT	0.87	23.2	C	7/17	0.48	7.3	A	4/4	0.48	7.3	A	4/4
Dorchester Avenue NB LT	--	--	--	--	0.70	47.0	D	5/5	0.77	55.4	E	5/5
Dorchester Avenue NB LT/TH/RT	0.31	27.6	C	2/3	--	--	--	--	--	--	--	--
Dorchester Avenue NB LTH/RT	--	--	--	--	0.81	49.8	D	7/9	0.81	49.8	D	7/9
Dorchester Avenue SB LT	1.06	81.9	F	12/20	1.00	73.1	E	7/15	1.00	73.1	E	7/15
Dorchester Avenue SB TH/RT	0.17	15.6	B	0/1	0.90	45.2	D	10/12	0.91	45.2	D	10/15
Overall	**0.80**	**36.7**	**D**	--	**0.87**	**48.4**	**D**	--	**0.87**	**48.5**	**D**	--
Congress Street at Dorchester Avenue												
Weekday Morning:												
Congress Street EB TH	0.64	23.2	C	12/17	0.59	19.1	B	8/14	0.59	19.2	B	8/14
Congress Street EB RT	0.35	37.0	D	4/5	0.40	41.2	D	6/8	0.40	41.7	D	6/8
Congress Street WB LT/TH	0.83	47.1	D	8/15	0.71	42.3	D	7/11	0.77	45.8	D	8/13
Dorchester Avenue NB LT/RT	0.88	70.2	E	11/12	0.89	49.5	D	12/13	0.89	49.5	D	12/13
Overall	**0.68**	**43.3**	**D**	--	**0.63**	**38.2**	**D**	--	**0.66**	**38.8**	**D**	--
Weekday Evening:												
Congress Street EB TH	0.55	11.8	B	6/8	0.60	21.1	C	8/11	0.67	25.4	C	8/11
Congress Street EB RT	0.39	10.3	B	0/0	0.45	23.8	C	1/3	0.45	27.7	C	1/3
Congress Street WB LT/TH	0.82	27.1	C	4/9	0.58	19.4	B	4/4	0.72	27.8	C	4/4
Dorchester Avenue NB LT/RT	0.92	47.5	D	10/15	0.90	42.3	D	12/16	0.90	42.3	D	13/16
Overall	**0.69**	**22.8**	**C**	--	**0.58**	**27.3**	**C**	-	**0.61**	**29.1**	**C**	--

See notes at end of table.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour	2014 Existing V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	2025 No-Build V/C	Delay	LOS	Queue[d] 50th/95th	2025 Build V/C	Delay	LOS	Queue[d] 50th/95th
Atlantic Avenue at Congress Street												
Weekday Morning:												
Congress Street EB LT	0.43	38.8	D	4/6	0.75	44.7	D	7/8	0.75	44.7	D	7/8
Congress Street EB TH	0.35	6.4	A	4/5	0.38	6.8	A	4/5	0.38	5.8	A	4/5
Congress Street WB RT	0.86	54.5	D	5/9	1.13	115.6	F	11/13	1.13	115.6	F	11/13
Atlantic Avenue NB TH/RT	0.82	16.8	B	2/6	0.90	21.9	C	4/9	0.94	23.3	C	5/9
Overall	**0.67**	**23.2**	**C**	--	**0.84**	**40.7**	**D**	--	**0.86**	**40.9**	**D**	--
Weekday Evening:												
Congress Street EB LT	0.77	38.5	D	6/8	0.97	57.5	E	7/11	0.97	57.5	E	7/11
Congress Street EB TH	0.45	4.0	A	3/3	0.48	4.0	A	3/3	0.48	4.0	A	3/3
Congress Street WB RT	0.95	50.5	D	7/8	1.13	101.7	F	12/13	1.13	109.5	F	13/14
Atlantic Avenue NB TH/RT	0.99	41.4	D	11/14	1.02	53.3	D	12/15	1.10	79.0	E	14/16
Overall	**0.87**	**31.7**	**C**	--	**0.97**	**51.4**	**D**	--	**1.00**	**62.6**	**E**	--
Atlantic Avenue at Pearl Street												
Weekday Morning:												
Atlantic Avenue NB LT/TH	0.40	3.8	A	3/3	0.52	5.8	A	5/6	0.54	5.8	A	6/7
Overall	**0.40**	**3.8**	**A**	--	**0.52**	**5.8**	**A**	--	**0.54**	**5.8**	**A**	--
Weekday Evening:												
Atlantic Avenue NB LT/TH	0.96	10.2	B	4/5	1.05	25.5	C	5/24	1.06	30.5	C	5/25
Overall	**0.96**	**10.2**	**B**	--	**1.05**	**25.5**	**C**	--	**1.06**	**30.5**	**C**	--

See notes at end of table.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	2025 No-Build V/C	Delay	LOS	Queue[d] 50th/95th	2025 Build V/C	Delay	LOS	Queue[d] 50th/95th
Atlantic Avenue at Seaport Boulevard and Oliver Street												
Weekday Morning:												
Oliver Street EB LT/TH	0.72	8.7	A	3/3	0.98	18.3	B	3/8	0.98	18.3	B	3/8
Seaport Boulevard WB TH/RT	0.70	56.5	E	8/14	0.85	68.3	E	12/18	0.85	68.3	E	12/18
Seaport Boulevard WB RT	0.76	62.9	E	8/14	0.93	82.8	F	11/18	0.93	82.8	F	11/18
Seaport Boulevard WB RT	0.68	56.7	E	6/12	0.83	66.7	E	10/12	0.83	66.7	E	10/12
Atlantic Avenue NB LT	0.72	31.3	C	4/16	1.10	98.9	F	20/29	1.15	117.1	F	21/31
Atlantic Avenue NB LT/TH/RT	0.74	27.9	C	4/12	1.36	195.7	F	27/32	1.37	201.3	F	27/33
Overall	**0.72**	**30.9**	**C**	--	**1.09**	**96.5**	**F**	--	**1.10**	**101.0**	**F**	--
Weekday Evening:												
Oliver Street EB LT/TH	0.53	6.6	A	1/1	0.62	6.8	A	1/1	0.62	6.8	A	1/1
Seaport Boulevard WB TH/RT	0.91	64.1	E	9/17	1.21	153.2	F	16/25	1.21	153.2	F	16/25
Seaport Boulevard WB RT	0.85	55.8	E	9/12	1.13	122.3	F	14/23	1.13	122.3	F	14/23
Seaport Boulevard WB RT	0.84	55.0	D	8/15	0.91	64.5	E	9/17	0.91	64.5	E	9/17
Atlantic Avenue NB LT	0.85	38.5	D	14/15	1.08	75.2	E	20/24	1.12	96.2	F	24/25
Atlantic Avenue NB LT/TH/RT	0.87	36.2	D	14/16	1.16	109.4	F	23/27	1.19	122.8	F	26/28
Overall	**0.82**	**36.6**	**D**	--	**1.07**	**85.5**	**F**	--	**1.08**	**93.6**	**F**	--
Purchase Street at Oliver Street and I-93 Southbound Off-Ramp												
Weekday Morning:												
Oliver Street WB LT/TH	0.91	50.2	D	6/10	1.11	105.9	F	9/11	1.11	105.9	F	9/11
Purchase Street SB TH/RT	0.92	39.1	D	10/14	1.01	55.4	E	12/16	1.03	60.5	E	12/16
I-93 Southbound Off-Ramp SB LT	1.11	93.0	F	25/35	1.56	282.7	F	45/55	1.56	282.7	F	45/55
I-93 Southbound Off-Ramp SB TH/RT	0.80	46.9	D	10/17	0.96	68.8	E	13/22	0.96	68.8	E	13/22
Overall	**1.04**	**59.0**	**E**	--	**1.35**	**148.6**	**F**	--	**1.36**	**148.9**	**F**	--
Weekday Evening:												
Oliver Street WB LT/TH	0.68	40.7	D	3/4	0.97	52.3	D	5/6	0.97	52.3	D	5/6
Purchase Street SB TH/RT	0.91	35.9	D	10/16	1.05	65.5	E	16/20	1.06	68.1	E	16/20
I-93 Southbound Off-Ramp SB LT	1.02	70.7	E	17/26	1.20	136.6	F	25/33	1.20	136.6	F	25/33
I-93 Southbound Off-Ramp SB TH/RT	0.66	46.0	D	7/10	0.79	54.7	D	8/13	0.79	54.7	D	8/13
Overall	**0.94**	**46.7**	**D**	--	**1.13**	**81.0**	**F**	--	**1.13**	**82.2**	**F**	--

See notes at end of table.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing				2025 No-Build				2025 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	V/C	Delay	LOS	Queue[d] 50th/95th	V/C	Delay	LOS	Queue[d] 50th/95th
Purchase Street at Pearl Street												
Weekday Morning:												
Pearl Street WB LT	0.19	48.5	D	2/4	0.28	49.6	D	2/4	0.28	49.6	D	2/4
Pearl Street WB TH	0.39	51.1	D	4/6	0.39	49.7	D	4/6	0.40	49.8	D	4/6
Purchase Street SB TH/RT	0.53	8.1	A	3/4	0.70	9.3	A	5/5	0.71	9.3	A	5/5
Overall	**0.42**	**16.9**	**B**	--	**0.52**	**17.0**	**B**	--	**0.53**	**17.1**	**B**	--
Weekday Evening:												
Pearl Street WB LT	0.45	42.2	D	3/3	0.47	42.6	D	3/3	0.47	42.6	D	3/3
Pearl Street WB TH	0.41	41.7	D	3/3	0.42	41.7	D	3/3	0.49	41.7	D	3/3
Purchase Street SB TH/RT	0.75	9.4	A	4/19	0.83	9.4	A	4/19	0.84	9.4	A	4/19
Overall	**0.59**	**13.7**	**B**	--	**0.66**	**13.8**	**B**	--	**0.66**	**13.8**	**B**	--
Purchase Street at Congress Street												
Weekday Morning:												
Congress Street EB TH	0.37	9.0	A	2/3	0.50	11.7	B	3/4	0.50	12.1	B	3/4
Congress Street EB RT	0.60	15.7	B	3/7	0.63	18.4	B	3/10	0.63	18.8	B	3/10
Congress Street EB RT	0.33	9.8	A	2/2	0.35	11.3	B	2/3	0.40	12.5	B	2/3
Purchase Street SB LT	0.69	10.9	B	3/8	0.97	32.1	C	7/26	0.97	32.1	C	7/27
Purchase Street SB LT	0.77	9.9	A	6/7	1.01	32.5	C	8/23	1.03	37.7	D	9/24
Purchase Street SB TH	0.77	9.9	A	6/7	1.01	32.5	C	8/23	1.03	37.7	D	9/24
Overall	**0.57**	**10.7**	**B**	--	0.69	**25.7**	**C**	--	**0.70**	**28.1**	**C**	--
Weekday Evening:												
Congress Street EB TH	0.68	17.1	B	5/8	0.72	18.2	B	5/9	0.72	18.3	C	5/10
Congress Street EB RT	1.20	123.8	F	24/30	1.20	124.2	F	23/32	1.20	124.4	F	23/32
Congress Street EB RT	0.48	15.7	B	3/5	0.48	15.8	B	3/5	0.49	16.2	B	3/6
Purchase Street SB LT	0.72	18.6	B	9/12	0.85	24.3	C	11/17	0.85	24.3	C	11/17
Purchase Street SB LT	1.21	125.4	F	24/32	1.41	207.7	F	31/39	1.41	207.7	F	31/39
Purchase Street SB TH	0.85	26.7	C	12/19	0.90	29.2	C	12/19	0.92	31.5	C	12/19
Overall	**1.01**	**62.8**	**E**	--	**1.07**	**80.3**	**F**	--	**1.07**	**80.3**	**F**	--

See notes at end of table.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	2025 No-Build V/C	Delay	LOS	Queue[d] 50th/95th	2025 Build V/C	Delay	LOS	Queue[d] 50th/95th
Purchase Street at Summer Street and the I-93 Southbound Off-Ramp												
Weekday Morning:												
Summer Street EB TH	0.25	22.0	C	1/1	0.57	77.2	E	3/5	0.57	77.1	E	3/5
Summer Street EB RT	0.06	39.9	D	0/0	0.09	47.5	D	0/2	0.09	47.5	D	0/2
Summer Street WB LT	0.91	49.6	D	5/15	0.97	64.6	E	7/13	1.00	71.5	E	7/14
Summer Street WB LT/TH	0.62	25.4	C	3/6	1.06	76.0	E	11/15	1.06	76.0	E	11/16
Purchase Street SB LT/TH/RT	1.02	88.3	F	9/13	0.95	51.6	D	11/11	1.01	62.7	E	12/13
I-93 Southbound Off-Ramp SB LT/TH/RT	0.75	42.8	D	9/11	0.90	54.1	D	10/15	0.97	65.9	E	11/17
Overall	**0.76**	**50.5**	**D**	--	**0.91**	**60.8**	**E**	--	**0.96**	**68.0**	**E**	--
Weekday Evening:												
Summer Street EB TH	0.42	38.6	D	2/3	0.70	60.1	E	4/6	0.70	60.1	E	4/6
Summer Street EB RT	0.08	40.4	D	0/0	0.19	62.4	E	1/3	0.19	62.4	E	1/3
Summer Street WB LT	0.63	19.8	B	3/3	0.63	19.0	B	2/2	0.63	19.0	B	2/2
Summer Street WB LT/TH	0.69	18.0	B	3/4	0.62	16.0	B	2/2	0.62	16.0	B	2/2
Purchase Street SB LT/TH/RT	1.21	148.0	F	12/17	1.02	71.4	E	12/16	1.05	79.9	E	13/16
I-93 Southbound Off-Ramp SB LT/TH/RT	0.47	35.3	D	5/7	0.90	57.6	E	9/13	0.94	63.5	E	10/14
Overall	**0.69**	**72.2**	**E**	--	**0.83**	**52.6**	**D**	--	**0.85**	**57.1**	**E**	--

See notes at end of table.

Table 2-12 Signalized Intersection Level of Service and Vehicle Queue Summary (Continued)

Signalized Intersection/Peak Hour/Movement	2014 Existing				2025 No-Build				2025 Build			
	V/C[a]	Delay[b]	LOS[c]	Queue[d] 50th/95th	V/C	Delay	LOS	Queue[d] 50th/95th	V/C	Delay	LOS	Queue[d] 50th/95th
Surface Road at Essex Street and Lincoln Street												
Weekday Morning:												
Essex Street EB LT	0.69	38.9	D	7/11	0.84	50.7	D	9/15	0.84	50.7	D	9/15
Essex Street EB TH	0.82	48.6	D	8/13	0.86	53.8	D	9/14	0.86	53.8	D	9/14
Essex Street EB RT	0.79	50.3	D	6/11	0.81	50.3	D	7/12	0.81	50.3	D	7/12
Surface Road SB LT/TH/RT	0.62	19.7	B	7/8	0.74	22.5	C	6/10	0.74	24.2	C	8/10
Lincoln Street NB TH	0.71	38.3	D	9/11	0.96	57.7	E	13/18	0.95	57.7	E	13/18
Lincoln Street NB RT	0.56	39.7	D	4/7	0.67	45.3	D	5/9	0.67	45.3	D	5/9
Overall	**0.70**	**34.2**	**C**	--	**0.85**	**42.9**	**D**	--	**0.85**	**43.5**	**D**	--
Weekday Evening:												
Essex Street EB LT	0.91	46.3	D	9/19	1.02	69.4	E	17/25	1.02	69.4	E	17/25
Essex Street EB TH	0.62	27.0	C	4/7	0.62	27.6	C	4/7	0.62	27.6	C	4/7
Essex Street EB RT	1.18	128.7	F	17/25	1.19	129.2	F	22/31	1.19	129.2	F	22/31
Surface Road SB LT/TH/RT	0.77	28.2	C	9/10	1.02	56.9	E	12/16	1.02	59.1	E	14/17
Lincoln Street NB TH	0.42	35.3	D	4/6	0.44	35.9	D	4/6	0.47	37.7	D	4/6
Lincoln Street NB RT	0.90	66.8	E	9/16	1.01	91.0	F	11/19	1.18	147.1	F	13/21
Overall	**0.95**	**52.6**	**D**	--	**1.09**	**75.2**	**E**	--	**1.13**	**79.0**	**E**	--
Surface Road at Beach Street												
Weekday Morning:												
Beach Street WB LT	0.58	44.0	D	2/5	0.59	45.9	D	2/5	0.59	45.9	D	3/5
Surface Road SB TH	0.33	1.9	A	1/1	0.33	1.9	A	1/1	0.38	1.9	A	1/1
Overall	**0.31**	**6.1**	**A**	--	**0.31**	**6.9**	**A**	--	**0.35**	**6.9**	**A**	--
Weekday Evening:												
Beach Street WB LT	0.55	52.7	D	3/6	0.56	53.7	D	4/6	0.60	53.7	D	4/6
Surface Road SB TH	0.45	1.0	A	0/1	0.53	1.7	A	1/2	0.56	2.4	A	2/3
Overall	**0.40**	**5.1**	**A**	--	**0.46**	**5.4**	**A**	--	**0.49**	**6.4**	**A**	--

[a]Volume-to-capacity ratio.

[b]Control (signal) delay per vehicle in seconds.

[c]Level of Service.

[d]Queue length in vehicles.

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

Table 2-13 Unsignalized Intersection Level of Service and Vehicle Queue Summary

Unsignalized Intersection/ Peak Hour/Movement	2014 Existing				2025 No-Build				2025 Build			
	Demand[a]	Delay[b]	LOS[c]	Queue[d] 95th	Demand	Delay	LOS	Queue 95th	Demand	Delay	LOS	Queue 95th
Atlantic Avenue at the Garage Exit Driveway												
Weekday Morning:												
Atlantic Avenue NB TH	--	--	--	--	--	--	--	--	1,372	0.0	A	0
Garage Exit Driveway WB RT	--	--	--	--	--	--	--	--	47	9.7	A	1
Weekday Evening:												
Atlantic Avenue NB TH	--	--	--	--	--	--	--	--	908	0.0	A	0
Garage Exit Driveway WB RT	--	--	--	--	--	--	--	--	93	9.0	A	1
Atlantic Avenue at the Garage Entrance Driveway												
Weekday Morning:												
Atlantic Avenue NB TH/RT	--	--	--	--	--	--	--	--	1,419	0.0	A	0
Weekday Evening:												
Atlantic Avenue NB TH/RT	--	---	--	--	--	--	--	--	1,001	0.0	A	0

[a]Demand in vehicles per hour.

[b]Average control delay per vehicle (in seconds).

[c]Level of Service.

[d]Queue length in vehicles.

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

Atlantic Avenue at Seaport Boulevard and Oliver Street – This signalized intersection was predicted to operate over its design capacity (LOS F) under 2025 No-Build and 2025 Build conditions during both the weekday morning and evening peak hours independent of the Project. Project-related impacts were defined as an increase in overall motorist delay of approximately eight seconds or less, with a predicted increase in vehicle queueing of approximately two vehicles.

Purchase Street at Oliver Street and the I-93 Southbound Off-Ramp – This signalized intersection was predicted to operate over its design capacity (LOS F) under 2025 No-Build and 2025 Build conditions during both the weekday morning and evening peak hours independent of the Project. Project-related impacts were defined as an increase in overall motorist delay of approximately one second, with no material increase in vehicle queueing predicted.

Purchase Street at Congress Street – This signalized intersection was predicted to operate at an LOS C during the weekday morning peak-hour under both the 2025 No-Build and 2025 Build conditions, and over its design capacity (LOS F) under 2025 No-Build and 2025 Build conditions during the weekday evening peak-hour independent of the Project. Project-related impacts were defined as an increase in overall motorist delay of approximately two seconds, with a predicted increase in vehicle queueing of approximately one vehicle.

Surface Road at Essex Street and Lincoln Street – This signalized intersection was predicted to operate at an LOS D in both the 2025 No-Build and 2025 Build conditions weekday morning peak-hour, and at its design capacity (LOS E) under 2025 No-Build and 2025 Build conditions during the weekday evening peak-hour independent of the Project. Project-related impacts were defined as an increase in overall motorist delay of approximately four seconds, with a predicted increase in vehicle queueing of approximately two vehicles.

2.4.1.4 Unsignalized Intersections

All movements at the two unsignalized study area intersections (the access points to the Project site from Atlantic Avenue) are predicted to operate at LOS A during both the weekday morning and evening peak hours, with vehicle queues of no more than one vehicle.

2.4.2 Pedestrian Impact Analysis

The Project is expected to result in up to 4,572 pedestrian/bicycle trips on an average weekday, and between 200 and 260 pedestrian/bicycle trips during the weekday peak commuter hours. As described in Section 2.2.4, the Project site is served by an interconnected sidewalk infrastructure that links the Project to Downtown Boston and the South Boston Waterfront, with the signalized intersections within the study area providing marked crosswalks, pedestrian traffic signal equipment and phasing. A Hubway bicycle sharing station is provided at South Station, and bicycle accommodations are provided along Atlantic Avenue, Surface Road, Purchase Street and Seaport Boulevard, which link the Project site to other bicycle facilities in the City and the region. Improvements to these accommodations are proposed in conjunction with the South Station Expansion project, as detailed herein, that will improve and expand pedestrian and bicycle access to the Project site.

In conjunction with the Project, the sidewalk along Atlantic Avenue will be improved to accommodate pedestrian access to the Project site, and secure bicycle parking will be provided within the proposed parking garage, with bicycle racks provided at an appropriate location along Atlantic Avenue proximate to the pedestrian entrances to the Project for short-term bicycle parking. In addition, the Proponent will consult with Hubway to determine if an additional Hubway bicycle sharing station can be accommodated along Atlantic Avenue to serve both the Project and the South Station Bus Terminal.

The existing and improved pedestrian and bicycle network in the South Station area, and the associated accommodations that will be provided as a part of the Project, will afford sufficient capacity to accommodate the increased pedestrian and bicycle activity that will be associated with the Project. It is important to note that the capacity analyses and the associated pedestrian and bicycle improvements that have been defined for the South Station Expansion project reflect a larger development proposal for the Project than is currently proposed.

2.4.3 Public Transportation Impact Analysis

Transit trips associated with the Project were assumed to be distributed among the major transit services in proportion to their expected usage by line and direction. The usage of each transit line was calculated based on the analysis that was completed for the Urban Ring project. The distribution of ridership, expressed as a peak load point or the point on the service with the highest ridership, was developed by the CTPS for the MBTA for the Commuter Rail and the private bus lines serving the South Station Bus Terminal, and for all MBTA buses and subway lines, distinguished by direction approaching downtown Boston. This information is summarized in Table 2-14.

Table 2-14 Peak Period Transit Peak Loads

	Transit Line	Percent Distribution
Commuter Rail:	Worcester/Framingham	2.61
	Needham	1.02
	Franklin	2.34
	Providence/Stoughton	4.65
	Fairmount	0.54
	Middleborough/Lakeville	2.26
	Greenbush	1.59
	Kingston/Plymouth	1.73
	Subtotal:	16.74
Subway:	Green Line – West	13.34
	Green Line – North	10.90
	Red Line – North	9.37
	Red Line – South	12.20
	Orange Line – North	9.28
	Orange Line – South	8.63
	Blue Line	7.61
	Subtotal:	71.33
Bus and Commuter Boats:	South Station Bus Lines	0.36
	MBTA Bus Lines (Includes Silver Line)	10.78
	Commuter Boats	0.79
	Subtotal:	11.93
TOTAL:		100

The transit ridership by line for the Project is assumed to follow the general distribution of ridership shown in Table 2-14. The percent distribution of the transit lines was applied to the transit peak period totals for the NPC Project from Table 2-7 to produce the forecast peak hour transit trips by transit line. The results are shown in Table 2-15.

For all transit services, the ridership shown in Table 2-15 represents the increase of transit riders on that line during the weekday morning and evening peak hours. The Red Line, between Park Street and South Station, carries all of the transit trips of the Project that are transferring from the Green Line. Similarly, the Red Line, between Downtown Crossing and South Station, also carries all transit trips of the Project that are transferring from the Green, Orange and Blue Lines. Table 2-16 presents the total projected Red Line ridership from the Project between South Station and Park Street by way of Downtown Crossing.

Table 2-15 Project Peak-Hour Transit Riders

	Transit Line	Morning Peak Hour Entering	Morning Peak Hour Exiting	Evening Peak Hour Entering	Evening Peak Hour Exiting
Commuter Rail:	Worcester/Framingham	23	2	2	22
	Needham	9	1	1	9
	Franklin	20	2	2	20
	Providence/Stoughton	41	4	4	40
	Fairmount	5	0	1	5
	Middleborough/Lakeville	20	2	2	20
	Greenbush	14	1	1	14
	Kingston/Plymouth	15	1	2	15
	Subtotal:	147	13	15	145
Subway:	Green Line – West	117	11	12	116
	Green Line – North	95	8	10	95
	Red Line – North	82	7	8	81
	Red Line – South	107	9	11	106
	Orange Line – North	81	7	8	81
	Orange Line – South	75	7	8	75
	Blue Line	66	6	7	66
	Subtotal:	623	55	64	620
Bus and Commuter Boats	South Station Bus Lines	3	0	0	3
	MBTA Bus Lines (Includes Silver Line)	94	8	10	94
	Commuter Boats	7	1	1	7
	Subtotal:	104	9	11	104
All Services	TOTALS	874	77	90	869

Table 2-16 Total Project Red Line Ridership - South Station to Park Street

		Morning Peak Hour Entering	Morning Peak Hour Exiting	Evening Peak Hour Entering	Evening Peak Hour Exiting
Red Line	Downtown Crossing – South Station	516	46	53	514
Red Line	Park Street- Downtown Crossing	294	34	30	292

As shown on Table 2-15, the majority of the transit trips associated with the Project are expected to use the subway system, with a projected increase in peak-hour ridership of up to 117 passengers on any one subway line. Peak-hour ridership on the Commuter Rail system is expected to increase by up to 41 passengers on any individual train. Increases in

bus and commuter boat ridership associated with the Project are expected to be relatively modest. As indicated previously, the South Station Expansion project and the associated improvements to South Station reflect a larger development proposal and associated increase in transit ridership for the Project than is currently proposed.

2.4.4 Parking

In conjunction with the Project, the South Station Bus Terminal will be expanded by approximately 106,000 sf on property owned by the MBTA, and a new parking garage will be constructed above the bus terminal which will include 895 spaces in addition to the existing MBTA parking garage. After construction of the new garage, the combined parking garages (new garage and MBTA garage) will provide 1,083 parking spaces. Access to the new and expanded parking garage will be provided by the South Station Connector and the ramp system that serves the South Station Bus Terminal, as well as by way of driveways (one entering drive and one exiting drive) located off Atlantic Avenue.

As proposed, the Project will provide up to 460 parking spaces for the office component of the Project (or a parking ratio of 0.4 spaces per 1,000 sf), leaving 435 spaces (out of the 895 new spaces) to serve the residential and/or hotel component (or a parking ratio of between 1.0 and 0.79 spaces per residential unit for the 435 unit and 550 unit residential development options, respectively); under the Phase 2 hotel option, the number of spaces provided would be capped at a ratio not to exceed 1.0 space per residential unit (175 units) and 0.4 spaces per hotel room (360 rooms), resulting in 319 spaces, with the balance of the parking (116 spaces) to be provided as commercial or visitor parking). These parking ratios are consistent with the BTD recommended parking ratios for the District in which the Project site is located.

2.4.5 Loading/Delivery Impacts

Loading and delivery activities associated with the Project will occur in two designated off-street loading areas: one accessed from the South Station Connector and the ramp system that serves the South Station Bus Terminal (serving Phases 1 and 2) and the second situated at the south end of the Project site that will be accessed from Atlantic Avenue (serving Phase 3). Both loading areas will be enclosed and will be located internal to the structures that will occupy the Project site. The loading area accessed from the South Station Connector has been designed to accommodate the turning and maneuvering requirements of a large tractor semi-trailer combination (WB-67 design vehicle), and will serve as the primary loading area for Project. The Atlantic Avenue loading area is situated outside of the sidewalk area and has been designed to accommodate smaller delivery trucks (SU-30/40 design vehicle).

Passenger drop-off/pick-up activities associated with the Project will occur both within the parking garage as well as along Atlantic Avenue, with curbside use (other than curb cuts for parking entrance and exit) limited to taxis or as defined by BTD.

2.5 Transportation Improvement Program

The previous sections of this assessment have quantified and evaluated in detail the impact of the Project on the transportation infrastructure. This section presents a summary of Project-related improvements that are designed to: 1) address existing deficiencies identified as a part of this assessment; 2) minimize the impact of the Project on the transportation system and proximate neighborhood areas; and 3) provide safe and efficient access to the Project site.

2.5.1 Proposed Improvements

The Proponent is committed to the implementation of a comprehensive transportation improvement program that is designed to reduce the impact of the planned development on the transportation infrastructure. The major elements of the improvement program have been identified in the TAPA that was executed between BTD and the Proponent for the previously approved development that was to occupy the Project site, and can be separated into three primary categories: i) Project site access accommodations; ii) off-site improvements; and iii) TDM measures. In addition, the framework of a construction traffic and parking management plan have also been developed for the Project. The elements of the planned transportation improvement program are discussed in detail in the following sections.

2.5.1.1 Project Site Access

Access to the Project site will be provided from the South Station Connector and the ramp system to the South Station Bus Terminal, and from one-way entrance and exit drives that will intersect the east side of Atlantic Avenue between Beach Street and East Street. Primary loading and delivery activities associated with the Project will occur in two designated off-street loading areas: one accessed from the South Station Connector and the ramp system that serves the South Station Bus Terminal (serving Phases 1 and 2) and the second situated at the south end of the Project site that will be accessed from Atlantic Avenue (serving Phase 3). . Both loading dock areas will be enclosed and will be located internal to the structures that will occupy the Project site. The loading area accessed from the South Station Connector has been designed to accommodate the turning and maneuvering requirements of a large tractor semi-trailer combination (WB-67 design vehicle) internal to the loading dock area. The following measures are anticipated relative to the access drives serving the Project site:

- The driveway serving the loading dock area off Atlantic Avenue is anticipated to be designed as a pan-type driveway so that the sidewalk is maintained at a consistent grade along Atlantic Avenue. Audible and visual pedestrian warning devices should be installed at the driveway to warn pedestrians of vehicles that may be exiting the loading area.

- Vehicles exiting the Project onto Atlantic Avenue will be placed under STOP-sign control.
- Centerline pavement markings, where provided, will consist of a double-yellow line in accordance with the centerline pavement marking standards of the *Manual on Uniform Traffic Control Devices* (MUTCD).[13]
- All signs and other pavement markings to be installed within the development will conform to the applicable standards of the MUTCD.
- Signs, landscaping and other features to be installed adjacent to the Project site driveways on Atlantic Avenue will be designed and maintained so as not to restrict lines of sight to or from the drives for vehicles, pedestrians or bicyclists.

2.5.1.2 Off-Site Improvements

Atlantic Avenue

Consistent with the requirements of the previously approved TAPA, the Proponent will complete the following improvements along Atlantic Avenue subject to receipt of all necessary rights, permits and approvals:

- Reconstruct the sidewalk and streetscape area along the Project site frontage on Atlantic Avenue commensurate with the phasing of the Project, generally from north to south. These improvements will be implemented by the Proponent as the build-out of the Project progresses along the Atlantic Avenue corridor, with all sidewalk and streetscape improvements completed prior to the issuance of the final Certificate of Occupancy for the Project as set forth in the Site Plans.

- Redesign/reconfigure the curb-side use along the east side of Atlantic Avenue between Summer Street and Kneeland Street to accommodate the installation of the Project driveways and to extend the existing cab stand areas. These improvements will be completed prior to the issuance of the first Certificate of Occupancy for the development.

2.5.1.3 Transportation Demand Management Program

Introduction

The Project site affords superior access to public transportation given its location at the southern hub of the MBTA Commuter Rail system at South Station and the South Station Bus Terminal. In addition to the MBTA Commuter Rail system, these important transportation nodes afford connections to intercity and interstate bus lines, MBTA bus

[13] *Manual on Uniform Traffic Control Devices* (MUTCD); Federal Highway Administration; Washington, DC; 2009.

services, Amtrak train services, and MBTA subway service via the Silver Line and Red Line. Headhouses for the Silver Line and Red Line are located on the corners of the Atlantic Avenue/Summer Street intersection and immediately adjacent to the Project site. Further, South Station is the location of one of the most active Hubway bicycle rental stations in the City, offering opportunities to expand the service to accommodate the increased demands associated with the Project. In conjunction with the Project, the South Station Bus Terminal will be expanded by approximately 106,000 sf and increase bus gate capacity by approximately 50 percent on property owned by the MBTA.

The following pedestrian and bicycle improvements/accommodations, TDM measures, and trip reduction strategies are proposed with the goal of further minimizing the Project's overall impact, and will be implemented commensurate with initial phase of the Project unless indicated otherwise.

Pedestrian Improvements

As part of the Project, the Proponent will define and enhance pedestrian facilities as follows:

- The sidewalk and streetscape area will be reconstructed along the Project site frontage on Atlantic Avenue commensurate with the phasing of the Project, generally from north to south.
- Street lighting will be provided around the building perimeter and along Atlantic Avenue.
- Full handicapped access will be provided on-site, including elevators and ramps for barrier-free access.
- Sidewalks will be constructed so as to be flush with all driveways and garage entrances.
- Pedestrian warning devices (signs, voice and light devices, mirrors, etc.) will be provided at all garage driveways for pedestrian safety.

In addition, the Proponent will provide funding and data to the City for the completion of a South Station/Leather District Pedestrian Access Study (see Section 2.5.1.4).

Bicycle Accommodations

The Project will include provision of safe, secure, weather protected bicycle racks and/or storage lockers within the Project site. Signs will be provided at appropriate locations within the Project site directing bicyclists to the bicycle storage facilities. Short-term bicycle parking will be provided at an appropriate location along Atlantic Avenue defined in consultation with BTD and the BRA. The location of the short-term bicycle parking will be commensurate with the build-out of the Project as building entrances are defined along

Atlantic Avenue. In addition, an on-site shower and locker facility will be provided for occupants of the Project.

Traffic Reduction Strategies

In order to reduce single occupant vehicle (SOV) travel to the Project site and encourage the use of alternative modes of transportation to reach the planned development, the following traffic reduction strategies will be implemented in conjunction with the Project:

- A full-time, on-site Transportation Coordinator will be assigned;
- Join the A Better City Transportation Management Association (TMA);
- Coordinate with MassRIDES through the A Better City TMA to provide commuter services to employees of the Project;
- Through the A Better City TMA, make available information regarding public transportation services, maps, schedules and fare information to tenants, employees, residents and guests of the Project;
- Work with the A Better City TMA to develop an orientation packet to be provided to all tenants, employees and residents of the Project detailing the elements of the TDM program supported by the Project, including car/vanpool matching programs, public transportation options, bicycle and walking alternatives and the "guaranteed-ride-home" program;
- Promote the use of public transportation to residents and employees in website based materials including links to the appropriate home pages of the MBTA and MassRIDES;
- Provide at least three car sharing (Zipcar or similar service) parking spaces within the parking garage;
- Provide at least two carpool/vanpool designated parking spaces within the parking garage;
- Provide at least two designated parking spaces for alternatively fueled vehicles within the parking garage;
- Provide at least two electric vehicle charging stations within the parking garage;
- Participate in the MBTA Corporate T-Pass Program to the extent practical and as allowable pursuant to corporate policies;
- Offer a "guaranteed-ride-home" to all employees that car/vanpool or that use public transportation as provided through the TMA;
- Through the A Better City TMA, provide a periodic newsletter or bulletin summarizing transit, ridesharing, bicycling, alternative work schedules and other travel options;

- Promote bicycle use as an alternative to SOV travel by providing promotional material on bicycle commuting and bicycle safety, and offer incentives for bicycle use;
- Provide an on-site shower and locker facility for occupants of the Project;
- Encourage occupants to participate in MassRIDES' NuRide program which rewards employees that choose to walk, bicycle, carpool, vanpool or that use public transportation; and
- Coordinate with Hubway to locate an additional bicycle sharing station along Atlantic Avenue at an appropriate location that is convenient to the pedestrian entrances to the Project and the entrance to the South Station Bus Terminal.

In addition, an annual occupant survey and traffic monitoring program will be implemented through the A Better City TMA (see Section 2.5.1.7) that will be used to document the effectiveness of the traffic reduction program.

Alternative Work Schedules

Flexible working hours allow employees to choose their own starting and finishing times by establishing a required core time such as 9:00 a.m. to 4:00 p.m.; this allows employees of office tenants to vary work schedules and reduces peak-hour demand. Project office tenants will evaluate the feasibility of implementing a flextime policy and/or telecommuting for clerical/office employees in order to reduce peak-hour traffic demands.

On-Site Banking/Direct Deposit

Project office tenants will be encouraged to offer employees the option of direct deposit of paychecks in order to reduce off-site trips and the overall volume of employee traffic.

2.5.1.4 South Station/Leather District Pedestrian Access Study

The Proponent will provide a monetary contribution to BTD for dedicated use in completing a comprehensive pedestrian access study for the South Station area and the Leather District. These funds will be provided to BTD in an appropriate form prior to the issuance of a Building Permit for the Project. In support of this pedestrian access study, the Proponent will conduct, and provide to BTD, pre-construction pedestrian counts during the weekday morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak periods along Atlantic Avenue and Summer Street, at the entrances to both the South Station Bus Terminal and the South Station Head House, as well as at the intersections defined in conjunction with the Traffic Monitoring Program (see Section 2.1.5.7). The amount of the contribution to BTD for this study will be the difference between $50,000 and the cost to provide the pre-construction pedestrian counts.

2.5.1.5 Construction Management Plan (CMP)

An important component of the transportation improvement program is an effective series of measures designed to minimize traffic flow and safety impacts during the Project's construction phase. Summarized below are several measures which the Proponent and the general contractor will undertake during the construction phase of the Project.

- The Proponent will coordinate with BTD regarding all transportation-related construction impacts of the Project.
- Prior to the implementation of any planned construction activities within the public right-of-way, the contractor will submit to BTD for review and approval a traffic and pedestrian management plan.
- The general contractor will join the A Better City TMA in order to coordinate trip reduction strategies during the construction phase of the Project.
- The general contractor, through the A Better City TMA, will implement a car/vanpool program in order to reduce construction-related traffic and parking demands associated with the Project.
- The general contractor will be encouraged to offer subsidies to workers that use public transportation to be used toward the purchase of MBTA "Charlie Cards". Employees that participate in the program would also be eligible for the "guaranteed-ride-home" program through the A Better City TMA.
- Designated truck routes will be established to govern how trucks access the Project site. The goal of this commitment is to have construction trucks use only the regional highway system (Interstates 90 and 93) and to avoid using residential city streets to the extent practical. Construction contracts for the Project will include notification of this provision and contain explicit language prohibiting travel through the Leather District, excepting Kneeland Street.
- Secure fencing and sidewalk staging protection will be provided in areas affected by the construction to protect nearby pedestrian and vehicular traffic. Gate entrances into the construction area(s) will be determined jointly with BTD.
- Secure on-site storage will be provided for tools and equipment in an effort to minimize construction-related vehicle trips to the site.
- Full or partial street closures will be avoided to the extent possible. Should a partial street closure be necessary in order to off-load construction materials and/or complete construction-related activities, the closure will be limited to off-peak periods as defined by the BTD so as to minimize the impact on vehicular and pedestrian flow. Police details will be utilized as required by the BTD.
- During construction activities, as required by BTD, a police detail will be placed on-site within the sidewalk/street area to control pedestrian, bicycle and construction vehicle conflicts.

- Construction worker parking will be prohibited along Atlantic Avenue and in on-street areas within the Leather District. Construction contracts for the Project will include notification of this prohibition.

2.5.1.6 Loading and Deliveries

Loading and delivery activities associated with the Project will occur in two designated off-street loading areas as described above. Both loading areas will be enclosed and will be located internal to the structures that will occupy the Project site. The loading area accessed from the South Station Connector has been designed to accommodate the turning and maneuvering requirements of a large tractor semi-trailer combination (WB-67 design vehicle), and will serve as the primary loading area for Project. The Atlantic Avenue loading area is situated outside of the sidewalk area and has been designed to accommodate smaller delivery trucks (SU-30/40 design vehicle).

The loading areas will be managed by the building management team, and signs will be posted in the loading areas informing drivers of the five-minute idle time. Loading and delivery activities will be carefully coordinated, scheduled and managed by the property management team to ensure that truck activity impacts associated with the Project are minimized during the commuter peak hours and avoid sensitive streets within the City.

2.5.1.7 Traffic Monitoring Program

The Proponent, by and through the A Better City TMA, 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. The monitoring program will include obtaining traffic volume information at the driveways serving the Project site and an employee and resident survey of commuting modes. The results of the annual monitoring program will be provided to the BRA and BTD. The monitoring program will be performed annually commencing upon the issuance of a Certificate of Occupancy for the first phase of the Project, and will continue for a period of two-years after the issuance of the Final Certificate of Occupancy for Project.

In conjunction with the traffic monitoring program, the Proponent will conduct manual TMCs, pedestrian counts and bicycle counts during the weekday morning (7:00 to 9:00 a.m.) and evening (4:00 to 6:00 p.m.) peak periods at the following intersections in the South Station area:

1. Atlantic Avenue/Kneeland Street/Frontage Road/I-90 Eastbound Off-Ramp
2. Atlantic Avenue/Beach Street
3. Atlantic Avenue/Project Site Drive
4. Atlantic Avenue/East Street/ Project Site Drive

5. Atlantic Avenue/Essex Street
6. Atlantic Avenue/Summer Street
7. Summer Street/Purchase Street
8. Surface Road/Essex Street/Lincoln Street
9. Surface Road/Beach Street
10. Kneeland Street/South Street
11. Kneeland Street/Lincoln Street
12. Kneeland Street/Surface Road

The TMCs will be conducted prior to the start of construction of each phase of the Project, and will be repeated six months after the issuance of the Final Certificate of Occupancy for Project. The Proponent will prepare a Synchro™ network for the defined intersections each time that the TMCs are completed, and will perform a detailed capacity analysis for each peak period (weekday morning and evening peak hours). In conjunction with this analysis, the Proponent will provide recommendations to BTD regarding potential modifications to the traffic signal timing and sequencing as may be required in order to improve intersection operations, and will provide long-term recommendations concerning potential future intersection improvements that could be undertaken by the City or others to facilitate the safe and efficient movement of vehicles and pedestrians in the South Station area. The Synchro™ network, analysis and data files will be provided to BTD and will be summarized in a written report. This information will be provided to BTD prior to the end of the calendar year in which the data is collected and analyzed.

In addition, the Proponent will install a pan-tilt zoom (PTZ) traffic monitoring camera at the following locations: Dorchester Avenue at Summer Street, Atlantic Avenue at Congress Street, and Kneeland Street at Lincoln Street; or alternate locations designated by BTD. The installation will include all necessary appurtenances required for transmitting the video signal to, and allowing remote operation of the camera from, BTD's Traffic Operations Center. The PTZ traffic monitoring cameras will be installed within 90 days after the issuance of the first Building Permit for the Project.

2.5.2 Conclusion

With implementation of the elements of the transportation improvement program described in the previous section, this assessment has demonstrated that the Project can be accommodated within the confines of the transportation system in a safe and efficient manner. The Proponent has committed to mitigation as a part of the City of Boston TAPA

and will ensure that proper Project mitigation will be implemented as may be required to accommodate the Project and commensurate with the planned build-out and occupancy of the development.

3. ITE Internal Capture

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Millennium - Winthrop Square	**Organization:**	VHB
Project Location:	Boston	**Performed By:**	ASR
Scenario Description:		**Date:**	11/20/2017
Analysis Year:	2017	**Checked By:**	
Analysis Period:	**AM Street Peak Hour**	**Date:**	

Table 1-A: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	771	ksf	981	863	118
Retail	820	19	ksf	57	35	22
Restaurant				0		
Cinema/Entertainment				0		
Residential	230	500	units	187	32	155
Hotel				0		
All Other Land Uses[2]				0		
Total				1225	930	295

Table 2-A: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	58%	9%	1.13	58%	9%
Retail	1.67	58%	9%	1.67	58%	9%
Restaurant						
Cinema/Entertainment						
Residential	1.13	15%	67%	1.13	15%	67%
Hotel						
All Other Land Uses[2]						

Table 3-A: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-A: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		19	0	0	0	0
Retail	11		0	0	1	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	4	2	0	0		0
Hotel	0	0	0	0	0	

Table 5-A: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,414	1,069	345
Internal Capture Percentage	5%	3%	11%
External Vehicle-Trips[3]	361	295	66
External Transit-Trips[4]	689	583	106
External Non-Motorized Trips[4]	237	112	125

Table 6-A: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	2%	14%
Retail	36%	32%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	3%	3%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-A

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Millennium - Winthrop Square	**Organization:**	VHB
Project Location:	Boston	**Performed By:**	ASR
Scenario Description:		**Date:**	11/20/2017
Analysis Year:	2017	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710	771	ksf	942	160	782
Retail	820	19	ksf	197	95	102
Restaurant				0		
Cinema/Entertainment				0		
Residential	220	500	units	225	151	74
Hotel				0		
All Other Land Uses[2]				0		
Total				1364	406	958

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.13	58%	9%	1.13	58%	9%
Retail	1.67	58%	9%	1.67	58%	9%
Restaurant						
Cinema/Entertainment						
Residential	1.13	15%	67%	1.13	15%	67%
Hotel						
All Other Land Uses[2]						

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office						
Retail						
Restaurant						
Cinema/Entertainment						
Residential						
Hotel						

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		13	0	0	7	0
Retail	3		0	0	44	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	3	16	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,649	511	1,138
Internal Capture Percentage	10%	17%	8%
External Vehicle-Trips[3]	382	95	287
External Transit-Trips[4]	777	195	582
External Non-Motorized Trips[4]	241	108	133

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	3%	2%
Retail	18%	28%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	30%	23%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

4. ITE Trip Generation

Millennium Partners - Winthrop Square
13706.00
11/20/2017 Program

Trip Generation Detail (Rounded)

Weekday Daily

		Unadjusted Vehicle Trips	Unadjusted Person Trips	Internal Capture	Net-New Person Trips	Person Trips by Vehicle	Vehicle Trips	Pass-By Trips	Net-New Vehicle Trips	Transit	Walk	Bike
1	**Residential**	2,610	2,950	0	2,950	530	500	n/a	500	440	1,980	0
2	**Office**	6,200	7,010	0	7,010	2,310	2,100	n/a	2,100	4,060	630	0
3	**Retail**	2,310	3,850	0	3,850	1,270	760	n/a	760	2,230	350	0
	Total	11,120	13,810	0	13,810	4,110	3,360	0	3,360	6,730	2,960	0

Weekday AM Peak Hour

		Unadjusted Vehicle Trips	Unadjusted Person Trips	Internal Capture	Net-New Person Trips	Person Trips by Vehicle	Vehicle Trips	Pass-By Trips	Net-New Vehicle Trips	Transit	Walk	Bike
1	**Residential**											
	In	30	35	0	35	5	5	n/a	5	5	25	0
	Out	155	175	5	170	30	30	n/a	30	25	115	0
	Total	185	210	5	205	35	35	0	35	30	140	0
2	**Office**											
	In	865	975	15	960	315	290	n/a	290	555	85	0
	Out	120	135	20	115	40	35	n/a	35	65	10	0
	Total	985	1110	35	1075	355	325	0	325	620	95	0
3	**Retail**											
	In	35	60	20	40	10	5	n/a	5	20	5	0
	Out	20	35	10	25	10	5	n/a	5	15	0	0
	Total	55	95	30	65	20	10	0	10	35	5	0
	Total											
	In	930	1070	35	1035	330	300	0	300	580	115	0
	Out	295	345	35	310	80	70	0	70	105	125	0
	Total	1225	1415	70	1345	410	370	0	370	685	240	0

Weekday PM Peak Hour

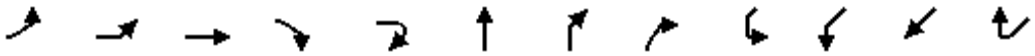
		Unadjusted Vehicle Trips	Unadjusted Person Trips	Internal Capture	Net-New Person Trips	Person Trips by Vehicle	Vehicle Trips	Pass-By Trips	Net-New Vehicle Trips	Transit	Walk	Bike
1	**Residential**											
	In	150	170	50	120	20	20	n/a	20	20	80	0
	Out	75	85	20	65	10	10	n/a	10	10	45	0
	Total	225	255	70	185	30	30	0	30	30	125	0
2	**Office**											
	In	160	180	5	175	60	50	n/a	50	100	15	0
	Out	780	885	20	865	285	260	n/a	260	500	80	0
	Total	940	1065	25	1040	345	310	0	310	600	95	0
3	**Retail**											
	In	95	160	30	130	45	25	n/a	25	75	10	0
	Out	100	170	45	125	40	25	n/a	25	70	10	0
	Total	195	330	75	255	85	50	0	50	145	20	0
	Total											
	In	405	510	85	425	125	95	0	95	195	105	0
	Out	955	1140	85	1055	335	295	0	295	580	135	0
	Total	1360	1650	170	1480	460	390	0	390	775	240	0

5. Synchro Level of Service Reports

Lane Group	EBT	EBR	NBT	SWT
Lane Group Flow (vph)	504	220	780	849
v/c Ratio	0.85	0.92	0.81	0.65
Control Delay	55.9	84.4	46.4	23.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	55.9	84.4	46.4	23.1
Queue Length 50th (ft)	188	168	186	147
Queue Length 95th (ft)	#280	#330	215	m180
Internal Link Dist (ft)	485		196	163
Turn Bay Length (ft)				
Base Capacity (vph)	607	244	1026	1298
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.83	0.90	0.76	0.65

Intersection Summary

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



Movement	EBL2	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SWL2	SWL	SWT	SWR2
Lane Configurations												
Volume (vph)	110	120	235	80	135	540	70	45	145	85	375	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	11	11	12	10	11	11	11
Total Lost time (s)			6.5	6.5		8.0					7.5	
Lane Util. Factor			0.91	0.91		0.91					0.91	
Frpb, ped/bikes			0.99	1.00		0.94					0.91	
Flpb, ped/bikes			1.00	1.00		1.00					1.00	
Frt			1.00	0.85		0.97					0.97	
Flt Protected			0.98	1.00		1.00					0.98	
Satd. Flow (prot)			2671	1077		3892					3694	
Flt Permitted			0.98	1.00		1.00					0.98	
Satd. Flow (perm)			2671	1077		3892					3694	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.84	0.84	0.84	0.86	0.86	0.86	0.86
Adj. Flow (vph)	117	128	250	85	144	643	83	54	169	99	436	145
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	76	0
Lane Group Flow (vph)	0	0	504	220	0	780	0	0	0	0	773	0
Confl. Peds. (#/hr)	875			382	395			284	284	382		875
Confl. Bikes (#/hr)								1				
Heavy Vehicles (%)	6%	2%	14%	5%	26%	7%	2%	6%	4%	4%	11%	1%
Parking (#/hr)								10				
Turn Type	Split	Split	NA	Prot		NA			Split	Split	NA	
Protected Phases	3	3	3	3		2			1	1	1	
Permitted Phases												
Actuated Green, G (s)			24.4	24.4		27.1					36.5	
Effective Green, g (s)			24.4	24.4		27.1					36.5	
Actuated g/C Ratio			0.22	0.22		0.25					0.33	
Clearance Time (s)			6.5	6.5		8.0					7.5	
Vehicle Extension (s)			3.0	3.0		3.0					3.0	
Lane Grp Cap (vph)			592	238		958					1225	
v/s Ratio Prot			0.19	c0.20		c0.20					c0.21	
v/s Ratio Perm												
v/c Ratio			0.85	0.92		0.81					0.63	
Uniform Delay, d1			41.1	41.9		39.1					31.1	
Progression Factor			1.00	1.00		1.00					0.76	
Incremental Delay, d2			11.3	38.1		5.4					2.0	
Delay (s)			52.4	80.0		44.5					25.5	
Level of Service			D	E		D					C	
Approach Delay (s)			60.8			44.5					25.5	
Approach LOS			E			D					C	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

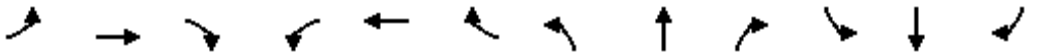
c Critical Lane Group

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1142	204	517	123	45
v/c Ratio	0.56	0.96	1.15	0.46	0.13
Control Delay	13.4	99.0	134.1	21.0	1.1
Queue Delay	0.5	0.0	0.0	0.3	0.0
Total Delay	13.9	99.0	134.1	21.3	1.1
Queue Length 50th (ft)	107	159	~236	23	0
Queue Length 95th (ft)	135	#307	#339	40	0
Internal Link Dist (ft)	95		250	176	
Turn Bay Length (ft)					
Base Capacity (vph)	2028	213	448	268	351
Starvation Cap Reductn	412	0	0	14	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.96	1.15	0.48	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	330	495	225	200	435	0	0	95	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	11	11	12	12	12	12	12	12
Total Lost time (s)					6.0		7.0	7.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			1.00	1.00
Frpb, ped/bikes					0.97		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.97		1.00	1.00			1.00	0.85
Flt Protected					0.98		0.95	1.00			1.00	1.00
Satd. Flow (prot)					3894		1382	2902			1474	1309
Flt Permitted					0.98		0.95	1.00			1.00	1.00
Satd. Flow (perm)					3894		1382	2902			1474	1309
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	0	0	0	359	538	245	227	494	0	0	123	45
RTOR Reduction (vph)	0	0	0	0	48	0	0	0	0	0	0	37
Lane Group Flow (vph)	0	0	0	0	1094	0	204	517	0	0	123	8
Confl. Peds. (#/hr)						216						1805
Confl. Bikes (#/hr)						6						7
Heavy Vehicles (%)	2%	2%	2%	6%	7%	8%	7%	7%	0%	2%	16%	11%
Turn Type				Split	NA		Split	NA			NA	Prot
Protected Phases				1 4	1 4		2	2			3	3
Permitted Phases												
Actuated Green, G (s)					56.0		17.0	17.0			20.0	20.0
Effective Green, g (s)					52.0		17.0	17.0			20.0	20.0
Actuated g/C Ratio					0.47		0.15	0.15			0.18	0.18
Clearance Time (s)							7.0	7.0			4.0	4.0
Vehicle Extension (s)							3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1840		213	448			268	238
v/s Ratio Prot					c0.28		0.15	c0.18			c0.08	0.01
v/s Ratio Perm												
v/c Ratio					0.59		0.96	1.15			0.46	0.03
Uniform Delay, d1					21.3		46.1	46.5			40.2	37.0
Progression Factor					0.73		1.00	1.00			0.38	1.00
Incremental Delay, d2					1.2		51.6	92.0			5.3	0.3
Delay (s)					16.7		97.7	138.5			20.7	37.3
Level of Service					B		F	F			C	D
Approach Delay (s)		0.0			16.7			127.0			25.1	
Approach LOS		A			B			F			C	

Intersection Summary			
HCM 2000 Control Delay	56.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	SET	SER	SER2	SWL2	SWL	SWT
Lane Group Flow (vph)	626	310	138	462	332	409
v/c Ratio	0.57	0.61	0.25	0.63	0.67	0.82
Control Delay	16.7	20.9	2.0	8.9	37.8	46.7
Queue Delay	0.9	1.6	0.5	0.0	0.0	0.0
Total Delay	17.6	22.5	2.6	8.9	37.8	46.7
Queue Length 50th (ft)	94	88	0	32	190	250
Queue Length 95th (ft)	159	298	9	125	283	366
Internal Link Dist (ft)	152					169
Turn Bay Length (ft)						
Base Capacity (vph)	1101	511	551	779	556	564
Starvation Cap Reductn	226	82	178	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.72	0.37	0.59	0.60	0.73

Intersection Summary

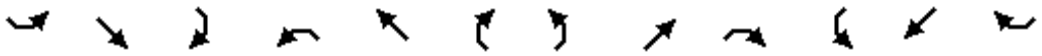
Movement	SET	SER	SER2	SWL2	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	545	285	120	430	305	380
Future Volume (vph)	545	285	120	430	305	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	2834	1317	1201	1404	1458	1478
Flt Permitted	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	2834	1317	1201	1404	1458	1478
Peak-hour factor, PHF	0.87	0.92	0.87	0.93	0.92	0.93
Adj. Flow (vph)	626	310	138	462	332	409
RTOR Reduction (vph)	0	0	84	260	0	0
Lane Group Flow (vph)	626	310	54	202	332	409
Heavy Vehicles (%)	7%	3%	13%	8%	4%	8%
Turn Type	NA	Perm	Prot	Split	Split	NA
Protected Phases	1		1	3	3	3
Permitted Phases		1				
Actuated Green, G (s)	42.7	42.7	42.7	37.3	37.3	37.3
Effective Green, g (s)	42.7	42.7	42.7	37.3	37.3	37.3
Actuated g/C Ratio	0.39	0.39	0.39	0.34	0.34	0.34
Clearance Time (s)	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
Lane Grp Cap (vph)	1100	511	466	476	494	501
v/s Ratio Prot	0.22		0.04	0.14	0.23	c0.28
v/s Ratio Perm		c0.24				
v/c Ratio	0.57	0.61	0.11	0.42	0.67	0.82
Uniform Delay, d1	26.4	26.9	21.5	28.1	31.1	33.2
Progression Factor	0.53	0.54	0.24	1.00	1.00	1.00
Incremental Delay, d2	2.0	4.9	0.5	0.6	3.6	9.9
Delay (s)	15.9	19.5	5.5	28.7	34.7	43.1
Level of Service	B	B	A	C	C	D
Approach Delay (s)	15.6					35.3
Approach LOS	B					D

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

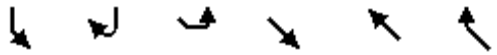
Lane Group	SET	NWL	SWT
Lane Group Flow (vph)	202	114	267
v/c Ratio	0.81	0.45	0.48
Control Delay	59.9	38.5	30.7
Queue Delay	0.0	0.0	0.0
Total Delay	59.9	38.5	30.7
Queue Length 50th (ft)	133	59	138
Queue Length 95th (ft)	160	100	245
Internal Link Dist (ft)	136		97
Turn Bay Length (ft)			
Base Capacity (vph)	367	255	557
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.55	0.45	0.48

Intersection Summary



Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	110	50	90	0	0	0	0	0	80	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0							5.0	
Lane Util. Factor		1.00		1.00							1.00	
Frpb, ped/bikes		0.72		1.00							1.00	
Flpb, ped/bikes		1.00		1.00							1.00	
Frt		0.96		1.00							1.00	
Flt Protected		1.00		0.95							0.98	
Satd. Flow (prot)		898		1279							1377	
Flt Permitted		1.00		0.95							0.98	
Satd. Flow (perm)		898		1279							1377	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	139	63	114	0	0	0	0	0	93	174	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	202	0	114	0	0	0	0	0	0	267	0
Confl. Peds. (#/hr)			1667							152		
Confl. Bikes (#/hr)			11									
Heavy Vehicles (%)	2%	12%	10%	8%	2%	2%	2%	2%	2%	24%	21%	2%
Parking (#/hr)		10		10								
Turn Type		NA		Prot						Split	NA	
Protected Phases		3		2						1	1	
Permitted Phases												
Actuated Green, G (s)		30.5		22.0							44.5	
Effective Green, g (s)		30.5		22.0							44.5	
Actuated g/C Ratio		0.28		0.20							0.40	
Clearance Time (s)		4.0		4.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		248		255							557	
v/s Ratio Prot		c0.22		c0.09							c0.19	
v/s Ratio Perm												
v/c Ratio		0.81		0.45							0.48	
Uniform Delay, d1		37.1		38.7							24.2	
Progression Factor		1.00		0.83							1.00	
Incremental Delay, d2		18.2		5.5							2.9	
Delay (s)		55.3		37.7							27.1	
Level of Service		E		D							C	
Approach Delay (s)		55.3			37.7			0.0			27.1	
Approach LOS		E			D			A			C	

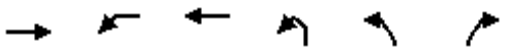
Intersection Summary			
HCM 2000 Control Delay	39.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Volume (veh/h)	0	0	20	170	90	245
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.82	0.82	0.87	0.87
Hourly flow rate (vph)	0	0	24	207	103	282
Pedestrians	1279					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				233	107	
pX, platoon unblocked	0.92	0.92	0.92			
vC, conflicting volume	1779	1523	1664			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1803	1525	1678			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	100	92			
cM capacity (veh/h)	74	133	309			

Direction, Lane #	SE 1	NW 1
Volume Total	232	385
Volume Left	24	0
Volume Right	0	282
cSH	309	1700
Volume to Capacity	0.08	0.23
Queue Length 95th (ft)	6	0
Control Delay (s)	3.3	0.0
Lane LOS	A	
Approach Delay (s)	3.3	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	35.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBL	WBT	NBL2	NBL	NBR
Lane Group Flow (vph)	226	135	194	214	202	262
v/c Ratio	0.40	0.94	0.31	0.24	0.26	0.40
Control Delay	7.5	75.7	11.6	0.4	9.5	11.1
Queue Delay	0.7	1.3	0.8	0.0	0.0	0.1
Total Delay	8.2	77.0	12.5	0.4	9.5	11.2
Queue Length 50th (ft)	9	45	52	0	41	53
Queue Length 95th (ft)	37	#174	93	m0	m54	m70
Internal Link Dist (ft)	27		136		330	
Turn Bay Length (ft)						
Base Capacity (vph)	716	186	799	882	783	650
Starvation Cap Reductn	217	7	373	0	0	0
Spillback Cap Reductn	250	0	0	0	0	39
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.75	0.46	0.24	0.26	0.43

Intersection Summary

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

Movement	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBR	NEL	NER
Lane Configurations										
Volume (vph)	160	0	10	115	165	180	170	220	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Lane Util. Factor	1.00			1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	0.95			1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00			0.46	1.00	1.00	1.00	1.00		
Frt	0.99			1.00	1.00	1.00	1.00	0.85		
Flt Protected	1.00			0.95	1.00	0.95	0.95	1.00		
Satd. Flow (prot)	1392			712	1598	1547	1562	1298		
Flt Permitted	1.00			0.55	1.00	0.95	0.95	1.00		
Satd. Flow (perm)	1392			412	1598	1547	1562	1298		
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.84	0.84	0.84	0.92	0.92
Adj. Flow (vph)	213	0	13	135	194	214	202	262	0	0
RTOR Reduction (vph)	24	0	0	0	0	107	0	0	0	0
Lane Group Flow (vph)	202	0	0	135	194	107	202	262	0	0
Confl. Peds. (#/hr)			1516	1516						
Confl. Bikes (#/hr)			9							
Heavy Vehicles (%)	15%	2%	25%	5%	7%	5%	4%	12%	2%	2%
Parking (#/hr)			10							
Turn Type	NA			Perm	NA	Perm	Prot	Perm		
Protected Phases	2				2		1			
Permitted Phases				2		1		1		
Actuated Green, G (s)	42.8			42.8	42.8	55.2	55.2	55.2		
Effective Green, g (s)	42.8			42.8	42.8	55.2	55.2	55.2		
Actuated g/C Ratio	0.39			0.39	0.39	0.50	0.50	0.50		
Clearance Time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	541			160	621	776	783	651		
v/s Ratio Prot	0.14				0.12		0.13			
v/s Ratio Perm				c0.33		0.07		c0.20		
v/c Ratio	0.37			0.84	0.31	0.14	0.26	0.40		
Uniform Delay, d1	24.0			30.6	23.4	14.7	15.7	17.1		
Progression Factor	0.32			0.57	0.49	0.00	0.46	0.47		
Incremental Delay, d2	0.4			29.7	0.3	0.2	0.5	1.2		
Delay (s)	8.1			47.1	11.8	0.2	7.8	9.2		
Level of Service	A			D	B	A	A	A		
Approach Delay (s)	8.1				26.3		5.9		0.0	
Approach LOS	A				C		A		A	

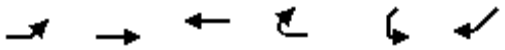
Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Group Flow (vph)	278	144	308	418
v/c Ratio	0.79	0.39	0.43	0.50
Control Delay	65.5	48.4	12.0	7.9
Queue Delay	58.7	6.6	2.6	2.0
Total Delay	124.2	55.0	14.6	9.9
Queue Length 50th (ft)	179	84	56	74
Queue Length 95th (ft)	#327	162	m61	m78
Internal Link Dist (ft)		136	176	
Turn Bay Length (ft)				
Base Capacity (vph)	352	371	718	831
Starvation Cap Reductn	135	177	291	266
Spillback Cap Reductn	0	0	18	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.28	0.74	0.72	0.74

Intersection Summary

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

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



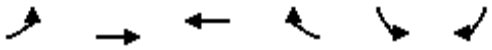
Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Volume (vph)	250	130	280	380	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1438	1513	1613	1346		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1438	1513	1613	1346		
Peak-hour factor, PHF	0.90	0.90	0.91	0.91	0.92	0.92
Adj. Flow (vph)	278	144	308	418	0	0
RTOR Reduction (vph)	0	0	0	232	0	0
Lane Group Flow (vph)	278	144	308	186	0	0
Confl. Bikes (#/hr)				10		
Heavy Vehicles (%)	13%	13%	6%	8%	2%	2%
Turn Type	Split	NA	NA	Prot		
Protected Phases	1	1	3	3		
Permitted Phases						
Actuated Green, G (s)	27.0	27.0	49.0	49.0		
Effective Green, g (s)	27.0	27.0	49.0	49.0		
Actuated g/C Ratio	0.25	0.25	0.45	0.45		
Clearance Time (s)	6.0	6.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	352	371	718	599		
v/s Ratio Prot	c0.19	0.10	c0.19	0.14		
v/s Ratio Perm						
v/c Ratio	0.79	0.39	0.43	0.31		
Uniform Delay, d1	38.8	34.6	20.9	19.6		
Progression Factor	1.26	1.29	0.53	3.68		
Incremental Delay, d2	15.6	2.9	0.6	0.4		
Delay (s)	64.7	47.5	11.7	72.6		
Level of Service	E	D	B	E		
Approach Delay (s)		58.8	46.8		0.0	
Approach LOS		E	D		A	

Intersection Summary			
HCM 2000 Control Delay	51.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT
Lane Group Flow (vph)	298	372
v/c Ratio	0.38	0.38
Control Delay	5.3	5.2
Queue Delay	0.5	0.6
Total Delay	5.8	5.7
Queue Length 50th (ft)	59	74
Queue Length 95th (ft)	m59	m72
Internal Link Dist (ft)		170
Turn Bay Length (ft)		
Base Capacity (vph)	787	975
Starvation Cap Reductn	194	288
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.50	0.54

Intersection Summary

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



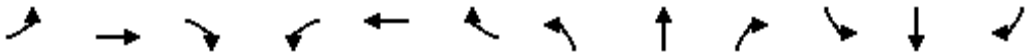
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	280	350	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	1.00				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1354	1676				
Flt Permitted	0.95	1.00				
Satd. Flow (perm)	1354	1676				
Peak-hour factor, PHF	0.94	0.94	0.92	0.92	0.92	0.92
Adj. Flow (vph)	298	372	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	298	372	0	0	0	0
Heavy Vehicles (%)	20%	2%	2%	2%	2%	2%
Turn Type	Perm	NA				
Protected Phases		1				
Permitted Phases	1					
Actuated Green, G (s)	32.0	32.0				
Effective Green, g (s)	32.0	32.0				
Actuated g/C Ratio	0.58	0.58				
Clearance Time (s)	5.0	5.0				
Vehicle Extension (s)	3.0	3.0				
Lane Grp Cap (vph)	787	975				
v/s Ratio Prot		c0.22				
v/s Ratio Perm	0.22					
v/c Ratio	0.38	0.38				
Uniform Delay, d1	6.2	6.2				
Progression Factor	0.66	0.67				
Incremental Delay, d2	1.1	0.9				
Delay (s)	5.2	5.1				
Level of Service	A	A				
Approach Delay (s)		5.1	0.0		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	SBT
Lane Group Flow (vph)	297	1016
v/c Ratio	0.80	0.45
Control Delay	46.5	4.0
Queue Delay	0.0	0.0
Total Delay	46.5	4.0
Queue Length 50th (ft)	227	41
Queue Length 95th (ft)	256	63
Internal Link Dist (ft)	484	92
Turn Bay Length (ft)		
Base Capacity (vph)	574	2261
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	66
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.52	0.46

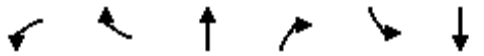
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	165	85	0	0	0	0	0	0	90	865	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1650	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		1.00									0.91	
Frpb, ped/bikes		0.88									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		1404									3513	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		1404									3513	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	196	101	0	0	0	0	0	0	96	920	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	297	0	0	0	0	0	0	0	0	1016	0
Confl. Peds. (#/hr)			201							528		
Confl. Bikes (#/hr)			8									
Heavy Vehicles (%)	2%	4%	0%	2%	2%	2%	2%	2%	2%	9%	7%	2%
Parking (#/hr)			10									
Turn Type		NA								Split	NA	
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		29.2									70.8	
Effective Green, g (s)		29.2									70.8	
Actuated g/C Ratio		0.27									0.64	
Clearance Time (s)		5.0									5.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		372									2261	
v/s Ratio Prot		c0.21									c0.29	
v/s Ratio Perm												
v/c Ratio		0.80									0.45	
Uniform Delay, d1		37.7									9.8	
Progression Factor		0.85									0.31	
Incremental Delay, d2		10.7									0.6	
Delay (s)		42.7									3.6	
Level of Service		D									A	
Approach Delay (s)		42.7			0.0			0.0			3.6	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	12.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		

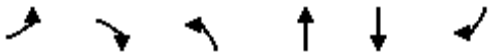
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	245	15	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.92	0.92
Hourly flow rate (vph)	0	0	306	19	0	0
Pedestrians	1709					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			341			334
pX, platoon unblocked						
vC, conflicting volume	2025	1872			2034	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2025	1872			2034	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	50	62			274	

Direction, Lane #	NB 1	NB 2
Volume Total	204	121
Volume Left	0	0
Volume Right	0	19
cSH	1700	1700
Volume to Capacity	0.12	0.07
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.7%	ICU Level of Service	A
Analysis Period (min)	15		



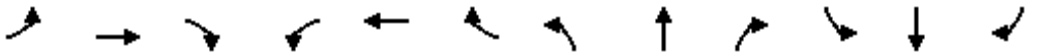
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	25	0	0	930	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	0	29	0	0	1057	0
Pedestrians				50		
Lane Width (ft)				0.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				172	301	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	1057	402	1057			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	564	0	564			
tC, single (s)	6.8	7.7	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.7	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	399	856	878			

Direction, Lane #	EB 1	SB 1	SB 2	SB 3
Volume Total	29	352	352	352
Volume Left	0	0	0	0
Volume Right	29	0	0	0
cSH	856	1700	1700	1700
Volume to Capacity	0.03	0.21	0.21	0.21
Queue Length 95th (ft)	3	0	0	0
Control Delay (s)	9.4	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.4	0.0		
Approach LOS	A			

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	446	835	124
v/c Ratio	0.41	0.48	0.21
Control Delay	13.5	23.9	7.3
Queue Delay	0.0	0.0	0.0
Total Delay	13.5	23.9	7.3
Queue Length 50th (ft)	50	152	13
Queue Length 95th (ft)	78	177	44
Internal Link Dist (ft)	217	146	
Turn Bay Length (ft)			75
Base Capacity (vph)	1075	1739	600
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.41	0.48	0.21

Intersection Summary



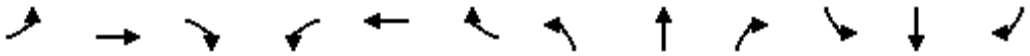
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	220	150	0	0	0	0	0	710	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	10
Total Lost time (s)					5.0						5.0	5.0
Lane Util. Factor					0.95						0.91	1.00
Frpb, ped/bikes					1.00						1.00	1.00
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					3051						4072	1280
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					3051						4072	1280
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	265	181	0	0	0	0	0	835	124
RTOR Reduction (vph)	0	0	0	0	188	0	0	0	0	0	0	53
Lane Group Flow (vph)	0	0	0	0	258	0	0	0	0	0	835	71
Confl. Bikes (#/hr)												32
Heavy Vehicles (%)	2%	2%	2%	3%	4%	2%	2%	2%	2%	2%	7%	6%
Turn Type				Split	NA						NA	Prot
Protected Phases				3	3						1	1
Permitted Phases												
Actuated Green, G (s)					32.0						47.0	47.0
Effective Green, g (s)					32.0						47.0	47.0
Actuated g/C Ratio					0.29						0.43	0.43
Clearance Time (s)					5.0						5.0	5.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					887						1739	546
v/s Ratio Prot					c0.08						c0.21	0.06
v/s Ratio Perm												
v/c Ratio					0.29						0.48	0.13
Uniform Delay, d1					30.2						22.7	19.1
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					0.8						1.0	0.5
Delay (s)					31.0						23.6	19.6
Level of Service					C						C	B
Approach Delay (s)		0.0			31.0			0.0			23.1	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	25.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBT
Lane Group Flow (vph)	290	253
v/c Ratio	0.24	0.28
Control Delay	7.3	8.7
Queue Delay	0.0	0.0
Total Delay	7.3	8.7
Queue Length 50th (ft)	21	52
Queue Length 95th (ft)	40	50
Internal Link Dist (ft)	162	254
Turn Bay Length (ft)		
Base Capacity (vph)	1218	920
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.24	0.28

Intersection Summary

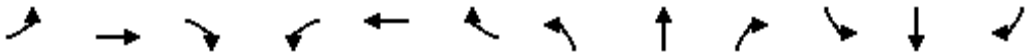


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	195	60	65	140	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frpb, ped/bikes					0.90			1.00				
Flpb, ped/bikes					1.00			0.83				
Frt					0.96			1.00				
Flt Protected					1.00			0.98				
Satd. Flow (prot)					2704			2092				
Flt Permitted					1.00			0.98				
Satd. Flow (perm)					2704			2092				
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	222	68	80	173	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	38	0	0	47	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	252	0	0	206	0	0	0	0
Confl. Peds. (#/hr)						832	1367					
Confl. Bikes (#/hr)						8						
Heavy Vehicles (%)	2%	2%	2%	2%	6%	0%	61%	11%	2%	2%	2%	2%
Parking (#/hr)						20						
Turn Type					NA		Perm	NA				
Protected Phases					1			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			23.0				
Effective Green, g (s)					24.0			23.0				
Actuated g/C Ratio					0.44			0.42				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1179			874				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.10				
v/c Ratio					0.21			0.24				
Uniform Delay, d1					9.6			10.3				
Progression Factor					0.92			1.12				
Incremental Delay, d2					0.4			0.6				
Delay (s)					9.3			12.2				
Level of Service					A			B				
Approach Delay (s)		0.0			9.3			12.2			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	SBT
Lane Group Flow (vph)	273	226	125
v/c Ratio	0.21	0.75	0.74
Control Delay	16.2	56.8	60.3
Queue Delay	0.6	0.0	0.0
Total Delay	16.8	56.8	60.3
Queue Length 50th (ft)	65	152	68
Queue Length 95th (ft)	101	218	115
Internal Link Dist (ft)	136		131
Turn Bay Length (ft)			
Base Capacity (vph)	1319	473	229
Starvation Cap Reductn	710	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.45	0.48	0.55

Intersection Summary

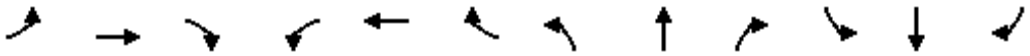


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	120	140	0	215	0	0	0	65	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		4.0				5.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.84	
Flpb, ped/bikes					1.00		1.00				1.00	
Frt					1.00		1.00				0.95	
Flt Protected					0.98		0.95				1.00	
Satd. Flow (prot)					2459		1533				1042	
Flt Permitted					0.98		0.95				1.00	
Satd. Flow (perm)					2459		1533				1042	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.84	0.84	0.84
Adj. Flow (vph)	0	0	0	126	147	0	226	0	0	0	77	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	22	0
Lane Group Flow (vph)	0	0	0	0	273	0	226	0	0	0	103	0
Confl. Peds. (#/hr)				680			345					345
Confl. Bikes (#/hr)												16
Heavy Vehicles (%)	2%	2%	2%	34%	7%	2%	6%	2%	2%	2%	11%	10%
Parking (#/hr)					10						10	
Turn Type				Split	NA		Prot				NA	
Protected Phases				1	1		3				2	
Permitted Phases												
Actuated Green, G (s)					59.0		21.6				15.4	
Effective Green, g (s)					59.0		21.6				15.4	
Actuated g/C Ratio					0.54		0.20				0.14	
Clearance Time (s)					5.0		4.0				5.0	
Vehicle Extension (s)					3.0		3.0				3.0	
Lane Grp Cap (vph)					1318		301				145	
v/s Ratio Prot					c0.11		c0.15				c0.10	
v/s Ratio Perm												
v/c Ratio					0.21		0.75				0.71	
Uniform Delay, d1					13.3		41.7				45.2	
Progression Factor					1.00		1.00				1.00	
Incremental Delay, d2					0.3		10.1				14.6	
Delay (s)					13.7		51.7				59.8	
Level of Service					B		D				E	
Approach Delay (s)		0.0			13.7			51.7			59.8	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	35.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

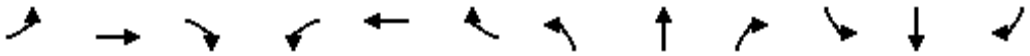
Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	232	184	225
v/c Ratio	0.23	0.33	0.28
Control Delay	17.1	4.8	4.7
Queue Delay	0.9	0.9	0.0
Total Delay	18.0	5.7	4.7
Queue Length 50th (ft)	35	0	18
Queue Length 95th (ft)	60	39	39
Internal Link Dist (ft)	114		201
Turn Bay Length (ft)			
Base Capacity (vph)	1006	558	799
Starvation Cap Reductn	524	182	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.49	0.28

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	220	175	100	80	0	0	0	0
Future Volume (vph)	0	0	0	0	220	175	100	80	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	12	12	12	12	12	12
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.95	1.00		1.00				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.97				
Satd. Flow (prot)					3065	1326		1346				
Flt Permitted					1.00	1.00		0.97				
Satd. Flow (perm)					3065	1326		1346				
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	232	184	125	100	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	124	0	56	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	232	60	0	169	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	0%	6%	6%	11%	6%	0%	2%	2%	2%
Parking (#/hr)								4				
Turn Type					NA	Perm	Perm	NA				
Protected Phases					1			2				
Permitted Phases						1	2					
Actuated Green, G (s)					22.0	22.0		37.0				
Effective Green, g (s)					22.0	22.0		37.0				
Actuated g/C Ratio					0.33	0.33		0.55				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					3.0	3.0		3.0				
Lane Grp Cap (vph)					1006	435		743				
v/s Ratio Prot					c0.08							
v/s Ratio Perm						0.05		0.13				
v/c Ratio					0.23	0.14		0.23				
Uniform Delay, d1					16.4	15.8		7.7				
Progression Factor					1.00	1.00		1.00				
Incremental Delay, d2					0.5	0.7		0.7				
Delay (s)					16.9	16.5		8.4				
Level of Service					B	B		A				
Approach Delay (s)		0.0			16.7			8.4			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	15	100	25	195	5	2	0	0	0	0
Future Volume (vph)	10	0	15	100	25	195	5	2	0	0	0	0
Peak Hour Factor	0.63	0.63	0.63	0.83	0.83	0.83	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	16	0	24	120	30	235	10	4	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	40	385	14
Volume Left (vph)	16	120	10
Volume Right (vph)	24	235	0
Hadj (s)	-0.28	-0.18	0.14
Departure Headway (s)	4.0	3.8	4.9
Degree Utilization, x	0.04	0.41	0.02
Capacity (veh/h)	877	943	672
Control Delay (s)	7.2	9.3	8.0
Approach Delay (s)	7.2	9.3	8.0
Approach LOS	A	A	A

Intersection Summary				
Delay	9.1			
Level of Service	A			
Intersection Capacity Utilization	52.1%	ICU Level of Service	A	
Analysis Period (min)	15			

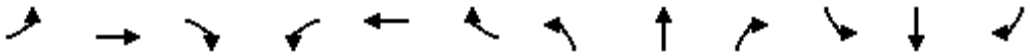
Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	0	0	0	65	0
Future Volume (vph)	0	0	0	0	65	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	71	0

Direction, Lane #	SE 1	SW 1
Volume Total (vph)	0	71
Volume Left (vph)	0	0
Volume Right (vph)	0	0
Hadj (s)	0.00	0.03
Departure Headway (s)	4.1	3.9
Degree Utilization, x	0.00	0.08
Capacity (veh/h)	880	902
Control Delay (s)	7.1	7.3
Approach Delay (s)	0.0	7.3
Approach LOS	A	A

Intersection Summary			
Delay	7.3		
Level of Service	A		
Intersection Capacity Utilization	7.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	232	222	82	857
v/c Ratio	0.33	0.78	0.12	0.43
Control Delay	34.4	56.7	19.1	20.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.4	56.7	19.1	20.9
Queue Length 50th (ft)	72	148	31	139
Queue Length 95th (ft)	94	210	72	212
Internal Link Dist (ft)	181			116
Turn Bay Length (ft)				
Base Capacity (vph)	1020	414	662	1994
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.54	0.12	0.43

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	225	215	0	0	0	0	0	0	75	780	0
Future Volume (vph)	0	225	215	0	0	0	0	0	0	75	780	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	12
Total Lost time (s)		5.0	5.0							5.0	5.0	
Lane Util. Factor		0.95	1.00							1.00	0.91	
Frpb, ped/bikes		1.00	0.93							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		2954	1179							1378	4150	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		2954	1179							1378	4150	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	232	222	0	0	0	0	0	0	82	857	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	232	222	0	0	0	0	0	0	82	857	0
Confl. Bikes (#/hr)			59									
Heavy Vehicles (%)	0%	10%	15%	2%	2%	2%	2%	2%	2%	10%	5%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		3									1	
Permitted Phases			3							1		
Actuated Green, G (s)		26.1	26.1							52.9	52.9	
Effective Green, g (s)		26.1	26.1							52.9	52.9	
Actuated g/C Ratio		0.24	0.24							0.48	0.48	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		700	279							662	1995	
v/s Ratio Prot		0.08									c0.21	
v/s Ratio Perm			c0.19							0.06		
v/c Ratio		0.33	0.80							0.12	0.43	
Uniform Delay, d1		34.7	39.4							15.8	18.7	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		0.3	14.5							0.4	0.7	
Delay (s)		35.0	53.9							16.1	19.4	
Level of Service		D	D							B	B	
Approach Delay (s)		44.2			0.0			0.0			19.1	
Approach LOS		D			A			A			B	

Intersection Summary					
HCM 2000 Control Delay	27.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.45				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	39.9%	ICU Level of Service	A		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBL	EBT	EBR	NBT	NBR	SWT
Lane Group Flow (vph)	253	212	189	304	244	834
v/c Ratio	0.75	0.75	0.72	0.54	0.88	0.51
Control Delay	53.8	55.5	54.2	42.9	73.4	26.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.8	55.5	54.2	42.9	73.4	26.0
Queue Length 50th (ft)	166	146	129	100	165	161
Queue Length 95th (ft)	242	222	201	133	#262	229
Internal Link Dist (ft)		485		196		167
Turn Bay Length (ft)						
Base Capacity (vph)	427	361	336	606	300	1640
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.59	0.56	0.50	0.81	0.51

Intersection Summary

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

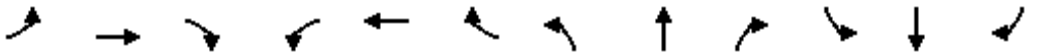
Movement	EBL2	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SWL2	SWL	SWT	SWR2
Lane Configurations												
Traffic Volume (vph)	40	190	135	100	130	255	195	10	80	140	530	25
Future Volume (vph)	40	190	135	100	130	255	195	10	80	140	530	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	11	11	12	10	11	11	11
Total Lost time (s)		6.5	6.5	6.5		8.0	8.0				7.5	
Lane Util. Factor		1.00	0.95	0.95		0.95	1.00				0.91	
Frpb, ped/bikes		1.00	0.90	1.00		1.00	1.00				0.99	
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00				1.00	
Frt		1.00	0.95	0.85		1.00	0.85				1.00	
Flt Protected		0.95	1.00	1.00		1.00	1.00				0.99	
Satd. Flow (prot)		1541	1305	1213		2779	1378				4134	
Flt Permitted		0.95	1.00	1.00		1.00	1.00				0.99	
Satd. Flow (perm)		1541	1305	1213		2779	1378				4134	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.84	0.84	0.84	0.93	0.93	0.93	0.93
Adj. Flow (vph)	44	209	148	110	143	304	232	12	86	151	570	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	71	0
Lane Group Flow (vph)	0	253	212	189	0	304	244	0	0	0	763	0
Confl. Peds. (#/hr)	681			273	309			131	131	273		681
Heavy Vehicles (%)	11%	0%	4%	1%	13%	13%	2%	2%	4%	5%	6%	4%
Parking (#/hr)								10				
Turn Type	Split	Split	NA	Prot		NA	Prot		Split	Split	NA	
Protected Phases	3	3	3	3		2	2		1	1	1	
Permitted Phases												
Actuated Green, G (s)		24.0	24.0	24.0		22.2	22.2				41.8	
Effective Green, g (s)		24.0	24.0	24.0		22.2	22.2				41.8	
Actuated g/C Ratio		0.22	0.22	0.22		0.20	0.20				0.38	
Clearance Time (s)		6.5	6.5	6.5		8.0	8.0				7.5	
Vehicle Extension (s)		3.0	3.0	3.0		3.0	3.0				3.0	
Lane Grp Cap (vph)		336	284	264		560	278				1570	
v/s Ratio Prot		c0.16	0.16	0.16		0.11	c0.18				c0.18	
v/s Ratio Perm												
v/c Ratio		0.75	0.75	0.72		0.54	0.88				0.49	
Uniform Delay, d1		40.2	40.2	39.8		39.4	42.6				25.9	
Progression Factor		1.00	1.00	1.00		1.00	1.00				1.04	
Incremental Delay, d2		9.2	10.2	8.9		1.1	25.2				1.0	
Delay (s)		49.4	50.4	48.7		40.4	67.8				28.0	
Level of Service		D	D	D		D	E				C	
Approach Delay (s)			49.5			52.6					28.0	
Approach LOS			D			D					C	

Intersection Summary			
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	864	165	347	177	133
v/c Ratio	0.42	0.64	0.65	0.66	0.36
Control Delay	14.5	54.5	48.1	48.9	9.9
Queue Delay	0.4	0.0	0.0	1.1	0.8
Total Delay	14.8	54.5	48.1	50.0	10.8
Queue Length 50th (ft)	83	119	126	58	5
Queue Length 95th (ft)	105	196	174	108	42
Internal Link Dist (ft)	138		250	176	
Turn Bay Length (ft)					
Base Capacity (vph)	2043	256	536	268	370
Starvation Cap Reductn	617	0	0	17	85
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.61	0.64	0.65	0.71	0.47

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	165	495	75	175	275	0	0	140	105
Future Volume (vph)	0	0	0	165	495	75	175	275	0	0	140	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	11	11	12	12	12	12	12	12
Total Lost time (s)					6.0		7.0	7.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			1.00	1.00
Frpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4136		1408	2950			1555	1358
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4136		1408	2950			1555	1358
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.88	0.88	0.88	0.79	0.79	0.79
Adj. Flow (vph)	0	0	0	194	582	88	199	312	0	0	177	133
RTOR Reduction (vph)	0	0	0	0	14	0	0	0	0	0	0	110
Lane Group Flow (vph)	0	0	0	0	850	0	165	347	0	0	177	23
Confl. Peds. (#/hr)						119						1405
Heavy Vehicles (%)	2%	2%	2%	4%	6%	3%	5%	5%	0%	2%	10%	7%
Turn Type				Split	NA		Split	NA			NA	Prot
Protected Phases				1 4	1 4		2	2			3	3
Permitted Phases												
Actuated Green, G (s)					54.0		20.0	20.0			19.0	19.0
Effective Green, g (s)					47.5		20.0	20.0			19.0	19.0
Actuated g/C Ratio					0.43		0.18	0.18			0.17	0.17
Clearance Time (s)							7.0	7.0			4.0	4.0
Vehicle Extension (s)							3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1786		256	536			268	234
v/s Ratio Prot					c0.21		0.12	c0.12			c0.11	0.02
v/s Ratio Perm												
v/c Ratio					0.48		0.64	0.65			0.66	0.10
Uniform Delay, d1					22.3		41.7	41.7			42.5	38.3
Progression Factor					0.79		1.00	1.00			0.87	2.17
Incremental Delay, d2					0.9		11.9	5.9			11.1	0.8
Delay (s)					18.5		53.6	47.7			48.0	84.0
Level of Service					B		D	D			D	F
Approach Delay (s)		0.0			18.5			49.6			63.5	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	SET	SER	SER2	SWL2	SWL	SWT
Lane Group Flow (vph)	685	545	197	289	437	311
v/c Ratio	0.61	1.06	0.32	0.44	0.91	0.65
Control Delay	16.8	69.8	2.1	5.4	60.7	39.0
Queue Delay	6.9	16.7	1.4	0.0	0.0	0.0
Total Delay	23.7	86.5	3.5	5.4	60.7	39.0
Queue Length 50th (ft)	107	~427	4	0	288	183
Queue Length 95th (ft)	172	m#604	m13	58	#473	281
Internal Link Dist (ft)	152					169
Turn Bay Length (ft)						
Base Capacity (vph)	1129	515	607	672	499	497
Starvation Cap Reductn	391	67	247	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	1.22	0.55	0.43	0.88	0.63

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	SET	SER	SER2	SWL2	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	610	485	175	275	415	295
Future Volume (vph)	610	485	175	275	415	295
Ideal Flow (vphpl)	1800	1800	1800	1900	1900	1900
Lane Width	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	2789	1272	1212	1430	1486	1478
Flt Permitted	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	2789	1272	1212	1430	1486	1478
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	685	545	197	289	437	311
RTOR Reduction (vph)	0	0	117	196	0	0
Lane Group Flow (vph)	685	545	80	93	437	311
Heavy Vehicles (%)	3%	1%	6%	6%	2%	8%
Turn Type	NA	Prot	Prot	Split	Split	NA
Protected Phases	1	1	1	3	3	3
Permitted Phases						
Actuated Green, G (s)	44.5	44.5	44.5	35.5	35.5	35.5
Effective Green, g (s)	44.5	44.5	44.5	35.5	35.5	35.5
Actuated g/C Ratio	0.40	0.40	0.40	0.32	0.32	0.32
Clearance Time (s)	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
Lane Grp Cap (vph)	1128	514	490	461	479	476
v/s Ratio Prot	0.25	c0.43	0.07	0.07	c0.29	0.21
v/s Ratio Perm						
v/c Ratio	0.61	1.06	0.16	0.20	0.91	0.65
Uniform Delay, d1	25.9	32.8	20.9	27.0	35.8	32.0
Progression Factor	0.58	0.59	0.41	1.00	1.00	1.00
Incremental Delay, d2	1.4	47.3	0.4	0.2	21.6	3.2
Delay (s)	16.3	66.5	8.9	27.2	57.4	35.2
Level of Service	B	E	A	C	E	D
Approach Delay (s)	34.5					42.3
Approach LOS	C					D

Intersection Summary			
HCM 2000 Control Delay	37.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

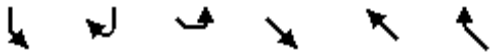
Lane Group	SET	NWL	SWT
Lane Group Flow (vph)	256	59	387
v/c Ratio	0.91	0.31	0.57
Control Delay	73.9	45.5	27.1
Queue Delay	2.6	0.0	0.0
Total Delay	76.5	45.5	27.1
Queue Length 50th (ft)	168	43	206
Queue Length 95th (ft)	#314	87	237
Internal Link Dist (ft)	136		97
Turn Bay Length (ft)			
Base Capacity (vph)	306	193	682
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	13	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.87	0.31	0.57

Intersection Summary

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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	170	65	55	0	0	0	0	0	120	170	0
Future Volume (vph)	0	170	65	55	0	0	0	0	0	120	170	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0							5.0	
Lane Util. Factor		1.00		1.00							1.00	
Frpb, ped/bikes		0.75		1.00							1.00	
Flpb, ped/bikes		1.00		1.00							1.00	
Frt		0.96		1.00							1.00	
Flt Protected		1.00		0.95							0.98	
Satd. Flow (prot)		991		1328							1507	
Flt Permitted		1.00		0.95							0.98	
Satd. Flow (perm)		991		1328							1507	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	0	185	71	59	0	0	0	0	0	160	227	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	256	0	59	0	0	0	0	0	0	387	0
Confl. Peds. (#/hr)			1061							149		
Heavy Vehicles (%)	2%	7%	3%	4%	2%	2%	2%	2%	2%	10%	12%	2%
Parking (#/hr)		10		10								
Turn Type		NA		Prot						Split	NA	
Protected Phases		3		2						1	1	
Permitted Phases												
Actuated Green, G (s)		31.2		16.0							49.8	
Effective Green, g (s)		31.2		16.0							49.8	
Actuated g/C Ratio		0.28		0.15							0.45	
Clearance Time (s)		4.0		4.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		281		193							682	
v/s Ratio Prot		c0.26		c0.04							c0.26	
v/s Ratio Perm												
v/c Ratio		0.91		0.31							0.57	
Uniform Delay, d1		38.1		42.0							22.2	
Progression Factor		1.00		0.97							1.00	
Incremental Delay, d2		31.4		4.0							3.4	
Delay (s)		69.5		44.6							25.6	
Level of Service		E		D							C	
Approach Delay (s)		69.5			44.6			0.0			25.6	
Approach LOS		E			D			A			C	

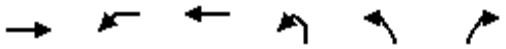
Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	0	0	15	275	55	125
Future Volume (Veh/h)	0	0	15	275	55	125
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.87	0.87
Hourly flow rate (vph)	0	0	16	299	63	144
Pedestrians	1011					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				233	107	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	1477	1146	1218			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1476	1129	1204			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	97			
cM capacity (veh/h)	129	237	539			

Direction, Lane #	SE 1	NW 1
Volume Total	315	207
Volume Left	16	0
Volume Right	0	144
cSH	539	1700
Volume to Capacity	0.03	0.12
Queue Length 95th (ft)	2	0
Control Delay (s)	1.0	0.0
Lane LOS	A	
Approach Delay (s)	1.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	33.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBL	WBT	NBL2	NBL	NBR
Lane Group Flow (vph)	323	106	112	160	105	278
v/c Ratio	0.75	1.03	0.24	0.16	0.11	0.35
Control Delay	34.1	108.1	4.3	0.3	5.0	7.0
Queue Delay	1.4	0.0	0.8	0.0	0.0	0.7
Total Delay	35.4	108.1	5.1	0.3	5.0	7.8
Queue Length 50th (ft)	176	81	21	0	13	36
Queue Length 95th (ft)	m197	#161	37	0	25	57
Internal Link Dist (ft)	27		136		330	
Turn Bay Length (ft)						
Base Capacity (vph)	550	134	615	980	962	799
Starvation Cap Reductn	92	0	305	0	0	266
Spillback Cap Reductn	83	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.79	0.36	0.16	0.11	0.52

Intersection Summary

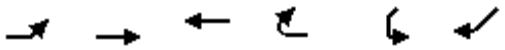
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	250	0	25	90	95	130	85	225	0	0
Future Volume (vph)	250	0	25	90	95	130	85	225	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Lane Util. Factor	1.00			1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	0.92			1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00			0.70	1.00	1.00	1.00	1.00		
Frt	0.99			1.00	1.00	1.00	1.00	0.85		
Flt Protected	1.00			0.95	1.00	0.95	0.95	1.00		
Satd. Flow (prot)	1443			1111	1693	1504	1577	1309		
Flt Permitted	1.00			0.34	1.00	0.95	0.95	1.00		
Satd. Flow (perm)	1443			396	1693	1504	1577	1309		
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.81	0.81	0.81	0.92	0.92
Adj. Flow (vph)	294	0	29	106	112	160	105	278	0	0
RTOR Reduction (vph)	29	0	0	0	0	62	0	0	0	0
Lane Group Flow (vph)	294	0	0	106	112	98	105	278	0	0
Confl. Peds. (#/hr)			1170	1170						
Heavy Vehicles (%)	8%	2%	3%	2%	1%	8%	3%	11%	2%	2%
Parking (#/hr)			10							
Turn Type	NA			Perm	NA	Perm	Prot	Perm		
Protected Phases	2				2		1			
Permitted Phases				2		1		1		
Actuated Green, G (s)	30.8			30.8	30.8	67.2	67.2	67.2		
Effective Green, g (s)	30.8			30.8	30.8	67.2	67.2	67.2		
Actuated g/C Ratio	0.28			0.28	0.28	0.61	0.61	0.61		
Clearance Time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	404			110	474	918	963	799		
v/s Ratio Prot	0.20				0.07		0.07			
v/s Ratio Perm				c0.27		0.06		c0.21		
v/c Ratio	0.73			0.96	0.24	0.11	0.11	0.35		
Uniform Delay, d1	35.8			39.0	30.5	8.9	8.9	10.6		
Progression Factor	0.85			0.33	0.11	0.00	0.43	0.46		
Incremental Delay, d2	4.9			70.2	0.2	0.2	0.2	1.1		
Delay (s)	35.5			83.2	3.7	0.2	4.0	6.0		
Level of Service	D			F	A	A	A	A		
Approach Delay (s)	35.5				42.4		3.9		0.0	
Approach LOS	D				D		A		A	

Intersection Summary			
HCM 2000 Control Delay	21.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Group Flow (vph)	284	302	210	188
v/c Ratio	0.46	0.45	0.46	0.38
Control Delay	19.2	18.7	9.8	2.0
Queue Delay	15.1	16.8	0.2	0.3
Total Delay	34.3	35.4	10.1	2.2
Queue Length 50th (ft)	132	140	32	1
Queue Length 95th (ft)	188	192	52	2
Internal Link Dist (ft)		136	176	
Turn Bay Length (ft)				
Base Capacity (vph)	612	668	461	500
Starvation Cap Reductn	307	349	35	63
Spillback Cap Reductn	0	5	5	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.93	0.95	0.49	0.43

Intersection Summary

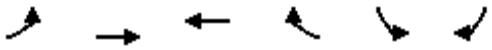


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	230	245	185	165	0	0
Future Volume (vph)	230	245	185	165	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1464	1598	1693	1333		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1464	1598	1693	1333		
Peak-hour factor, PHF	0.81	0.81	0.88	0.88	0.92	0.92
Adj. Flow (vph)	284	302	210	188	0	0
RTOR Reduction (vph)	0	0	0	137	0	0
Lane Group Flow (vph)	284	302	210	51	0	0
Heavy Vehicles (%)	11%	7%	1%	9%	2%	2%
Turn Type	Split	NA	NA	Prot		
Protected Phases	1	1	3	3		
Permitted Phases						
Actuated Green, G (s)	46.0	46.0	30.0	30.0		
Effective Green, g (s)	46.0	46.0	30.0	30.0		
Actuated g/C Ratio	0.42	0.42	0.27	0.27		
Clearance Time (s)	6.0	6.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	612	668	461	363		
v/s Ratio Prot	c0.19	0.19	c0.12	0.04		
v/s Ratio Perm						
v/c Ratio	0.46	0.45	0.46	0.14		
Uniform Delay, d1	23.1	23.0	33.2	30.3		
Progression Factor	0.71	0.71	0.21	0.05		
Incremental Delay, d2	2.3	2.0	2.6	0.7		
Delay (s)	18.8	18.3	9.7	2.2		
Level of Service	B	B	A	A		
Approach Delay (s)		18.5	6.2		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT
Lane Group Flow (vph)	143	260
v/c Ratio	0.18	0.27
Control Delay	6.2	6.9
Queue Delay	0.0	0.5
Total Delay	6.2	7.4
Queue Length 50th (ft)	44	81
Queue Length 95th (ft)	72	139
Internal Link Dist (ft)		170
Turn Bay Length (ft)		
Base Capacity (vph)	774	956
Starvation Cap Reductn	0	351
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.18	0.43

Intersection Summary



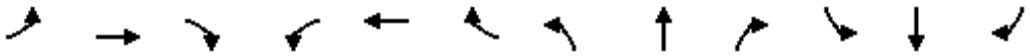
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	140	255	0	0	0	0
Future Volume (vph)	140	255	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	1.00				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1332	1644				
Flt Permitted	0.95	1.00				
Satd. Flow (perm)	1332	1644				
Peak-hour factor, PHF	0.98	0.98	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	260	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	143	260	0	0	0	0
Heavy Vehicles (%)	22%	4%	2%	2%	2%	2%
Turn Type	Perm	NA				
Protected Phases		1				
Permitted Phases	1					
Actuated Green, G (s)	32.0	32.0				
Effective Green, g (s)	32.0	32.0				
Actuated g/C Ratio	0.58	0.58				
Clearance Time (s)	5.0	5.0				
Vehicle Extension (s)	3.0	3.0				
Lane Grp Cap (vph)	774	956				
v/s Ratio Prot		c0.16				
v/s Ratio Perm	0.11					
v/c Ratio	0.18	0.27				
Uniform Delay, d1	5.4	5.7				
Progression Factor	1.03	1.08				
Incremental Delay, d2	0.5	0.6				
Delay (s)	6.0	6.8				
Level of Service	A	A				
Approach Delay (s)		6.5	0.0		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	6.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	19.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	SBT
Lane Group Flow (vph)	299	1405
v/c Ratio	0.80	0.82
Control Delay	40.9	13.7
Queue Delay	0.0	0.9
Total Delay	40.9	14.6
Queue Length 50th (ft)	193	183
Queue Length 95th (ft)	312	#626
Internal Link Dist (ft)	484	92
Turn Bay Length (ft)		
Base Capacity (vph)	544	1710
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	110
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.55	0.88

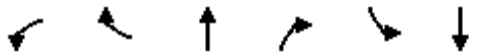
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	185	90	0	0	0	0	0	0	70	1180	0
Future Volume (vph)	0	185	90	0	0	0	0	0	0	70	1180	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1650	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		1.00									*0.65	
Frpb, ped/bikes		0.89									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		1425									2641	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		1425									2641	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	201	98	0	0	0	0	0	0	79	1326	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	299	0	0	0	0	0	0	0	0	1405	0
Confl. Peds. (#/hr)			158							334		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Parking (#/hr)			10									
Turn Type		NA								Split	NA	
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		28.7									71.3	
Effective Green, g (s)		28.7									71.3	
Actuated g/C Ratio		0.26									0.65	
Clearance Time (s)		5.0									5.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		371									1711	
v/s Ratio Prot		c0.21									c0.53	
v/s Ratio Perm												
v/c Ratio		0.81									0.82	
Uniform Delay, d1		38.0									14.6	
Progression Factor		0.66									0.51	
Incremental Delay, d2		11.9									4.2	
Delay (s)		37.0									11.6	
Level of Service		D									B	
Approach Delay (s)		37.0			0.0			0.0			11.6	
Approach LOS		D			A			A			B	

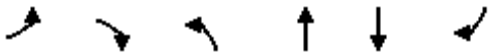
Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	58.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	135	15	0	0
Future Volume (Veh/h)	0	0	135	15	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Hourly flow rate (vph)	0	0	145	16	0	0
Pedestrians	1960					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			341			334
pX, platoon unblocked						
vC, conflicting volume	2113	2040			2121	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2113	2040			2121	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	44	47			254	

Direction, Lane #	NB 1	NB 2
Volume Total	97	64
Volume Left	0	0
Volume Right	0	16
cSH	1700	1700
Volume to Capacity	0.06	0.04
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.7%	ICU Level of Service	A
Analysis Period (min)	15		



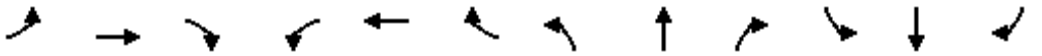
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	60	0	0	1190	0
Future Volume (Veh/h)	0	60	0	0	1190	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	0	67	0	0	1308	0
Pedestrians				19		
Lane Width (ft)				0.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				172	301	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	1308	455	1308			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	769	0	769			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	289	933	719			

Direction, Lane #	EB 1	SB 1	SB 2	SB 3
Volume Total	67	436	436	436
Volume Left	0	0	0	0
Volume Right	67	0	0	0
cSH	933	1700	1700	1700
Volume to Capacity	0.07	0.26	0.26	0.26
Queue Length 95th (ft)	6	0	0	0
Control Delay (s)	9.2	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.2	0.0		
Approach LOS	A			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	430	1016	99
v/c Ratio	0.47	0.48	0.15
Control Delay	13.8	19.7	6.5
Queue Delay	0.0	0.1	0.0
Total Delay	13.8	19.8	6.5
Queue Length 50th (ft)	44	169	11
Queue Length 95th (ft)	90	208	40
Internal Link Dist (ft)	217	146	
Turn Bay Length (ft)			75
Base Capacity (vph)	920	2097	681
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	6	191	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.47	0.53	0.15

Intersection Summary



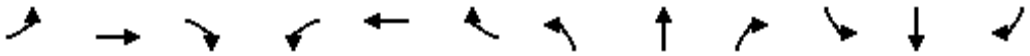
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	265	135	0	0	0	0	0	925	90
Future Volume (vph)	0	0	0	265	135	0	0	0	0	0	925	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	10
Total Lost time (s)					5.0						5.0	5.0
Lane Util. Factor					0.95						0.91	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					3083						4272	1317
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					3083						4272	1317
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	285	145	0	0	0	0	0	1016	99
RTOR Reduction (vph)	0	0	0	0	220	0	0	0	0	0	0	35
Lane Group Flow (vph)	0	0	0	0	210	0	0	0	0	0	1016	64
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%
Turn Type				Split	NA						NA	Prot
Protected Phases				3	3						1	1
Permitted Phases												
Actuated Green, G (s)					25.0						54.0	54.0
Effective Green, g (s)					25.0						54.0	54.0
Actuated g/C Ratio					0.23						0.49	0.49
Clearance Time (s)					5.0						5.0	5.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					700						2097	646
v/s Ratio Prot					c0.07						c0.24	0.05
v/s Ratio Perm												
v/c Ratio					0.30						0.48	0.10
Uniform Delay, d1					35.2						18.7	15.0
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					1.1						0.8	0.3
Delay (s)					36.3						19.5	15.3
Level of Service					D						B	B
Approach Delay (s)		0.0			36.3			0.0			19.1	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	23.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBT
Lane Group Flow (vph)	296	190
v/c Ratio	0.23	0.21
Control Delay	6.5	7.5
Queue Delay	0.0	0.0
Total Delay	6.5	7.5
Queue Length 50th (ft)	23	14
Queue Length 95th (ft)	32	24
Internal Link Dist (ft)	162	254
Turn Bay Length (ft)		
Base Capacity (vph)	1304	922
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.21

Intersection Summary



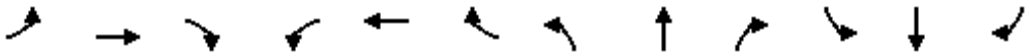
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	170	55	75	105	0	0	0	0
Future Volume (vph)	0	0	0	0	170	55	75	105	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frpb, ped/bikes					0.91			1.00				
Flpb, ped/bikes					1.00			0.82				
Frt					0.96			1.00				
Flt Protected					1.00			0.98				
Satd. Flow (prot)					2781			2188				
Flt Permitted					1.00			0.98				
Satd. Flow (perm)					2781			2188				
Peak-hour factor, PHF	0.92	0.92	0.92	0.76	0.76	0.76	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	224	72	79	111	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	47	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	257	0	0	143	0	0	0	0
Confl. Peds. (#/hr)						597	848					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	44%	1%	2%	2%	2%	2%
Parking (#/hr)						20						
Turn Type					NA		Perm	NA				
Protected Phases					1			2				
Permitted Phases							2					
Actuated Green, G (s)					25.0			22.0				
Effective Green, g (s)					25.0			22.0				
Actuated g/C Ratio					0.45			0.40				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1264			875				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.07				
v/c Ratio					0.20			0.16				
Uniform Delay, d1					9.0			10.6				
Progression Factor					0.89			1.12				
Incremental Delay, d2					0.4			0.4				
Delay (s)					8.4			12.3				
Level of Service					A			B				
Approach Delay (s)		0.0			8.4			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	SBT
Lane Group Flow (vph)	310	159	205
v/c Ratio	0.22	0.68	0.90
Control Delay	13.4	58.6	78.1
Queue Delay	0.7	0.0	0.0
Total Delay	14.1	58.6	78.1
Queue Length 50th (ft)	68	108	124
Queue Length 95th (ft)	87	151	#260
Internal Link Dist (ft)	136		131
Turn Bay Length (ft)			
Base Capacity (vph)	1388	321	239
Starvation Cap Reductn	765	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.50	0.50	0.86

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	155	90	0	130	0	0	0	115	75
Future Volume (vph)	0	0	0	155	90	0	130	0	0	0	115	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		4.0				5.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.84	
Flpb, ped/bikes					1.00		1.00				1.00	
Frt					1.00		1.00				0.95	
Flt Protected					0.97		0.95				1.00	
Satd. Flow (prot)					2541		1608				1144	
Flt Permitted					0.97		0.95				1.00	
Satd. Flow (perm)					2541		1608				1144	
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.82	0.82	0.82	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	196	114	0	159	0	0	0	124	81
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	0	0	0	310	0	159	0	0	0	184	0
Confl. Peds. (#/hr)				614			309					309
Heavy Vehicles (%)	2%	2%	2%	22%	2%	2%	1%	2%	2%	2%	0%	3%
Parking (#/hr)					10						10	
Turn Type				Split	NA		Prot				NA	
Protected Phases				1	1		3				2	
Permitted Phases												
Actuated Green, G (s)					60.2		16.0				19.8	
Effective Green, g (s)					60.2		16.0				19.8	
Actuated g/C Ratio					0.55		0.15				0.18	
Clearance Time (s)					5.0		4.0				5.0	
Vehicle Extension (s)					3.0		3.0				3.0	
Lane Grp Cap (vph)					1390		233				205	
v/s Ratio Prot					c0.12		c0.10				c0.16	
v/s Ratio Perm												
v/c Ratio					0.22		0.68				0.90	
Uniform Delay, d1					12.8		44.6				44.1	
Progression Factor					0.92		1.00				1.00	
Incremental Delay, d2					0.4		8.0				35.5	
Delay (s)					12.1		52.6				79.6	
Level of Service					B		D				E	
Approach Delay (s)		0.0			12.1			52.6			79.6	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	42.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

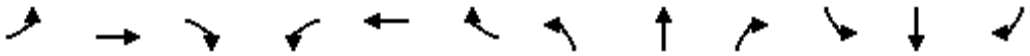
Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	159	165	261
v/c Ratio	0.15	0.32	0.32
Control Delay	16.4	5.1	8.2
Queue Delay	0.0	0.8	0.0
Total Delay	16.4	5.9	8.2
Queue Length 50th (ft)	23	0	45
Queue Length 95th (ft)	43	37	85
Internal Link Dist (ft)	114		201
Turn Bay Length (ft)			
Base Capacity (vph)	1056	516	815
Starvation Cap Reductn	0	158	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	0.46	0.32

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	145	150	55	185	0	0	0	0
Future Volume (vph)	0	0	0	0	145	150	55	185	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	12	12	12	12	12	12
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.95	1.00		1.00				
Frpb, ped/bikes					1.00	0.91		1.00				
Flpb, ped/bikes					1.00	1.00		1.00				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.99				
Satd. Flow (prot)					3217	1236		1448				
Flt Permitted					1.00	1.00		0.99				
Satd. Flow (perm)					3217	1236		1448				
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	159	165	60	201	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	111	0	16	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	159	54	0	245	0	0	0	0
Confl. Bikes (#/hr)						58						
Heavy Vehicles (%)	2%	2%	2%	0%	1%	4%	2%	3%	0%	2%	2%	2%
Parking (#/hr)								4				
Turn Type					NA	Perm	Perm	NA				
Protected Phases					1			2				
Permitted Phases						1	2					
Actuated Green, G (s)					22.0	22.0		37.0				
Effective Green, g (s)					22.0	22.0		37.0				
Actuated g/C Ratio					0.33	0.33		0.55				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					3.0	3.0		3.0				
Lane Grp Cap (vph)					1056	405		799				
v/s Ratio Prot					c0.05							
v/s Ratio Perm						0.04		0.17				
v/c Ratio					0.15	0.13		0.31				
Uniform Delay, d1					15.9	15.8		8.1				
Progression Factor					1.00	1.00		1.00				
Incremental Delay, d2					0.3	0.7		1.0				
Delay (s)					16.2	16.5		9.1				
Level of Service					B	B		A				
Approach Delay (s)		0.0			16.3			9.1			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	15	95	25	80	5	5	0	0	0	0
Future Volume (vph)	10	0	15	95	25	80	5	5	0	0	0	0
Peak Hour Factor	0.59	0.59	0.59	0.90	0.90	0.90	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	25	106	28	89	10	10	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	42	223	20
Volume Left (vph)	17	106	10
Volume Right (vph)	25	89	0
Hadj (s)	-0.28	-0.11	0.10
Departure Headway (s)	3.9	3.9	4.5
Degree Utilization, x	0.05	0.24	0.03
Capacity (veh/h)	909	919	742
Control Delay (s)	7.1	8.1	7.7
Approach Delay (s)	7.1	8.1	7.7
Approach LOS	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			

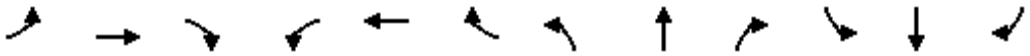
Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	0	0	0	125	0
Future Volume (vph)	0	0	0	0	125	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	136	0

Direction, Lane #	SE 1	SW 1
Volume Total (vph)	0	136
Volume Left (vph)	0	0
Volume Right (vph)	0	0
Hadj (s)	0.00	0.03
Departure Headway (s)	4.2	3.9
Degree Utilization, x	0.00	0.15
Capacity (veh/h)	836	903
Control Delay (s)	7.2	7.6
Approach Delay (s)	0.0	7.6
Approach LOS	A	A

Intersection Summary			
Delay	7.6		
Level of Service	A		
Intersection Capacity Utilization	11.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	424	272	97	710
v/c Ratio	0.53	0.77	0.14	0.37
Control Delay	36.2	52.0	20.6	21.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	36.2	52.0	20.6	21.4
Queue Length 50th (ft)	134	177	39	117
Queue Length 95th (ft)	163	246	85	174
Internal Link Dist (ft)	181			116
Turn Bay Length (ft)				
Base Capacity (vph)	1068	465	673	1935
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.58	0.14	0.37

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	390	250	0	0	0	0	0	0	90	660	0
Future Volume (vph)	0	390	250	0	0	0	0	0	0	90	660	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	12
Total Lost time (s)		5.0	5.0							5.0	5.0	
Lane Util. Factor		0.95	1.00							1.00	0.91	
Frpb, ped/bikes		1.00	0.97							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3094	1341							1472	4230	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3094	1341							1472	4230	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	424	272	0	0	0	0	0	0	97	710	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	424	272	0	0	0	0	0	0	97	710	0
Confl. Bikes (#/hr)			23									
Heavy Vehicles (%)	0%	5%	5%	2%	2%	2%	2%	2%	2%	3%	3%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		3									1	
Permitted Phases			3							1		
Actuated Green, G (s)		28.7	28.7							50.3	50.3	
Effective Green, g (s)		28.7	28.7							50.3	50.3	
Actuated g/C Ratio		0.26	0.26							0.46	0.46	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		807	349							673	1934	
v/s Ratio Prot		0.14									c0.17	
v/s Ratio Perm			c0.20							0.07		
v/c Ratio		0.53	0.78							0.14	0.37	
Uniform Delay, d1		34.8	37.7							17.3	19.5	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		0.6	10.5							0.4	0.5	
Delay (s)		35.4	48.2							17.8	20.0	
Level of Service		D	D							B	C	
Approach Delay (s)		40.4			0.0			0.0			19.7	
Approach LOS		D			A			A			B	

Intersection Summary					
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.42				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A		
Analysis Period (min)	15				
c Critical Lane Group					

Lane Group	EBT	EBR	NBT	SWT
Lane Group Flow (vph)	509	220	804	982
v/c Ratio	0.86	0.93	0.83	0.75
Control Delay	57.3	85.5	47.5	26.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	57.3	85.5	47.5	26.6
Queue Length 50th (ft)	190	168	193	202
Queue Length 95th (ft)	#284	#330	223	m239
Internal Link Dist (ft)	485		196	163
Turn Bay Length (ft)				
Base Capacity (vph)	604	243	1021	1311
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.84	0.91	0.79	0.75

Intersection Summary

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

Movement	EBL2	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SWL2	SWL	SWT	SWR2
Lane Configurations												
Traffic Volume (vph)	110	120	240	80	135	550	80	45	150	85	485	125
Future Volume (vph)	110	120	240	80	135	550	80	45	150	85	485	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	11	11	12	10	11	11	11
Total Lost time (s)			6.5	6.5		8.0					7.5	
Lane Util. Factor			0.91	0.91		0.91					0.91	
Frpb, ped/bikes			0.99	1.00		0.94					0.93	
Flpb, ped/bikes			1.00	1.00		1.00					1.00	
Frt			1.00	0.85		0.97					0.98	
Flt Protected			0.98	1.00		1.00					0.99	
Satd. Flow (prot)			2670	1077		3875					3744	
Flt Permitted			0.98	1.00		1.00					0.99	
Satd. Flow (perm)			2670	1077		3875					3744	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.84	0.84	0.84	0.86	0.86	0.86	0.86
Adj. Flow (vph)	117	128	255	85	144	655	95	54	174	99	564	145
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	76	0
Lane Group Flow (vph)	0	0	509	220	0	804	0	0	0	0	906	0
Confl. Peds. (#/hr)	875			382	395			284	284	382		875
Confl. Bikes (#/hr)								1				
Heavy Vehicles (%)	6%	2%	14%	5%	26%	7%	2%	6%	4%	4%	11%	1%
Parking (#/hr)								10				
Turn Type	Split	Split	NA	Prot		NA			Split	Split	NA	
Protected Phases	3	3	3	3		2			1	1	1	
Permitted Phases												
Actuated Green, G (s)			24.3	24.3		27.4					36.3	
Effective Green, g (s)			24.3	24.3		27.4					36.3	
Actuated g/C Ratio			0.22	0.22		0.25					0.33	
Clearance Time (s)			6.5	6.5		8.0					7.5	
Vehicle Extension (s)			3.0	3.0		3.0					3.0	
Lane Grp Cap (vph)			589	237		965					1235	
v/s Ratio Prot			0.19	c0.20		c0.21					c0.24	
v/s Ratio Perm												
v/c Ratio			0.86	0.93		0.83					0.73	
Uniform Delay, d1			41.3	42.0		39.1					32.6	
Progression Factor			1.00	1.00		1.00					0.80	
Incremental Delay, d2			12.5	38.9		6.3					2.9	
Delay (s)			53.8	80.9		45.4					29.0	
Level of Service			D	F		D					C	
Approach Delay (s)			62.0			45.4					29.0	
Approach LOS			E			D					C	

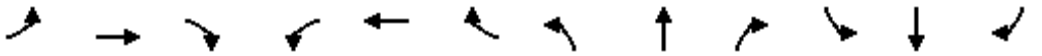
Intersection Summary			
HCM 2000 Control Delay	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	75.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1266	215	530	130	45
v/c Ratio	0.62	1.01	1.18	0.49	0.13
Control Delay	13.9	111.5	144.3	22.4	1.2
Queue Delay	0.6	0.0	0.0	0.3	0.0
Total Delay	14.5	111.5	144.3	22.7	1.2
Queue Length 50th (ft)	124	~170	~247	27	0
Queue Length 95th (ft)	162	#330	#350	45	0
Internal Link Dist (ft)	95		250	176	
Turn Bay Length (ft)					
Base Capacity (vph)	2033	213	448	268	351
Starvation Cap Reductn	379	0	0	13	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	1.01	1.18	0.51	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	335	600	230	210	445	0	0	100	35
Future Volume (vph)	0	0	0	335	600	230	210	445	0	0	100	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	11	11	12	12	12	12	12	12
Total Lost time (s)					6.0		7.0	7.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			1.00	1.00
Frpb, ped/bikes					0.97		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.97		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					3920		1382	2902			1474	1309
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					3920		1382	2902			1474	1309
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	0	0	0	364	652	250	239	506	0	0	130	45
RTOR Reduction (vph)	0	0	0	0	41	0	0	0	0	0	0	37
Lane Group Flow (vph)	0	0	0	0	1225	0	215	530	0	0	130	8
Confl. Peds. (#/hr)						216						1805
Confl. Bikes (#/hr)						6						7
Heavy Vehicles (%)	2%	2%	2%	6%	7%	8%	7%	7%	0%	2%	16%	11%
Turn Type				Split	NA		Split	NA			NA	Prot
Protected Phases				1 4	1 4		2	2			3	3
Permitted Phases												
Actuated Green, G (s)					56.0		17.0	17.0			20.0	20.0
Effective Green, g (s)					52.0		17.0	17.0			20.0	20.0
Actuated g/C Ratio					0.47		0.15	0.15			0.18	0.18
Clearance Time (s)							7.0	7.0			4.0	4.0
Vehicle Extension (s)							3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1853		213	448			268	238
v/s Ratio Prot					c0.31		0.16	c0.18			c0.09	0.01
v/s Ratio Perm												
v/c Ratio					0.66		1.01	1.18			0.49	0.03
Uniform Delay, d1					22.2		46.5	46.5			40.4	37.0
Progression Factor					0.70		1.00	1.00			0.40	1.00
Incremental Delay, d2					1.5		64.1	103.1			5.9	0.3
Delay (s)					17.0		110.6	149.6			22.1	37.3
Level of Service					B		F	F			C	D
Approach Delay (s)		0.0			17.0			138.4			26.0	
Approach LOS		A			B			F			C	

Intersection Summary			
HCM 2000 Control Delay	59.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	SET	SER	SER2	SWL2	SWL	SWT
Lane Group Flow (vph)	649	321	167	473	348	435
v/c Ratio	0.61	0.65	0.30	0.64	0.68	0.84
Control Delay	17.3	22.1	2.2	9.7	37.5	48.1
Queue Delay	1.1	1.9	0.6	0.0	0.0	0.0
Total Delay	18.4	24.0	2.8	9.7	37.5	48.1
Queue Length 50th (ft)	105	110	0	40	197	265
Queue Length 95th (ft)	162	293	10	142	301	#402
Internal Link Dist (ft)	152					169
Turn Bay Length (ft)						
Base Capacity (vph)	1068	496	556	775	556	564
Starvation Cap Reductn	205	73	164	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.76	0.43	0.61	0.63	0.77

Intersection Summary

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

Movement	SET	SER	SER2	SWL2	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	565	295	145	440	320	405
Future Volume (vph)	565	295	145	440	320	405
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	2834	1317	1201	1404	1458	1478
Flt Permitted	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	2834	1317	1201	1404	1458	1478
Peak-hour factor, PHF	0.87	0.92	0.87	0.93	0.92	0.93
Adj. Flow (vph)	649	321	167	473	348	435
RTOR Reduction (vph)	0	0	104	252	0	0
Lane Group Flow (vph)	649	321	63	221	348	435
Heavy Vehicles (%)	7%	3%	13%	8%	4%	8%
Turn Type	NA	Perm	Prot	Split	Split	NA
Protected Phases	1		1	3	3	3
Permitted Phases		1				
Actuated Green, G (s)	41.5	41.5	41.5	38.5	38.5	38.5
Effective Green, g (s)	41.5	41.5	41.5	38.5	38.5	38.5
Actuated g/C Ratio	0.38	0.38	0.38	0.35	0.35	0.35
Clearance Time (s)	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
Lane Grp Cap (vph)	1069	496	453	491	510	517
v/s Ratio Prot	0.23		0.05	0.16	0.24	c0.29
v/s Ratio Perm		c0.24				
v/c Ratio	0.61	0.65	0.14	0.45	0.68	0.84
Uniform Delay, d1	27.7	28.2	22.5	27.6	30.5	32.9
Progression Factor	0.52	0.53	0.22	1.00	1.00	1.00
Incremental Delay, d2	2.3	5.8	0.6	0.7	3.8	11.8
Delay (s)	16.6	20.9	5.6	28.3	34.3	44.7
Level of Service	B	C	A	C	C	D
Approach Delay (s)	16.2					35.6
Approach LOS	B					D

Intersection Summary			
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

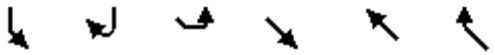
Lane Group	SET	NWL	SWT
Lane Group Flow (vph)	209	114	273
v/c Ratio	0.82	0.45	0.50
Control Delay	59.4	39.1	31.4
Queue Delay	0.0	0.0	0.0
Total Delay	59.4	39.1	31.4
Queue Length 50th (ft)	137	59	143
Queue Length 95th (ft)	165	100	252
Internal Link Dist (ft)	136		97
Turn Bay Length (ft)			
Base Capacity (vph)	372	255	551
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.56	0.45	0.50

Intersection Summary

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	115	50	90	0	0	0	0	0	80	155	0
Future Volume (vph)	0	115	50	90	0	0	0	0	0	80	155	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0							5.0	
Lane Util. Factor		1.00		1.00							1.00	
Frpb, ped/bikes		0.73		1.00							1.00	
Flpb, ped/bikes		1.00		1.00							1.00	
Frt		0.96		1.00							1.00	
Flt Protected		1.00		0.95							0.98	
Satd. Flow (prot)		911		1279							1378	
Flt Permitted		1.00		0.95							0.98	
Satd. Flow (perm)		911		1279							1378	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	146	63	114	0	0	0	0	0	93	180	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	209	0	114	0	0	0	0	0	0	273	0
Confl. Peds. (#/hr)			1667							152		
Confl. Bikes (#/hr)			11									
Heavy Vehicles (%)	2%	12%	10%	8%	2%	2%	2%	2%	2%	24%	21%	2%
Parking (#/hr)		10		10								
Turn Type		NA		Prot						Split	NA	
Protected Phases		3		2						1	1	
Permitted Phases												
Actuated Green, G (s)		31.0		22.0							44.0	
Effective Green, g (s)		31.0		22.0							44.0	
Actuated g/C Ratio		0.28		0.20							0.40	
Clearance Time (s)		4.0		4.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		256		255							551	
v/s Ratio Prot		c0.23		c0.09							c0.20	
v/s Ratio Perm												
v/c Ratio		0.82		0.45							0.50	
Uniform Delay, d1		36.8		38.7							24.7	
Progression Factor		1.00		0.85							1.00	
Incremental Delay, d2		17.9		5.5							3.2	
Delay (s)		54.7		38.3							27.9	
Level of Service		D		D							C	
Approach Delay (s)		54.7			38.3			0.0			27.9	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	39.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		

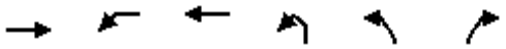
c Critical Lane Group



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	0	0	20	175	90	255
Future Volume (Veh/h)	0	0	20	175	90	255
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.82	0.82	0.87	0.87
Hourly flow rate (vph)	0	0	24	213	103	293
Pedestrians	1279					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				233	107	
pX, platoon unblocked	0.92	0.92	0.92			
vC, conflicting volume	1790	1528	1675			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1816	1531	1691			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	100	92			
cM capacity (veh/h)	72	132	304			

Direction, Lane #	SE 1	NW 1
Volume Total	237	396
Volume Left	24	0
Volume Right	0	293
cSH	304	1700
Volume to Capacity	0.08	0.23
Queue Length 95th (ft)	6	0
Control Delay (s)	3.3	0.0
Lane LOS	A	
Approach Delay (s)	3.3	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBL	WBT	NBL2	NBL	NBR
Lane Group Flow (vph)	233	135	200	220	208	268
v/c Ratio	0.42	0.93	0.33	0.25	0.26	0.41
Control Delay	8.3	75.3	12.0	0.4	9.1	10.5
Queue Delay	0.8	1.4	0.8	0.0	0.0	0.1
Total Delay	9.1	76.8	12.8	0.4	9.1	10.6
Queue Length 50th (ft)	9	46	53	0	41	54
Queue Length 95th (ft)	44	#173	97	m0	m54	m69
Internal Link Dist (ft)	27		136		330	
Turn Bay Length (ft)						
Base Capacity (vph)	717	188	799	891	790	657
Starvation Cap Reductn	214	8	359	0	0	0
Spillback Cap Reductn	248	0	0	0	0	38
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.75	0.45	0.25	0.26	0.43

Intersection Summary

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

Movement	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	165	0	10	115	170	185	175	225	0	0
Future Volume (vph)	165	0	10	115	170	185	175	225	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Lane Util. Factor	1.00			1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	0.95			1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00			0.48	1.00	1.00	1.00	1.00		
Frt	0.99			1.00	1.00	1.00	1.00	0.85		
Flt Protected	1.00			0.95	1.00	0.95	0.95	1.00		
Satd. Flow (prot)	1395			736	1598	1547	1562	1298		
Flt Permitted	1.00			0.54	1.00	0.95	0.95	1.00		
Satd. Flow (perm)	1395			418	1598	1547	1562	1298		
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.84	0.84	0.84	0.92	0.92
Adj. Flow (vph)	220	0	13	135	200	220	208	268	0	0
RTOR Reduction (vph)	25	0	0	0	0	109	0	0	0	0
Lane Group Flow (vph)	208	0	0	135	200	111	208	268	0	0
Confl. Peds. (#/hr)			1516	1516						
Confl. Bikes (#/hr)			9							
Heavy Vehicles (%)	15%	2%	25%	5%	7%	5%	4%	12%	2%	2%
Parking (#/hr)			10							
Turn Type	NA			Perm	NA	Perm	Prot	Perm		
Protected Phases	2				2		1			
Permitted Phases				2		1		1		
Actuated Green, G (s)	42.3			42.3	42.3	55.7	55.7	55.7		
Effective Green, g (s)	42.3			42.3	42.3	55.7	55.7	55.7		
Actuated g/C Ratio	0.38			0.38	0.38	0.51	0.51	0.51		
Clearance Time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	536			160	614	783	790	657		
v/s Ratio Prot	0.15				0.13		0.13			
v/s Ratio Perm				c0.32		0.07		c0.21		
v/c Ratio	0.39			0.84	0.33	0.14	0.26	0.41		
Uniform Delay, d1	24.5			30.8	23.8	14.4	15.5	16.9		
Progression Factor	0.35			0.57	0.50	0.00	0.45	0.45		
Incremental Delay, d2	0.4			29.6	0.3	0.2	0.5	1.1		
Delay (s)	9.0			47.3	12.1	0.2	7.4	8.6		
Level of Service	A			D	B	A	A	A		
Approach Delay (s)	9.0				26.3		5.6		0.0	
Approach LOS	A				C		A		A	

Intersection Summary			
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.8%	ICU Level of Service	A
Analysis Period (min)	15		

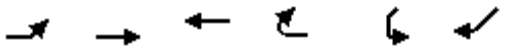
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR
Lane Group Flow (vph)	283	150	313	429
v/c Ratio	0.80	0.40	0.44	0.51
Control Delay	66.3	48.4	12.0	8.1
Queue Delay	58.2	7.3	3.0	2.3
Total Delay	124.4	55.7	15.0	10.4
Queue Length 50th (ft)	178	86	58	80
Queue Length 95th (ft)	#335	168	m63	m80
Internal Link Dist (ft)		136	176	
Turn Bay Length (ft)				
Base Capacity (vph)	352	371	718	837
Starvation Cap Reductn	133	175	296	272
Spillback Cap Reductn	0	0	18	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.29	0.77	0.74	0.76

Intersection Summary

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

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



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	255	135	285	390	0	0
Future Volume (vph)	255	135	285	390	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1438	1513	1613	1346		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1438	1513	1613	1346		
Peak-hour factor, PHF	0.90	0.90	0.91	0.91	0.92	0.92
Adj. Flow (vph)	283	150	313	429	0	0
RTOR Reduction (vph)	0	0	0	238	0	0
Lane Group Flow (vph)	283	150	313	191	0	0
Confl. Bikes (#/hr)				10		
Heavy Vehicles (%)	13%	13%	6%	8%	2%	2%
Turn Type	Split	NA	NA	Prot		
Protected Phases	1	1	3	3		
Permitted Phases						
Actuated Green, G (s)	27.0	27.0	49.0	49.0		
Effective Green, g (s)	27.0	27.0	49.0	49.0		
Actuated g/C Ratio	0.25	0.25	0.45	0.45		
Clearance Time (s)	6.0	6.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	352	371	718	599		
v/s Ratio Prot	c0.20	0.10	c0.19	0.14		
v/s Ratio Perm						
v/c Ratio	0.80	0.40	0.44	0.32		
Uniform Delay, d1	39.0	34.8	21.0	19.7		
Progression Factor	1.25	1.28	0.54	3.88		
Incremental Delay, d2	16.7	3.1	0.4	0.3		
Delay (s)	65.4	47.5	11.7	76.7		
Level of Service	E	D	B	E		
Approach Delay (s)		59.2	49.3		0.0	
Approach LOS		E	D		A	

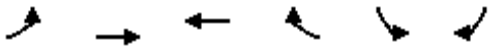
Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	51.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT
Lane Group Flow (vph)	303	383
v/c Ratio	0.39	0.39
Control Delay	5.3	5.2
Queue Delay	0.5	0.6
Total Delay	5.8	5.8
Queue Length 50th (ft)	59	75
Queue Length 95th (ft)	m60	m74
Internal Link Dist (ft)		170
Turn Bay Length (ft)		
Base Capacity (vph)	787	975
Starvation Cap Reductn	194	285
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.51	0.56

Intersection Summary

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

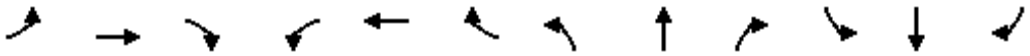


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	285	360	0	0	0	0
Future Volume (vph)	285	360	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	1.00				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1354	1676				
Flt Permitted	0.95	1.00				
Satd. Flow (perm)	1354	1676				
Peak-hour factor, PHF	0.94	0.94	0.92	0.92	0.92	0.92
Adj. Flow (vph)	303	383	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	303	383	0	0	0	0
Heavy Vehicles (%)	20%	2%	2%	2%	2%	2%
Turn Type	Perm	NA				
Protected Phases		1				
Permitted Phases	1					
Actuated Green, G (s)	32.0	32.0				
Effective Green, g (s)	32.0	32.0				
Actuated g/C Ratio	0.58	0.58				
Clearance Time (s)	5.0	5.0				
Vehicle Extension (s)	3.0	3.0				
Lane Grp Cap (vph)	787	975				
v/s Ratio Prot		c0.23				
v/s Ratio Perm	0.22					
v/c Ratio	0.39	0.39				
Uniform Delay, d1	6.2	6.2				
Progression Factor	0.66	0.67				
Incremental Delay, d2	1.1	0.9				
Delay (s)	5.2	5.1				
Level of Service	A	A				
Approach Delay (s)		5.1	0.0		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	5.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

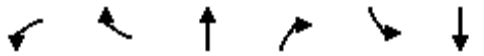
Lane Group	EBT	SBT
Lane Group Flow (vph)	309	1074
v/c Ratio	0.80	0.48
Control Delay	45.6	4.2
Queue Delay	0.0	0.0
Total Delay	45.6	4.2
Queue Length 50th (ft)	236	43
Queue Length 95th (ft)	259	65
Internal Link Dist (ft)	484	92
Turn Bay Length (ft)		
Base Capacity (vph)	572	2229
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	76
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.54	0.50

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	170	90	0	0	0	0	0	0	95	915	0
Future Volume (vph)	0	170	90	0	0	0	0	0	0	95	915	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1650	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		1.00									0.91	
Frpb, ped/bikes		0.88									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		1400									3514	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		1400									3514	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	202	107	0	0	0	0	0	0	101	973	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	309	0	0	0	0	0	0	0	0	1074	0
Confl. Peds. (#/hr)			201							528		
Confl. Bikes (#/hr)			8									
Heavy Vehicles (%)	2%	4%	0%	2%	2%	2%	2%	2%	2%	9%	7%	2%
Parking (#/hr)			10									
Turn Type		NA								Split	NA	
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		30.2									69.8	
Effective Green, g (s)		30.2									69.8	
Actuated g/C Ratio		0.27									0.63	
Clearance Time (s)		5.0									5.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		384									2229	
v/s Ratio Prot		c0.22									c0.31	
v/s Ratio Perm												
v/c Ratio		0.80									0.48	
Uniform Delay, d1		37.2									10.6	
Progression Factor		0.83									0.30	
Incremental Delay, d2		10.9									0.7	
Delay (s)		41.9									3.8	
Level of Service		D									A	
Approach Delay (s)		41.9			0.0			0.0			3.8	
Approach LOS		D			A			A			A	

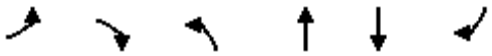
Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	250	15	0	0
Future Volume (Veh/h)	0	0	250	15	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.80	0.80	0.92	0.92
Hourly flow rate (vph)	0	0	313	19	0	0
Pedestrians	1709					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			341			334
pX, platoon unblocked						
vC, conflicting volume	2032	1875			2041	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2032	1875			2041	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	50	61			273	

Direction, Lane #	NB 1	NB 2
Volume Total	209	123
Volume Left	0	0
Volume Right	0	19
cSH	1700	1700
Volume to Capacity	0.12	0.07
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.7%	ICU Level of Service	A
Analysis Period (min)	15		



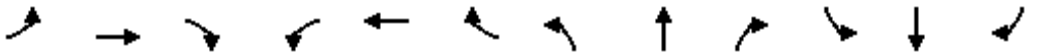
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	25	0	0	985	0
Future Volume (Veh/h)	0	25	0	0	985	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	0	29	0	0	1119	0
Pedestrians				50		
Lane Width (ft)				0.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				172	301	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	1119	423	1119			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	0	574			
tC, single (s)	6.8	7.7	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.7	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	387	842	857			

Direction, Lane #	EB 1	SB 1	SB 2	SB 3
Volume Total	29	373	373	373
Volume Left	0	0	0	0
Volume Right	29	0	0	0
cSH	842	1700	1700	1700
Volume to Capacity	0.03	0.22	0.22	0.22
Queue Length 95th (ft)	3	0	0	0
Control Delay (s)	9.4	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.4	0.0		
Approach LOS	A			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	458	894	124
v/c Ratio	0.42	0.51	0.21
Control Delay	13.6	24.4	8.0
Queue Delay	0.0	0.0	0.0
Total Delay	13.6	24.4	8.0
Queue Length 50th (ft)	52	166	15
Queue Length 95th (ft)	81	191	47
Internal Link Dist (ft)	217	146	
Turn Bay Length (ft)			75
Base Capacity (vph)	1079	1739	596
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.51	0.21

Intersection Summary

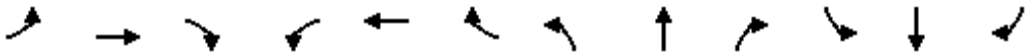


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	225	155	0	0	0	0	0	760	105
Future Volume (vph)	0	0	0	225	155	0	0	0	0	0	760	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	10
Total Lost time (s)					5.0						5.0	5.0
Lane Util. Factor					0.95						0.91	1.00
Frpb, ped/bikes					1.00						1.00	1.00
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					3052						4072	1280
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					3052						4072	1280
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	271	187	0	0	0	0	0	894	124
RTOR Reduction (vph)	0	0	0	0	192	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	266	0	0	0	0	0	894	74
Confl. Bikes (#/hr)												32
Heavy Vehicles (%)	2%	2%	2%	3%	4%	2%	2%	2%	2%	2%	7%	6%
Turn Type				Split	NA						NA	Prot
Protected Phases				3	3						1	1
Permitted Phases												
Actuated Green, G (s)					32.0						47.0	47.0
Effective Green, g (s)					32.0						47.0	47.0
Actuated g/C Ratio					0.29						0.43	0.43
Clearance Time (s)					5.0						5.0	5.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					887						1739	546
v/s Ratio Prot					c0.09						c0.22	0.06
v/s Ratio Perm												
v/c Ratio					0.30						0.51	0.14
Uniform Delay, d1					30.3						23.1	19.2
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					0.9						1.1	0.5
Delay (s)					31.2						24.2	19.7
Level of Service					C						C	B
Approach Delay (s)		0.0			31.2			0.0			23.7	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBT
Lane Group Flow (vph)	295	253
v/c Ratio	0.24	0.28
Control Delay	7.3	8.5
Queue Delay	0.0	0.0
Total Delay	7.3	8.5
Queue Length 50th (ft)	23	50
Queue Length 95th (ft)	41	48
Internal Link Dist (ft)	162	254
Turn Bay Length (ft)		
Base Capacity (vph)	1220	920
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.24	0.28

Intersection Summary



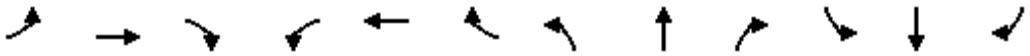
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	200	60	65	140	0	0	0	0
Future Volume (vph)	0	0	0	0	200	60	65	140	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frpb, ped/bikes					0.90			1.00				
Flpb, ped/bikes					1.00			0.83				
Frt					0.97			1.00				
Flt Protected					1.00			0.98				
Satd. Flow (prot)					2710			2092				
Flt Permitted					1.00			0.98				
Satd. Flow (perm)					2710			2092				
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	227	68	80	173	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	38	0	0	47	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	257	0	0	206	0	0	0	0
Confl. Peds. (#/hr)						832	1367					
Confl. Bikes (#/hr)						8						
Heavy Vehicles (%)	2%	2%	2%	2%	6%	0%	61%	11%	2%	2%	2%	2%
Parking (#/hr)						20						
Turn Type					NA		Perm	NA				
Protected Phases					1			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			23.0				
Effective Green, g (s)					24.0			23.0				
Actuated g/C Ratio					0.44			0.42				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1182			874				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.10				
v/c Ratio					0.22			0.24				
Uniform Delay, d1					9.7			10.3				
Progression Factor					0.93			1.10				
Incremental Delay, d2					0.4			0.6				
Delay (s)					9.3			12.0				
Level of Service					A			B				
Approach Delay (s)		0.0			9.3			12.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	SBT
Lane Group Flow (vph)	279	232	125
v/c Ratio	0.21	0.76	0.74
Control Delay	16.4	56.7	60.3
Queue Delay	0.6	0.0	0.0
Total Delay	17.0	56.7	60.3
Queue Length 50th (ft)	66	155	68
Queue Length 95th (ft)	103	223	115
Internal Link Dist (ft)	136		131
Turn Bay Length (ft)			
Base Capacity (vph)	1314	473	229
Starvation Cap Reductn	701	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.49	0.55

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	120	145	0	220	0	0	0	65	40
Future Volume (vph)	0	0	0	120	145	0	220	0	0	0	65	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		4.0				5.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.84	
Flpb, ped/bikes					1.00		1.00				1.00	
Frt					1.00		1.00				0.95	
Flt Protected					0.98		0.95				1.00	
Satd. Flow (prot)					2466		1533				1042	
Flt Permitted					0.98		0.95				1.00	
Satd. Flow (perm)					2466		1533				1042	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.84	0.84	0.84
Adj. Flow (vph)	0	0	0	126	153	0	232	0	0	0	77	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	22	0
Lane Group Flow (vph)	0	0	0	0	279	0	232	0	0	0	103	0
Confl. Peds. (#/hr)				680			345					345
Confl. Bikes (#/hr)												16
Heavy Vehicles (%)	2%	2%	2%	34%	7%	2%	6%	2%	2%	2%	11%	10%
Parking (#/hr)					10						10	
Turn Type				Split	NA		Prot				NA	
Protected Phases				1	1		3				2	
Permitted Phases												
Actuated Green, G (s)					58.6		22.0				15.4	
Effective Green, g (s)					58.6		22.0				15.4	
Actuated g/C Ratio					0.53		0.20				0.14	
Clearance Time (s)					5.0		4.0				5.0	
Vehicle Extension (s)					3.0		3.0				3.0	
Lane Grp Cap (vph)					1313		306				145	
v/s Ratio Prot					c0.11		c0.15				c0.10	
v/s Ratio Perm												
v/c Ratio					0.21		0.76				0.71	
Uniform Delay, d1					13.5		41.5				45.2	
Progression Factor					0.99		1.00				1.00	
Incremental Delay, d2					0.4		10.3				14.6	
Delay (s)					13.8		51.8				59.8	
Level of Service					B		D				E	
Approach Delay (s)		0.0			13.8			51.8			59.8	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

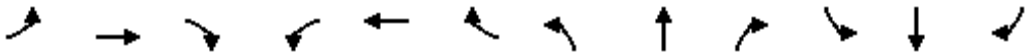
c Critical Lane Group

Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	237	189	225
v/c Ratio	0.24	0.34	0.28
Control Delay	17.2	4.8	4.7
Queue Delay	0.9	0.9	0.0
Total Delay	18.1	5.7	4.7
Queue Length 50th (ft)	36	0	18
Queue Length 95th (ft)	62	39	39
Internal Link Dist (ft)	114		201
Turn Bay Length (ft)			
Base Capacity (vph)	1006	562	799
Starvation Cap Reductn	523	181	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.50	0.28

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	225	180	100	80	0	0	0	0
Future Volume (vph)	0	0	0	0	225	180	100	80	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	12	12	12	12	12	12
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.95	1.00		1.00				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.97				
Satd. Flow (prot)					3065	1326		1346				
Flt Permitted					1.00	1.00		0.97				
Satd. Flow (perm)					3065	1326		1346				
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	237	189	125	100	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	127	0	56	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	237	62	0	169	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	0%	6%	6%	11%	6%	0%	2%	2%	2%
Parking (#/hr)								4				
Turn Type					NA	Perm	Perm	NA				
Protected Phases					1			2				
Permitted Phases						1	2					
Actuated Green, G (s)					22.0	22.0		37.0				
Effective Green, g (s)					22.0	22.0		37.0				
Actuated g/C Ratio					0.33	0.33		0.55				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					3.0	3.0		3.0				
Lane Grp Cap (vph)					1006	435		743				
v/s Ratio Prot					c0.08							
v/s Ratio Perm						0.05		0.13				
v/c Ratio					0.24	0.14		0.23				
Uniform Delay, d1					16.4	15.9		7.7				
Progression Factor					1.00	1.00		1.00				
Incremental Delay, d2					0.6	0.7		0.2				
Delay (s)					16.9	16.5		7.8				
Level of Service					B	B		A				
Approach Delay (s)		0.0			16.8			7.8			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	15	100	25	200	5	2	0	0	0	0
Future Volume (vph)	10	0	15	100	25	200	5	2	0	0	0	0
Peak Hour Factor	0.63	0.63	0.63	0.83	0.83	0.83	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	16	0	24	120	30	241	10	4	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	40	391	14
Volume Left (vph)	16	120	10
Volume Right (vph)	24	241	0
Hadj (s)	-0.28	-0.19	0.14
Departure Headway (s)	4.0	3.8	4.9
Degree Utilization, x	0.04	0.41	0.02
Capacity (veh/h)	876	944	670
Control Delay (s)	7.2	9.4	8.0
Approach Delay (s)	7.2	9.4	8.0
Approach LOS	A	A	A

Intersection Summary				
Delay	9.2			
Level of Service	A			
Intersection Capacity Utilization	52.5%	ICU Level of Service	A	
Analysis Period (min)	15			

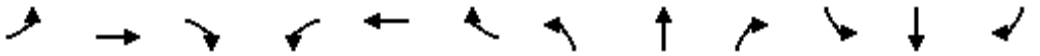
Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	0	0	0	70	0
Future Volume (vph)	0	0	0	0	70	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	76	0

Direction, Lane #	SE 1	SW 1
Volume Total (vph)	0	76
Volume Left (vph)	0	0
Volume Right (vph)	0	0
Hadj (s)	0.00	0.03
Departure Headway (s)	4.1	3.9
Degree Utilization, x	0.00	0.08
Capacity (veh/h)	877	902
Control Delay (s)	7.1	7.3
Approach Delay (s)	0.0	7.3
Approach LOS	A	A

Intersection Summary			
Delay	7.3		
Level of Service	A		
Intersection Capacity Utilization	7.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	237	227	82	912
v/c Ratio	0.33	0.78	0.12	0.46
Control Delay	34.1	56.6	19.3	21.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	34.1	56.6	19.3	21.6
Queue Length 50th (ft)	73	151	31	152
Queue Length 95th (ft)	95	213	73	229
Internal Link Dist (ft)	181			116
Turn Bay Length (ft)				
Base Capacity (vph)	1020	414	656	1977
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.55	0.13	0.46

Intersection Summary



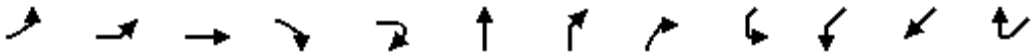
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	230	220	0	0	0	0	0	0	75	830	0
Future Volume (vph)	0	230	220	0	0	0	0	0	0	75	830	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	12
Total Lost time (s)		5.0	5.0							5.0	5.0	
Lane Util. Factor		0.95	1.00							1.00	0.91	
Frpb, ped/bikes		1.00	0.93							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		2954	1180							1378	4150	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		2954	1180							1378	4150	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	237	227	0	0	0	0	0	0	82	912	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	237	227	0	0	0	0	0	0	82	912	0
Confl. Bikes (#/hr)			59									
Heavy Vehicles (%)	0%	10%	15%	2%	2%	2%	2%	2%	2%	10%	5%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		3									1	
Permitted Phases			3							1		
Actuated Green, G (s)		26.6	26.6							52.4	52.4	
Effective Green, g (s)		26.6	26.6							52.4	52.4	
Actuated g/C Ratio		0.24	0.24							0.48	0.48	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		714	285							656	1976	
v/s Ratio Prot		0.08									c0.22	
v/s Ratio Perm			c0.19							0.06		
v/c Ratio		0.33	0.80							0.12	0.46	
Uniform Delay, d1		34.4	39.2							16.0	19.3	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		0.3	14.2							0.4	0.8	
Delay (s)		34.7	53.4							16.4	20.1	
Level of Service		C	D							B	C	
Approach Delay (s)		43.8			0.0			0.0			19.8	
Approach LOS		D			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	27.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	41.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	NBT	NBR	SWT
Lane Group Flow (vph)	258	212	189	310	262	958
v/c Ratio	0.76	0.74	0.71	0.53	0.91	0.60
Control Delay	54.0	54.6	53.4	42.2	77.5	28.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.0	54.6	53.4	42.2	77.5	28.8
Queue Length 50th (ft)	169	145	128	102	180	214
Queue Length 95th (ft)	247	222	201	136	#291	280
Internal Link Dist (ft)		485		196		167
Turn Bay Length (ft)						
Base Capacity (vph)	427	361	336	606	300	1607
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.59	0.56	0.51	0.87	0.60

Intersection Summary

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



Movement	EBL2	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SWL2	SWL	SWT	SWR2
Lane Configurations												
Traffic Volume (vph)	40	195	135	100	130	260	210	10	80	140	645	25
Future Volume (vph)	40	195	135	100	130	260	210	10	80	140	645	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	11	11	12	10	11	11	11
Total Lost time (s)		6.5	6.5	6.5		8.0	8.0				7.5	
Lane Util. Factor		1.00	0.95	0.95		0.95	1.00				0.91	
Frpb, ped/bikes		1.00	0.90	1.00		1.00	1.00				0.99	
Flpb, ped/bikes		1.00	1.00	1.00		1.00	1.00				1.00	
Frt		1.00	0.95	0.85		1.00	0.85				1.00	
Flt Protected		0.95	1.00	1.00		1.00	1.00				0.99	
Satd. Flow (prot)		1541	1305	1213		2779	1378				4150	
Flt Permitted		0.95	1.00	1.00		1.00	1.00				0.99	
Satd. Flow (perm)		1541	1305	1213		2779	1378				4150	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.84	0.84	0.84	0.93	0.93	0.93	0.93
Adj. Flow (vph)	44	214	148	110	143	310	250	12	86	151	694	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	72	0
Lane Group Flow (vph)	0	258	212	189	0	310	262	0	0	0	886	0
Confl. Peds. (#/hr)	681			273	309			131	131	273		681
Heavy Vehicles (%)	11%	0%	4%	1%	13%	13%	2%	2%	4%	5%	6%	4%
Parking (#/hr)								10				
Turn Type	Split	Split	NA	Prot		NA	Prot		Split	Split	NA	
Protected Phases	3	3	3	3		2	2		1	1	1	
Permitted Phases												
Actuated Green, G (s)		24.3	24.3	24.3		23.0	23.0				40.7	
Effective Green, g (s)		24.3	24.3	24.3		23.0	23.0				40.7	
Actuated g/C Ratio		0.22	0.22	0.22		0.21	0.21				0.37	
Clearance Time (s)		6.5	6.5	6.5		8.0	8.0				7.5	
Vehicle Extension (s)		3.0	3.0	3.0		3.0	3.0				3.0	
Lane Grp Cap (vph)		340	288	267		581	288				1535	
v/s Ratio Prot		c0.17	0.16	0.16		0.11	c0.19				c0.21	
v/s Ratio Perm												
v/c Ratio		0.76	0.74	0.71		0.53	0.91				0.58	
Uniform Delay, d1		40.1	39.9	39.6		38.7	42.5				27.8	
Progression Factor		1.00	1.00	1.00		1.00	1.00				1.06	
Incremental Delay, d2		9.4	9.4	8.3		0.9	30.3				1.4	
Delay (s)		49.5	49.3	47.9		39.7	72.8				30.7	
Level of Service		D	D	D		D	E				C	
Approach Delay (s)			48.9			54.8					30.7	
Approach LOS			D			D					C	

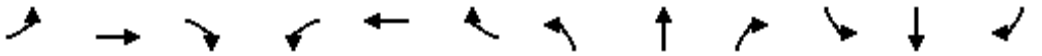
Intersection Summary			
HCM 2000 Control Delay	42.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	994	172	362	184	133
v/c Ratio	0.49	0.67	0.68	0.69	0.36
Control Delay	15.0	56.2	49.1	50.8	10.3
Queue Delay	0.4	0.0	0.0	1.4	0.8
Total Delay	15.4	56.2	49.1	52.2	11.1
Queue Length 50th (ft)	98	125	132	62	5
Queue Length 95th (ft)	121	#208	181	113	44
Internal Link Dist (ft)	138		250	176	
Turn Bay Length (ft)					
Base Capacity (vph)	2048	256	536	268	370
Starvation Cap Reductn	523	0	0	17	85
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.65	0.67	0.68	0.73	0.47

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	600	75	185	285	0	0	145	105
Future Volume (vph)	0	0	0	170	600	75	185	285	0	0	145	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	11	11	12	12	12	12	12	12
Total Lost time (s)					6.0		7.0	7.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			1.00	1.00
Frpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.99		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	0.99			1.00	1.00
Satd. Flow (prot)					4151		1408	2949			1555	1358
Flt Permitted					0.99		0.95	0.99			1.00	1.00
Satd. Flow (perm)					4151		1408	2949			1555	1358
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.88	0.88	0.88	0.79	0.79	0.79
Adj. Flow (vph)	0	0	0	200	706	88	210	324	0	0	184	133
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	0	110
Lane Group Flow (vph)	0	0	0	0	983	0	172	362	0	0	184	23
Confl. Peds. (#/hr)						119						1405
Heavy Vehicles (%)	2%	2%	2%	4%	6%	3%	5%	5%	0%	2%	10%	7%
Turn Type				Split	NA		Split	NA			NA	Prot
Protected Phases				1 4	1 4		2	2			3	3
Permitted Phases												
Actuated Green, G (s)					54.0		20.0	20.0			19.0	19.0
Effective Green, g (s)					47.5		20.0	20.0			19.0	19.0
Actuated g/C Ratio					0.43		0.18	0.18			0.17	0.17
Clearance Time (s)							7.0	7.0			4.0	4.0
Vehicle Extension (s)							3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1792		256	536			268	234
v/s Ratio Prot					c0.24		0.12	c0.12			c0.12	0.02
v/s Ratio Perm												
v/c Ratio					0.55		0.67	0.68			0.69	0.10
Uniform Delay, d1					23.3		41.9	42.0			42.7	38.3
Progression Factor					0.77		1.00	1.00			0.88	2.29
Incremental Delay, d2					1.1		13.2	6.7			12.3	0.8
Delay (s)					19.1		55.2	48.7			49.9	88.4
Level of Service					B		E	D			D	F
Approach Delay (s)		0.0			19.1			50.7			66.0	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	36.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	64.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	SET	SER	SER2	SWL2	SWL	SWT
Lane Group Flow (vph)	708	562	225	295	458	337
v/c Ratio	0.64	1.11	0.36	0.44	0.94	0.69
Control Delay	17.9	86.1	2.2	5.3	65.0	40.7
Queue Delay	14.8	1.3	1.8	0.0	0.0	0.0
Total Delay	32.8	87.5	4.0	5.3	65.0	40.7
Queue Length 50th (ft)	126	~454	5	0	308	203
Queue Length 95th (ft)	m162	m#582	m13	59	#505	310
Internal Link Dist (ft)	152					169
Turn Bay Length (ft)						
Base Capacity (vph)	1112	507	618	676	499	497
Starvation Cap Reductn	395	71	249	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.99	1.29	0.61	0.44	0.92	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	SET	SER	SER2	SWL2	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	630	500	200	280	435	320
Future Volume (vph)	630	500	200	280	435	320
Ideal Flow (vphpl)	1800	1800	1800	1900	1900	1900
Lane Width	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	2789	1272	1212	1430	1486	1478
Flt Permitted	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	2789	1272	1212	1430	1486	1478
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	708	562	225	295	458	337
RTOR Reduction (vph)	0	0	135	198	0	0
Lane Group Flow (vph)	708	562	90	97	458	337
Heavy Vehicles (%)	3%	1%	6%	6%	2%	8%
Turn Type	NA	Prot	Prot	Split	Split	NA
Protected Phases	1	1	1	3	3	3
Permitted Phases						
Actuated Green, G (s)	43.9	43.9	43.9	36.1	36.1	36.1
Effective Green, g (s)	43.9	43.9	43.9	36.1	36.1	36.1
Actuated g/C Ratio	0.40	0.40	0.40	0.33	0.33	0.33
Clearance Time (s)	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
Lane Grp Cap (vph)	1113	507	483	469	487	485
v/s Ratio Prot	0.25	c0.44	0.07	0.07	c0.31	0.23
v/s Ratio Perm						
v/c Ratio	0.64	1.11	0.19	0.21	0.94	0.69
Uniform Delay, d1	26.6	33.0	21.5	26.6	35.9	32.2
Progression Factor	0.60	0.61	0.44	1.00	1.00	1.00
Incremental Delay, d2	1.4	62.9	0.4	0.2	26.5	4.3
Delay (s)	17.5	83.1	9.9	26.8	62.4	36.5
Level of Service	B	F	A	C	E	D
Approach Delay (s)	41.0					44.8
Approach LOS	D					D

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

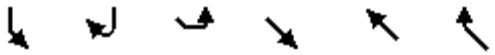
Lane Group	SET	NWL	SWT
Lane Group Flow (vph)	261	59	393
v/c Ratio	0.92	0.31	0.58
Control Delay	74.7	45.3	27.6
Queue Delay	3.7	0.0	0.0
Total Delay	78.4	45.3	27.6
Queue Length 50th (ft)	172	43	211
Queue Length 95th (ft)	#321	87	242
Internal Link Dist (ft)	136		97
Turn Bay Length (ft)			
Base Capacity (vph)	308	193	679
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	16	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.89	0.31	0.58

Intersection Summary

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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	175	65	55	0	0	0	0	0	120	175	0
Future Volume (vph)	0	175	65	55	0	0	0	0	0	120	175	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0							5.0	
Lane Util. Factor		1.00		1.00							1.00	
Frpb, ped/bikes		0.75		1.00							1.00	
Flpb, ped/bikes		1.00		1.00							1.00	
Frt		0.96		1.00							1.00	
Flt Protected		1.00		0.95							0.98	
Satd. Flow (prot)		998		1328							1507	
Flt Permitted		1.00		0.95							0.98	
Satd. Flow (perm)		998		1328							1507	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	0	190	71	59	0	0	0	0	0	160	233	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	261	0	59	0	0	0	0	0	0	393	0
Confl. Peds. (#/hr)			1061							149		
Heavy Vehicles (%)	2%	7%	3%	4%	2%	2%	2%	2%	2%	10%	12%	2%
Parking (#/hr)		10		10								
Turn Type		NA		Prot						Split	NA	
Protected Phases		3		2						1	1	
Permitted Phases												
Actuated Green, G (s)		31.4		16.0							49.6	
Effective Green, g (s)		31.4		16.0							49.6	
Actuated g/C Ratio		0.29		0.15							0.45	
Clearance Time (s)		4.0		4.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		284		193							679	
v/s Ratio Prot		c0.26		c0.04							c0.26	
v/s Ratio Perm												
v/c Ratio		0.92		0.31							0.58	
Uniform Delay, d1		38.1		42.0							22.4	
Progression Factor		1.00		0.96							1.00	
Incremental Delay, d2		32.5		4.0							3.6	
Delay (s)		70.6		44.5							26.0	
Level of Service		E		D							C	
Approach Delay (s)		70.6			44.5			0.0			26.0	
Approach LOS		E			D			A			C	

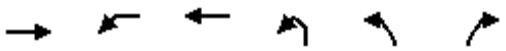
Intersection Summary			
HCM 2000 Control Delay	43.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	0	0	15	280	55	125
Future Volume (Veh/h)	0	0	15	280	55	125
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.87	0.87
Hourly flow rate (vph)	0	0	16	304	63	144
Pedestrians	1011					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				233	107	
pX, platoon unblocked	0.95	0.95	0.95			
vC, conflicting volume	1482	1146	1218			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1481	1129	1204			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	100	100	97			
cM capacity (veh/h)	128	237	540			

Direction, Lane #	SE 1	NW 1
Volume Total	320	207
Volume Left	16	0
Volume Right	0	144
cSH	540	1700
Volume to Capacity	0.03	0.12
Queue Length 95th (ft)	2	0
Control Delay (s)	1.0	0.0
Lane LOS	A	
Approach Delay (s)	1.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	33.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBL	WBT	NBL2	NBL	NBR
Lane Group Flow (vph)	329	112	112	160	105	284
v/c Ratio	0.74	1.04	0.23	0.16	0.11	0.36
Control Delay	32.7	108.5	4.2	0.3	5.1	7.3
Queue Delay	1.8	0.0	1.0	0.0	0.0	0.8
Total Delay	34.5	108.5	5.2	0.3	5.1	8.1
Queue Length 50th (ft)	168	85	21	0	13	38
Queue Length 95th (ft)	m203	#170	39	0	25	58
Internal Link Dist (ft)	27		136		330	
Turn Bay Length (ft)						
Base Capacity (vph)	551	137	615	970	950	789
Starvation Cap Reductn	102	0	325	0	0	258
Spillback Cap Reductn	87	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.82	0.39	0.16	0.11	0.53

Intersection Summary

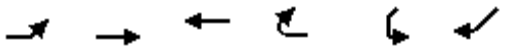
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	255	0	25	95	95	130	85	230	0	0
Future Volume (vph)	255	0	25	95	95	130	85	230	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Lane Util. Factor	1.00			1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	0.92			1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00			0.70	1.00	1.00	1.00	1.00		
Frt	0.99			1.00	1.00	1.00	1.00	0.85		
Flt Protected	1.00			0.95	1.00	0.95	0.95	1.00		
Satd. Flow (prot)	1446			1122	1693	1504	1577	1309		
Flt Permitted	1.00			0.34	1.00	0.95	0.95	1.00		
Satd. Flow (perm)	1446			402	1693	1504	1577	1309		
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.81	0.81	0.81	0.92	0.92
Adj. Flow (vph)	300	0	29	112	112	160	105	284	0	0
RTOR Reduction (vph)	28	0	0	0	0	64	0	0	0	0
Lane Group Flow (vph)	301	0	0	112	112	96	105	284	0	0
Confl. Peds. (#/hr)			1170	1170						
Heavy Vehicles (%)	8%	2%	3%	2%	1%	8%	3%	11%	2%	2%
Parking (#/hr)			10							
Turn Type	NA			Perm	NA	Perm	Prot	Perm		
Protected Phases	2				2		1			
Permitted Phases				2		1		1		
Actuated Green, G (s)	31.7			31.7	31.7	66.3	66.3	66.3		
Effective Green, g (s)	31.7			31.7	31.7	66.3	66.3	66.3		
Actuated g/C Ratio	0.29			0.29	0.29	0.60	0.60	0.60		
Clearance Time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	416			115	487	906	950	788		
v/s Ratio Prot	0.21				0.07		0.07			
v/s Ratio Perm				c0.28		0.06		c0.22		
v/c Ratio	0.72			0.97	0.23	0.11	0.11	0.36		
Uniform Delay, d1	35.2			38.7	29.8	9.3	9.3	11.1		
Progression Factor	0.84			0.34	0.12	0.00	0.42	0.46		
Incremental Delay, d2	4.5			71.4	0.2	0.2	0.2	1.2		
Delay (s)	33.9			84.5	3.7	0.2	4.1	6.3		
Level of Service	C			F	A	A	A	A		
Approach Delay (s)	33.9				44.1		4.1		0.0	
Approach LOS	C				D		A		A	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Group Flow (vph)	290	309	216	193
v/c Ratio	0.47	0.46	0.47	0.38
Control Delay	19.6	19.2	10.3	1.9
Queue Delay	15.0	16.6	0.3	0.3
Total Delay	34.6	35.8	10.6	2.2
Queue Length 50th (ft)	133	142	33	0
Queue Length 95th (ft)	192	197	57	1
Internal Link Dist (ft)		136	176	
Turn Bay Length (ft)				
Base Capacity (vph)	612	668	461	503
Starvation Cap Reductn	301	342	37	66
Spillback Cap Reductn	13	7	8	1
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.93	0.95	0.51	0.44

Intersection Summary

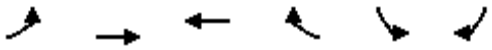


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	235	250	190	170	0	0
Future Volume (vph)	235	250	190	170	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1464	1598	1693	1333		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1464	1598	1693	1333		
Peak-hour factor, PHF	0.81	0.81	0.88	0.88	0.92	0.92
Adj. Flow (vph)	290	309	216	193	0	0
RTOR Reduction (vph)	0	0	0	140	0	0
Lane Group Flow (vph)	290	309	216	53	0	0
Heavy Vehicles (%)	11%	7%	1%	9%	2%	2%
Turn Type	Split	NA	NA	Prot		
Protected Phases	1	1	3	3		
Permitted Phases						
Actuated Green, G (s)	46.0	46.0	30.0	30.0		
Effective Green, g (s)	46.0	46.0	30.0	30.0		
Actuated g/C Ratio	0.42	0.42	0.27	0.27		
Clearance Time (s)	6.0	6.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	612	668	461	363		
v/s Ratio Prot	c0.20	0.19	c0.13	0.04		
v/s Ratio Perm						
v/c Ratio	0.47	0.46	0.47	0.15		
Uniform Delay, d1	23.2	23.1	33.4	30.3		
Progression Factor	0.73	0.72	0.23	0.05		
Incremental Delay, d2	2.4	2.1	2.6	0.6		
Delay (s)	19.2	18.8	10.2	2.1		
Level of Service	B	B	B	A		
Approach Delay (s)		19.0	6.4		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	35.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT
Lane Group Flow (vph)	143	270
v/c Ratio	0.18	0.28
Control Delay	6.1	7.0
Queue Delay	0.0	0.5
Total Delay	6.1	7.5
Queue Length 50th (ft)	43	84
Queue Length 95th (ft)	73	147
Internal Link Dist (ft)		170
Turn Bay Length (ft)		
Base Capacity (vph)	774	956
Starvation Cap Reductn	0	343
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.18	0.44

Intersection Summary



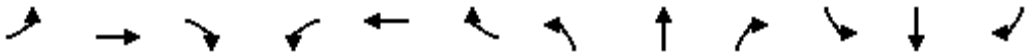
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	140	265	0	0	0	0
Future Volume (vph)	140	265	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	1.00				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1332	1644				
Flt Permitted	0.95	1.00				
Satd. Flow (perm)	1332	1644				
Peak-hour factor, PHF	0.98	0.98	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	270	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	143	270	0	0	0	0
Heavy Vehicles (%)	22%	4%	2%	2%	2%	2%
Turn Type	Perm	NA				
Protected Phases		1				
Permitted Phases	1					
Actuated Green, G (s)	32.0	32.0				
Effective Green, g (s)	32.0	32.0				
Actuated g/C Ratio	0.58	0.58				
Clearance Time (s)	5.0	5.0				
Vehicle Extension (s)	3.0	3.0				
Lane Grp Cap (vph)	774	956				
v/s Ratio Prot		c0.16				
v/s Ratio Perm	0.11					
v/c Ratio	0.18	0.28				
Uniform Delay, d1	5.4	5.8				
Progression Factor	1.03	1.08				
Incremental Delay, d2	0.5	0.7				
Delay (s)	6.0	6.9				
Level of Service	A	A				
Approach Delay (s)		6.6	0.0		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	SBT
Lane Group Flow (vph)	310	1472
v/c Ratio	0.81	0.87
Control Delay	41.1	16.7
Queue Delay	0.1	3.1
Total Delay	41.2	19.7
Queue Length 50th (ft)	202	210
Queue Length 95th (ft)	321	#685
Internal Link Dist (ft)	484	92
Turn Bay Length (ft)		
Base Capacity (vph)	542	1688
Starvation Cap Reductn	0	0
Spillback Cap Reductn	11	135
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.58	0.95

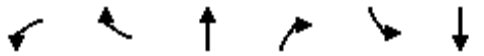
Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	190	95	0	0	0	0	0	0	75	1235	0
Future Volume (vph)	0	190	95	0	0	0	0	0	0	75	1235	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1650	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		1.00									*0.65	
Frpb, ped/bikes		0.89									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		1421									2641	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		1421									2641	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	207	103	0	0	0	0	0	0	84	1388	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	310	0	0	0	0	0	0	0	0	1472	0
Confl. Peds. (#/hr)			158							334		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Parking (#/hr)			10									
Turn Type		NA								Split	NA	
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		29.6									70.4	
Effective Green, g (s)		29.6									70.4	
Actuated g/C Ratio		0.27									0.64	
Clearance Time (s)		5.0									5.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		382									1690	
v/s Ratio Prot		c0.22									c0.56	
v/s Ratio Perm												
v/c Ratio		0.81									0.87	
Uniform Delay, d1		37.6									16.1	
Progression Factor		0.67									0.51	
Incremental Delay, d2		12.1									5.9	
Delay (s)		37.3									14.1	
Level of Service		D									B	
Approach Delay (s)		37.3			0.0			0.0			14.1	
Approach LOS		D			A			A			B	

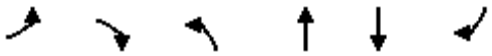
Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	135	15	0	0
Future Volume (Veh/h)	0	0	135	15	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.93	0.93	0.92	0.92
Hourly flow rate (vph)	0	0	145	16	0	0
Pedestrians	1960					
Lane Width (ft)	0.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			341			334
pX, platoon unblocked						
vC, conflicting volume	2113	2040			2121	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2113	2040			2121	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	44	47			254	

Direction, Lane #	NB 1	NB 2
Volume Total	97	64
Volume Left	0	0
Volume Right	0	16
cSH	1700	1700
Volume to Capacity	0.06	0.04
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.7%	ICU Level of Service	A
Analysis Period (min)	15		



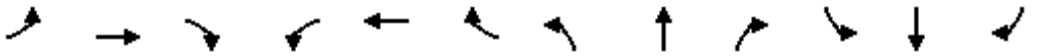
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	60	0	0	1250	0
Future Volume (Veh/h)	0	60	0	0	1250	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	0	67	0	0	1374	0
Pedestrians				19		
Lane Width (ft)				0.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				172	301	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	1374	477	1374			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	790	0	790			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	93	100			
cM capacity (veh/h)	276	919	696			

Direction, Lane #	EB 1	SB 1	SB 2	SB 3
Volume Total	67	458	458	458
Volume Left	0	0	0	0
Volume Right	67	0	0	0
cSH	919	1700	1700	1700
Volume to Capacity	0.07	0.27	0.27	0.27
Queue Length 95th (ft)	6	0	0	0
Control Delay (s)	9.2	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.2	0.0		
Approach LOS	A			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	441	1077	99
v/c Ratio	0.48	0.51	0.15
Control Delay	14.0	20.1	7.0
Queue Delay	0.0	0.1	0.0
Total Delay	14.1	20.3	7.0
Queue Length 50th (ft)	45	183	13
Queue Length 95th (ft)	93	224	42
Internal Link Dist (ft)	217	146	
Turn Bay Length (ft)			75
Base Capacity (vph)	924	2097	679
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	9	262	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.48	0.59	0.15

Intersection Summary



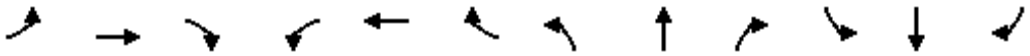
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	270	140	0	0	0	0	0	980	90
Future Volume (vph)	0	0	0	270	140	0	0	0	0	0	980	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	10
Total Lost time (s)					5.0						5.0	5.0
Lane Util. Factor					0.95						0.91	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					3084						4272	1317
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					3084						4272	1317
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	290	151	0	0	0	0	0	1077	99
RTOR Reduction (vph)	0	0	0	0	224	0	0	0	0	0	0	33
Lane Group Flow (vph)	0	0	0	0	217	0	0	0	0	0	1077	66
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%
Turn Type				Split	NA						NA	Prot
Protected Phases				3	3						1	1
Permitted Phases												
Actuated Green, G (s)					25.0						54.0	54.0
Effective Green, g (s)					25.0						54.0	54.0
Actuated g/C Ratio					0.23						0.49	0.49
Clearance Time (s)					5.0						5.0	5.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					700						2097	646
v/s Ratio Prot					c0.07						c0.25	0.05
v/s Ratio Perm												
v/c Ratio					0.31						0.51	0.10
Uniform Delay, d1					35.3						19.1	15.0
Progression Factor					1.00						1.00	1.00
Incremental Delay, d2					1.2						0.9	0.3
Delay (s)					36.5						20.0	15.3
Level of Service					D						B	B
Approach Delay (s)		0.0			36.5			0.0			19.6	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBT
Lane Group Flow (vph)	302	195
v/c Ratio	0.23	0.21
Control Delay	6.5	7.4
Queue Delay	0.0	0.0
Total Delay	6.5	7.4
Queue Length 50th (ft)	24	14
Queue Length 95th (ft)	32	24
Internal Link Dist (ft)	162	254
Turn Bay Length (ft)		
Base Capacity (vph)	1306	913
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.21

Intersection Summary



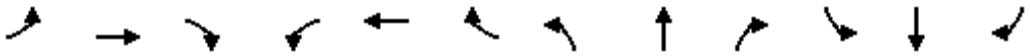
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	175	55	80	105	0	0	0	0
Future Volume (vph)	0	0	0	0	175	55	80	105	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frpb, ped/bikes					0.91			1.00				
Flpb, ped/bikes					1.00			0.81				
Frt					0.96			1.00				
Flt Protected					1.00			0.98				
Satd. Flow (prot)					2789			2157				
Flt Permitted					1.00			0.98				
Satd. Flow (perm)					2789			2157				
Peak-hour factor, PHF	0.92	0.92	0.92	0.76	0.76	0.76	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	230	72	84	111	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	50	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	263	0	0	145	0	0	0	0
Confl. Peds. (#/hr)						597	848					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	44%	1%	2%	2%	2%	2%
Parking (#/hr)						20						
Turn Type					NA		Perm	NA				
Protected Phases					1			2				
Permitted Phases							2					
Actuated Green, G (s)					25.0			22.0				
Effective Green, g (s)					25.0			22.0				
Actuated g/C Ratio					0.45			0.40				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1267			862				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.07				
v/c Ratio					0.21			0.17				
Uniform Delay, d1					9.0			10.6				
Progression Factor					0.89			1.12				
Incremental Delay, d2					0.4			0.4				
Delay (s)					8.4			12.3				
Level of Service					A			B				
Approach Delay (s)		0.0			8.4			12.3			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.19		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	SBT
Lane Group Flow (vph)	323	159	205
v/c Ratio	0.23	0.68	0.90
Control Delay	13.5	58.6	78.1
Queue Delay	0.8	0.0	0.0
Total Delay	14.2	58.6	78.1
Queue Length 50th (ft)	71	108	124
Queue Length 95th (ft)	91	151	#260
Internal Link Dist (ft)	136		131
Turn Bay Length (ft)			
Base Capacity (vph)	1390	321	239
Starvation Cap Reductn	758	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.51	0.50	0.86

Intersection Summary

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

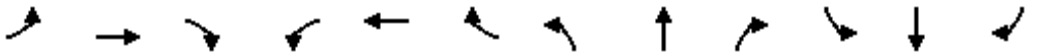


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	160	95	0	130	0	0	0	115	75
Future Volume (vph)	0	0	0	160	95	0	130	0	0	0	115	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		4.0				5.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.84	
Flpb, ped/bikes					1.00		1.00				1.00	
Frt					1.00		1.00				0.95	
Flt Protected					0.97		0.95				1.00	
Satd. Flow (prot)					2543		1608				1144	
Flt Permitted					0.97		0.95				1.00	
Satd. Flow (perm)					2543		1608				1144	
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.82	0.82	0.82	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	203	120	0	159	0	0	0	124	81
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	0	0	0	323	0	159	0	0	0	184	0
Confl. Peds. (#/hr)				614			309					309
Heavy Vehicles (%)	2%	2%	2%	22%	2%	2%	1%	2%	2%	2%	0%	3%
Parking (#/hr)					10						10	
Turn Type				Split	NA		Prot				NA	
Protected Phases				1	1		3				2	
Permitted Phases												
Actuated Green, G (s)					60.2		16.0				19.8	
Effective Green, g (s)					60.2		16.0				19.8	
Actuated g/C Ratio					0.55		0.15				0.18	
Clearance Time (s)					5.0		4.0				5.0	
Vehicle Extension (s)					3.0		3.0				3.0	
Lane Grp Cap (vph)					1391		233				205	
v/s Ratio Prot					c0.13		c0.10				c0.16	
v/s Ratio Perm												
v/c Ratio					0.23		0.68				0.90	
Uniform Delay, d1					12.9		44.6				44.1	
Progression Factor					0.92		1.00				1.00	
Incremental Delay, d2					0.4		8.0				35.5	
Delay (s)					12.2		52.6				79.6	
Level of Service					B		D				E	
Approach Delay (s)		0.0			12.2			52.6			79.6	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	159	170	267
v/c Ratio	0.15	0.33	0.33
Control Delay	16.4	5.1	8.4
Queue Delay	0.0	0.8	0.0
Total Delay	16.4	5.9	8.4
Queue Length 50th (ft)	23	0	46
Queue Length 95th (ft)	43	37	88
Internal Link Dist (ft)	114		201
Turn Bay Length (ft)			
Base Capacity (vph)	1056	520	815
Starvation Cap Reductn	0	157	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	0.47	0.33

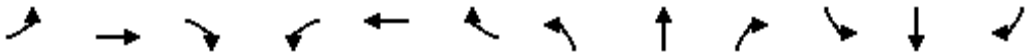
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	145	155	55	190	0	0	0	0
Future Volume (vph)	0	0	0	0	145	155	55	190	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	12	12	12	12	12	12
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.95	1.00		1.00				
Frpb, ped/bikes					1.00	0.91		1.00				
Flpb, ped/bikes					1.00	1.00		1.00				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.99				
Satd. Flow (prot)					3217	1236		1448				
Flt Permitted					1.00	1.00		0.99				
Satd. Flow (perm)					3217	1236		1448				
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	159	170	60	207	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	114	0	16	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	159	56	0	251	0	0	0	0
Confl. Bikes (#/hr)						58						
Heavy Vehicles (%)	2%	2%	2%	0%	1%	4%	2%	3%	0%	2%	2%	2%
Parking (#/hr)								4				
Turn Type					NA	Perm	Perm	NA				
Protected Phases					1			2				
Permitted Phases						1	2					
Actuated Green, G (s)					22.0	22.0		37.0				
Effective Green, g (s)					22.0	22.0		37.0				
Actuated g/C Ratio					0.33	0.33		0.55				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					3.0	3.0		3.0				
Lane Grp Cap (vph)					1056	405		799				
v/s Ratio Prot					c0.05							
v/s Ratio Perm						0.05		0.17				
v/c Ratio					0.15	0.14		0.31				
Uniform Delay, d1					15.9	15.8		8.1				
Progression Factor					1.00	1.00		1.00				
Incremental Delay, d2					0.3	0.7		1.0				
Delay (s)					16.2	16.5		9.2				
Level of Service					B	B		A				
Approach Delay (s)		0.0			16.4			9.2			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	15	95	25	80	5	5	0	0	0	0
Future Volume (vph)	10	0	15	95	25	80	5	5	0	0	0	0
Peak Hour Factor	0.59	0.59	0.59	0.90	0.90	0.90	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	25	106	28	89	10	10	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	42	223	20
Volume Left (vph)	17	106	10
Volume Right (vph)	25	89	0
Hadj (s)	-0.28	-0.11	0.10
Departure Headway (s)	3.9	3.9	4.5
Degree Utilization, x	0.05	0.24	0.03
Capacity (veh/h)	909	919	742
Control Delay (s)	7.1	8.1	7.7
Approach Delay (s)	7.1	8.1	7.7
Approach LOS	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			

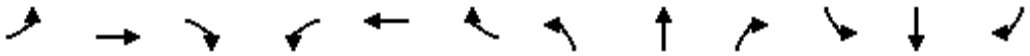
Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	0	0	0	130	0
Future Volume (vph)	0	0	0	0	130	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	141	0

Direction, Lane #	SE 1	SW 1
Volume Total (vph)	0	141
Volume Left (vph)	0	0
Volume Right (vph)	0	0
Hadj (s)	0.00	0.03
Departure Headway (s)	4.2	3.9
Degree Utilization, x	0.00	0.15
Capacity (veh/h)	833	903
Control Delay (s)	7.2	7.6
Approach Delay (s)	0.0	7.6
Approach LOS	A	A

Intersection Summary			
Delay	7.6		
Level of Service	A		
Intersection Capacity Utilization	11.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	429	277	97	763
v/c Ratio	0.53	0.78	0.14	0.40
Control Delay	36.0	52.2	20.7	22.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	36.0	52.2	20.7	22.0
Queue Length 50th (ft)	135	180	39	129
Queue Length 95th (ft)	165	253	85	188
Internal Link Dist (ft)	181			116
Turn Bay Length (ft)				
Base Capacity (vph)	1068	465	669	1923
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	0.60	0.14	0.40

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	395	255	0	0	0	0	0	0	90	710	0
Future Volume (vph)	0	395	255	0	0	0	0	0	0	90	710	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	12
Total Lost time (s)		5.0	5.0							5.0	5.0	
Lane Util. Factor		0.95	1.00							1.00	0.91	
Frpb, ped/bikes		1.00	0.97							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3094	1341							1472	4230	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3094	1341							1472	4230	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	429	277	0	0	0	0	0	0	97	763	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	429	277	0	0	0	0	0	0	97	763	0
Confl. Bikes (#/hr)			23									
Heavy Vehicles (%)	0%	5%	5%	2%	2%	2%	2%	2%	2%	3%	3%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		3									1	
Permitted Phases			3							1		
Actuated Green, G (s)		29.0	29.0							50.0	50.0	
Effective Green, g (s)		29.0	29.0							50.0	50.0	
Actuated g/C Ratio		0.26	0.26							0.45	0.45	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		815	353							669	1922	
v/s Ratio Prot		0.14									c0.18	
v/s Ratio Perm			c0.21							0.07		
v/c Ratio		0.53	0.78							0.14	0.40	
Uniform Delay, d1		34.6	37.6							17.5	20.0	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		0.6	10.9							0.5	0.6	
Delay (s)		35.2	48.5							18.0	20.6	
Level of Service		D	D							B	C	
Approach Delay (s)		40.4			0.0			0.0			20.3	
Approach LOS		D			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	NBT	SWT
Lane Group Flow (vph)	550	242	976	982
v/c Ratio	0.94	1.01	0.94	0.78
Control Delay	66.9	105.2	57.1	27.3
Queue Delay	0.0	0.0	4.8	0.0
Total Delay	66.9	105.2	61.9	27.3
Queue Length 50th (ft)	210	~192	247	200
Queue Length 95th (ft)	#323	#371	#295	m236
Internal Link Dist (ft)	485		196	163
Turn Bay Length (ft)				
Base Capacity (vph)	588	239	1037	1252
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	40	1
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	1.01	0.98	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	EBL2	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SWL2	SWL	SWT	SWR2
Lane Configurations												
Traffic Volume (vph)	110	145	240	100	150	695	80	45	150	85	485	125
Future Volume (vph)	110	145	240	100	150	695	80	45	150	85	485	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	11	11	12	10	11	11	11
Total Lost time (s)			6.5	6.5		8.0					7.5	
Lane Util. Factor			0.91	0.91		0.91					0.91	
Frpb, ped/bikes			0.98	1.00		0.95					0.93	
Flpb, ped/bikes			1.00	1.00		1.00					1.00	
Frt			0.99	0.85		0.98					0.98	
Flt Protected			0.98	1.00		1.00					0.99	
Satd. Flow (prot)			2643	1075		3935					3744	
Flt Permitted			0.98	1.00		1.00					0.99	
Satd. Flow (perm)			2643	1075		3935					3744	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.84	0.84	0.84	0.86	0.86	0.86	0.86
Adj. Flow (vph)	117	154	255	106	160	827	95	54	174	99	564	145
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	550	242	0	976	0	0	0	0	904	0
Confl. Peds. (#/hr)	875			382	395			284	284	382		875
Confl. Bikes (#/hr)								1				
Heavy Vehicles (%)	6%	2%	14%	5%	26%	7%	2%	6%	4%	4%	11%	1%
Parking (#/hr)								10				
Turn Type	Split	Split	NA	Prot		NA			Split	Split	NA	
Protected Phases	3	3	3	3		2			1	1	1	
Permitted Phases												
Actuated Green, G (s)			24.5	24.5		29.0					34.5	
Effective Green, g (s)			24.5	24.5		29.0					34.5	
Actuated g/C Ratio			0.22	0.22		0.26					0.31	
Clearance Time (s)			6.5	6.5		8.0					7.5	
Vehicle Extension (s)			3.0	3.0		3.0					3.0	
Lane Grp Cap (vph)			588	239		1037					1174	
v/s Ratio Prot			0.21	c0.23		c0.25					c0.24	
v/s Ratio Perm												
v/c Ratio			0.94	1.01		0.94					0.77	
Uniform Delay, d1			42.0	42.8		39.7					34.2	
Progression Factor			1.00	1.00		1.00					0.78	
Incremental Delay, d2			22.3	61.5		15.7					3.5	
Delay (s)			64.3	104.2		55.4					30.1	
Level of Service			E	F		E					C	
Approach Delay (s)			76.5			55.4					30.1	
Approach LOS			E			E					C	

Intersection Summary			
HCM 2000 Control Delay	52.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1391	215	569	130	45
v/c Ratio	0.69	1.01	1.27	0.49	0.13
Control Delay	14.3	111.5	177.1	21.6	1.2
Queue Delay	1.0	0.0	0.1	0.3	0.0
Total Delay	15.3	111.5	177.2	21.9	1.2
Queue Length 50th (ft)	126	~170	~279	24	0
Queue Length 95th (ft)	176	#330	#383	45	0
Internal Link Dist (ft)	95		250	176	
Turn Bay Length (ft)					
Base Capacity (vph)	2013	213	448	268	351
Starvation Cap Reductn	347	0	0	13	0
Spillback Cap Reductn	7	0	6	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	1.01	1.29	0.51	0.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	335	600	345	210	480	0	0	100	35
Future Volume (vph)	0	0	0	335	600	345	210	480	0	0	100	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	11	11	12	12	12	12	12	12
Total Lost time (s)					6.0		7.0	7.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			1.00	1.00
Frpb, ped/bikes					0.96		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.96		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					3834		1382	2902			1474	1309
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					3834		1382	2902			1474	1309
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	0	0	0	364	652	375	239	545	0	0	130	45
RTOR Reduction (vph)	0	0	0	0	65	0	0	0	0	0	0	37
Lane Group Flow (vph)	0	0	0	0	1326	0	215	569	0	0	130	8
Confl. Peds. (#/hr)						216						1805
Confl. Bikes (#/hr)						6						7
Heavy Vehicles (%)	2%	2%	2%	6%	7%	8%	7%	7%	0%	2%	16%	11%
Turn Type				Split	NA		Split	NA			NA	Prot
Protected Phases				1 4	1 4		2	2			3	3
Permitted Phases												
Actuated Green, G (s)					56.0		17.0	17.0			20.0	20.0
Effective Green, g (s)					52.0		17.0	17.0			20.0	20.0
Actuated g/C Ratio					0.47		0.15	0.15			0.18	0.18
Clearance Time (s)							7.0	7.0			4.0	4.0
Vehicle Extension (s)							3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1812		213	448			268	238
v/s Ratio Prot					c0.35		0.16	c0.20			c0.09	0.01
v/s Ratio Perm												
v/c Ratio					0.73		1.01	1.27			0.49	0.03
Uniform Delay, d1					23.4		46.5	46.5			40.4	37.0
Progression Factor					0.69		1.00	1.00			0.38	1.00
Incremental Delay, d2					1.9		64.1	138.2			5.9	0.3
Delay (s)					18.0		110.6	184.7			21.3	37.3
Level of Service					B		F	F			C	D
Approach Delay (s)		0.0			18.0			164.4			25.4	
Approach LOS		A			B			F			C	

Intersection Summary			
HCM 2000 Control Delay	67.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	SET	SER	SER2	SWL2	SWL	SWT
Lane Group Flow (vph)	649	326	167	473	348	441
v/c Ratio	0.61	0.66	0.30	0.63	0.68	0.85
Control Delay	12.0	17.0	2.0	9.6	37.2	48.7
Queue Delay	1.1	2.1	0.6	0.0	0.0	0.0
Total Delay	13.2	19.1	2.6	9.6	37.2	48.7
Queue Length 50th (ft)	77	74	0	40	197	271
Queue Length 95th (ft)	100	191	8	142	301	#418
Internal Link Dist (ft)	152					169
Turn Bay Length (ft)						
Base Capacity (vph)	1063	493	555	775	556	564
Starvation Cap Reductn	206	71	165	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.77	0.43	0.61	0.63	0.78

Intersection Summary

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

Movement	SET	SER	SER2	SWL2	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	565	300	145	440	320	410
Future Volume (vph)	565	300	145	440	320	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	2834	1317	1201	1404	1458	1478
Flt Permitted	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	2834	1317	1201	1404	1458	1478
Peak-hour factor, PHF	0.87	0.92	0.87	0.93	0.92	0.93
Adj. Flow (vph)	649	326	167	473	348	441
RTOR Reduction (vph)	0	0	104	251	0	0
Lane Group Flow (vph)	649	326	63	222	348	441
Heavy Vehicles (%)	7%	3%	13%	8%	4%	8%
Turn Type	NA	Perm	Prot	Split	Split	NA
Protected Phases	1		1	3	3	3
Permitted Phases		1				
Actuated Green, G (s)	41.3	41.3	41.3	38.7	38.7	38.7
Effective Green, g (s)	41.3	41.3	41.3	38.7	38.7	38.7
Actuated g/C Ratio	0.38	0.38	0.38	0.35	0.35	0.35
Clearance Time (s)	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
Lane Grp Cap (vph)	1064	494	450	493	512	519
v/s Ratio Prot	0.23		0.05	0.16	0.24	c0.30
v/s Ratio Perm		c0.25				
v/c Ratio	0.61	0.66	0.14	0.45	0.68	0.85
Uniform Delay, d1	27.8	28.5	22.6	27.5	30.4	33.0
Progression Factor	0.33	0.35	0.19	1.00	1.00	1.00
Incremental Delay, d2	2.3	6.1	0.6	0.7	3.6	12.3
Delay (s)	11.6	16.1	4.9	28.1	34.0	45.3
Level of Service	B	B	A	C	C	D
Approach Delay (s)	11.9					35.7
Approach LOS	B					D

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	SET	NWL	SWT
Lane Group Flow (vph)	215	114	349
v/c Ratio	0.82	0.45	0.64
Control Delay	59.0	41.7	36.2
Queue Delay	0.0	0.0	0.0
Total Delay	59.0	41.7	36.2
Queue Length 50th (ft)	141	62	197
Queue Length 95th (ft)	168	101	#374
Internal Link Dist (ft)	335		97
Turn Bay Length (ft)			
Base Capacity (vph)	376	255	549
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.45	0.64

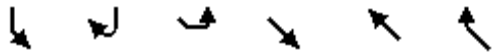
Intersection Summary

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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	120	50	90	0	0	0	0	0	80	220	0
Future Volume (vph)	0	120	50	90	0	0	0	0	0	80	220	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0							5.0	
Lane Util. Factor		1.00		1.00							1.00	
Frpb, ped/bikes		0.74		1.00							1.00	
Flpb, ped/bikes		1.00		1.00							1.00	
Frt		0.96		1.00							1.00	
Flt Protected		1.00		0.95							0.99	
Satd. Flow (prot)		921		1279							1385	
Flt Permitted		1.00		0.95							0.99	
Satd. Flow (perm)		921		1279							1385	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	152	63	114	0	0	0	0	0	93	256	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	215	0	114	0	0	0	0	0	0	349	0
Confl. Peds. (#/hr)			1667							152		
Confl. Bikes (#/hr)			11									
Heavy Vehicles (%)	2%	12%	10%	8%	2%	2%	2%	2%	2%	24%	21%	2%
Parking (#/hr)		10		10								
Turn Type		NA		Prot						Split	NA	
Protected Phases		3		2						1	1	
Permitted Phases												
Actuated Green, G (s)		31.4		22.0							43.6	
Effective Green, g (s)		31.4		22.0							43.6	
Actuated g/C Ratio		0.29		0.20							0.40	
Clearance Time (s)		4.0		4.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		262		255							548	
v/s Ratio Prot		c0.23		c0.09							c0.25	
v/s Ratio Perm												
v/c Ratio		0.82		0.45							0.64	
Uniform Delay, d1		36.7		38.7							26.8	
Progression Factor		1.00		0.92							1.00	
Incremental Delay, d2		18.3		5.5							5.6	
Delay (s)		54.9		40.9							32.4	
Level of Service		D		D							C	
Approach Delay (s)		54.9			40.9			0.0			32.4	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	41.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

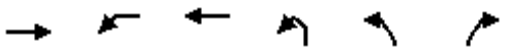
c Critical Lane Group



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	0	0	20	180	90	265
Future Volume (Veh/h)	0	0	20	180	90	265
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.82	0.82	0.87	0.87
Hourly flow rate (vph)	0	0	24	220	103	305
Pedestrians	1279					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	80					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				233	107	
pX, platoon unblocked	0.91	0.91	0.91			
vC, conflicting volume	1802	1534	1687			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1831	1538	1705			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	100	60			
cM capacity (veh/h)	9	26	60			

Direction, Lane #	SB 1	SE 1	NW 1
Volume Total	0	244	408
Volume Left	0	24	0
Volume Right	0	0	305
cSH	1700	60	1700
Volume to Capacity	0.00	0.40	0.24
Queue Length 95th (ft)	0	38	0
Control Delay (s)	0.0	52.0	0.0
Lane LOS	A	F	
Approach Delay (s)	0.0	52.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	19.5		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBL	WBT	NBL2	NBL	NBR
Lane Group Flow (vph)	240	135	206	220	214	440
v/c Ratio	0.43	0.94	0.34	0.25	0.27	0.66
Control Delay	11.6	75.9	11.8	0.2	7.5	14.1
Queue Delay	1.0	1.3	0.8	0.0	0.0	3.2
Total Delay	12.6	77.3	12.6	0.2	7.5	17.2
Queue Length 50th (ft)	22	53	57	0	36	74
Queue Length 95th (ft)	58	#171	98	m0	m40	m360
Internal Link Dist (ft)	27		136		330	
Turn Bay Length (ft)						
Base Capacity (vph)	719	190	799	897	797	663
Starvation Cap Reductn	223	8	346	0	0	105
Spillback Cap Reductn	275	0	0	0	0	134
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.74	0.45	0.25	0.27	0.83

Intersection Summary

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

Movement	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	170	0	10	115	175	185	180	370	0	0
Future Volume (vph)	170	0	10	115	175	185	180	370	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Lane Util. Factor	1.00			1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	0.95			1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00			0.49	1.00	1.00	1.00	1.00		
Frt	0.99			1.00	1.00	1.00	1.00	0.85		
Flt Protected	1.00			0.95	1.00	0.95	0.95	1.00		
Satd. Flow (prot)	1397			760	1598	1547	1562	1298		
Flt Permitted	1.00			0.53	1.00	0.95	0.95	1.00		
Satd. Flow (perm)	1397			424	1598	1547	1562	1298		
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.84	0.84	0.84	0.92	0.92
Adj. Flow (vph)	227	0	13	135	206	220	214	440	0	0
RTOR Reduction (vph)	25	0	0	0	0	108	0	0	0	0
Lane Group Flow (vph)	215	0	0	135	206	112	214	440	0	0
Confl. Peds. (#/hr)			1516	1516						
Confl. Bikes (#/hr)			9							
Heavy Vehicles (%)	15%	2%	25%	5%	7%	5%	4%	12%	2%	2%
Parking (#/hr)			10							
Turn Type	NA			Perm	NA	Perm	Prot	Perm		
Protected Phases	2				2		1			
Permitted Phases				2		1		1		
Actuated Green, G (s)	41.8			41.8	41.8	56.2	56.2	56.2		
Effective Green, g (s)	41.8			41.8	41.8	56.2	56.2	56.2		
Actuated g/C Ratio	0.38			0.38	0.38	0.51	0.51	0.51		
Clearance Time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	530			161	607	790	798	663		
v/s Ratio Prot	0.15				0.13		0.14			
v/s Ratio Perm				c0.32		0.07		c0.34		
v/c Ratio	0.41			0.84	0.34	0.14	0.27	0.66		
Uniform Delay, d1	25.0			31.0	24.3	14.2	15.2	19.9		
Progression Factor	0.51			0.55	0.47	0.00	0.38	0.43		
Incremental Delay, d2	0.4			28.2	0.3	0.1	0.3	2.0		
Delay (s)	13.3			45.3	11.8	0.1	6.1	10.5		
Level of Service	B			D	B	A	A	B		
Approach Delay (s)	13.3				25.1		6.8		0.0	
Approach LOS	B				C		A		A	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

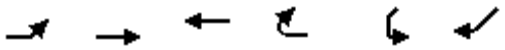
Lane Group	EBL	EBT	WBT	WBR
Lane Group Flow (vph)	450	150	319	588
v/c Ratio	1.28	0.40	0.44	0.67
Control Delay	186.3	51.5	10.7	11.0
Queue Delay	5.1	8.9	4.2	11.9
Total Delay	191.5	60.4	14.8	22.9
Queue Length 50th (ft)	~394	94	61	128
Queue Length 95th (ft)	#622	m166	m71	m120
Internal Link Dist (ft)		136	176	
Turn Bay Length (ft)				
Base Capacity (vph)	352	371	718	880
Starvation Cap Reductn	120	182	314	270
Spillback Cap Reductn	38	0	19	37
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.94	0.79	0.79	0.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	405	135	290	535	0	0
Future Volume (vph)	405	135	290	535	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1438	1513	1613	1346		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1438	1513	1613	1346		
Peak-hour factor, PHF	0.90	0.90	0.91	0.91	0.92	0.92
Adj. Flow (vph)	450	150	319	588	0	0
RTOR Reduction (vph)	0	0	0	281	0	0
Lane Group Flow (vph)	450	150	319	307	0	0
Confl. Bikes (#/hr)				10		
Heavy Vehicles (%)	13%	13%	6%	8%	2%	2%
Turn Type	Split	NA	NA	Prot		
Protected Phases	1	1	3	3		
Permitted Phases						
Actuated Green, G (s)	27.0	27.0	49.0	49.0		
Effective Green, g (s)	27.0	27.0	49.0	49.0		
Actuated g/C Ratio	0.25	0.25	0.45	0.45		
Clearance Time (s)	6.0	6.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	352	371	718	599		
v/s Ratio Prot	c0.31	0.10	0.20	c0.23		
v/s Ratio Perm						
v/c Ratio	1.28	0.40	0.44	0.51		
Uniform Delay, d1	41.5	34.8	21.1	21.9		
Progression Factor	1.32	1.37	0.49	2.78		
Incremental Delay, d2	142.7	2.7	0.2	0.3		
Delay (s)	197.6	50.5	10.4	61.1		
Level of Service	F	D	B	E		
Approach Delay (s)		160.9	43.3		0.0	
Approach LOS		F	D		A	

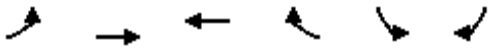
Intersection Summary			
HCM 2000 Control Delay	90.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT
Lane Group Flow (vph)	617	383
v/c Ratio	0.78	0.39
Control Delay	14.2	3.5
Queue Delay	4.8	1.2
Total Delay	19.0	4.7
Queue Length 50th (ft)	357	48
Queue Length 95th (ft)	m73	m38
Internal Link Dist (ft)		170
Turn Bay Length (ft)		
Base Capacity (vph)	787	975
Starvation Cap Reductn	113	370
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.92	0.63

Intersection Summary

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

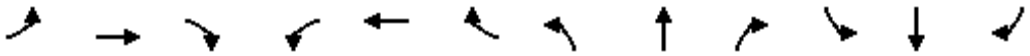


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	580	360	0	0	0	0
Future Volume (vph)	580	360	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	1.00				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1354	1676				
Flt Permitted	0.95	1.00				
Satd. Flow (perm)	1354	1676				
Peak-hour factor, PHF	0.94	0.94	0.92	0.92	0.92	0.92
Adj. Flow (vph)	617	383	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	617	383	0	0	0	0
Heavy Vehicles (%)	20%	2%	2%	2%	2%	2%
Turn Type	Perm	NA				
Protected Phases		1				
Permitted Phases	1					
Actuated Green, G (s)	32.0	32.0				
Effective Green, g (s)	32.0	32.0				
Actuated g/C Ratio	0.58	0.58				
Clearance Time (s)	5.0	5.0				
Vehicle Extension (s)	3.0	3.0				
Lane Grp Cap (vph)	787	975				
v/s Ratio Prot		0.23				
v/s Ratio Perm	c0.46					
v/c Ratio	0.78	0.39				
Uniform Delay, d1	8.8	6.2				
Progression Factor	1.19	0.48				
Incremental Delay, d2	2.9	0.4				
Delay (s)	13.4	3.4				
Level of Service	B	A				
Approach Delay (s)		9.6	0.0		0.0	
Approach LOS		A	A		A	

Intersection Summary			
HCM 2000 Control Delay	9.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

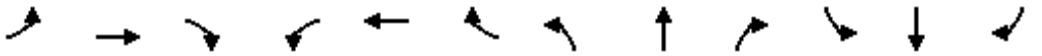
Lane Group	EBT	SBT
Lane Group Flow (vph)	309	1080
v/c Ratio	0.80	0.48
Control Delay	47.0	4.0
Queue Delay	0.0	0.0
Total Delay	47.0	4.0
Queue Length 50th (ft)	236	39
Queue Length 95th (ft)	268	60
Internal Link Dist (ft)	484	92
Turn Bay Length (ft)		
Base Capacity (vph)	572	2229
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	28
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.54	0.49

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	170	90	0	0	0	0	0	0	95	920	0
Future Volume (vph)	0	170	90	0	0	0	0	0	0	95	920	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1650	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		1.00									0.91	
Frpb, ped/bikes		0.88									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		1400									3514	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		1400									3514	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	202	107	0	0	0	0	0	0	101	979	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	309	0	0	0	0	0	0	0	0	1080	0
Confl. Peds. (#/hr)			201							528		
Confl. Bikes (#/hr)			8									
Heavy Vehicles (%)	2%	4%	0%	2%	2%	2%	2%	2%	2%	9%	7%	2%
Parking (#/hr)			10									
Turn Type		NA								Split	NA	
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		30.2									69.8	
Effective Green, g (s)		30.2									69.8	
Actuated g/C Ratio		0.27									0.63	
Clearance Time (s)		5.0									5.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		384									2229	
v/s Ratio Prot		c0.22									c0.31	
v/s Ratio Perm												
v/c Ratio		0.80									0.48	
Uniform Delay, d1		37.2									10.6	
Progression Factor		0.87									0.28	
Incremental Delay, d2		10.9									0.7	
Delay (s)		43.4									3.6	
Level of Service		D									A	
Approach Delay (s)		43.4			0.0			0.0			3.6	
Approach LOS		D			A			A			A	

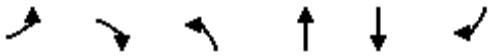
Intersection Summary			
HCM 2000 Control Delay	12.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	290	255	15	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0	290	255	15	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	315	319	19	0	0	0
Pedestrians					1709							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								341			334	
pX, platoon unblocked												
vC, conflicting volume	958	2677	0	2668	2668	2038	0			2047		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	958	2677	0	2668	2668	2038	0			2047		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	81			100		
cM capacity (veh/h)	201	18	1085	13	18	71	1623			274		

Direction, Lane #	EB 1	NB 1
Volume Total	0	653
Volume Left	0	315
Volume Right	0	19
cSH	1700	1623
Volume to Capacity	0.00	0.19
Queue Length 95th (ft)	0	18
Control Delay (s)	0.0	4.7
Lane LOS	A	A
Approach Delay (s)	0.0	4.7
Approach LOS	A	

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	37.5%	ICU Level of Service	A	
Analysis Period (min)	15			



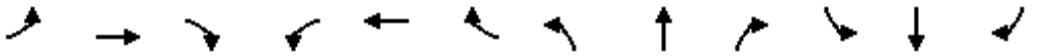
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	25	0	0	990	0
Future Volume (Veh/h)	0	25	0	0	990	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	0	29	0	0	1125	0
Pedestrians				50		
Lane Width (ft)				0.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				172	301	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	1125	425	1125			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	575	0	575			
tC, single (s)	6.8	7.7	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.7	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	386	841	855			

Direction, Lane #	EB 1	SB 1	SB 2	SB 3
Volume Total	29	375	375	375
Volume Left	0	0	0	0
Volume Right	29	0	0	0
cSH	841	1700	1700	1700
Volume to Capacity	0.03	0.22	0.22	0.22
Queue Length 95th (ft)	3	0	0	0
Control Delay (s)	9.4	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.4	0.0		
Approach LOS	A			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	458	900	124
v/c Ratio	0.42	0.52	0.21
Control Delay	13.6	25.2	7.4
Queue Delay	0.0	0.0	0.0
Total Delay	13.6	25.2	7.4
Queue Length 50th (ft)	52	226	42
Queue Length 95th (ft)	81	258	35
Internal Link Dist (ft)	217	365	
Turn Bay Length (ft)			75
Base Capacity (vph)	1079	1739	596
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.52	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	225	155	0	0	0	0	0	765	105
Future Volume (vph)	0	0	0	225	155	0	0	0	0	0	765	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	10
Total Lost time (s)					5.0						5.0	5.0
Lane Util. Factor					0.95						0.91	1.00
Frpb, ped/bikes					1.00						1.00	1.00
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					3052						4072	1280
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					3052						4072	1280
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	271	187	0	0	0	0	0	900	124
RTOR Reduction (vph)	0	0	0	0	192	0	0	0	0	0	0	49
Lane Group Flow (vph)	0	0	0	0	266	0	0	0	0	0	900	75
Confl. Bikes (#/hr)												32
Heavy Vehicles (%)	2%	2%	2%	3%	4%	2%	2%	2%	2%	2%	7%	6%
Turn Type				Split	NA						NA	Prot
Protected Phases				3	3						1	1
Permitted Phases												
Actuated Green, G (s)					32.0						47.0	47.0
Effective Green, g (s)					32.0						47.0	47.0
Actuated g/C Ratio					0.29						0.43	0.43
Clearance Time (s)					5.0						5.0	5.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					887						1739	546
v/s Ratio Prot					c0.09						c0.22	0.06
v/s Ratio Perm												
v/c Ratio					0.30						0.52	0.14
Uniform Delay, d1					30.3						23.2	19.2
Progression Factor					1.00						1.04	0.92
Incremental Delay, d2					0.9						1.0	0.5
Delay (s)					31.2						25.0	18.0
Level of Service					C						C	B
Approach Delay (s)		0.0			31.2			0.0			24.1	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBT
Lane Group Flow (vph)	295	420
v/c Ratio	0.24	0.48
Control Delay	8.7	10.7
Queue Delay	0.0	0.0
Total Delay	8.7	10.7
Queue Length 50th (ft)	35	58
Queue Length 95th (ft)	55	29
Internal Link Dist (ft)	162	254
Turn Bay Length (ft)		
Base Capacity (vph)	1220	881
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.24	0.48

Intersection Summary

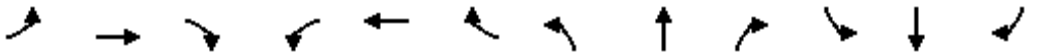
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	200	60	65	145	0	0	0	0
Future Volume (vph)	0	0	0	0	200	60	65	145	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frpb, ped/bikes					0.90			1.00				
Flpb, ped/bikes					1.00			0.83				
Frt					0.97			1.00				
Flt Protected					1.00			0.98				
Satd. Flow (prot)					2710			2107				
Flt Permitted					1.00			0.98				
Satd. Flow (perm)					2710			2107				
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.50	0.50	0.50	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	227	68	130	290	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	38	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	257	0	0	420	0	0	0	0
Confl. Peds. (#/hr)						832	1367					
Confl. Bikes (#/hr)						8						
Heavy Vehicles (%)	2%	2%	2%	2%	6%	0%	61%	11%	2%	2%	2%	2%
Parking (#/hr)						20						
Turn Type					NA		Perm	NA				
Protected Phases					1			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			23.0				
Effective Green, g (s)					24.0			23.0				
Actuated g/C Ratio					0.44			0.42				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1182			881				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.20				
v/c Ratio					0.22			0.48				
Uniform Delay, d1					9.7			11.6				
Progression Factor					1.10			0.78				
Incremental Delay, d2					0.4			1.5				
Delay (s)					11.0			10.6				
Level of Service					B			B				
Approach Delay (s)		0.0			11.0			10.6			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	10.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	SBT
Lane Group Flow (vph)	279	232	125
v/c Ratio	0.21	0.76	0.74
Control Delay	12.5	56.7	60.3
Queue Delay	0.6	0.0	0.0
Total Delay	13.2	56.7	60.3
Queue Length 50th (ft)	55	155	68
Queue Length 95th (ft)	87	223	115
Internal Link Dist (ft)	136		131
Turn Bay Length (ft)			
Base Capacity (vph)	1314	473	229
Starvation Cap Reductn	701	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.49	0.55

Intersection Summary



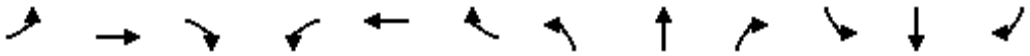
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	120	145	0	220	0	0	0	65	40
Future Volume (vph)	0	0	0	120	145	0	220	0	0	0	65	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		4.0				5.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.84	
Flpb, ped/bikes					1.00		1.00				1.00	
Frt					1.00		1.00				0.95	
Flt Protected					0.98		0.95				1.00	
Satd. Flow (prot)					2466		1533				1042	
Flt Permitted					0.98		0.95				1.00	
Satd. Flow (perm)					2466		1533				1042	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.84	0.84	0.84
Adj. Flow (vph)	0	0	0	126	153	0	232	0	0	0	77	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	22	0
Lane Group Flow (vph)	0	0	0	0	279	0	232	0	0	0	103	0
Confl. Peds. (#/hr)				680			345					345
Confl. Bikes (#/hr)												16
Heavy Vehicles (%)	2%	2%	2%	34%	7%	2%	6%	2%	2%	2%	11%	10%
Parking (#/hr)					10						10	
Turn Type				Split	NA		Prot				NA	
Protected Phases				1	1		3				2	
Permitted Phases												
Actuated Green, G (s)					58.6		22.0				15.4	
Effective Green, g (s)					58.6		22.0				15.4	
Actuated g/C Ratio					0.53		0.20				0.14	
Clearance Time (s)					5.0		4.0				5.0	
Vehicle Extension (s)					3.0		3.0				3.0	
Lane Grp Cap (vph)					1313		306				145	
v/s Ratio Prot					c0.11		c0.15				c0.10	
v/s Ratio Perm												
v/c Ratio					0.21		0.76				0.71	
Uniform Delay, d1					13.5		41.5				45.2	
Progression Factor					0.75		1.00				1.00	
Incremental Delay, d2					0.4		10.3				14.6	
Delay (s)					10.6		51.8				59.8	
Level of Service					B		D				E	
Approach Delay (s)		0.0			10.6			51.8			59.8	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

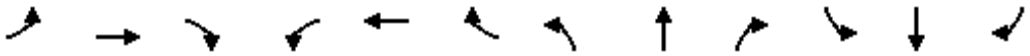
Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	237	189	225
v/c Ratio	0.24	0.34	0.28
Control Delay	17.2	4.8	4.7
Queue Delay	0.9	0.9	0.0
Total Delay	18.1	5.7	4.7
Queue Length 50th (ft)	36	0	18
Queue Length 95th (ft)	62	39	39
Internal Link Dist (ft)	114		201
Turn Bay Length (ft)			
Base Capacity (vph)	1006	562	799
Starvation Cap Reductn	523	181	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.50	0.28

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	225	180	100	80	0	0	0	0
Future Volume (vph)	0	0	0	0	225	180	100	80	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	12	12	12	12	12	12
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.95	1.00		1.00				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.97				
Satd. Flow (prot)					3065	1326		1346				
Flt Permitted					1.00	1.00		0.97				
Satd. Flow (perm)					3065	1326		1346				
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	237	189	125	100	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	127	0	56	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	237	62	0	169	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	0%	6%	6%	11%	6%	0%	2%	2%	2%
Parking (#/hr)								4				
Turn Type					NA	Perm	Perm	NA				
Protected Phases					1			2				
Permitted Phases						1	2					
Actuated Green, G (s)					22.0	22.0		37.0				
Effective Green, g (s)					22.0	22.0		37.0				
Actuated g/C Ratio					0.33	0.33		0.55				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					3.0	3.0		3.0				
Lane Grp Cap (vph)					1006	435		743				
v/s Ratio Prot					c0.08							
v/s Ratio Perm						0.05		0.13				
v/c Ratio					0.24	0.14		0.23				
Uniform Delay, d1					16.4	15.9		7.7				
Progression Factor					1.00	1.00		1.00				
Incremental Delay, d2					0.6	0.7		0.2				
Delay (s)					16.9	16.5		7.8				
Level of Service					B	B		A				
Approach Delay (s)		0.0			16.8			7.8			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	15	100	25	200	5	2	0	0	0	0
Future Volume (vph)	10	0	15	100	25	200	5	2	0	0	0	0
Peak Hour Factor	0.63	0.63	0.63	0.83	0.83	0.83	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	16	0	24	120	30	241	10	4	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	40	391	14
Volume Left (vph)	16	120	10
Volume Right (vph)	24	241	0
Hadj (s)	-0.28	-0.19	0.14
Departure Headway (s)	4.0	3.8	4.9
Degree Utilization, x	0.04	0.41	0.02
Capacity (veh/h)	876	944	670
Control Delay (s)	7.2	9.4	8.0
Approach Delay (s)	7.2	9.4	8.0
Approach LOS	A	A	A

Intersection Summary				
Delay	9.2			
Level of Service	A			
Intersection Capacity Utilization	52.5%	ICU Level of Service	A	
Analysis Period (min)	15			

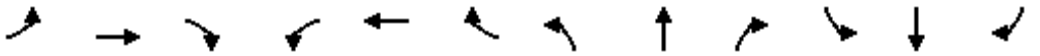
Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	0	0	0	70	0
Future Volume (vph)	0	0	0	0	70	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	76	0

Direction, Lane #	SE 1	SW 1
Volume Total (vph)	0	76
Volume Left (vph)	0	0
Volume Right (vph)	0	0
Hadj (s)	0.00	0.03
Departure Headway (s)	4.1	3.9
Degree Utilization, x	0.00	0.08
Capacity (veh/h)	877	902
Control Delay (s)	7.1	7.3
Approach Delay (s)	0.0	7.3
Approach LOS	A	A

Intersection Summary			
Delay	7.3		
Level of Service	A		
Intersection Capacity Utilization	7.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	237	232	82	912
v/c Ratio	0.33	0.78	0.13	0.47
Control Delay	33.6	55.9	19.7	22.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	33.6	55.9	19.7	22.1
Queue Length 50th (ft)	72	153	32	156
Queue Length 95th (ft)	94	217	73	231
Internal Link Dist (ft)	181			116
Turn Bay Length (ft)				
Base Capacity (vph)	1020	414	649	1955
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.56	0.13	0.47

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	230	225	0	0	0	0	0	0	75	830	0
Future Volume (vph)	0	230	225	0	0	0	0	0	0	75	830	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	12
Total Lost time (s)		5.0	5.0							5.0	5.0	
Lane Util. Factor		0.95	1.00							1.00	0.91	
Frpb, ped/bikes		1.00	0.93							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		2954	1182							1378	4150	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		2954	1182							1378	4150	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	237	232	0	0	0	0	0	0	82	912	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	237	232	0	0	0	0	0	0	82	912	0
Confl. Bikes (#/hr)			59									
Heavy Vehicles (%)	0%	10%	15%	2%	2%	2%	2%	2%	2%	10%	5%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		3									1	
Permitted Phases			3							1		
Actuated Green, G (s)		27.2	27.2							51.8	51.8	
Effective Green, g (s)		27.2	27.2							51.8	51.8	
Actuated g/C Ratio		0.25	0.25							0.47	0.47	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		730	292							648	1954	
v/s Ratio Prot		0.08									c0.22	
v/s Ratio Perm			c0.20							0.06		
v/c Ratio		0.32	0.79							0.13	0.47	
Uniform Delay, d1		33.9	38.8							16.4	19.7	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		0.3	13.8							0.4	0.8	
Delay (s)		34.1	52.6							16.8	20.5	
Level of Service		C	D							B	C	
Approach Delay (s)		43.3			0.0			0.0			20.2	
Approach LOS		D			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	27.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	41.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	65	280	5	0	0
Future Volume (Veh/h)	0	65	280	5	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	71	304	5	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	306	306			309	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	306	306			309	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	90			100	
cM capacity (veh/h)	686	733			1252	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	71	309	0
Volume Left	0	0	0
Volume Right	71	5	0
cSH	733	1700	1700
Volume to Capacity	0.10	0.18	0.00
Queue Length 95th (ft)	8	0	0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	27.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	NBT	SWT
Lane Group Flow (vph)	264	225	203	625	958
v/c Ratio	0.76	0.78	0.74	1.02dr	0.61
Control Delay	53.3	57.8	55.1	56.8	28.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	57.8	55.1	56.8	28.9
Queue Length 50th (ft)	172	155	138	156	217
Queue Length 95th (ft)	253	237	216	187	280
Internal Link Dist (ft)		485		196	167
Turn Bay Length (ft)					
Base Capacity (vph)	427	354	337	734	1578
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.62	0.64	0.60	0.85	0.61

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL2	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SWL2	SWL	SWT	SWR2
Lane Configurations												
Traffic Volume (vph)	40	200	135	120	135	305	210	10	80	140	645	25
Future Volume (vph)	40	200	135	120	135	305	210	10	80	140	645	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	11	11	12	10	11	11	11
Total Lost time (s)		6.5	6.5	6.5		8.0					7.5	
Lane Util. Factor		1.00	0.95	0.95		0.91					0.91	
Frpb, ped/bikes		1.00	0.88	1.00		0.86					0.99	
Flpb, ped/bikes		1.00	1.00	1.00		1.00					1.00	
Frt		1.00	0.95	0.85		0.94					1.00	
Flt Protected		0.95	1.00	1.00		1.00					0.99	
Satd. Flow (prot)		1542	1278	1216		3367					4150	
Flt Permitted		0.95	1.00	1.00		1.00					0.99	
Satd. Flow (perm)		1542	1278	1216		3367					4150	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.84	0.84	0.84	0.93	0.93	0.93	0.93
Adj. Flow (vph)	44	220	148	132	148	363	250	12	86	151	694	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	264	225	203	0	625	0	0	0	0	885	0
Confl. Peds. (#/hr)	681			273	309			131	131	273		681
Heavy Vehicles (%)	11%	0%	4%	1%	13%	13%	2%	2%	4%	5%	6%	4%
Parking (#/hr)								10				
Turn Type	Split	Split	NA	Prot		NA			Split	Split	NA	
Protected Phases	3	3	3	3		2			1	1	1	
Permitted Phases												
Actuated Green, G (s)		24.9	24.9	24.9		23.2					39.9	
Effective Green, g (s)		24.9	24.9	24.9		23.2					39.9	
Actuated g/C Ratio		0.23	0.23	0.23		0.21					0.36	
Clearance Time (s)		6.5	6.5	6.5		8.0					7.5	
Vehicle Extension (s)		3.0	3.0	3.0		3.0					3.0	
Lane Grp Cap (vph)		349	289	275		710					1505	
v/s Ratio Prot		0.17	c0.18	0.17		c0.19					c0.21	
v/s Ratio Perm												
v/c Ratio		0.76	0.78	0.74		1.02dr					0.59	
Uniform Delay, d1		39.7	40.0	39.5		42.1					28.4	
Progression Factor		1.00	1.00	1.00		1.00					1.04	
Incremental Delay, d2		9.0	12.4	9.9		12.3					1.5	
Delay (s)		48.7	52.4	49.4		54.3					30.9	
Level of Service		D	D	D		D					C	
Approach Delay (s)			50.1			54.3					30.9	
Approach LOS			D			D					C	

Intersection Summary			
HCM 2000 Control Delay	43.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

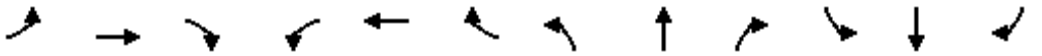
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1035	176	369	184	133
v/c Ratio	0.51	0.69	0.69	0.69	0.36
Control Delay	14.4	57.2	49.6	50.5	10.3
Queue Delay	0.5	0.0	0.0	1.4	0.8
Total Delay	14.9	57.2	49.6	51.8	11.2
Queue Length 50th (ft)	98	128	135	62	3
Queue Length 95th (ft)	120	#221	185	113	43
Internal Link Dist (ft)	138		250	176	
Turn Bay Length (ft)					
Base Capacity (vph)	2037	256	536	268	370
Starvation Cap Reductn	507	0	0	17	85
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.68	0.69	0.69	0.73	0.47

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	600	110	185	295	0	0	145	105
Future Volume (vph)	0	0	0	170	600	110	185	295	0	0	145	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	11	11	12	12	12	12	12	12
Total Lost time (s)					6.0		7.0	7.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			1.00	1.00
Frpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4119		1408	2950			1555	1358
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4119		1408	2950			1555	1358
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.88	0.88	0.88	0.79	0.79	0.79
Adj. Flow (vph)	0	0	0	200	706	129	210	335	0	0	184	133
RTOR Reduction (vph)	0	0	0	0	19	0	0	0	0	0	0	110
Lane Group Flow (vph)	0	0	0	0	1016	0	176	369	0	0	184	23
Confl. Peds. (#/hr)						119						1405
Heavy Vehicles (%)	2%	2%	2%	4%	6%	3%	5%	5%	0%	2%	10%	7%
Turn Type				Split	NA		Split	NA			NA	Prot
Protected Phases				1 4	1 4		2	2			3	3
Permitted Phases												
Actuated Green, G (s)					54.0		20.0	20.0			19.0	19.0
Effective Green, g (s)					47.5		20.0	20.0			19.0	19.0
Actuated g/C Ratio					0.43		0.18	0.18			0.17	0.17
Clearance Time (s)							7.0	7.0			4.0	4.0
Vehicle Extension (s)							3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1778		256	536			268	234
v/s Ratio Prot					c0.25		0.13	c0.13			c0.12	0.02
v/s Ratio Perm												
v/c Ratio					0.57		0.69	0.69			0.69	0.10
Uniform Delay, d1					23.6		42.1	42.1			42.7	38.3
Progression Factor					0.73		1.00	1.00			0.87	2.30
Incremental Delay, d2					1.2		14.1	7.1			12.3	0.8
Delay (s)					18.5		56.1	49.2			49.6	88.7
Level of Service					B		E	D			D	F
Approach Delay (s)		0.0			18.5			51.4			66.0	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	SET	SER	SER2	SWL2	SWL	SWT
Lane Group Flow (vph)	764	719	230	295	458	337
v/c Ratio	0.69	1.42	0.39	0.44	0.94	0.69
Control Delay	19.5	214.8	2.7	5.3	65.0	40.7
Queue Delay	46.6	0.8	2.4	0.0	0.0	0.0
Total Delay	66.1	215.6	5.1	5.3	65.0	40.7
Queue Length 50th (ft)	177	~689	9	0	308	203
Queue Length 95th (ft)	m143	m#700	m13	59	#505	310
Internal Link Dist (ft)	152					169
Turn Bay Length (ft)						
Base Capacity (vph)	1112	507	596	676	499	497
Starvation Cap Reductn	410	44	247	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.55	0.66	0.44	0.92	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	SET	SER	SER2	SWL2	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	680	640	205	280	435	320
Future Volume (vph)	680	640	205	280	435	320
Ideal Flow (vphpl)	1800	1800	1800	1900	1900	1900
Lane Width	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	2789	1272	1212	1430	1486	1478
Flt Permitted	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	2789	1272	1212	1430	1486	1478
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	764	719	230	295	458	337
RTOR Reduction (vph)	0	0	114	198	0	0
Lane Group Flow (vph)	764	719	116	97	458	337
Heavy Vehicles (%)	3%	1%	6%	6%	2%	8%
Turn Type	NA	Prot	Prot	Split	Split	NA
Protected Phases	1	1	1	3	3	3
Permitted Phases						
Actuated Green, G (s)	43.9	43.9	43.9	36.1	36.1	36.1
Effective Green, g (s)	43.9	43.9	43.9	36.1	36.1	36.1
Actuated g/C Ratio	0.40	0.40	0.40	0.33	0.33	0.33
Clearance Time (s)	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
Lane Grp Cap (vph)	1113	507	483	469	487	485
v/s Ratio Prot	0.27	c0.57	0.10	0.07	c0.31	0.23
v/s Ratio Perm						
v/c Ratio	0.69	1.42	0.24	0.21	0.94	0.69
Uniform Delay, d1	27.4	33.0	22.0	26.6	35.9	32.2
Progression Factor	0.66	0.67	0.39	1.00	1.00	1.00
Incremental Delay, d2	1.0	191.5	0.3	0.2	26.5	4.3
Delay (s)	19.1	213.7	8.9	26.8	62.4	36.5
Level of Service	B	F	A	C	E	D
Approach Delay (s)	99.4					44.8
Approach LOS	F					D

Intersection Summary			
HCM 2000 Control Delay	78.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

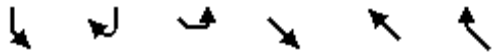
Lane Group	SET	NWL	SWT
Lane Group Flow (vph)	261	59	460
v/c Ratio	0.92	0.31	0.68
Control Delay	74.7	43.5	30.9
Queue Delay	4.7	0.0	0.0
Total Delay	79.4	43.5	30.9
Queue Length 50th (ft)	172	39	262
Queue Length 95th (ft)	#321	80	294
Internal Link Dist (ft)	335		97
Turn Bay Length (ft)			
Base Capacity (vph)	308	193	681
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	19	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.90	0.31	0.68

Intersection Summary

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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	175	65	55	0	0	0	0	0	120	225	0
Future Volume (vph)	0	175	65	55	0	0	0	0	0	120	225	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0							5.0	
Lane Util. Factor		1.00		1.00							1.00	
Frpb, ped/bikes		0.75		1.00							1.00	
Flpb, ped/bikes		1.00		1.00							1.00	
Frt		0.96		1.00							1.00	
Flt Protected		1.00		0.95							0.98	
Satd. Flow (prot)		998		1328							1510	
Flt Permitted		1.00		0.95							0.98	
Satd. Flow (perm)		998		1328							1510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	0	190	71	59	0	0	0	0	0	160	300	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	261	0	59	0	0	0	0	0	0	460	0
Confl. Peds. (#/hr)			1061							149		
Heavy Vehicles (%)	2%	7%	3%	4%	2%	2%	2%	2%	2%	10%	12%	2%
Parking (#/hr)		10		10								
Turn Type		NA		Prot						Split	NA	
Protected Phases		3		2						1	1	
Permitted Phases												
Actuated Green, G (s)		31.4		16.0							49.6	
Effective Green, g (s)		31.4		16.0							49.6	
Actuated g/C Ratio		0.29		0.15							0.45	
Clearance Time (s)		4.0		4.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		284		193							680	
v/s Ratio Prot		c0.26		c0.04							c0.30	
v/s Ratio Perm												
v/c Ratio		0.92		0.31							0.68	
Uniform Delay, d1		38.1		42.0							23.9	
Progression Factor		1.00		0.92							1.00	
Incremental Delay, d2		32.5		4.0							5.3	
Delay (s)		70.6		42.8							29.2	
Level of Service		E		D							C	
Approach Delay (s)		70.6			42.8			0.0			29.2	
Approach LOS		E			D			A			C	

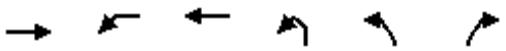
Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	5	0	15	280	55	205
Future Volume (Veh/h)	5	0	15	280	55	205
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.87	0.87
Hourly flow rate (vph)	5	0	16	304	63	236
Pedestrians	700					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	58					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				233	107	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	1217	881	999			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1196	835	962			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	93	100	94			
cM capacity (veh/h)	75	143	271			

Direction, Lane #	SB 1	SE 1	NW 1
Volume Total	5	320	299
Volume Left	5	16	0
Volume Right	0	0	236
cSH	75	271	1700
Volume to Capacity	0.07	0.06	0.18
Queue Length 95th (ft)	5	5	0
Control Delay (s)	56.4	2.3	0.0
Lane LOS	F	A	
Approach Delay (s)	56.4	2.3	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBL	WBT	NBL2	NBL	NBR
Lane Group Flow (vph)	393	127	159	160	154	296
v/c Ratio	0.85	0.98	0.32	0.17	0.16	0.38
Control Delay	42.0	86.2	6.6	0.3	4.8	6.1
Queue Delay	4.5	0.0	1.5	0.0	0.0	1.0
Total Delay	46.6	86.2	8.1	0.3	4.8	7.1
Queue Length 50th (ft)	240	96	40	0	18	36
Queue Length 95th (ft)	214	#145	67	m0	m29	m55
Internal Link Dist (ft)	27		136		330	
Turn Bay Length (ft)						
Base Capacity (vph)	559	159	615	957	936	777
Starvation Cap Reductn	104	0	306	0	0	265
Spillback Cap Reductn	87	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.86	0.80	0.51	0.17	0.16	0.58

Intersection Summary

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

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

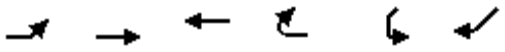
Movement	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	255	0	25	95	135	130	125	240	0	0
Future Volume (vph)	255	0	25	95	135	130	125	240	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Lane Util. Factor	1.00			1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	0.93			1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00			1.00	1.00	1.00	1.00	1.00		
Frt	0.99			1.00	1.00	1.00	1.00	0.85		
Flt Protected	1.00			0.95	1.00	0.95	0.95	1.00		
Satd. Flow (prot)	1468			1593	1693	1504	1577	1309		
Flt Permitted	1.00			0.26	1.00	0.95	0.95	1.00		
Satd. Flow (perm)	1468			438	1693	1504	1577	1309		
Peak-hour factor, PHF	0.70	0.85	0.85	0.75	0.85	0.81	0.81	0.81	0.92	0.92
Adj. Flow (vph)	364	0	29	127	159	160	154	296	0	0
RTOR Reduction (vph)	28	0	0	0	0	65	0	0	0	0
Lane Group Flow (vph)	365	0	0	127	159	95	154	296	0	0
Confl. Peds. (#/hr)			1170	1170						
Heavy Vehicles (%)	8%	2%	3%	2%	1%	8%	3%	11%	2%	2%
Parking (#/hr)			10							
Turn Type	NA			Perm	NA	Perm	Prot	Perm		
Protected Phases	2				2		1			
Permitted Phases				2		1		1		
Actuated Green, G (s)	32.7			32.7	32.7	65.3	65.3	65.3		
Effective Green, g (s)	32.7			32.7	32.7	65.3	65.3	65.3		
Actuated g/C Ratio	0.30			0.30	0.30	0.59	0.59	0.59		
Clearance Time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	436			130	503	892	936	777		
v/s Ratio Prot	0.25				0.09		0.10			
v/s Ratio Perm				c0.29		0.06		c0.23		
v/c Ratio	0.84			0.98	0.32	0.11	0.16	0.38		
Uniform Delay, d1	36.2			38.3	30.0	9.7	10.1	11.7		
Progression Factor	0.87			0.38	0.18	0.00	0.38	0.36		
Incremental Delay, d2	10.8			65.9	0.3	0.2	0.3	1.2		
Delay (s)	42.4			80.7	5.7	0.2	4.1	5.4		
Level of Service	D			F	A	A	A	A		
Approach Delay (s)	42.4				39.0		3.7		0.0	
Approach LOS	D				D		A		A	

Intersection Summary			
HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Group Flow (vph)	302	309	261	199
v/c Ratio	0.49	0.46	0.57	0.39
Control Delay	22.5	21.7	13.2	2.0
Queue Delay	17.5	16.2	0.3	0.3
Total Delay	40.1	37.8	13.4	2.3
Queue Length 50th (ft)	151	155	51	1
Queue Length 95th (ft)	204	199	86	m4
Internal Link Dist (ft)		136	176	
Turn Bay Length (ft)				
Base Capacity (vph)	612	668	461	508
Starvation Cap Reductn	295	341	21	68
Spillback Cap Reductn	5	7	9	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.95	0.94	0.59	0.45

Intersection Summary

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

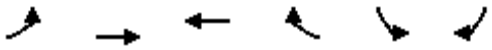


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	245	250	230	175	0	0
Future Volume (vph)	245	250	230	175	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1464	1598	1693	1333		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1464	1598	1693	1333		
Peak-hour factor, PHF	0.81	0.81	0.88	0.88	0.92	0.92
Adj. Flow (vph)	302	309	261	199	0	0
RTOR Reduction (vph)	0	0	0	145	0	0
Lane Group Flow (vph)	302	309	261	54	0	0
Heavy Vehicles (%)	11%	7%	1%	9%	2%	2%
Turn Type	Split	NA	NA	Prot		
Protected Phases	1	1	3	3		
Permitted Phases						
Actuated Green, G (s)	46.0	46.0	30.0	30.0		
Effective Green, g (s)	46.0	46.0	30.0	30.0		
Actuated g/C Ratio	0.42	0.42	0.27	0.27		
Clearance Time (s)	6.0	6.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	612	668	461	363		
v/s Ratio Prot	c0.21	0.19	c0.15	0.04		
v/s Ratio Perm						
v/c Ratio	0.49	0.46	0.57	0.15		
Uniform Delay, d1	23.5	23.1	34.4	30.3		
Progression Factor	0.83	0.83	0.27	0.05		
Incremental Delay, d2	2.5	2.1	3.8	0.7		
Delay (s)	22.0	21.2	13.0	2.3		
Level of Service	C	C	B	A		
Approach Delay (s)		21.6	8.4		0.0	
Approach LOS		C	A		A	

Intersection Summary			
HCM 2000 Control Delay	15.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT
Lane Group Flow (vph)	158	270
v/c Ratio	0.20	0.28
Control Delay	6.4	7.1
Queue Delay	0.0	0.5
Total Delay	6.4	7.6
Queue Length 50th (ft)	52	90
Queue Length 95th (ft)	77	141
Internal Link Dist (ft)		170
Turn Bay Length (ft)		
Base Capacity (vph)	774	956
Starvation Cap Reductn	0	344
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.20	0.44

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	155	265	0	0	0	0
Future Volume (vph)	155	265	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	1.00				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1332	1644				
Flt Permitted	0.95	1.00				
Satd. Flow (perm)	1332	1644				
Peak-hour factor, PHF	0.98	0.98	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	270	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	158	270	0	0	0	0
Heavy Vehicles (%)	22%	4%	2%	2%	2%	2%
Turn Type	Perm	NA				
Protected Phases		1				
Permitted Phases	1					
Actuated Green, G (s)	32.0	32.0				
Effective Green, g (s)	32.0	32.0				
Actuated g/C Ratio	0.58	0.58				
Clearance Time (s)	5.0	5.0				
Vehicle Extension (s)	3.0	3.0				
Lane Grp Cap (vph)	774	956				
v/s Ratio Prot		c0.16				
v/s Ratio Perm	0.12					
v/c Ratio	0.20	0.28				
Uniform Delay, d1	5.5	5.8				
Progression Factor	1.04	1.09				
Incremental Delay, d2	0.5	0.7				
Delay (s)	6.2	7.0				
Level of Service	A	A				
Approach Delay (s)		6.7	0.0		0.0	
Approach LOS		A	A		A	

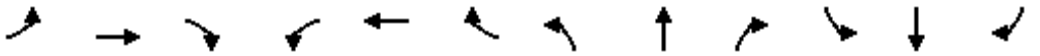
Intersection Summary			
HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	SBT
Lane Group Flow (vph)	310	1691
v/c Ratio	0.81	1.00
Control Delay	41.5	36.8
Queue Delay	0.5	36.5
Total Delay	42.0	73.2
Queue Length 50th (ft)	206	~285
Queue Length 95th (ft)	321	#870
Internal Link Dist (ft)	484	92
Turn Bay Length (ft)		
Base Capacity (vph)	542	1690
Starvation Cap Reductn	0	0
Spillback Cap Reductn	48	156
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.63	1.10

Intersection Summary

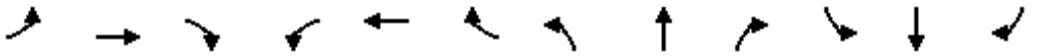
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	190	95	0	0	0	0	0	0	75	1430	0
Future Volume (vph)	0	190	95	0	0	0	0	0	0	75	1430	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1650	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		1.00									*0.65	
Frpb, ped/bikes		0.89									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		1421									2642	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		1421									2642	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	207	103	0	0	0	0	0	0	84	1607	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	310	0	0	0	0	0	0	0	0	1691	0
Confl. Peds. (#/hr)			158							334		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Parking (#/hr)			10									
Turn Type		NA								Split	NA	
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		29.6									70.4	
Effective Green, g (s)		29.6									70.4	
Actuated g/C Ratio		0.27									0.64	
Clearance Time (s)		5.0									5.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		382									1690	
v/s Ratio Prot		c0.22									c0.64	
v/s Ratio Perm												
v/c Ratio		0.81									1.00	
Uniform Delay, d1		37.6									19.8	
Progression Factor		0.68									0.68	
Incremental Delay, d2		12.1									20.2	
Delay (s)		37.7									33.7	
Level of Service		D									C	
Approach Delay (s)		37.7			0.0			0.0			33.7	
Approach LOS		D			A			A			C	

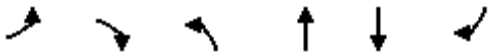
Intersection Summary			
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	0	0	0	0	0	0	150	15	0	0	0
Future Volume (Veh/h)	260	0	0	0	0	0	0	150	15	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.92	0.92	0.92
Hourly flow rate (vph)	283	0	0	0	0	0	0	161	16	0	0	0
Pedestrians					1960							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								341			334	
pX, platoon unblocked												
vC, conflicting volume	169	2137	0	2129	2129	2129	0			2137		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	169	2137	0	2129	2129	2129	0			2137		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	100	100	100	100	100	100			100		
cM capacity (veh/h)	795	49	1085	36	50	63	1623			253		

Direction, Lane #	EB 1	NB 1
Volume Total	283	177
Volume Left	283	0
Volume Right	0	16
cSH	795	1623
Volume to Capacity	0.36	0.00
Queue Length 95th (ft)	40	0
Control Delay (s)	12.0	0.0
Lane LOS	B	
Approach Delay (s)	12.0	0.0
Approach LOS	B	

Intersection Summary				
Average Delay	7.4			
Intersection Capacity Utilization	36.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	60	0	0	1445	0
Future Volume (Veh/h)	0	60	0	0	1445	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	0	67	0	0	1588	0
Pedestrians				19		
Lane Width (ft)				0.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				172	301	
pX, platoon unblocked	0.79	0.79	0.79			
vC, conflicting volume	1588	548	1588			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	827	0	827			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	246	865	634			

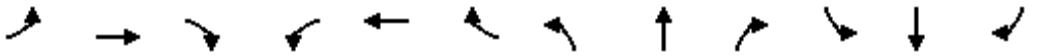
Direction, Lane #	EB 1	SB 1	SB 2	SB 3
Volume Total	67	529	529	529
Volume Left	0	0	0	0
Volume Right	67	0	0	0
cSH	865	1700	1700	1700
Volume to Capacity	0.08	0.31	0.31	0.31
Queue Length 95th (ft)	6	0	0	0
Control Delay (s)	9.5	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.5	0.0		
Approach LOS	A			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	441	1291	99
v/c Ratio	0.48	0.62	0.15
Control Delay	14.4	16.2	4.5
Queue Delay	0.0	0.4	0.0
Total Delay	14.5	16.6	4.5
Queue Length 50th (ft)	47	308	12
Queue Length 95th (ft)	95	m319	m25
Internal Link Dist (ft)	217	365	
Turn Bay Length (ft)			75
Base Capacity (vph)	920	2097	677
Starvation Cap Reductn	0	335	0
Spillback Cap Reductn	11	335	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.73	0.15

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	270	140	0	0	0	0	0	1175	90
Future Volume (vph)	0	0	0	270	140	0	0	0	0	0	1175	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	10
Total Lost time (s)					5.0						5.0	5.0
Lane Util. Factor					0.95						0.91	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					3084						4272	1317
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					3084						4272	1317
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	290	151	0	0	0	0	0	1291	99
RTOR Reduction (vph)	0	0	0	0	220	0	0	0	0	0	0	31
Lane Group Flow (vph)	0	0	0	0	221	0	0	0	0	0	1291	68
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%
Turn Type				Split	NA						NA	Prot
Protected Phases				3	3						1	1
Permitted Phases												
Actuated Green, G (s)					25.0						54.0	54.0
Effective Green, g (s)					25.0						54.0	54.0
Actuated g/C Ratio					0.23						0.49	0.49
Clearance Time (s)					5.0						5.0	5.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					700						2097	646
v/s Ratio Prot					c0.07						c0.30	0.05
v/s Ratio Perm												
v/c Ratio					0.32						0.62	0.11
Uniform Delay, d1					35.4						20.4	15.0
Progression Factor					1.00						0.73	0.59
Incremental Delay, d2					1.2						1.1	0.3
Delay (s)					36.6						16.0	9.1
Level of Service					D						B	A
Approach Delay (s)		0.0			36.6			0.0			15.5	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBT
Lane Group Flow (vph)	302	484
v/c Ratio	0.23	0.45
Control Delay	6.1	10.9
Queue Delay	0.0	0.0
Total Delay	6.1	10.9
Queue Length 50th (ft)	32	45
Queue Length 95th (ft)	36	67
Internal Link Dist (ft)	162	254
Turn Bay Length (ft)		
Base Capacity (vph)	1306	1086
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.45

Intersection Summary

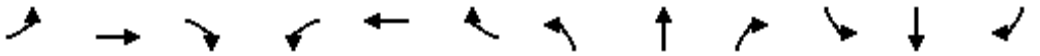
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	175	55	110	350	0	0	0	0
Future Volume (vph)	0	0	0	0	175	55	110	350	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frpb, ped/bikes					0.91			1.00				
Flpb, ped/bikes					1.00			0.89				
Frt					0.96			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					2789			2580				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					2789			2580				
Peak-hour factor, PHF	0.92	0.92	0.92	0.76	0.76	0.76	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	230	72	116	368	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	55	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	263	0	0	429	0	0	0	0
Confl. Peds. (#/hr)						597	848					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	44%	1%	2%	2%	2%	2%
Parking (#/hr)						20						
Turn Type					NA		Perm	NA				
Protected Phases					1			2				
Permitted Phases							2					
Actuated Green, G (s)					25.0			22.0				
Effective Green, g (s)					25.0			22.0				
Actuated g/C Ratio					0.45			0.40				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1267			1032				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.17				
v/c Ratio					0.21			0.42				
Uniform Delay, d1					9.0			11.9				
Progression Factor					0.83			0.98				
Incremental Delay, d2					0.4			1.2				
Delay (s)					7.8			12.9				
Level of Service					A			B				
Approach Delay (s)		0.0			7.8			12.9			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	SBT
Lane Group Flow (vph)	361	159	205
v/c Ratio	0.26	0.68	0.90
Control Delay	12.8	58.6	78.1
Queue Delay	0.8	0.0	0.0
Total Delay	13.6	58.6	78.1
Queue Length 50th (ft)	70	108	124
Queue Length 95th (ft)	91	151	#260
Internal Link Dist (ft)	136		131
Turn Bay Length (ft)			
Base Capacity (vph)	1378	321	239
Starvation Cap Reductn	712	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.50	0.86

Intersection Summary

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

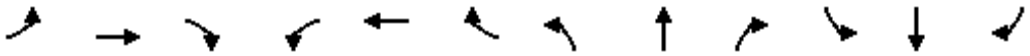


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	190	95	0	130	0	0	0	115	75
Future Volume (vph)	0	0	0	190	95	0	130	0	0	0	115	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		4.0				5.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.84	
Flpb, ped/bikes					1.00		1.00				1.00	
Frt					1.00		1.00				0.95	
Flt Protected					0.97		0.95				1.00	
Satd. Flow (prot)					2521		1608				1144	
Flt Permitted					0.97		0.95				1.00	
Satd. Flow (perm)					2521		1608				1144	
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.82	0.82	0.82	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	241	120	0	159	0	0	0	124	81
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	0	0	0	361	0	159	0	0	0	184	0
Confl. Peds. (#/hr)				614			309					309
Heavy Vehicles (%)	2%	2%	2%	22%	2%	2%	1%	2%	2%	2%	0%	3%
Parking (#/hr)					10						10	
Turn Type				Split	NA		Prot				NA	
Protected Phases				1	1		3				2	
Permitted Phases												
Actuated Green, G (s)					60.2		16.0				19.8	
Effective Green, g (s)					60.2		16.0				19.8	
Actuated g/C Ratio					0.55		0.15				0.18	
Clearance Time (s)					5.0		4.0				5.0	
Vehicle Extension (s)					3.0		3.0				3.0	
Lane Grp Cap (vph)					1379		233				205	
v/s Ratio Prot					c0.14		c0.10				c0.16	
v/s Ratio Perm												
v/c Ratio					0.26		0.68				0.90	
Uniform Delay, d1					13.2		44.6				44.1	
Progression Factor					0.85		1.00				1.00	
Incremental Delay, d2					0.4		8.0				35.5	
Delay (s)					11.7		52.6				79.6	
Level of Service					B		D				E	
Approach Delay (s)		0.0			11.7			52.6			79.6	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	159	170	267
v/c Ratio	0.15	0.33	0.33
Control Delay	16.4	5.1	8.4
Queue Delay	0.0	0.8	0.0
Total Delay	16.4	5.9	8.4
Queue Length 50th (ft)	23	0	46
Queue Length 95th (ft)	43	37	88
Internal Link Dist (ft)	114		201
Turn Bay Length (ft)			
Base Capacity (vph)	1056	520	815
Starvation Cap Reductn	0	157	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	0.47	0.33

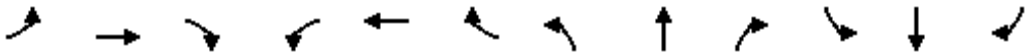
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	145	155	55	190	0	0	0	0
Future Volume (vph)	0	0	0	0	145	155	55	190	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	12	12	12	12	12	12
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.95	1.00		1.00				
Frpb, ped/bikes					1.00	0.91		1.00				
Flpb, ped/bikes					1.00	1.00		1.00				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.99				
Satd. Flow (prot)					3217	1236		1448				
Flt Permitted					1.00	1.00		0.99				
Satd. Flow (perm)					3217	1236		1448				
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	159	170	60	207	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	114	0	16	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	159	56	0	251	0	0	0	0
Confl. Bikes (#/hr)						58						
Heavy Vehicles (%)	2%	2%	2%	0%	1%	4%	2%	3%	0%	2%	2%	2%
Parking (#/hr)								4				
Turn Type					NA	Perm	Perm	NA				
Protected Phases					1			2				
Permitted Phases						1	2					
Actuated Green, G (s)					22.0	22.0		37.0				
Effective Green, g (s)					22.0	22.0		37.0				
Actuated g/C Ratio					0.33	0.33		0.55				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					3.0	3.0		3.0				
Lane Grp Cap (vph)					1056	405		799				
v/s Ratio Prot					c0.05							
v/s Ratio Perm						0.05		0.17				
v/c Ratio					0.15	0.14		0.31				
Uniform Delay, d1					15.9	15.8		8.1				
Progression Factor					1.00	1.00		1.00				
Incremental Delay, d2					0.3	0.7		1.0				
Delay (s)					16.2	16.5		9.2				
Level of Service					B	B		A				
Approach Delay (s)		0.0			16.4			9.2			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	15	95	25	80	5	5	0	0	0	0
Future Volume (vph)	10	0	15	95	25	80	5	5	0	0	0	0
Peak Hour Factor	0.59	0.59	0.59	0.90	0.90	0.90	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	25	106	28	89	10	10	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	42	223	20
Volume Left (vph)	17	106	10
Volume Right (vph)	25	89	0
Hadj (s)	-0.28	-0.11	0.10
Departure Headway (s)	3.9	3.9	4.5
Degree Utilization, x	0.05	0.24	0.03
Capacity (veh/h)	909	919	742
Control Delay (s)	7.1	8.1	7.7
Approach Delay (s)	7.1	8.1	7.7
Approach LOS	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	0	0	0	130	0
Future Volume (vph)	0	0	0	0	130	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	141	0

Direction, Lane #	SE 1	SW 1
Volume Total (vph)	0	141
Volume Left (vph)	0	0
Volume Right (vph)	0	0
Hadj (s)	0.00	0.03
Departure Headway (s)	4.2	3.9
Degree Utilization, x	0.00	0.15
Capacity (veh/h)	833	903
Control Delay (s)	7.2	7.6
Approach Delay (s)	0.0	7.6
Approach LOS	A	A

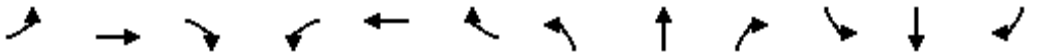
Intersection Summary			
Delay	7.6		
Level of Service	A		
Intersection Capacity Utilization	11.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	484	489	97	763
v/c Ratio	0.45	1.05	0.18	0.48
Control Delay	29.6	92.1	24.3	27.7
Queue Delay	0.0	0.0	0.0	0.1
Total Delay	29.6	92.1	24.3	27.8
Queue Length 50th (ft)	138	~378	45	149
Queue Length 95th (ft)	187	#581	85	188
Internal Link Dist (ft)	181			116
Turn Bay Length (ft)				
Base Capacity (vph)	1068	465	548	1576
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	99
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	1.05	0.18	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	445	450	0	0	0	0	0	0	90	710	0
Future Volume (vph)	0	445	450	0	0	0	0	0	0	90	710	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	12
Total Lost time (s)		5.0	5.0							5.0	5.0	
Lane Util. Factor		0.95	1.00							1.00	0.91	
Frpb, ped/bikes		1.00	0.97							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		1.00	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		3094	1347							1472	4230	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		3094	1347							1472	4230	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	484	489	0	0	0	0	0	0	97	763	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	484	489	0	0	0	0	0	0	97	763	0
Confl. Bikes (#/hr)			23									
Heavy Vehicles (%)	0%	5%	5%	2%	2%	2%	2%	2%	2%	3%	3%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		3									1	
Permitted Phases			3							1		
Actuated Green, G (s)		38.0	38.0							41.0	41.0	
Effective Green, g (s)		38.0	38.0							41.0	41.0	
Actuated g/C Ratio		0.35	0.35							0.37	0.37	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		1068	465							548	1576	
v/s Ratio Prot		0.16									c0.18	
v/s Ratio Perm			c0.36							0.07		
v/c Ratio		0.45	1.05							0.18	0.48	
Uniform Delay, d1		27.9	36.0							23.2	26.4	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		0.3	56.0							0.7	1.1	
Delay (s)		28.2	92.0							23.9	27.5	
Level of Service		C	F							C	C	
Approach Delay (s)		60.3			0.0			0.0			27.1	
Approach LOS		E			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	44.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	10	150	70	0	0
Future Volume (Veh/h)	0	10	150	70	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	163	76	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	201	201			239	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	201	201			239	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	788	840			1328	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	239	0
Volume Left	0	0	0
Volume Right	11	76	0
cSH	840	1700	1700
Volume to Capacity	0.01	0.14	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.3	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.3	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	NBT	SWT
Lane Group Flow (vph)	550	242	976	982
v/c Ratio	0.94	1.01	0.94	0.78
Control Delay	66.9	105.2	57.1	25.9
Queue Delay	0.0	0.0	4.8	0.0
Total Delay	66.9	105.2	61.9	25.9
Queue Length 50th (ft)	210	~192	247	184
Queue Length 95th (ft)	#323	#371	#295	235
Internal Link Dist (ft)	485		196	163
Turn Bay Length (ft)				
Base Capacity (vph)	588	239	1037	1252
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	40	1
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.94	1.01	0.98	0.78

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

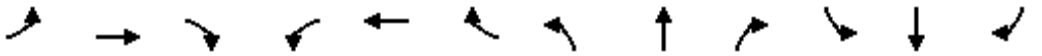
Movement	EBL2	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SWL2	SWL	SWT	SWR2
Lane Configurations												
Traffic Volume (vph)	110	145	240	100	150	695	80	45	150	85	485	125
Future Volume (vph)	110	145	240	100	150	695	80	45	150	85	485	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	11	11	12	10	11	11	11
Total Lost time (s)			6.5	6.5		8.0					7.5	
Lane Util. Factor			0.91	0.91		0.91					0.91	
Frpb, ped/bikes			0.98	1.00		0.95					0.93	
Flpb, ped/bikes			1.00	1.00		1.00					1.00	
Frt			0.99	0.85		0.98					0.98	
Flt Protected			0.98	1.00		1.00					0.99	
Satd. Flow (prot)			2643	1075		3935					3744	
Flt Permitted			0.98	1.00		1.00					0.99	
Satd. Flow (perm)			2643	1075		3935					3744	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.84	0.84	0.84	0.86	0.86	0.86	0.86
Adj. Flow (vph)	117	154	255	106	160	827	95	54	174	99	564	145
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	78	0
Lane Group Flow (vph)	0	0	550	242	0	976	0	0	0	0	904	0
Confl. Peds. (#/hr)	875			382	395			284	284	382		875
Confl. Bikes (#/hr)								1				
Heavy Vehicles (%)	6%	2%	14%	5%	26%	7%	2%	6%	4%	4%	11%	1%
Parking (#/hr)								10				
Turn Type	Split	Split	NA	Prot		NA			Split	Split	NA	
Protected Phases	3	3	3	3		2			1	1	1	
Permitted Phases												
Actuated Green, G (s)			24.5	24.5		29.0					34.5	
Effective Green, g (s)			24.5	24.5		29.0					34.5	
Actuated g/C Ratio			0.22	0.22		0.26					0.31	
Clearance Time (s)			6.5	6.5		8.0					7.5	
Vehicle Extension (s)			3.0	3.0		3.0					3.0	
Lane Grp Cap (vph)			588	239		1037					1174	
v/s Ratio Prot			0.21	c0.23		c0.25					c0.24	
v/s Ratio Perm												
v/c Ratio			0.94	1.01		0.94					0.77	
Uniform Delay, d1			42.0	42.8		39.7					34.2	
Progression Factor			1.00	1.00		1.00					0.72	
Incremental Delay, d2			22.3	61.5		15.7					3.8	
Delay (s)			64.3	104.2		55.4					28.5	
Level of Service			E	F		E					C	
Approach Delay (s)			76.5			55.4					28.5	
Approach LOS			E			E					C	

Intersection Summary			
HCM 2000 Control Delay	51.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	76.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1391	215	569	130	45
v/c Ratio	0.73	0.66	0.83	0.70	0.16
Control Delay	14.0	49.0	51.6	52.5	2.3
Queue Delay	0.8	0.0	0.3	0.0	0.0
Total Delay	14.8	49.0	51.9	52.5	2.3
Queue Length 50th (ft)	117	151	210	95	0
Queue Length 95th (ft)	159	238	#279	135	1
Internal Link Dist (ft)	95		250	176	
Turn Bay Length (ft)					
Base Capacity (vph)	1904	326	686	187	287
Starvation Cap Reductn	234	0	0	0	0
Spillback Cap Reductn	142	0	8	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.83	0.66	0.84	0.70	0.16

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	335	600	345	210	480	0	0	100	35
Future Volume (vph)	0	0	0	335	600	345	210	480	0	0	100	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	11	11	12	12	12	12	12	12
Total Lost time (s)					6.0		7.0	7.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			1.00	1.00
Frpb, ped/bikes					0.96		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.96		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					3825		1382	2902			1474	1309
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					3825		1382	2902			1474	1309
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.88	0.88	0.88	0.77	0.77	0.77
Adj. Flow (vph)	0	0	0	364	652	375	239	545	0	0	130	45
RTOR Reduction (vph)	0	0	0	0	65	0	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	0	0	1326	0	215	569	0	0	130	6
Confl. Peds. (#/hr)						216						1805
Confl. Bikes (#/hr)						6						7
Heavy Vehicles (%)	2%	2%	2%	6%	7%	8%	7%	7%	0%	2%	16%	11%
Turn Type				Split	NA		Split	NA			NA	Prot
Protected Phases				1 4	1 4		2	2			3	3
Permitted Phases												
Actuated Green, G (s)					53.0		26.0	26.0			14.0	14.0
Effective Green, g (s)					49.0		26.0	26.0			14.0	14.0
Actuated g/C Ratio					0.45		0.24	0.24			0.13	0.13
Clearance Time (s)							7.0	7.0			4.0	4.0
Vehicle Extension (s)							3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1703		326	685			187	166
v/s Ratio Prot					c0.35		0.16	c0.20			c0.09	0.00
v/s Ratio Perm												
v/c Ratio					0.78		0.66	0.83			0.70	0.03
Uniform Delay, d1					25.9		38.0	39.9			46.0	42.1
Progression Factor					0.58		1.00	1.00			0.69	1.00
Incremental Delay, d2					2.7		10.0	11.2			19.1	0.4
Delay (s)					17.7		48.0	51.1			51.0	42.5
Level of Service					B		D	D			D	D
Approach Delay (s)		0.0			17.7			50.3			48.8	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM 2000 Control Delay	30.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	SET	SER	SER2	SWL2	SWL	SWT
Lane Group Flow (vph)	649	326	167	473	348	441
v/c Ratio	0.61	0.66	0.30	0.63	0.68	0.85
Control Delay	12.0	17.0	2.0	9.6	37.2	48.7
Queue Delay	1.1	2.1	0.6	0.0	0.0	0.0
Total Delay	13.2	19.1	2.6	9.6	37.2	48.7
Queue Length 50th (ft)	77	74	0	40	197	271
Queue Length 95th (ft)	100	191	8	142	301	#418
Internal Link Dist (ft)	152					169
Turn Bay Length (ft)						
Base Capacity (vph)	1063	493	555	775	556	564
Starvation Cap Reductn	206	71	165	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.77	0.43	0.61	0.63	0.78

Intersection Summary

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

Movement	SET	SER	SER2	SWL2	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	565	300	145	440	320	410
Future Volume (vph)	565	300	145	440	320	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	2834	1317	1201	1404	1458	1478
Flt Permitted	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	2834	1317	1201	1404	1458	1478
Peak-hour factor, PHF	0.87	0.92	0.87	0.93	0.92	0.93
Adj. Flow (vph)	649	326	167	473	348	441
RTOR Reduction (vph)	0	0	104	251	0	0
Lane Group Flow (vph)	649	326	63	222	348	441
Heavy Vehicles (%)	7%	3%	13%	8%	4%	8%
Turn Type	NA	Perm	Prot	Split	Split	NA
Protected Phases	1		1	3	3	3
Permitted Phases		1				
Actuated Green, G (s)	41.3	41.3	41.3	38.7	38.7	38.7
Effective Green, g (s)	41.3	41.3	41.3	38.7	38.7	38.7
Actuated g/C Ratio	0.38	0.38	0.38	0.35	0.35	0.35
Clearance Time (s)	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
Lane Grp Cap (vph)	1064	494	450	493	512	519
v/s Ratio Prot	0.23		0.05	0.16	0.24	c0.30
v/s Ratio Perm		c0.25				
v/c Ratio	0.61	0.66	0.14	0.45	0.68	0.85
Uniform Delay, d1	27.8	28.5	22.6	27.5	30.4	33.0
Progression Factor	0.33	0.35	0.19	1.00	1.00	1.00
Incremental Delay, d2	2.3	6.1	0.6	0.7	3.6	12.3
Delay (s)	11.6	16.1	4.9	28.1	34.0	45.3
Level of Service	B	B	A	C	C	D
Approach Delay (s)	11.9					35.7
Approach LOS	B					D

Intersection Summary			
HCM 2000 Control Delay	24.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	SET	NWL	SWT
Lane Group Flow (vph)	215	114	349
v/c Ratio	0.82	0.45	0.64
Control Delay	59.0	41.0	36.2
Queue Delay	0.0	0.0	0.0
Total Delay	59.0	41.0	36.2
Queue Length 50th (ft)	141	62	197
Queue Length 95th (ft)	168	101	#374
Internal Link Dist (ft)	335		97
Turn Bay Length (ft)			
Base Capacity (vph)	376	255	549
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.57	0.45	0.64

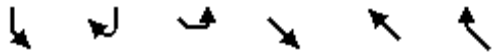
Intersection Summary

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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	120	50	90	0	0	0	0	0	80	220	0
Future Volume (vph)	0	120	50	90	0	0	0	0	0	80	220	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0							5.0	
Lane Util. Factor		1.00		1.00							1.00	
Frpb, ped/bikes		0.74		1.00							1.00	
Flpb, ped/bikes		1.00		1.00							1.00	
Frt		0.96		1.00							1.00	
Flt Protected		1.00		0.95							0.99	
Satd. Flow (prot)		921		1279							1385	
Flt Permitted		1.00		0.95							0.99	
Satd. Flow (perm)		921		1279							1385	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	0.92	0.92	0.92	0.86	0.86	0.86
Adj. Flow (vph)	0	152	63	114	0	0	0	0	0	93	256	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	215	0	114	0	0	0	0	0	0	349	0
Confl. Peds. (#/hr)			1667							152		
Confl. Bikes (#/hr)			11									
Heavy Vehicles (%)	2%	12%	10%	8%	2%	2%	2%	2%	2%	24%	21%	2%
Parking (#/hr)		10		10								
Turn Type		NA		Prot						Split	NA	
Protected Phases		3		2						1	1	
Permitted Phases												
Actuated Green, G (s)		31.4		22.0							43.6	
Effective Green, g (s)		31.4		22.0							43.6	
Actuated g/C Ratio		0.29		0.20							0.40	
Clearance Time (s)		4.0		4.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		262		255							548	
v/s Ratio Prot		c0.23		c0.09							c0.25	
v/s Ratio Perm												
v/c Ratio		0.82		0.45							0.64	
Uniform Delay, d1		36.7		38.7							26.8	
Progression Factor		1.00		0.90							1.00	
Incremental Delay, d2		18.3		5.5							5.6	
Delay (s)		54.9		40.2							32.4	
Level of Service		D		D							C	
Approach Delay (s)		54.9			40.2			0.0			32.4	
Approach LOS		D			D			A			C	

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

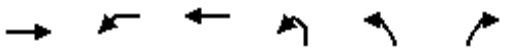
c Critical Lane Group



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	0	0	20	180	90	265
Future Volume (Veh/h)	0	0	20	180	90	265
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.82	0.82	0.87	0.87
Hourly flow rate (vph)	0	0	24	220	103	305
Pedestrians	1279					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	80					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				233	107	
pX, platoon unblocked	0.91	0.91	0.91			
vC, conflicting volume	1802	1534	1687			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1831	1538	1705			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	100	100	60			
cM capacity (veh/h)	9	26	60			

Direction, Lane #	SB 1	SE 1	NW 1
Volume Total	0	244	408
Volume Left	0	24	0
Volume Right	0	0	305
cSH	1700	60	1700
Volume to Capacity	0.00	0.40	0.24
Queue Length 95th (ft)	0	38	0
Control Delay (s)	0.0	52.0	0.0
Lane LOS	A	F	
Approach Delay (s)	0.0	52.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	19.5		
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBL	WBT	NBL2	NBL	NBR
Lane Group Flow (vph)	240	135	206	220	214	440
v/c Ratio	0.43	0.94	0.34	0.25	0.27	0.66
Control Delay	11.6	64.4	5.5	0.2	7.5	14.1
Queue Delay	0.9	1.3	0.6	0.0	0.0	1.9
Total Delay	12.5	65.7	6.2	0.2	7.5	16.0
Queue Length 50th (ft)	22	58	5	0	35	74
Queue Length 95th (ft)	58	m#63	7	m0	m40	m360
Internal Link Dist (ft)	27		136		330	
Turn Bay Length (ft)						
Base Capacity (vph)	719	190	799	897	797	663
Starvation Cap Reductn	223	8	323	0	0	105
Spillback Cap Reductn	261	0	0	0	0	21
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.74	0.43	0.25	0.27	0.79

Intersection Summary

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

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

Movement	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	170	0	10	115	175	185	180	370	0	0
Future Volume (vph)	170	0	10	115	175	185	180	370	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Lane Util. Factor	1.00			1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	0.95			1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00			0.49	1.00	1.00	1.00	1.00		
Frt	0.99			1.00	1.00	1.00	1.00	0.85		
Flt Protected	1.00			0.95	1.00	0.95	0.95	1.00		
Satd. Flow (prot)	1397			760	1598	1547	1562	1298		
Flt Permitted	1.00			0.53	1.00	0.95	0.95	1.00		
Satd. Flow (perm)	1397			424	1598	1547	1562	1298		
Peak-hour factor, PHF	0.75	0.75	0.75	0.85	0.85	0.84	0.84	0.84	0.92	0.92
Adj. Flow (vph)	227	0	13	135	206	220	214	440	0	0
RTOR Reduction (vph)	25	0	0	0	0	108	0	0	0	0
Lane Group Flow (vph)	215	0	0	135	206	112	214	440	0	0
Confl. Peds. (#/hr)			1516	1516						
Confl. Bikes (#/hr)			9							
Heavy Vehicles (%)	15%	2%	25%	5%	7%	5%	4%	12%	2%	2%
Parking (#/hr)			10							
Turn Type	NA			Perm	NA	Perm	Prot	Perm		
Protected Phases	2				2		1			
Permitted Phases				2		1		1		
Actuated Green, G (s)	41.8			41.8	41.8	56.2	56.2	56.2		
Effective Green, g (s)	41.8			41.8	41.8	56.2	56.2	56.2		
Actuated g/C Ratio	0.38			0.38	0.38	0.51	0.51	0.51		
Clearance Time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	530			161	607	790	798	663		
v/s Ratio Prot	0.15				0.13		0.14			
v/s Ratio Perm				c0.32		0.07		c0.34		
v/c Ratio	0.41			0.84	0.34	0.14	0.27	0.66		
Uniform Delay, d1	25.0			31.0	24.3	14.2	15.2	19.9		
Progression Factor	0.51			0.39	0.20	0.00	0.38	0.43		
Incremental Delay, d2	0.4			23.8	0.3	0.1	0.3	2.0		
Delay (s)	13.3			35.9	5.1	0.1	6.0	10.5		
Level of Service	B			D	A	A	A	B		
Approach Delay (s)	13.3				17.3		6.8		0.0	
Approach LOS	B				B		A		A	

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	46.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR
Lane Group Flow (vph)	450	150	319	588
v/c Ratio	0.77	0.24	0.70	0.79
Control Delay	41.2	28.6	39.5	18.0
Queue Delay	54.6	3.6	22.6	10.9
Total Delay	95.8	32.1	62.0	29.0
Queue Length 50th (ft)	217	64	167	139
Queue Length 95th (ft)	341	m123	m237	m181
Internal Link Dist (ft)		136	176	
Turn Bay Length (ft)				
Base Capacity (vph)	588	618	454	743
Starvation Cap Reductn	216	381	132	135
Spillback Cap Reductn	38	0	0	30
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.21	0.63	0.99	0.97

Intersection Summary

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

Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	405	135	290	535	0	0
Future Volume (vph)	405	135	290	535	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1438	1513	1613	1346		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1438	1513	1613	1346		
Peak-hour factor, PHF	0.90	0.90	0.91	0.91	0.92	0.92
Adj. Flow (vph)	450	150	319	588	0	0
RTOR Reduction (vph)	0	0	0	364	0	0
Lane Group Flow (vph)	450	150	319	224	0	0
Confl. Bikes (#/hr)				10		
Heavy Vehicles (%)	13%	13%	6%	8%	2%	2%
Turn Type	Split	NA	NA	Prot		
Protected Phases	1	1	3	3		
Permitted Phases						
Actuated Green, G (s)	45.0	45.0	31.0	31.0		
Effective Green, g (s)	45.0	45.0	31.0	31.0		
Actuated g/C Ratio	0.41	0.41	0.28	0.28		
Clearance Time (s)	6.0	6.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	588	618	454	379		
v/s Ratio Prot	c0.31	0.10	c0.20	0.17		
v/s Ratio Perm						
v/c Ratio	0.77	0.24	0.70	0.59		
Uniform Delay, d1	28.0	21.3	35.4	34.0		
Progression Factor	1.15	1.28	0.94	2.10		
Incremental Delay, d2	7.8	0.8	5.3	3.9		
Delay (s)	40.0	28.1	38.7	75.3		
Level of Service	D	C	D	E		
Approach Delay (s)		37.0	62.4		0.0	
Approach LOS		D	E		A	

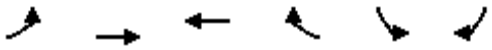
Intersection Summary			
HCM 2000 Control Delay	52.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	70.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT
Lane Group Flow (vph)	617	383
v/c Ratio	0.78	0.39
Control Delay	14.8	6.5
Queue Delay	9.8	1.5
Total Delay	24.6	8.0
Queue Length 50th (ft)	109	59
Queue Length 95th (ft)	288	m98
Internal Link Dist (ft)		170
Turn Bay Length (ft)		
Base Capacity (vph)	787	975
Starvation Cap Reductn	145	399
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.96	0.66

Intersection Summary

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

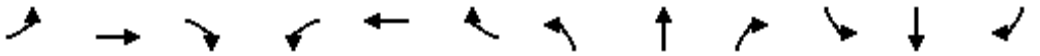


Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	580	360	0	0	0	0
Future Volume (vph)	580	360	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	1.00				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1354	1676				
Flt Permitted	0.95	1.00				
Satd. Flow (perm)	1354	1676				
Peak-hour factor, PHF	0.94	0.94	0.92	0.92	0.92	0.92
Adj. Flow (vph)	617	383	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	617	383	0	0	0	0
Heavy Vehicles (%)	20%	2%	2%	2%	2%	2%
Turn Type	Perm	NA				
Protected Phases		1				
Permitted Phases	1					
Actuated Green, G (s)	32.0	32.0				
Effective Green, g (s)	32.0	32.0				
Actuated g/C Ratio	0.58	0.58				
Clearance Time (s)	5.0	5.0				
Vehicle Extension (s)	3.0	3.0				
Lane Grp Cap (vph)	787	975				
v/s Ratio Prot		0.23				
v/s Ratio Perm	c0.46					
v/c Ratio	0.78	0.39				
Uniform Delay, d1	8.8	6.2				
Progression Factor	1.05	0.91				
Incremental Delay, d2	4.8	0.7				
Delay (s)	14.1	6.4				
Level of Service	B	A				
Approach Delay (s)		11.1	0.0		0.0	
Approach LOS		B	A		A	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	39.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

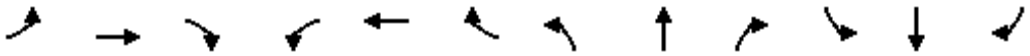
Lane Group	EBT	SBT
Lane Group Flow (vph)	309	1080
v/c Ratio	0.80	0.48
Control Delay	52.7	4.0
Queue Delay	0.0	0.0
Total Delay	52.7	4.0
Queue Length 50th (ft)	236	39
Queue Length 95th (ft)	238	60
Internal Link Dist (ft)	484	92
Turn Bay Length (ft)		
Base Capacity (vph)	572	2229
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	28
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.54	0.49

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	170	90	0	0	0	0	0	0	95	920	0
Future Volume (vph)	0	170	90	0	0	0	0	0	0	95	920	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1650	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		1.00									0.91	
Frpb, ped/bikes		0.88									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.95									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		1400									3514	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		1400									3514	
Peak-hour factor, PHF	0.84	0.84	0.84	0.92	0.92	0.92	0.92	0.92	0.92	0.94	0.94	0.94
Adj. Flow (vph)	0	202	107	0	0	0	0	0	0	101	979	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	309	0	0	0	0	0	0	0	0	1080	0
Confl. Peds. (#/hr)			201							528		
Confl. Bikes (#/hr)			8									
Heavy Vehicles (%)	2%	4%	0%	2%	2%	2%	2%	2%	2%	9%	7%	2%
Parking (#/hr)			10									
Turn Type		NA								Split	NA	
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		30.2									69.8	
Effective Green, g (s)		30.2									69.8	
Actuated g/C Ratio		0.27									0.63	
Clearance Time (s)		5.0									5.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		384									2229	
v/s Ratio Prot		c0.22									c0.31	
v/s Ratio Perm												
v/c Ratio		0.80									0.48	
Uniform Delay, d1		37.2									10.6	
Progression Factor		1.03									0.28	
Incremental Delay, d2		10.9									0.7	
Delay (s)		49.2									3.6	
Level of Service		D									A	
Approach Delay (s)		49.2			0.0			0.0			3.6	
Approach LOS		D			A			A			A	

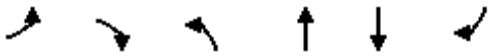
Intersection Summary			
HCM 2000 Control Delay	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	290	255	15	0	0	0
Future Volume (Veh/h)	0	0	0	0	0	0	290	255	15	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	315	319	19	0	0	0
Pedestrians					1709							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								341			334	
pX, platoon unblocked												
vC, conflicting volume	958	2677	0	2668	2668	2038	0			2047		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	958	2677	0	2668	2668	2038	0			2047		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	81			100		
cM capacity (veh/h)	201	18	1085	13	18	71	1623			274		

Direction, Lane #	EB 1	NB 1
Volume Total	0	653
Volume Left	0	315
Volume Right	0	19
cSH	1700	1623
Volume to Capacity	0.00	0.19
Queue Length 95th (ft)	0	18
Control Delay (s)	0.0	4.7
Lane LOS	A	A
Approach Delay (s)	0.0	4.7
Approach LOS	A	

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	37.5%	ICU Level of Service	A	
Analysis Period (min)	15			



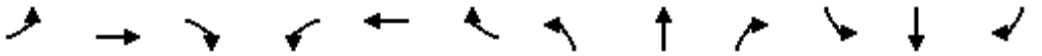
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	25	0	0	990	0
Future Volume (Veh/h)	0	25	0	0	990	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.92	0.92	0.88	0.88
Hourly flow rate (vph)	0	29	0	0	1125	0
Pedestrians				50		
Lane Width (ft)				0.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				172	301	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	1125	425	1125			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	575	0	575			
tC, single (s)	6.8	7.7	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.7	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	386	841	855			

Direction, Lane #	EB 1	SB 1	SB 2	SB 3
Volume Total	29	375	375	375
Volume Left	0	0	0	0
Volume Right	29	0	0	0
cSH	841	1700	1700	1700
Volume to Capacity	0.03	0.22	0.22	0.22
Queue Length 95th (ft)	3	0	0	0
Control Delay (s)	9.4	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.4	0.0		
Approach LOS	A			

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	458	900	124
v/c Ratio	0.42	0.52	0.21
Control Delay	13.6	25.2	7.4
Queue Delay	0.0	0.0	0.0
Total Delay	13.6	25.2	7.4
Queue Length 50th (ft)	52	226	42
Queue Length 95th (ft)	81	258	35
Internal Link Dist (ft)	217	365	
Turn Bay Length (ft)			75
Base Capacity (vph)	1079	1739	596
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.42	0.52	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	225	155	0	0	0	0	0	765	105
Future Volume (vph)	0	0	0	225	155	0	0	0	0	0	765	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	10
Total Lost time (s)					5.0						5.0	5.0
Lane Util. Factor					0.95						0.91	1.00
Frpb, ped/bikes					1.00						1.00	1.00
Flpb, ped/bikes					1.00						1.00	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					3052						4072	1280
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					3052						4072	1280
Peak-hour factor, PHF	0.92	0.92	0.92	0.83	0.83	0.83	0.92	0.92	0.92	0.85	0.85	0.85
Adj. Flow (vph)	0	0	0	271	187	0	0	0	0	0	900	124
RTOR Reduction (vph)	0	0	0	0	192	0	0	0	0	0	0	49
Lane Group Flow (vph)	0	0	0	0	266	0	0	0	0	0	900	75
Confl. Bikes (#/hr)												32
Heavy Vehicles (%)	2%	2%	2%	3%	4%	2%	2%	2%	2%	2%	7%	6%
Turn Type				Split	NA						NA	Prot
Protected Phases				3	3						1	1
Permitted Phases												
Actuated Green, G (s)					32.0						47.0	47.0
Effective Green, g (s)					32.0						47.0	47.0
Actuated g/C Ratio					0.29						0.43	0.43
Clearance Time (s)					5.0						5.0	5.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					887						1739	546
v/s Ratio Prot					c0.09						c0.22	0.06
v/s Ratio Perm												
v/c Ratio					0.30						0.52	0.14
Uniform Delay, d1					30.3						23.2	19.2
Progression Factor					1.00						1.04	0.92
Incremental Delay, d2					0.9						1.0	0.5
Delay (s)					31.2						25.0	18.0
Level of Service					C						C	B
Approach Delay (s)		0.0			31.2			0.0			24.1	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBT
Lane Group Flow (vph)	295	259
v/c Ratio	0.24	0.28
Control Delay	8.7	6.0
Queue Delay	0.0	0.0
Total Delay	8.7	6.0
Queue Length 50th (ft)	35	23
Queue Length 95th (ft)	55	m23
Internal Link Dist (ft)	162	254
Turn Bay Length (ft)		
Base Capacity (vph)	1220	928
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.24	0.28

Intersection Summary

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

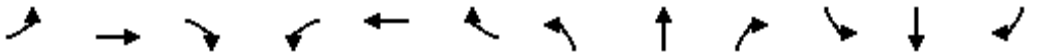
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	200	60	65	145	0	0	0	0
Future Volume (vph)	0	0	0	0	200	60	65	145	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frpb, ped/bikes					0.90			1.00				
Flpb, ped/bikes					1.00			0.83				
Frt					0.97			1.00				
Flt Protected					1.00			0.98				
Satd. Flow (prot)					2710			2108				
Flt Permitted					1.00			0.98				
Satd. Flow (perm)					2710			2108				
Peak-hour factor, PHF	0.92	0.92	0.92	0.88	0.88	0.88	0.81	0.81	0.81	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	227	68	80	179	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	38	0	0	47	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	257	0	0	212	0	0	0	0
Confl. Peds. (#/hr)						832	1367					
Confl. Bikes (#/hr)						8						
Heavy Vehicles (%)	2%	2%	2%	2%	6%	0%	61%	11%	2%	2%	2%	2%
Parking (#/hr)						20						
Turn Type					NA		Perm	NA				
Protected Phases					1			2				
Permitted Phases							2					
Actuated Green, G (s)					24.0			23.0				
Effective Green, g (s)					24.0			23.0				
Actuated g/C Ratio					0.44			0.42				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1182			881				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.10				
v/c Ratio					0.22			0.24				
Uniform Delay, d1					9.7			10.4				
Progression Factor					1.10			0.77				
Incremental Delay, d2					0.4			0.4				
Delay (s)					11.0			8.4				
Level of Service					B			A				
Approach Delay (s)		0.0			11.0			8.4			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBL	SBT
Lane Group Flow (vph)	279	232	125
v/c Ratio	0.21	0.76	0.74
Control Delay	12.4	56.7	60.3
Queue Delay	0.6	0.0	0.0
Total Delay	13.0	56.7	60.3
Queue Length 50th (ft)	53	155	68
Queue Length 95th (ft)	87	223	115
Internal Link Dist (ft)	136		131
Turn Bay Length (ft)			
Base Capacity (vph)	1314	473	229
Starvation Cap Reductn	701	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.46	0.49	0.55

Intersection Summary



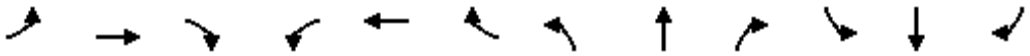
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	120	145	0	220	0	0	0	65	40
Future Volume (vph)	0	0	0	120	145	0	220	0	0	0	65	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		4.0				5.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.84	
Flpb, ped/bikes					1.00		1.00				1.00	
Frt					1.00		1.00				0.95	
Flt Protected					0.98		0.95				1.00	
Satd. Flow (prot)					2466		1533				1042	
Flt Permitted					0.98		0.95				1.00	
Satd. Flow (perm)					2466		1533				1042	
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.95	0.95	0.95	0.84	0.84	0.84
Adj. Flow (vph)	0	0	0	126	153	0	232	0	0	0	77	48
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	22	0
Lane Group Flow (vph)	0	0	0	0	279	0	232	0	0	0	103	0
Confl. Peds. (#/hr)				680			345					345
Confl. Bikes (#/hr)												16
Heavy Vehicles (%)	2%	2%	2%	34%	7%	2%	6%	2%	2%	2%	11%	10%
Parking (#/hr)					10						10	
Turn Type				Split	NA		Prot				NA	
Protected Phases				1	1		3				2	
Permitted Phases												
Actuated Green, G (s)					58.6		22.0				15.4	
Effective Green, g (s)					58.6		22.0				15.4	
Actuated g/C Ratio					0.53		0.20				0.14	
Clearance Time (s)					5.0		4.0				5.0	
Vehicle Extension (s)					3.0		3.0				3.0	
Lane Grp Cap (vph)					1313		306				145	
v/s Ratio Prot					c0.11		c0.15				c0.10	
v/s Ratio Perm												
v/c Ratio					0.21		0.76				0.71	
Uniform Delay, d1					13.5		41.5				45.2	
Progression Factor					0.74		1.00				1.00	
Incremental Delay, d2					0.4		10.3				14.6	
Delay (s)					10.4		51.8				59.8	
Level of Service					B		D				E	
Approach Delay (s)		0.0			10.4			51.8			59.8	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	35.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	36.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

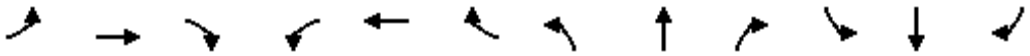
Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	237	189	225
v/c Ratio	0.24	0.34	0.28
Control Delay	17.2	4.8	4.7
Queue Delay	0.9	0.9	0.0
Total Delay	18.1	5.7	4.7
Queue Length 50th (ft)	36	0	18
Queue Length 95th (ft)	62	39	39
Internal Link Dist (ft)	114		201
Turn Bay Length (ft)			
Base Capacity (vph)	1006	562	799
Starvation Cap Reductn	523	181	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.50	0.28

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	225	180	100	80	0	0	0	0
Future Volume (vph)	0	0	0	0	225	180	100	80	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	12	12	12	12	12	12
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.95	1.00		1.00				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.97				
Satd. Flow (prot)					3065	1326		1346				
Flt Permitted					1.00	1.00		0.97				
Satd. Flow (perm)					3065	1326		1346				
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	0.80	0.80	0.80	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	237	189	125	100	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	127	0	56	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	237	62	0	169	0	0	0	0
Heavy Vehicles (%)	2%	2%	2%	0%	6%	6%	11%	6%	0%	2%	2%	2%
Parking (#/hr)								4				
Turn Type					NA	Perm	Perm	NA				
Protected Phases					1			2				
Permitted Phases						1	2					
Actuated Green, G (s)					22.0	22.0		37.0				
Effective Green, g (s)					22.0	22.0		37.0				
Actuated g/C Ratio					0.33	0.33		0.55				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					3.0	3.0		3.0				
Lane Grp Cap (vph)					1006	435		743				
v/s Ratio Prot					c0.08							
v/s Ratio Perm						0.05		0.13				
v/c Ratio					0.24	0.14		0.23				
Uniform Delay, d1					16.4	15.9		7.7				
Progression Factor					1.00	1.00		1.00				
Incremental Delay, d2					0.6	0.7		0.2				
Delay (s)					16.9	16.5		7.8				
Level of Service					B	B		A				
Approach Delay (s)		0.0			16.8			7.8			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	29.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	15	100	25	200	5	2	0	0	0	0
Future Volume (vph)	10	0	15	100	25	200	5	2	0	0	0	0
Peak Hour Factor	0.63	0.63	0.63	0.83	0.83	0.83	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	16	0	24	120	30	241	10	4	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	40	391	14
Volume Left (vph)	16	120	10
Volume Right (vph)	24	241	0
Hadj (s)	-0.28	-0.19	0.14
Departure Headway (s)	4.0	3.8	4.9
Degree Utilization, x	0.04	0.41	0.02
Capacity (veh/h)	876	944	670
Control Delay (s)	7.2	9.4	8.0
Approach Delay (s)	7.2	9.4	8.0
Approach LOS	A	A	A

Intersection Summary				
Delay	9.2			
Level of Service	A			
Intersection Capacity Utilization	52.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	0	0	0	70	0
Future Volume (vph)	0	0	0	0	70	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	76	0

Direction, Lane #	SE 1	SW 1
Volume Total (vph)	0	76
Volume Left (vph)	0	0
Volume Right (vph)	0	0
Hadj (s)	0.00	0.03
Departure Headway (s)	4.1	3.9
Degree Utilization, x	0.00	0.08
Capacity (veh/h)	877	902
Control Delay (s)	7.1	7.3
Approach Delay (s)	0.0	7.3
Approach LOS	A	A

Intersection Summary			
Delay	7.3		
Level of Service	A		
Intersection Capacity Utilization	7.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	325	144	82	912
v/c Ratio	0.64	0.69	0.11	0.42
Control Delay	45.9	56.9	15.7	17.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	45.9	56.9	15.7	17.6
Queue Length 50th (ft)	117	105	28	135
Queue Length 95th (ft)	150	164	65	204
Internal Link Dist (ft)	181			116
Turn Bay Length (ft)				
Base Capacity (vph)	913	377	724	2182
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.36	0.38	0.11	0.42

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	230	225	0	0	0	0	0	0	75	830	0
Future Volume (vph)	0	230	225	0	0	0	0	0	0	75	830	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	12
Total Lost time (s)		5.0	5.0							5.0	5.0	
Lane Util. Factor		0.91	0.91							1.00	0.91	
Frpb, ped/bikes		0.98	0.92							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		0.96	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		2623	1058							1378	4150	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		2623	1058							1378	4150	
Peak-hour factor, PHF	0.97	0.97	0.97	0.92	0.92	0.92	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	237	232	0	0	0	0	0	0	82	912	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	325	144	0	0	0	0	0	0	82	912	0
Confl. Bikes (#/hr)			59									
Heavy Vehicles (%)	0%	10%	15%	2%	2%	2%	2%	2%	2%	10%	5%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		3									1	
Permitted Phases			3							1		
Actuated Green, G (s)		21.2	21.2							57.8	57.8	
Effective Green, g (s)		21.2	21.2							57.8	57.8	
Actuated g/C Ratio		0.19	0.19							0.53	0.53	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		505	203							724	2180	
v/s Ratio Prot		0.12									c0.22	
v/s Ratio Perm			c0.14							0.06		
v/c Ratio		0.64	0.71							0.11	0.42	
Uniform Delay, d1		40.9	41.5							13.2	15.9	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		2.8	10.8							0.3	0.6	
Delay (s)		43.7	52.3							13.5	16.5	
Level of Service		D	D							B	B	
Approach Delay (s)		46.4			0.0			0.0			16.2	
Approach LOS		D			A			A			B	

Intersection Summary			
HCM 2000 Control Delay	25.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	36.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	65	280	5	0	0
Future Volume (Veh/h)	0	65	280	5	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	71	304	5	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	306	306			309	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	306	306			309	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	90			100	
cM capacity (veh/h)	686	733			1252	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	71	309	0
Volume Left	0	0	0
Volume Right	71	5	0
cSH	733	1700	1700
Volume to Capacity	0.10	0.18	0.00
Queue Length 95th (ft)	8	0	0
Control Delay (s)	10.4	0.0	0.0
Lane LOS	B		
Approach Delay (s)	10.4	0.0	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	27.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	NBT	SWT
Lane Group Flow (vph)	478	214	625	958
v/c Ratio	0.76	0.78	0.98dr	0.62
Control Delay	47.2	58.3	53.2	28.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	47.2	58.3	53.2	28.6
Queue Length 50th (ft)	171	153	153	222
Queue Length 95th (ft)	224	243	184	279
Internal Link Dist (ft)	485		196	167
Turn Bay Length (ft)				
Base Capacity (vph)	739	324	781	1557
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.65	0.66	0.80	0.62

Intersection Summary

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL2	EBL	EBT	EBR	EBR2	NBT	NBR	NBR2	SWL2	SWL	SWT	SWR2
Lane Configurations												
Traffic Volume (vph)	40	200	135	120	135	305	210	10	80	140	645	25
Future Volume (vph)	40	200	135	120	135	305	210	10	80	140	645	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	12	11	11	12	10	11	11	11
Total Lost time (s)			6.5	6.5		8.0					7.5	
Lane Util. Factor			0.91	0.91		0.91					0.91	
Frpb, ped/bikes			0.95	1.00		0.92					0.99	
Flpb, ped/bikes			1.00	1.00		1.00					1.00	
Frt			0.98	0.85		0.94					1.00	
Flt Protected			0.97	1.00		1.00					0.99	
Satd. Flow (prot)			2669	1170		3581					4150	
Flt Permitted			0.97	1.00		1.00					0.99	
Satd. Flow (perm)			2669	1170		3581					4150	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.84	0.84	0.84	0.93	0.93	0.93	0.93
Adj. Flow (vph)	44	220	148	132	148	363	250	12	86	151	694	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	73	0
Lane Group Flow (vph)	0	0	478	214	0	625	0	0	0	0	885	0
Confl. Peds. (#/hr)	681			273	309			131	131	273		681
Heavy Vehicles (%)	11%	0%	4%	1%	13%	13%	2%	2%	4%	5%	6%	4%
Parking (#/hr)								10				
Turn Type	Split	Split	NA	Prot		NA			Split	Split	NA	
Protected Phases	3	3	3	3		2			1	1	1	
Permitted Phases												
Actuated Green, G (s)			25.9	25.9		22.8					39.3	
Effective Green, g (s)			25.9	25.9		22.8					39.3	
Actuated g/C Ratio			0.24	0.24		0.21					0.36	
Clearance Time (s)			6.5	6.5		8.0					7.5	
Vehicle Extension (s)			3.0	3.0		3.0					3.0	
Lane Grp Cap (vph)			628	275		742					1482	
v/s Ratio Prot			0.18	c0.18		c0.17					c0.21	
v/s Ratio Perm												
v/c Ratio			0.76	0.78		0.98dr					0.60	
Uniform Delay, d1			39.2	39.4		41.9					28.9	
Progression Factor			1.00	1.00		1.00					1.01	
Incremental Delay, d2			5.4	13.0		8.6					1.5	
Delay (s)			44.6	52.3		50.5					30.7	
Level of Service			D	D		D					C	
Approach Delay (s)			47.0			50.5					30.7	
Approach LOS			D			D					C	

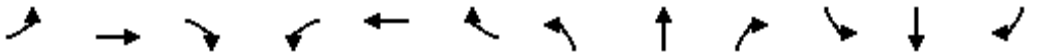
Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	22.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

Lane Group	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	1035	176	369	184	133
v/c Ratio	0.56	0.63	0.63	0.59	0.33
Control Delay	16.5	51.3	45.6	32.7	5.4
Queue Delay	0.5	0.0	0.0	1.1	0.9
Total Delay	17.0	51.3	45.6	33.8	6.2
Queue Length 50th (ft)	103	126	131	38	1
Queue Length 95th (ft)	126	204	181	83	24
Internal Link Dist (ft)	138		250	176	
Turn Bay Length (ft)					
Base Capacity (vph)	1847	281	589	311	402
Starvation Cap Reductn	381	0	0	31	111
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.71	0.63	0.63	0.66	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	170	600	110	185	295	0	0	145	105
Future Volume (vph)	0	0	0	170	600	110	185	295	0	0	145	105
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	11	11	12	12	12	12	12	12
Total Lost time (s)					6.0		7.0	7.0			4.0	4.0
Lane Util. Factor					0.91		0.91	0.91			1.00	1.00
Frpb, ped/bikes					0.99		1.00	1.00			1.00	1.00
Flpb, ped/bikes					1.00		1.00	1.00			1.00	1.00
Frt					0.98		1.00	1.00			1.00	0.85
Flt Protected					0.99		0.95	1.00			1.00	1.00
Satd. Flow (prot)					4114		1408	2950			1555	1358
Flt Permitted					0.99		0.95	1.00			1.00	1.00
Satd. Flow (perm)					4114		1408	2950			1555	1358
Peak-hour factor, PHF	0.92	0.92	0.92	0.85	0.85	0.85	0.88	0.88	0.88	0.79	0.79	0.79
Adj. Flow (vph)	0	0	0	200	706	129	210	335	0	0	184	133
RTOR Reduction (vph)	0	0	0	0	18	0	0	0	0	0	0	106
Lane Group Flow (vph)	0	0	0	0	1017	0	176	369	0	0	184	27
Confl. Peds. (#/hr)						119						1405
Heavy Vehicles (%)	2%	2%	2%	4%	6%	3%	5%	5%	0%	2%	10%	7%
Turn Type				Split	NA		Split	NA			NA	Prot
Protected Phases				1 4	1 4		2	2			3	3
Permitted Phases												
Actuated Green, G (s)					49.0		22.0	22.0			22.0	22.0
Effective Green, g (s)					42.5		22.0	22.0			22.0	22.0
Actuated g/C Ratio					0.39		0.20	0.20			0.20	0.20
Clearance Time (s)							7.0	7.0			4.0	4.0
Vehicle Extension (s)							3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					1589		281	590			311	271
v/s Ratio Prot					c0.25		0.13	c0.13			c0.12	0.02
v/s Ratio Perm												
v/c Ratio					0.64		0.63	0.63			0.59	0.10
Uniform Delay, d1					27.5		40.2	40.2			39.9	35.9
Progression Factor					0.70		1.00	1.00			0.63	1.06
Incremental Delay, d2					1.8		10.1	4.9			7.2	0.6
Delay (s)					21.0		50.4	45.2			32.2	38.6
Level of Service					C		D	D			C	D
Approach Delay (s)		0.0			21.0			46.9			34.9	
Approach LOS		A			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	23.5
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	SET	SER	SER2	SWL2	SWL	SWT
Lane Group Flow (vph)	764	719	230	295	458	337
v/c Ratio	0.69	1.42	0.39	0.44	0.94	0.69
Control Delay	19.5	214.8	2.7	5.3	65.0	40.7
Queue Delay	46.6	0.8	2.4	0.0	0.0	0.0
Total Delay	66.1	215.6	5.1	5.3	65.0	40.7
Queue Length 50th (ft)	177	~690	9	0	308	203
Queue Length 95th (ft)	m143	m#700	m13	59	#505	310
Internal Link Dist (ft)	152					169
Turn Bay Length (ft)						
Base Capacity (vph)	1112	507	596	676	499	497
Starvation Cap Reductn	410	44	247	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.09	1.55	0.66	0.44	0.92	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Movement	SET	SER	SER2	SWL2	SWL	SWT
Lane Configurations						
Traffic Volume (vph)	680	640	205	280	435	320
Future Volume (vph)	680	640	205	280	435	320
Ideal Flow (vphpl)	1800	1800	1800	1900	1900	1900
Lane Width	10	10	10	10	10	10
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lane Util. Factor	0.95	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	0.85	1.00	1.00	1.00
Flt Protected	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (prot)	2789	1272	1212	1430	1486	1478
Flt Permitted	1.00	1.00	1.00	0.95	0.95	1.00
Satd. Flow (perm)	2789	1272	1212	1430	1486	1478
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95
Adj. Flow (vph)	764	719	230	295	458	337
RTOR Reduction (vph)	0	0	114	198	0	0
Lane Group Flow (vph)	764	719	116	97	458	337
Heavy Vehicles (%)	3%	1%	6%	6%	2%	8%
Turn Type	NA	Prot	Prot	Split	Split	NA
Protected Phases	1	1	1	3	3	3
Permitted Phases						
Actuated Green, G (s)	43.9	43.9	43.9	36.1	36.1	36.1
Effective Green, g (s)	43.9	43.9	43.9	36.1	36.1	36.1
Actuated g/C Ratio	0.40	0.40	0.40	0.33	0.33	0.33
Clearance Time (s)	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
Lane Grp Cap (vph)	1113	507	483	469	487	485
v/s Ratio Prot	0.27	c0.57	0.10	0.07	c0.31	0.23
v/s Ratio Perm						
v/c Ratio	0.69	1.42	0.24	0.21	0.94	0.69
Uniform Delay, d1	27.4	33.0	22.0	26.6	35.9	32.2
Progression Factor	0.66	0.67	0.39	1.00	1.00	1.00
Incremental Delay, d2	1.0	191.5	0.3	0.2	26.5	4.3
Delay (s)	19.1	213.7	8.9	26.8	62.4	36.5
Level of Service	B	F	A	C	E	D
Approach Delay (s)	99.4					44.8
Approach LOS	F					D

Intersection Summary			
HCM 2000 Control Delay	78.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

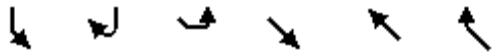
Lane Group	SET	NWL	SWT
Lane Group Flow (vph)	261	59	460
v/c Ratio	0.92	0.31	0.68
Control Delay	74.7	43.6	30.9
Queue Delay	4.7	0.0	0.0
Total Delay	79.4	43.6	30.9
Queue Length 50th (ft)	172	39	262
Queue Length 95th (ft)	#321	80	294
Internal Link Dist (ft)	335		97
Turn Bay Length (ft)			
Base Capacity (vph)	308	193	681
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	19	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.90	0.31	0.68

Intersection Summary

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

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Traffic Volume (vph)	0	175	65	55	0	0	0	0	0	120	225	0
Future Volume (vph)	0	175	65	55	0	0	0	0	0	120	225	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0		4.0							5.0	
Lane Util. Factor		1.00		1.00							1.00	
Frpb, ped/bikes		0.75		1.00							1.00	
Flpb, ped/bikes		1.00		1.00							1.00	
Frt		0.96		1.00							1.00	
Flt Protected		1.00		0.95							0.98	
Satd. Flow (prot)		998		1328							1510	
Flt Permitted		1.00		0.95							0.98	
Satd. Flow (perm)		998		1328							1510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.75	0.75	0.75
Adj. Flow (vph)	0	190	71	59	0	0	0	0	0	160	300	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	261	0	59	0	0	0	0	0	0	460	0
Confl. Peds. (#/hr)			1061							149		
Heavy Vehicles (%)	2%	7%	3%	4%	2%	2%	2%	2%	2%	10%	12%	2%
Parking (#/hr)		10		10								
Turn Type		NA		Prot						Split	NA	
Protected Phases		3		2						1	1	
Permitted Phases												
Actuated Green, G (s)		31.4		16.0							49.6	
Effective Green, g (s)		31.4		16.0							49.6	
Actuated g/C Ratio		0.29		0.15							0.45	
Clearance Time (s)		4.0		4.0							5.0	
Vehicle Extension (s)		3.0		3.0							3.0	
Lane Grp Cap (vph)		284		193							680	
v/s Ratio Prot		c0.26		c0.04							c0.30	
v/s Ratio Perm												
v/c Ratio		0.92		0.31							0.68	
Uniform Delay, d1		38.1		42.0							23.9	
Progression Factor		1.00		0.92							1.00	
Incremental Delay, d2		32.5		4.0							5.3	
Delay (s)		70.6		42.8							29.2	
Level of Service		E		D							C	
Approach Delay (s)		70.6			42.8			0.0			29.2	
Approach LOS		E			D			A			C	

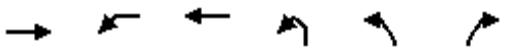
Intersection Summary			
HCM 2000 Control Delay	44.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	SBL	SBR	SEL	SET	NWT	NWR
Lane Configurations						
Traffic Volume (veh/h)	5	0	15	280	55	205
Future Volume (Veh/h)	5	0	15	280	55	205
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.87	0.87
Hourly flow rate (vph)	5	0	16	304	63	236
Pedestrians	700					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	58					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				233	107	
pX, platoon unblocked	0.93	0.93	0.93			
vC, conflicting volume	1217	881	999			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1196	835	962			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	93	100	94			
cM capacity (veh/h)	75	143	271			

Direction, Lane #	SB 1	SE 1	NW 1
Volume Total	5	320	299
Volume Left	5	16	0
Volume Right	0	0	236
cSH	75	271	1700
Volume to Capacity	0.07	0.06	0.18
Queue Length 95th (ft)	5	5	0
Control Delay (s)	56.4	2.3	0.0
Lane LOS	F	A	
Approach Delay (s)	56.4	2.3	0.0
Approach LOS	F		

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBT	WBL	WBT	NBL2	NBL	NBR
Lane Group Flow (vph)	329	112	159	160	154	296
v/c Ratio	0.74	1.03	0.33	0.17	0.16	0.38
Control Delay	32.7	107.0	6.5	0.3	4.8	6.1
Queue Delay	2.4	0.0	1.5	0.0	0.0	0.9
Total Delay	35.1	107.0	8.0	0.3	4.8	7.0
Queue Length 50th (ft)	176	86	39	0	18	37
Queue Length 95th (ft)	m214	#170	64	m0	m29	m55
Internal Link Dist (ft)	27		136		330	
Turn Bay Length (ft)						
Base Capacity (vph)	551	137	615	968	948	787
Starvation Cap Reductn	109	0	307	0	0	262
Spillback Cap Reductn	119	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.76	0.82	0.52	0.17	0.16	0.56

Intersection Summary

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

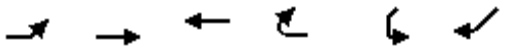
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBT	EBR	EBR2	WBL	WBT	NBL2	NBL	NBR	NEL	NER
Lane Configurations										
Traffic Volume (vph)	255	0	25	95	135	130	125	240	0	0
Future Volume (vph)	255	0	25	95	135	130	125	240	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Lane Util. Factor	1.00			1.00	1.00	1.00	1.00	1.00		
Frpb, ped/bikes	0.92			1.00	1.00	1.00	1.00	1.00		
Flpb, ped/bikes	1.00			0.70	1.00	1.00	1.00	1.00		
Frt	0.99			1.00	1.00	1.00	1.00	0.85		
Flt Protected	1.00			0.95	1.00	0.95	0.95	1.00		
Satd. Flow (prot)	1446			1121	1693	1504	1577	1309		
Flt Permitted	1.00			0.34	1.00	0.95	0.95	1.00		
Satd. Flow (perm)	1446			403	1693	1504	1577	1309		
Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.81	0.81	0.81	0.92	0.92
Adj. Flow (vph)	300	0	29	112	159	160	154	296	0	0
RTOR Reduction (vph)	28	0	0	0	0	64	0	0	0	0
Lane Group Flow (vph)	301	0	0	112	159	96	154	296	0	0
Confl. Peds. (#/hr)			1170	1170						
Heavy Vehicles (%)	8%	2%	3%	2%	1%	8%	3%	11%	2%	2%
Parking (#/hr)			10							
Turn Type	NA			Perm	NA	Perm	Prot	Perm		
Protected Phases	2				2		1			
Permitted Phases				2		1		1		
Actuated Green, G (s)	31.8			31.8	31.8	66.2	66.2	66.2		
Effective Green, g (s)	31.8			31.8	31.8	66.2	66.2	66.2		
Actuated g/C Ratio	0.29			0.29	0.29	0.60	0.60	0.60		
Clearance Time (s)	5.0			5.0	5.0	7.0	7.0	7.0		
Vehicle Extension (s)	3.0			3.0	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	418			116	489	905	949	787		
v/s Ratio Prot	0.21				0.09		0.10			
v/s Ratio Perm				c0.28		0.06		c0.23		
v/c Ratio	0.72			0.97	0.33	0.11	0.16	0.38		
Uniform Delay, d1	35.1			38.6	30.7	9.3	9.7	11.3		
Progression Factor	0.86			0.39	0.17	0.00	0.38	0.36		
Incremental Delay, d2	4.1			67.3	0.3	0.2	0.3	1.2		
Delay (s)	34.3			82.2	5.6	0.2	4.0	5.2		
Level of Service	C			F	A	A	A	A		
Approach Delay (s)	34.3				37.3		3.6		0.0	
Approach LOS	C				D		A		A	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR
Lane Group Flow (vph)	302	309	261	199
v/c Ratio	0.53	0.50	0.51	0.37
Control Delay	27.3	26.3	11.6	1.8
Queue Delay	27.3	24.8	0.3	0.3
Total Delay	54.6	51.1	11.9	2.1
Queue Length 50th (ft)	163	167	48	1
Queue Length 95th (ft)	220	219	78	4
Internal Link Dist (ft)		136	176	
Turn Bay Length (ft)				
Base Capacity (vph)	572	624	507	539
Starvation Cap Reductn	270	312	39	78
Spillback Cap Reductn	12	0	9	1
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.00	0.99	0.56	0.43

Intersection Summary

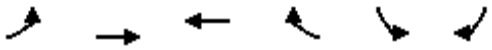


Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (vph)	245	250	230	175	0	0
Future Volume (vph)	245	250	230	175	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	5.0	5.0		
Lane Util. Factor	1.00	1.00	1.00	1.00		
Frt	1.00	1.00	1.00	0.85		
Flt Protected	0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1464	1598	1693	1333		
Flt Permitted	0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1464	1598	1693	1333		
Peak-hour factor, PHF	0.81	0.81	0.88	0.88	0.92	0.92
Adj. Flow (vph)	302	309	261	199	0	0
RTOR Reduction (vph)	0	0	0	139	0	0
Lane Group Flow (vph)	302	309	261	60	0	0
Heavy Vehicles (%)	11%	7%	1%	9%	2%	2%
Turn Type	Split	NA	NA	Prot		
Protected Phases	1	1	3	3		
Permitted Phases						
Actuated Green, G (s)	43.0	43.0	33.0	33.0		
Effective Green, g (s)	43.0	43.0	33.0	33.0		
Actuated g/C Ratio	0.39	0.39	0.30	0.30		
Clearance Time (s)	6.0	6.0	5.0	5.0		
Vehicle Extension (s)	3.0	3.0	3.0	3.0		
Lane Grp Cap (vph)	572	624	507	399		
v/s Ratio Prot	c0.21	0.19	c0.15	0.04		
v/s Ratio Perm						
v/c Ratio	0.53	0.50	0.51	0.15		
Uniform Delay, d1	25.7	25.3	31.9	28.2		
Progression Factor	0.92	0.92	0.26	0.06		
Incremental Delay, d2	3.1	2.5	3.0	0.6		
Delay (s)	26.7	25.7	11.4	2.3		
Level of Service	C	C	B	A		
Approach Delay (s)		26.2	7.4		0.0	
Approach LOS		C	A		A	

Intersection Summary			
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT
Lane Group Flow (vph)	158	270
v/c Ratio	0.20	0.28
Control Delay	6.7	7.5
Queue Delay	0.0	0.6
Total Delay	6.7	8.1
Queue Length 50th (ft)	56	98
Queue Length 95th (ft)	77	141
Internal Link Dist (ft)		170
Turn Bay Length (ft)		
Base Capacity (vph)	774	956
Starvation Cap Reductn	0	370
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.20	0.46

Intersection Summary



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	155	265	0	0	0	0
Future Volume (vph)	155	265	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0				
Lane Util. Factor	1.00	1.00				
Frt	1.00	1.00				
Flt Protected	0.95	1.00				
Satd. Flow (prot)	1332	1644				
Flt Permitted	0.95	1.00				
Satd. Flow (perm)	1332	1644				
Peak-hour factor, PHF	0.98	0.98	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	270	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	158	270	0	0	0	0
Heavy Vehicles (%)	22%	4%	2%	2%	2%	2%
Turn Type	Perm	NA				
Protected Phases		1				
Permitted Phases	1					
Actuated Green, G (s)	32.0	32.0				
Effective Green, g (s)	32.0	32.0				
Actuated g/C Ratio	0.58	0.58				
Clearance Time (s)	5.0	5.0				
Vehicle Extension (s)	3.0	3.0				
Lane Grp Cap (vph)	774	956				
v/s Ratio Prot		c0.16				
v/s Ratio Perm	0.12					
v/c Ratio	0.20	0.28				
Uniform Delay, d1	5.5	5.8				
Progression Factor	1.11	1.17				
Incremental Delay, d2	0.5	0.7				
Delay (s)	6.6	7.4				
Level of Service	A	A				
Approach Delay (s)		7.1	0.0		0.0	
Approach LOS		A	A		A	

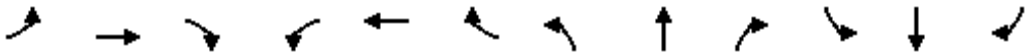
Intersection Summary			
HCM 2000 Control Delay	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.20		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	19.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	SBT
Lane Group Flow (vph)	310	1691
v/c Ratio	0.81	1.00
Control Delay	41.4	36.8
Queue Delay	0.5	36.5
Total Delay	41.9	73.2
Queue Length 50th (ft)	209	~285
Queue Length 95th (ft)	321	#870
Internal Link Dist (ft)	484	92
Turn Bay Length (ft)		
Base Capacity (vph)	542	1690
Starvation Cap Reductn	0	0
Spillback Cap Reductn	48	156
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.63	1.10

Intersection Summary

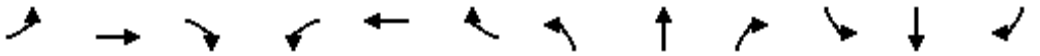
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	190	95	0	0	0	0	0	0	75	1430	0
Future Volume (vph)	0	190	95	0	0	0	0	0	0	75	1430	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1650	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	10
Total Lost time (s)		5.0									5.0	
Lane Util. Factor		1.00									*0.65	
Frpb, ped/bikes		0.89									1.00	
Flpb, ped/bikes		1.00									1.00	
Frt		0.96									1.00	
Flt Protected		1.00									1.00	
Satd. Flow (prot)		1421									2642	
Flt Permitted		1.00									1.00	
Satd. Flow (perm)		1421									2642	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.89	0.89	0.89
Adj. Flow (vph)	0	207	103	0	0	0	0	0	0	84	1607	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	310	0	0	0	0	0	0	0	0	1691	0
Confl. Peds. (#/hr)			158							334		
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	3%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Parking (#/hr)			10									
Turn Type		NA								Split	NA	
Protected Phases		2								1	1	
Permitted Phases												
Actuated Green, G (s)		29.6									70.4	
Effective Green, g (s)		29.6									70.4	
Actuated g/C Ratio		0.27									0.64	
Clearance Time (s)		5.0									5.0	
Vehicle Extension (s)		3.0									3.0	
Lane Grp Cap (vph)		382									1690	
v/s Ratio Prot		c0.22									c0.64	
v/s Ratio Perm												
v/c Ratio		0.81									1.00	
Uniform Delay, d1		37.6									19.8	
Progression Factor		0.68									0.68	
Incremental Delay, d2		12.1									20.2	
Delay (s)		37.6									33.7	
Level of Service		D									C	
Approach Delay (s)		37.6			0.0			0.0			33.7	
Approach LOS		D			A			A			C	

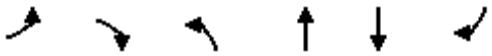
Intersection Summary			
HCM 2000 Control Delay	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	0	0	0	0	0	0	150	15	0	0	0
Future Volume (Veh/h)	260	0	0	0	0	0	0	150	15	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.92	0.92	0.92
Hourly flow rate (vph)	283	0	0	0	0	0	0	161	16	0	0	0
Pedestrians					1960							
Lane Width (ft)					0.0							
Walking Speed (ft/s)					4.0							
Percent Blockage					0							
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)								341			334	
pX, platoon unblocked												
vC, conflicting volume	169	2137	0	2129	2129	2129	0			2137		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	169	2137	0	2129	2129	2129	0			2137		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	64	100	100	100	100	100	100			100		
cM capacity (veh/h)	795	49	1085	36	50	63	1623			253		

Direction, Lane #	EB 1	NB 1
Volume Total	283	177
Volume Left	283	0
Volume Right	0	16
cSH	795	1623
Volume to Capacity	0.36	0.00
Queue Length 95th (ft)	40	0
Control Delay (s)	12.0	0.0
Lane LOS	B	
Approach Delay (s)	12.0	0.0
Approach LOS	B	

Intersection Summary				
Average Delay	7.4			
Intersection Capacity Utilization	36.0%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	60	0	0	1445	0
Future Volume (Veh/h)	0	60	0	0	1445	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.92	0.92	0.91	0.91
Hourly flow rate (vph)	0	67	0	0	1588	0
Pedestrians				19		
Lane Width (ft)				0.0		
Walking Speed (ft/s)				4.0		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				172	301	
pX, platoon unblocked	0.79	0.79	0.79			
vC, conflicting volume	1588	548	1588			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	827	0	827			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	92	100			
cM capacity (veh/h)	246	865	634			

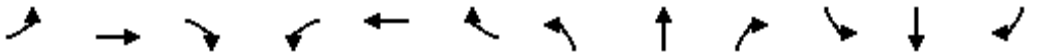
Direction, Lane #	EB 1	SB 1	SB 2	SB 3
Volume Total	67	529	529	529
Volume Left	0	0	0	0
Volume Right	67	0	0	0
cSH	865	1700	1700	1700
Volume to Capacity	0.08	0.31	0.31	0.31
Queue Length 95th (ft)	6	0	0	0
Control Delay (s)	9.5	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s)	9.5	0.0		
Approach LOS	A			

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBT	SBT	SBR
Lane Group Flow (vph)	441	1291	99
v/c Ratio	0.48	0.62	0.15
Control Delay	14.4	16.2	4.5
Queue Delay	0.0	0.4	0.0
Total Delay	14.5	16.6	4.5
Queue Length 50th (ft)	47	308	12
Queue Length 95th (ft)	95	m319	m25
Internal Link Dist (ft)	217	365	
Turn Bay Length (ft)			75
Base Capacity (vph)	920	2097	677
Starvation Cap Reductn	0	335	0
Spillback Cap Reductn	11	335	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.49	0.73	0.15

Intersection Summary

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



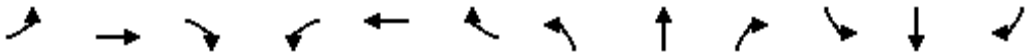
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	270	140	0	0	0	0	0	1175	90
Future Volume (vph)	0	0	0	270	140	0	0	0	0	0	1175	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	12	10	10
Total Lost time (s)					5.0						5.0	5.0
Lane Util. Factor					0.95						0.91	1.00
Frt					1.00						1.00	0.85
Flt Protected					0.97						1.00	1.00
Satd. Flow (prot)					3084						4272	1317
Flt Permitted					0.97						1.00	1.00
Satd. Flow (perm)					3084						4272	1317
Peak-hour factor, PHF	0.92	0.92	0.92	0.93	0.93	0.93	0.92	0.92	0.92	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	290	151	0	0	0	0	0	1291	99
RTOR Reduction (vph)	0	0	0	0	220	0	0	0	0	0	0	31
Lane Group Flow (vph)	0	0	0	0	221	0	0	0	0	0	1291	68
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%
Turn Type				Split	NA						NA	Prot
Protected Phases				3	3						1	1
Permitted Phases												
Actuated Green, G (s)					25.0						54.0	54.0
Effective Green, g (s)					25.0						54.0	54.0
Actuated g/C Ratio					0.23						0.49	0.49
Clearance Time (s)					5.0						5.0	5.0
Vehicle Extension (s)					3.0						3.0	3.0
Lane Grp Cap (vph)					700						2097	646
v/s Ratio Prot					c0.07						c0.30	0.05
v/s Ratio Perm												
v/c Ratio					0.32						0.62	0.11
Uniform Delay, d1					35.4						20.4	15.0
Progression Factor					1.00						0.73	0.59
Incremental Delay, d2					1.2						1.1	0.3
Delay (s)					36.6						16.0	9.1
Level of Service					D						B	A
Approach Delay (s)		0.0			36.6			0.0			15.5	
Approach LOS		A			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	WBT	NBT
Lane Group Flow (vph)	302	484
v/c Ratio	0.23	0.45
Control Delay	6.1	10.9
Queue Delay	0.0	0.0
Total Delay	6.1	10.9
Queue Length 50th (ft)	32	45
Queue Length 95th (ft)	36	67
Internal Link Dist (ft)	162	254
Turn Bay Length (ft)		
Base Capacity (vph)	1306	1086
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.23	0.45

Intersection Summary



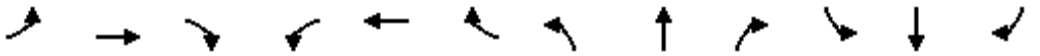
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	175	55	110	350	0	0	0	0
Future Volume (vph)	0	0	0	0	175	55	110	350	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0			4.0				
Lane Util. Factor					0.95			0.95				
Frpb, ped/bikes					0.91			1.00				
Flpb, ped/bikes					1.00			0.89				
Frt					0.96			1.00				
Flt Protected					1.00			0.99				
Satd. Flow (prot)					2789			2580				
Flt Permitted					1.00			0.99				
Satd. Flow (perm)					2789			2580				
Peak-hour factor, PHF	0.92	0.92	0.92	0.76	0.76	0.76	0.95	0.95	0.95	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	230	72	116	368	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	55	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	263	0	0	429	0	0	0	0
Confl. Peds. (#/hr)						597	848					
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	44%	1%	2%	2%	2%	2%
Parking (#/hr)						20						
Turn Type					NA		Perm	NA				
Protected Phases					1			2				
Permitted Phases							2					
Actuated Green, G (s)					25.0			22.0				
Effective Green, g (s)					25.0			22.0				
Actuated g/C Ratio					0.45			0.40				
Clearance Time (s)					4.0			4.0				
Vehicle Extension (s)					3.0			3.0				
Lane Grp Cap (vph)					1267			1032				
v/s Ratio Prot					c0.09							
v/s Ratio Perm								0.17				
v/c Ratio					0.21			0.42				
Uniform Delay, d1					9.0			11.9				
Progression Factor					0.83			0.99				
Incremental Delay, d2					0.4			1.2				
Delay (s)					7.8			13.0				
Level of Service					A			B				
Approach Delay (s)		0.0			7.8			13.0			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay	11.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	NBL	SBT
Lane Group Flow (vph)	361	159	205
v/c Ratio	0.26	0.68	0.90
Control Delay	12.8	58.6	78.1
Queue Delay	0.8	0.0	0.0
Total Delay	13.7	58.6	78.1
Queue Length 50th (ft)	70	108	124
Queue Length 95th (ft)	91	151	#260
Internal Link Dist (ft)	136		131
Turn Bay Length (ft)			
Base Capacity (vph)	1378	321	239
Starvation Cap Reductn	712	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.54	0.50	0.86

Intersection Summary

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

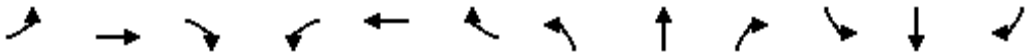


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	190	95	0	130	0	0	0	115	75
Future Volume (vph)	0	0	0	190	95	0	130	0	0	0	115	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.0		4.0				5.0	
Lane Util. Factor					0.95		1.00				1.00	
Frpb, ped/bikes					1.00		1.00				0.84	
Flpb, ped/bikes					1.00		1.00				1.00	
Frt					1.00		1.00				0.95	
Flt Protected					0.97		0.95				1.00	
Satd. Flow (prot)					2521		1608				1144	
Flt Permitted					0.97		0.95				1.00	
Satd. Flow (perm)					2521		1608				1144	
Peak-hour factor, PHF	0.92	0.92	0.92	0.79	0.79	0.79	0.82	0.82	0.82	0.93	0.93	0.93
Adj. Flow (vph)	0	0	0	241	120	0	159	0	0	0	124	81
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	21	0
Lane Group Flow (vph)	0	0	0	0	361	0	159	0	0	0	184	0
Confl. Peds. (#/hr)				614			309					309
Heavy Vehicles (%)	2%	2%	2%	22%	2%	2%	1%	2%	2%	2%	0%	3%
Parking (#/hr)					10						10	
Turn Type				Split	NA		Prot				NA	
Protected Phases				1	1		3				2	
Permitted Phases												
Actuated Green, G (s)					60.2		16.0				19.8	
Effective Green, g (s)					60.2		16.0				19.8	
Actuated g/C Ratio					0.55		0.15				0.18	
Clearance Time (s)					5.0		4.0				5.0	
Vehicle Extension (s)					3.0		3.0				3.0	
Lane Grp Cap (vph)					1379		233				205	
v/s Ratio Prot					c0.14		c0.10				c0.16	
v/s Ratio Perm												
v/c Ratio					0.26		0.68				0.90	
Uniform Delay, d1					13.2		44.6				44.1	
Progression Factor					0.86		1.00				1.00	
Incremental Delay, d2					0.4		8.0				35.5	
Delay (s)					11.7		52.6				79.6	
Level of Service					B		D				E	
Approach Delay (s)		0.0			11.7			52.6			79.6	
Approach LOS		A			B			D			E	

Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	46.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	WBT	WBR	NBT
Lane Group Flow (vph)	159	170	267
v/c Ratio	0.15	0.33	0.33
Control Delay	16.4	5.1	8.4
Queue Delay	0.0	0.8	0.0
Total Delay	16.4	5.9	8.4
Queue Length 50th (ft)	23	0	46
Queue Length 95th (ft)	43	37	88
Internal Link Dist (ft)	114		201
Turn Bay Length (ft)			
Base Capacity (vph)	1056	520	815
Starvation Cap Reductn	0	157	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.15	0.47	0.33

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	145	155	55	190	0	0	0	0
Future Volume (vph)	0	0	0	0	145	155	55	190	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	11	12	12	12	12	12	12
Total Lost time (s)					4.0	4.0		4.0				
Lane Util. Factor					0.95	1.00		1.00				
Frpb, ped/bikes					1.00	0.91		1.00				
Flpb, ped/bikes					1.00	1.00		1.00				
Frt					1.00	0.85		1.00				
Flt Protected					1.00	1.00		0.99				
Satd. Flow (prot)					3217	1236		1448				
Flt Permitted					1.00	1.00		0.99				
Satd. Flow (perm)					3217	1236		1448				
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	159	170	60	207	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	114	0	16	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	159	56	0	251	0	0	0	0
Confl. Bikes (#/hr)						58						
Heavy Vehicles (%)	2%	2%	2%	0%	1%	4%	2%	3%	0%	2%	2%	2%
Parking (#/hr)								4				
Turn Type					NA	Perm	Perm	NA				
Protected Phases					1			2				
Permitted Phases						1	2					
Actuated Green, G (s)					22.0	22.0		37.0				
Effective Green, g (s)					22.0	22.0		37.0				
Actuated g/C Ratio					0.33	0.33		0.55				
Clearance Time (s)					4.0	4.0		4.0				
Vehicle Extension (s)					3.0	3.0		3.0				
Lane Grp Cap (vph)					1056	405		799				
v/s Ratio Prot					c0.05							
v/s Ratio Perm						0.05		0.17				
v/c Ratio					0.15	0.14		0.31				
Uniform Delay, d1					15.9	15.8		8.1				
Progression Factor					1.00	1.00		1.00				
Incremental Delay, d2					0.3	0.7		1.0				
Delay (s)					16.2	16.5		9.2				
Level of Service					B	B		A				
Approach Delay (s)		0.0			16.4			9.2			0.0	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	0	15	95	25	80	5	5	0	0	0	0
Future Volume (vph)	10	0	15	95	25	80	5	5	0	0	0	0
Peak Hour Factor	0.59	0.59	0.59	0.90	0.90	0.90	0.50	0.50	0.50	0.92	0.92	0.92
Hourly flow rate (vph)	17	0	25	106	28	89	10	10	0	0	0	0

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	42	223	20
Volume Left (vph)	17	106	10
Volume Right (vph)	25	89	0
Hadj (s)	-0.28	-0.11	0.10
Departure Headway (s)	3.9	3.9	4.5
Degree Utilization, x	0.05	0.24	0.03
Capacity (veh/h)	909	919	742
Control Delay (s)	7.1	8.1	7.7
Approach Delay (s)	7.1	8.1	7.7
Approach LOS	A	A	A

Intersection Summary				
Delay	7.9			
Level of Service	A			
Intersection Capacity Utilization	41.8%	ICU Level of Service	A	
Analysis Period (min)	15			

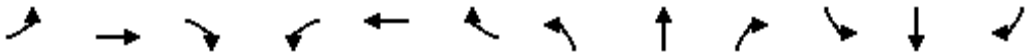
Movement	SEL	SET	NWT	NWR	SWL	SWR
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	0	0	0	0	130	0
Future Volume (vph)	0	0	0	0	130	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	141	0

Direction, Lane #	SE 1	SW 1
Volume Total (vph)	0	141
Volume Left (vph)	0	0
Volume Right (vph)	0	0
Hadj (s)	0.00	0.03
Departure Headway (s)	4.2	3.9
Degree Utilization, x	0.00	0.15
Capacity (veh/h)	833	903
Control Delay (s)	7.2	7.6
Approach Delay (s)	0.0	7.6
Approach LOS	A	A

Intersection Summary			
Delay	7.6		
Level of Service	A		
Intersection Capacity Utilization	11.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	SBL	SBT
Lane Group Flow (vph)	675	298	97	763
v/c Ratio	0.78	0.80	0.16	0.44
Control Delay	41.7	51.1	22.8	24.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	41.7	51.1	22.8	25.0
Queue Length 50th (ft)	234	207	43	142
Queue Length 95th (ft)	295	315	85	188
Internal Link Dist (ft)	181			116
Turn Bay Length (ft)				
Base Capacity (vph)	973	423	607	1746
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	98
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.69	0.70	0.16	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	445	450	0	0	0	0	0	0	90	710	0
Future Volume (vph)	0	445	450	0	0	0	0	0	0	90	710	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	12	12	12	12	12	10	10	12
Total Lost time (s)		5.0	5.0							5.0	5.0	
Lane Util. Factor		0.91	0.91							1.00	0.91	
Frpb, ped/bikes		0.99	0.97							1.00	1.00	
Flpb, ped/bikes		1.00	1.00							1.00	1.00	
Frt		0.96	0.85							1.00	1.00	
Flt Protected		1.00	1.00							0.95	1.00	
Satd. Flow (prot)		2815	1224							1472	4230	
Flt Permitted		1.00	1.00							0.95	1.00	
Satd. Flow (perm)		2815	1224							1472	4230	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93
Adj. Flow (vph)	0	484	489	0	0	0	0	0	0	97	763	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	675	298	0	0	0	0	0	0	97	763	0
Confl. Bikes (#/hr)			23									
Heavy Vehicles (%)	0%	5%	5%	2%	2%	2%	2%	2%	2%	3%	3%	0%
Turn Type		NA	Perm							Perm	NA	
Protected Phases		3									1	
Permitted Phases			3							1		
Actuated Green, G (s)		33.6	33.6							45.4	45.4	
Effective Green, g (s)		33.6	33.6							45.4	45.4	
Actuated g/C Ratio		0.31	0.31							0.41	0.41	
Clearance Time (s)		5.0	5.0							5.0	5.0	
Vehicle Extension (s)		3.0	3.0							3.0	3.0	
Lane Grp Cap (vph)		859	373							607	1745	
v/s Ratio Prot		0.24									c0.18	
v/s Ratio Perm			c0.24							0.07		
v/c Ratio		0.79	0.80							0.16	0.44	
Uniform Delay, d1		34.9	35.1							20.3	23.1	
Progression Factor		1.00	1.00							1.00	1.00	
Incremental Delay, d2		4.8	11.3							0.6	0.8	
Delay (s)		39.7	46.4							20.9	23.9	
Level of Service		D	D							C	C	
Approach Delay (s)		41.8			0.0			0.0			23.6	
Approach LOS		D			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	33.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	44.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	10	150	70	0	0
Future Volume (Veh/h)	0	10	150	70	0	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	163	76	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	201	201			239	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	201	201			239	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	788	840			1328	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	11	239	0
Volume Left	0	0	0
Volume Right	11	76	0
cSH	840	1700	1700
Volume to Capacity	0.01	0.14	0.00
Queue Length 95th (ft)	1	0	0
Control Delay (s)	9.3	0.0	0.0
Lane LOS	A		
Approach Delay (s)	9.3	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	22.2%	ICU Level of Service	A
Analysis Period (min)	15		

6. Transit Analysis

Routes	Ridership[1]	Percent Distribution	Daily	Morning Peak			Evening Peak		
				In	Out	**Total**	In	Out	**Total**
North Station	-	25.88%	444	41	6	47	12	40	52
South Station	-	74.12%	1272	116	16	132	36	116	152
Fairmont	1,038	1.37%	17	2	0	2	0	2	2
Framingham/Worchester	16,293	21.56%	274	25	3	28	8	25	33
Franklin	12,480	16.51%	210	19	3	22	6	19	25
Greenbush	5,411	7.16%	91	8	1	9	3	8	11
Kingston/Plymouth	6,560	8.68%	110	10	1	11	3	10	13
Middleborough/Lakeville	7,182	9.50%	121	11	2	13	3	11	14
Needham	6,972	9.23%	117	11	1	12	3	11	14
Providence/Stoughton	19,634	25.98%	330	30	4	34	9	30	39
TOTAL COMMUTER RAIL	**75,570**	**100%**	1716	157	22	179	48	156	204
Orange Line	203,406	37.72%	1325	110	23	133	38	110	148
Oak Grove[2]	36,312	54.11%	717	60	12	72	21	60	80
Forest Hills[2]	30,799	45.89%	608	50	11	61	17	50	68
Red Line	272,684	50.56%	1777	147	31	178	52	148	200
Alewife[2]	32,359	44.94%	798	66	14	80	23	67	90
Ashmont/Braintree[2]	39,647	55.06%	978	81	17	98	29	81	110
Blue Line	63,225	11.72%	412	34	7	41	12	34	46
Wonderland[2]	31,591	96.99%	400	33	7	40	12	33	45
Bowdoin[2]	982	3.01%	12	1	0	1	0	1	1
TOTAL HEAVY RAIL	**539,315**	**100%**	3514	290	60	350	103	292	395
Green Line	227,645	100.00%	208	19	3	22	6	19	25
Lechmere[2]	20,228	28.52%	59	5	1	6	2	5	7
B/C/D/E[2]	50,692	18.21%	149	14	2	16	4	14	18
TOTAL LIGHT RAIL	**227,645**	**100%**	208	19	3	22	6	19	25
Silver Line 1[2]	10,882	19.43%	226	20	4	24	7	19	26
Silver Line 2[2]	6,023	10.75%	125	11	2	13	3	11	14
Silver Line 4[2]	5,957	10.64%	124	11	1	12	3	11	14
Silver Line 5[2]	10,175	18.17%	211	18	4	22	7	18	25
TOTAL SILVER LINE	**33,037**		685	60	11	71	20	59	79
Route 4	470	0.84%	10	1	0	1	0	1	1
Route 7	4,452	7.95%	92	8	1	9	2	8	10
Route 11	3,413	6.09%	71	6	1	7	2	6	8
Route 92	1,321	2.36%	27	2	0	2	1	2	3
Route 93	4,874	8.70%	101	9	1	10	3	9	12
Route 448	176	0.31%	4	0	0	0	0	0	0
Route 449	258	0.46%	5	0	0	0	0	0	0
Route 459	1,184	2.11%	25	2	0	2	1	2	3
Route 501	1,690	3.02%	35	3	0	3	1	3	4
Route 504	1,548	2.76%	32	3	0	3	1	3	4
Route 505	1,009	1.80%	21	2	0	2	1	2	3
Route 553	978	1.75%	20	2	0	2	1	2	3
Route 554	649	1.16%	13	1	0	1	0	1	1
Route 556	515	0.92%	11	1	0	1	0	1	1
Route 558	429	0.77%	9	1	0	1	0	1	1
TOTAL BUS			477	41	3	44	13	41	54
TOTAL BUS+SL	**22,966**	**100.00%**	1162	102	18	120	34	101	135
F1 Higham-Boston	2654	59.80%	156	14	4	18	4	14	18
F2H Harbor Express	949	21.38%	56	6	0	6	2	6	8
F4 Boston-Charlestown	835	18.81%	48	4	0	4	2	4	6
TOTAL FERRY	**4438**	**100.00%**	260	24	4	28	8	24	32

[1] Ridership Source: 2014 MBTA Ridership and Service Statistics (Blue Book)

[2]Directional Ridership Source: MBTA Load Profiles Fall 2016

EXITSING BUILD UTILIZATION ANALYSIS

Blue Line at State Street

Existing Conditions (2016)

	Capacity						Ridership								MBTA Policy CAPACITY V/C Ratio				MBTA Crush CAPACITY V/C Ratio			
							AM Peak Hour (8-9 AM)				PM Peak Hour (4:30-5:30 PM)				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Frequency (# Trains/Peak Hour)*	OTP Factor (on time performance)**	# Cars / Blue Line Train	MBTA Policy Capacity (# Pax/Car)***	MBTA Crush Capacity (# Pax/Car)***	MBTA Policy Capacity (# Pax/Peak Hour)	MBTA Crush Capacity (# Pax/Peak Hour)	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (towards Wonderland)	12	0.930	6	95	145	6,361	9,709	230	311	20	521	2043	2299	94	4248	0.04	0.08	0.32	0.67	0.02	0.05	0.21	0.44
Inbound (towards Bowdoin)	12	0.930	6	95	145	6,361	9,709	4655	15	2677	1993	1497	66	910	653	0.73	0.31	0.24	0.10	0.48	0.21	0.15	0.07

* Schedule frequency assuming 5 minute headways; 60/5 = 12 trains
** MBTA 2016 Annual performance report, rail and transit division scorecard page 64
*** MBTA blue book 14th edition policy capacity & crush capacity

Source: MBTA flow data for Fall 2016

No-Build Conditions (2023)

	Capacity						Ridership								MBTA Policy CAPACITY V/C Ratio				MBTA Crush CAPACITY V/C Ratio			
							AM Peak Hour (8-9 AM)				PM Peak Hour (5-6 PM)				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Frequency (# Trains/Peak Hour)*	OTP Factor (on time performance)**	# Cars / Blue Line Train	MBTA Policy Capacity (# Pax/Car)***	MBTA Crush Capacity (# Pax/Car)***	MBTA Policy Capacity (# Pax/Peak Hour)	MBTA Crush Capacity (# Pax/Peak Hour)	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (towards Wonderland)	12	0.930	6	95	145	6,361	9,709	308	345	79	575	2231	2557	112	4676	0.05	0.09	0.35	0.74	0.03	0.06	0.23	0.48
Inbound (towards Bowdoin)	12	0.930	6	95	145	6,361	9,709	5062	17	2912	2167	1628	74	990	712	0.80	0.34	0.26	0.11	0.52	0.22	0.17	0.07

* Schedule frequency assuming 5 minute headways; 60/5 = 12 trains
** MBTA 2016 Annual performance report, rail and transit division scorecard page 64
*** MBTA blue book 14th edition policy capacity & crush capacity

Average Annual Growth	AM	PM	Years		
Blue Line*	1.2%	1.2%	7	1.087085211	1.087085211

*Hub and Spoke Baseline Growth

Build Conditions (2023)

	Project Generated Transit Trips			
	AM Peak Hour		PM Peak Hour	
	OUT (Boardings)	IN (Alightings)	OUT (Boardings)	IN (Alightings)
Outbound (towads Wonderland)	7	33	33	12
Inbound (towards Bowdoin)	0	1	1	0
	7	34	34	12

	Ridership								MBTA Policy CAPACITY				MBTA Crush CAPACITY			
	AM Peak Hour				PM Peak Hour				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (towads Wonderland)	341	352	112	581	2242	2590	124	4709	0.05	0.09	0.35	0.74	0.04	0.06	0.23	0.48
Inbound (towards Bowdoin)	5063	17	2913	2167	1628	75	990	713	0.80	0.34	0.26	0.11	0.52	0.22	0.17	0.07

adding project trips to existing loads - not incorporating boardings & alightings directly

EXITSING BUILD UTILIZATION ANALYSIS

Green Line at Park Street

Existing Conditions (2016)

Capacity

	Frequency (# Trains/Peak Hour)*	OTP Factor (on time performance)**	# Cars / Green Line Train	MBTA Policy Capacity (# Pax/Car)***	MBTA Crush Capacity (# Pax/Car)***	MBTA Policy Capacity (# Pax/Peak Hour)	MBTA Crush Capacity (# Pax/Peak Hour)
Outbound (Westbound)	40	0.720	2	101	269	5,818	15,494
Inbound (towards Lechmere)	30	0.720	2	101	269	4,363	11,621

* Schedule frequency assuming 6 minute headways per line; 60/1.5 = 40 trains
** MBTA 2016 Annual performance report, rail and transit division scorecard page 64
*** MBTA blue book 14th edition policy capacity & crush capacity

Ridership

	AM Peak Hour (8-9 AM)				PM Peak Hour (4:30-5:30 PM)			
	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting
Outbound (Westbound)	3243	2692	1018	4917	2566	2521	1061	4025
Inbound (towards Lechmere)	3093	628	2007	1714	5289	955	2858	3386

Source: MBTA flow data for april 2016

MBTA Policy CAPACITY V/C Ratio

	AM Peak Hour		PM Peak Hour	
	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (Westbound)	0.56	0.85	0.44	0.69
Inbound (towards Lechmere)	0.71	0.39	1.21	0.78

MBTA Crush CAPACITY V/C Ratio

	AM Peak Hour		PM Peak Hour	
	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (Westbound)	0.21	0.32	0.17	0.26
Inbound (towards Lechmere)	0.27	0.15	0.46	0.29

No-Build Conditions (2023)

Capacity

	Frequency (# Trains/Peak Hour)*	OTP Factor (on time performance)**	# Cars / Green Line Train	MBTA Policy Capacity (# Pax/Car)***	MBTA Crush Capacity (# Pax/Car)***	MBTA Policy Capacity (# Pax/Peak Hour)	MBTA Crush Capacity (# Pax/Peak Hour)
Outbound (towards Riverside)	40	0.900	2	101	269	7,272	19,368
Inbound (towards Lechmere)	30	0.900	2	101	269	5,454	14,526

* Schedule frequency assuming 6 minute headways per line; 60/1.5 = 40 trains
** MBTA 2016 Annual performance report, rail and transit division scorecard page 64; specifies a 2 year target reliability of 90%
*** MBTA blue book 14th edition policy capacity & crush capacity

Ridership

	AM Peak Hour (8-9 AM)				PM Peak Hour (5-6 PM)			
	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting
Outbound (towards Riverside)	3605	2989	1136	5458	2849	2804	1179	4474
Inbound (towards Lechmere)	3443	698	2237	1903	5871	1070	3173	3768

Average Annual Growth	AM	PM	Years		
Green Line *	1.5%	1.5%	7	1.109844913	1.109844913

*From Hub and Spoke "Moderate Growth"

MBTA Policy CAPACITY V/C Ratio

	AM Peak Hour		PM Peak Hour	
	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (towards Riverside)	0.50	0.75	0.39	0.62
Inbound (towards Lechmere)	0.63	0.35	1.08	0.69

MBTA Crush CAPACITY V/C Ratio

	AM Peak Hour		PM Peak Hour	
	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (towards Riverside)	0.19	0.28	0.15	0.23
Inbound (towards Lechmere)	0.24	0.13	0.40	0.26

Build Conditions (2023)

Project Generated Transit Trips

AM Peak Hour		PM Peak Hour	
OUT (Boardings)	IN (Alightings)	OUT (Boardings)	IN (Alightings)
2	14	14	4
1	5	5	2
3	19	19	6

Ridership

	AM Peak Hour				PM Peak Hour			
	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting
Outbound (towards Riverside)	3619	2991	1150	5460	2853	2817	1183	4487
Inbound (towards Lechmere)	3448	699	2243	1904	5873	1075	3175	3773

adding project trips to existing loads - not incorporating boardings & alightings directly

MBTA Policy CAPACITY

	AM Peak Hour		PM Peak Hour	
	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (towards Riverside)	0.50	0.75	0.39	0.62
Inbound (towards Lechmere)	0.63	0.35	1.08	0.69

MBTA Crush CAPACITY

	AM Peak Hour		PM Peak Hour	
	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (towards Riverside)	0.19	0.28	0.15	0.23
Inbound (towards Lechmere)	0.24	0.13	0.40	0.26

EXITSING BUILD UTILIZATION ANALYSIS

Orange Line at Downtown Crossing

Existing Conditions (2016)

	Capacity				Ridership								MBTA Policy CAPACITY V/C Ratio				MBTA Crush CAPACITY V/C Ratio			
					AM Peak Hour (8-9 AM)				PM Peak Hour (4:30-5:30 PM)				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Frequency (# Trains/Peak Hour)*	OTP Factor (on time performance)**	# Cars / Orange Line Train	MBTA Policy Capacity (# Pax/Car)***	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (Southbound to Forest Hills)	10	0.910	6	131	6639	1103	2909	4833	4196	1791	1300	4687	0.93	0.68	0.59	0.66	0.54	0.40	0.34	0.38
Inbound (Northbound to Oak Grove)	10	0.910	6	131	4943	993	2137	3800	5004	2636	1413	6228	0.69	0.53	0.70	0.87	0.40	0.31	0.41	0.51

* Schedule frequency assuming 6 minute headways; 60/6 = 10 trains
** MBTA 2016 Annual performance report, rail and transit division scorecard page 64
*** MBTA blue book 14th edition policy capacity & crush capacity

Source: MBTA flow data for april 2016

No-Build Conditions (2023)

	Capacity				Ridership								MBTA Policy CAPACITY V/C Ratio				MBTA Crush CAPACITY V/C Ratio			
					AM Peak Hour (8-9 AM)				PM Peak Hour (5-6 PM)				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Frequency (# Trains/Peak Hour)*	OTP Factor (on time performance)**	# Cars / Orange Line Train	MBTA Policy Capacity (# Pax/Car)***	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (Southbound to Forest Hills)	13	0.910	6	131	7268	1219	3185	5302	4562	2036	1413	5184	0.76	0.56	0.48	0.54	0.45	0.33	0.28	0.32
Inbound (Northbound to Oak Grove)	13	0.910	6	131	5514	1087	2442	4159	5457	2866	1553	6770	0.58	0.44	0.57	0.71	0.34	0.26	0.33	0.42

* New Train cars will reduce headway to 4.5 minute; 60/4.5 = 13 trains
** MBTA 2016 Annual performance report, rail and transit division scorecard page 64
*** MBTA blue book 14th edition policy capacity & crush capacity

Average Annual Growth	AM	PM	Years		
Orange Line	1.3%	1.2%	7	1.094626902	1.087085211

Build Conditions (2023)

	Project Generated Transit Trips				Ridership								MBTA Policy CAPACITY				MBTA Crush CAPACITY			
	AM Peak Hour		PM Peak Hour		AM Peak Hour				PM Peak Hour				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	OUT (Boardings)	IN (Alightings)	OUT (Boardings)	IN (Alightings)	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (Southbound to Forest Hills)	11	50	50	17	7318	1230	3235	5313	4579	2087	1431	5235	0.77	0.56	0.48	0.55	0.45	0.33	0.28	0.32
Inbound (Northbound to Oak Grove)	12	60	60	21	5573	1100	2502	4172	5478	2925	1574	6829	0.58	0.44	0.57	0.72	0.34	0.26	0.34	0.42
	23	110	110	38																

adding project trips to existing loads - not incorporating boardings & alightings directly

EXITSING BUILD UTILIZATION ANALYSIS

Orange Line at State Street

Existing Conditions (2016)

	Capacity				Ridership								MBTA Policy CAPACITY V/C Ratio				MBTA Crush CAPACITY V/C Ratio			
					AM Peak Hour (8-9 AM)				PM Peak Hour (4:30-5:30 PM)				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Frequency (# Trains/Peak Hour)*	OTP Factor (on time performance)**	# Cars / Orange Line Train	MBTA Policy Capacity (# Pax/Car)***	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (Southbound to Forest Hills)	10	0.910	6	131	7016	1030	1390	6656	3190	1385	356	4219	0.98	0.93	0.45	0.59	0.57	0.54	0.26	0.34
Inbound (Northbound to Oak Grove)	10	0.910	6	131	3798	315	1359	2754	6213	1238	1104	6347	0.53	0.38	0.87	0.89	0.31	0.23	0.51	0.52

* Schedule frequency assuming 6 minute headways; 60/6 = 10 trains
** MBTA 2016 Annual performance report, rail and transit division scorecard page 64
*** MBTA blue book 14th edition policy capacity & crush capacity

Source: MBTA flow data for Fall 2016

No-Build Conditions (2023)

	Capacity				Ridership								MBTA Policy CAPACITY V/C Ratio				MBTA Crush CAPACITY V/C Ratio			
					AM Peak Hour (8-9 AM)				PM Peak Hour (5-6 PM)				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	Frequency (# Trains/Peak Hour)*	OTP Factor (on time performance)**	# Cars / Orange Line Train	MBTA Policy Capacity (# Pax/Car)***	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (Southbound to Forest Hills)	13	0.910	6	131	7767	1128	1609	7286	3482	1506	402	4586	0.81	0.76	0.37	0.48	0.48	0.45	0.21	0.28
Inbound (Northbound to Oak Grove)	13	0.910	6	131	4157	359	1488	3028	6754	1451	1200	7004	0.44	0.32	0.71	0.73	0.25	0.19	0.41	0.43

* New Train cars will reduce headway to 4.5 minute; 60/4.5 = 13 trains
** MBTA 2016 Annual performance report, rail and transit division scorecard page 64
*** MBTA blue book 14th edition policy capacity & crush capacity

Average Annual Growth	AM	PM	Years		
Orange Line	1.3%	1.2%	7	1.094626902	1.087085211

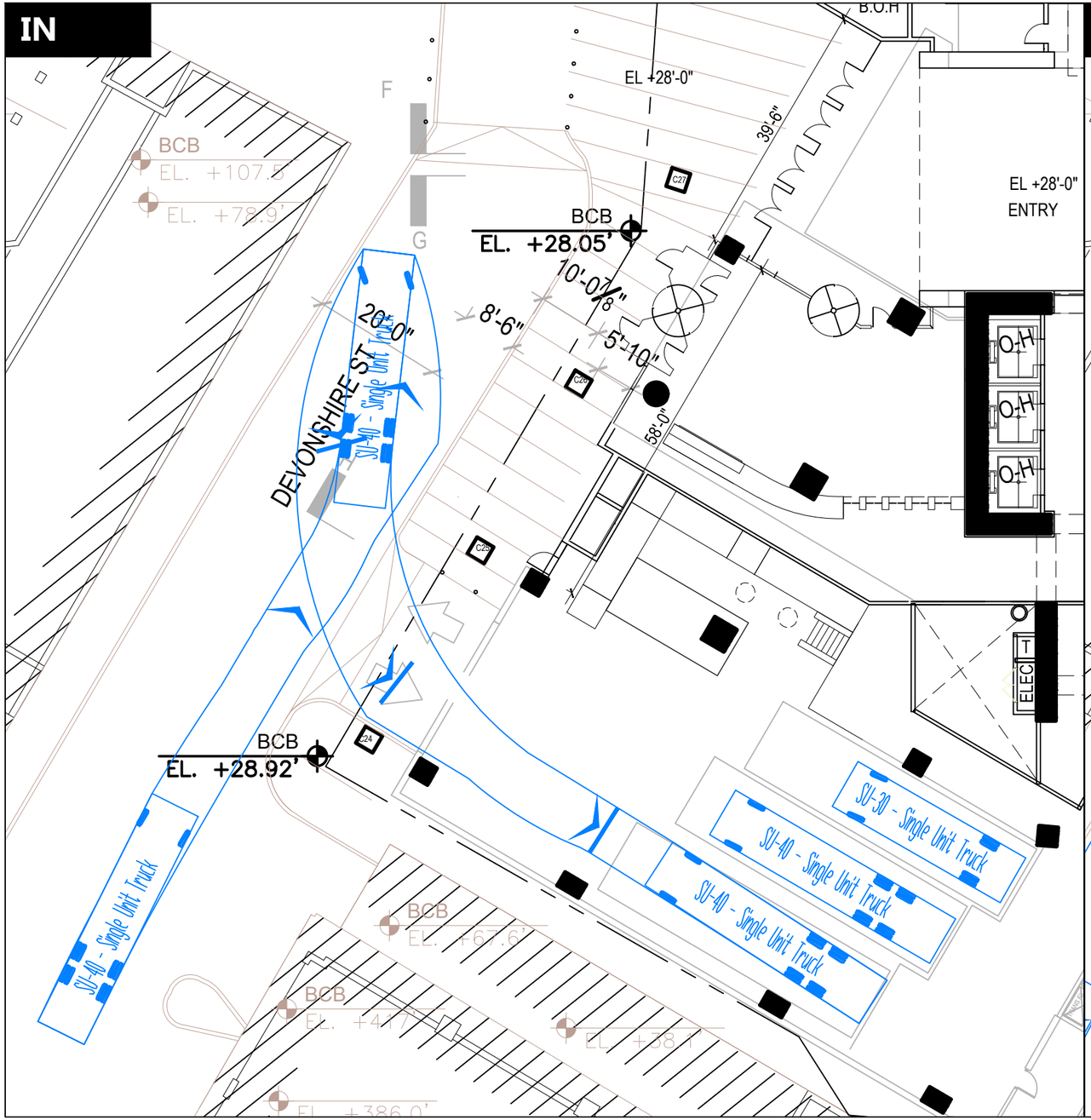
Build Conditions (2023)

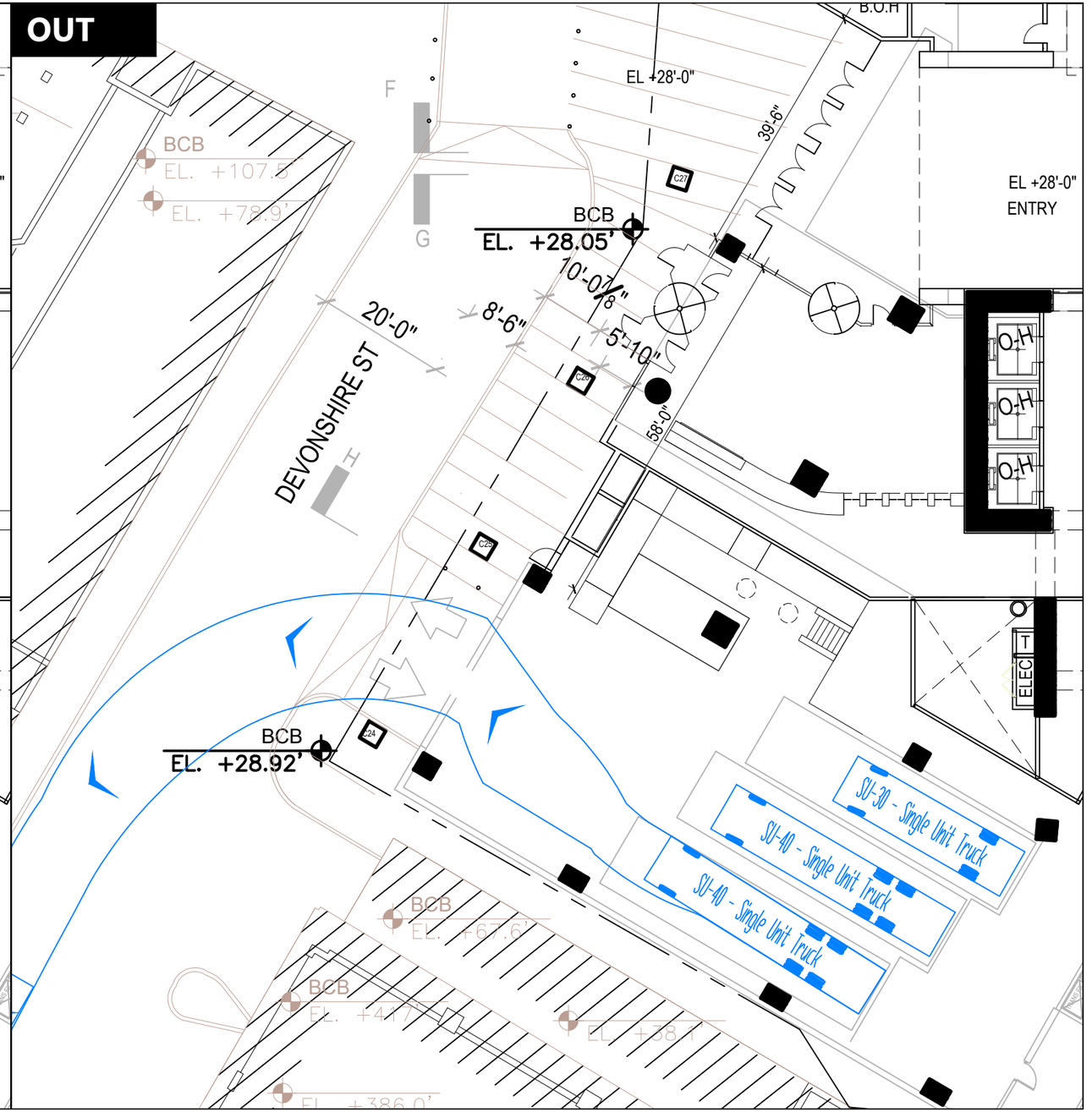
	Project Generated Transit Trips				Ridership								MBTA Policy CAPACITY				MBTA Crush CAPACITY			
	AM Peak Hour		PM Peak Hour		AM Peak Hour				PM Peak Hour				AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	OUT (Boardings)	IN (Alightings)	OUT (Boardings)	IN (Alightings)	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Load Entering	Boardings (ON)	Alightings (OFF)	Load Exiting	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C	Enter V/C	Exit V/C
Outbound (Southbound to Forest Hills)	11	50	50	17	7818	1139	1660	7297	3500	1556	420	4636	0.82	0.77	0.37	0.49	0.48	0.45	0.21	0.28
Inbound (Northbound to Oak Grove)	12	60	60	21	4217	371	1547	3041	6774	1510	1221	7064	0.44	0.32	0.71	0.74	0.26	0.19	0.42	0.43
	23	110	110	38																

adding project trips to existing loads - not incorporating boardings & alightings directly

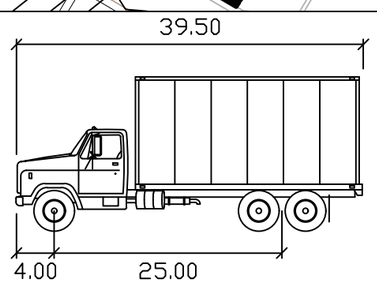
7. Loading Dock Truck Turns

\\vhb\proj\Boston\13706.00 Millennium Winthrop Sq\cad\ld\Traffic\Loading Dock Analysis 12-14-2017.dwg





0 10 20 Feet



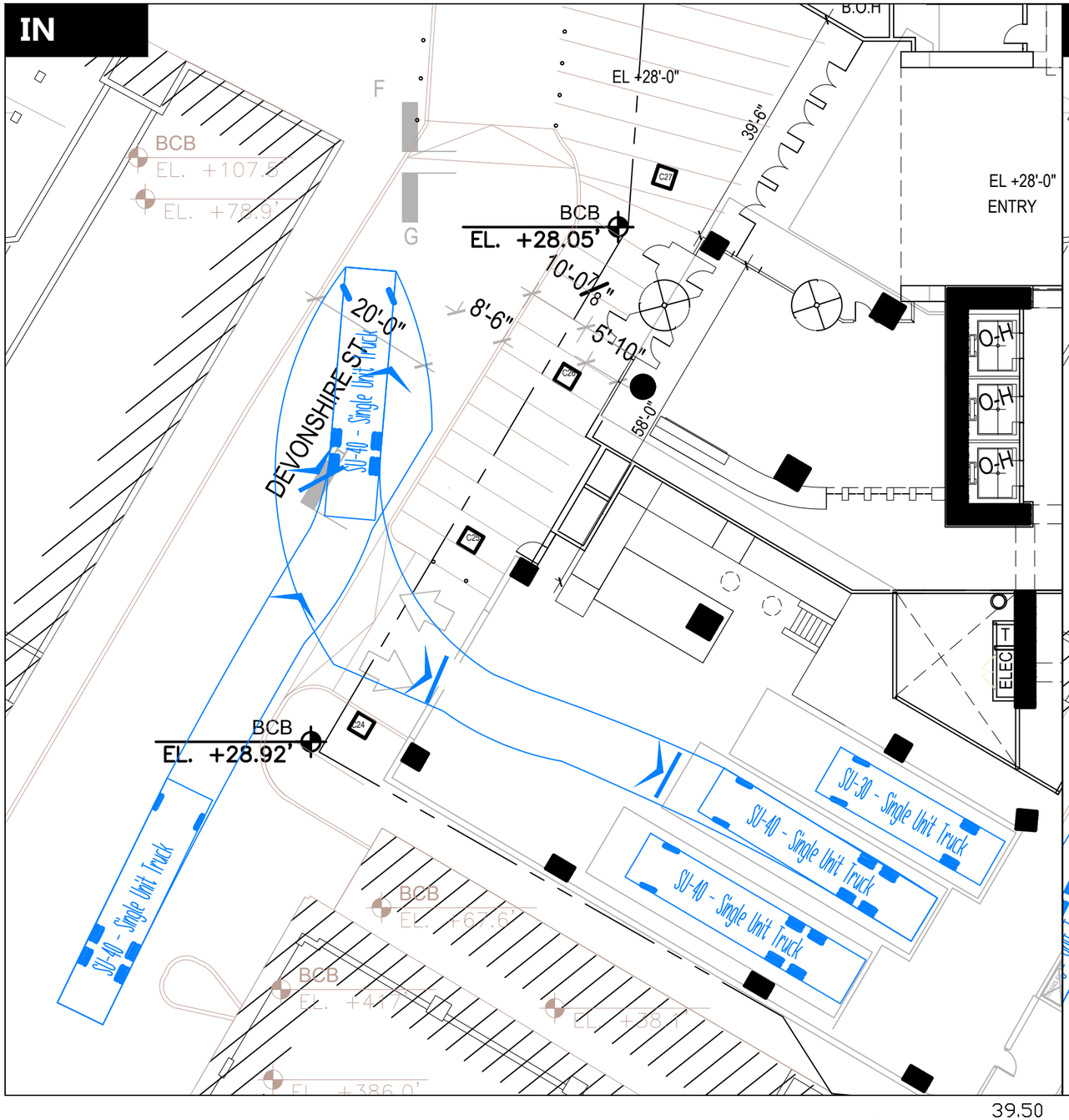
SU-40	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	6.0
Steering Angle	: 31.8

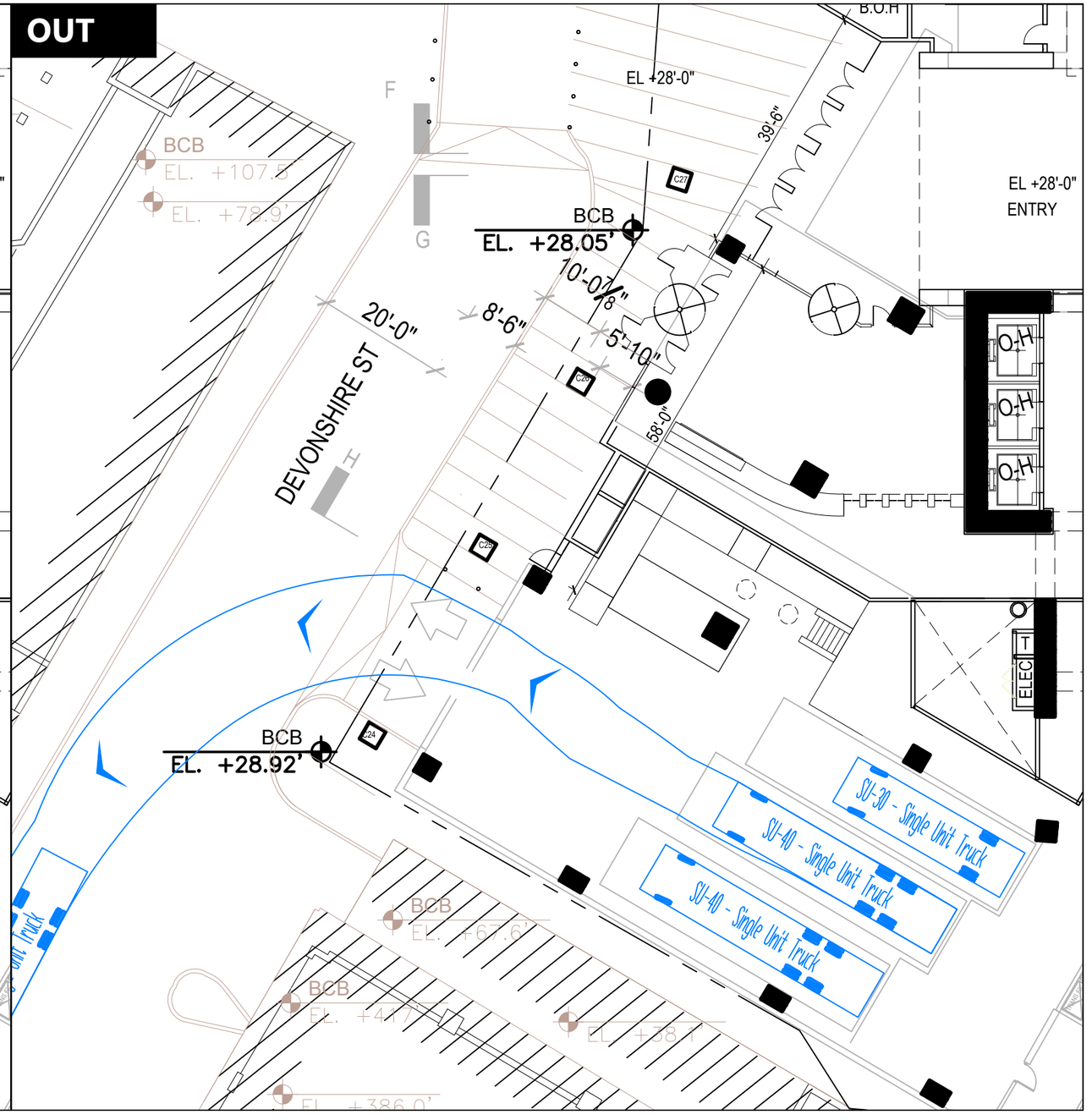
Figure 1

Truck Turn Study (Staggered Dock) - SU-40
Loading Dock 1
115 Winthrop Square
Boston, MA

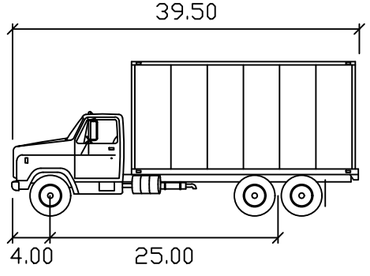
December 2017

\\vhb\proj\Boston\13706.00 Millennium Winthrop Sq\cad\ld\Traffic\Loading Dock Analysis 12-14-2017.dwg





0 10 20 Feet



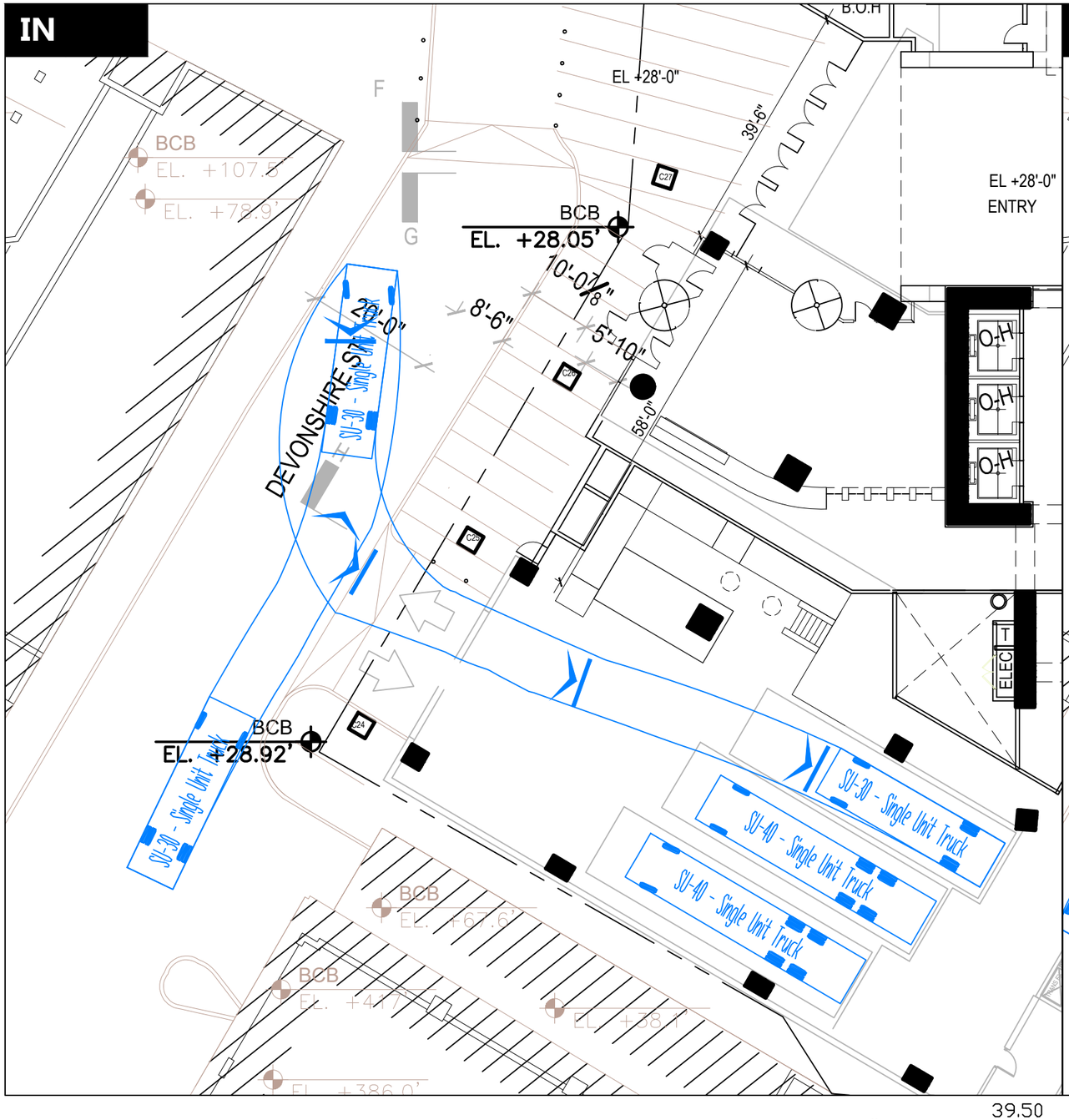
SU-40	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	6.0
Steering Angle	: 31.8

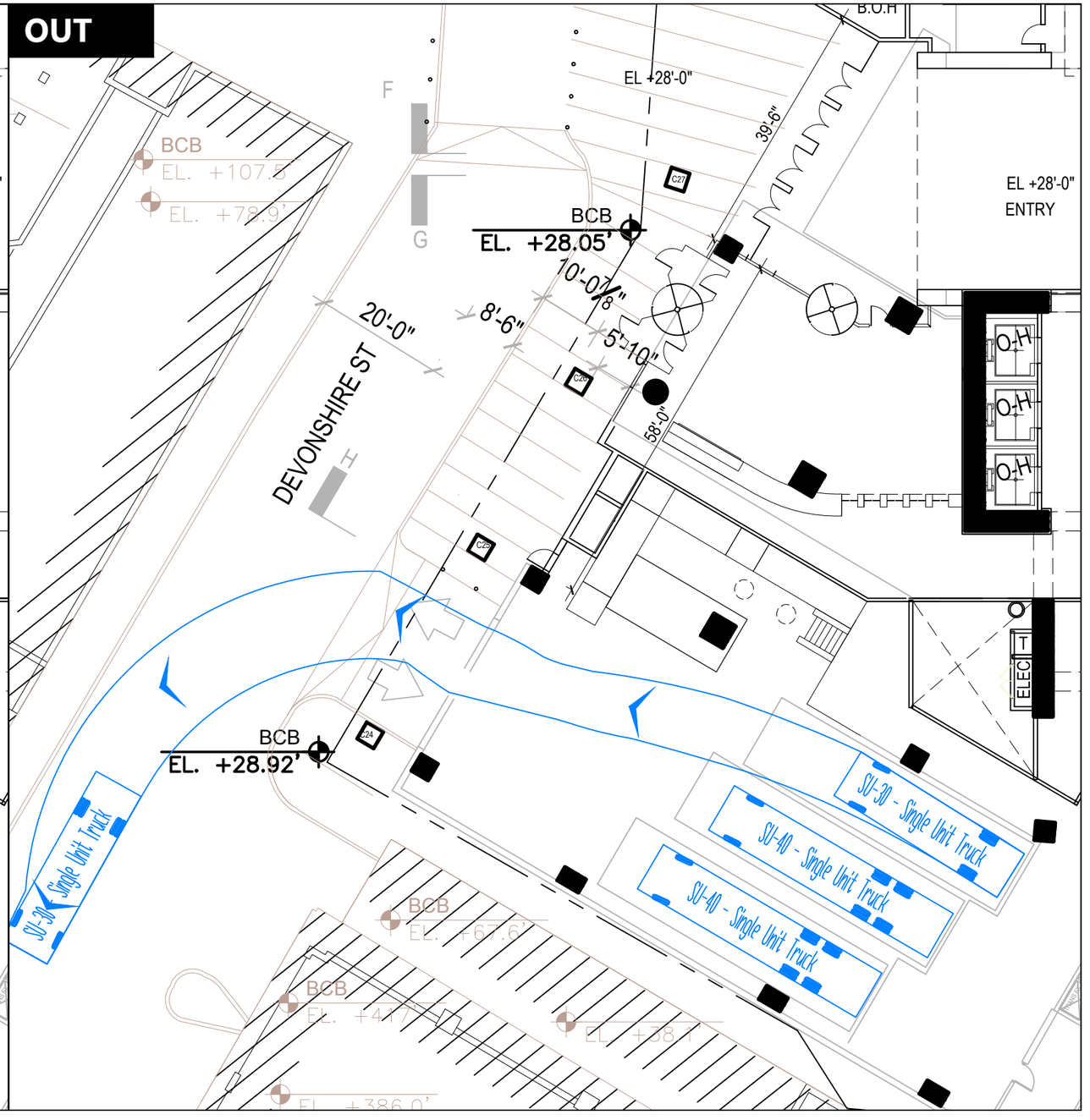
Figure 2

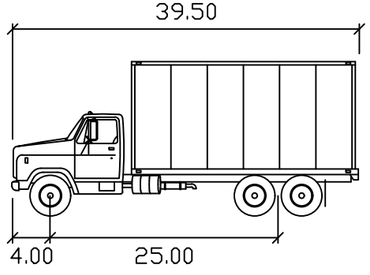
Truck Turn Study (Staggered Dock) - SU-40
Loading Dock 2
115 Winthrop Square
Boston, MA

December 2017

\\vhb\proj\Boston\13706.00 Millennium Winthrop Sq\cad\ld\Traffic\Loading Dock Analysis 12-14-2017.dwg





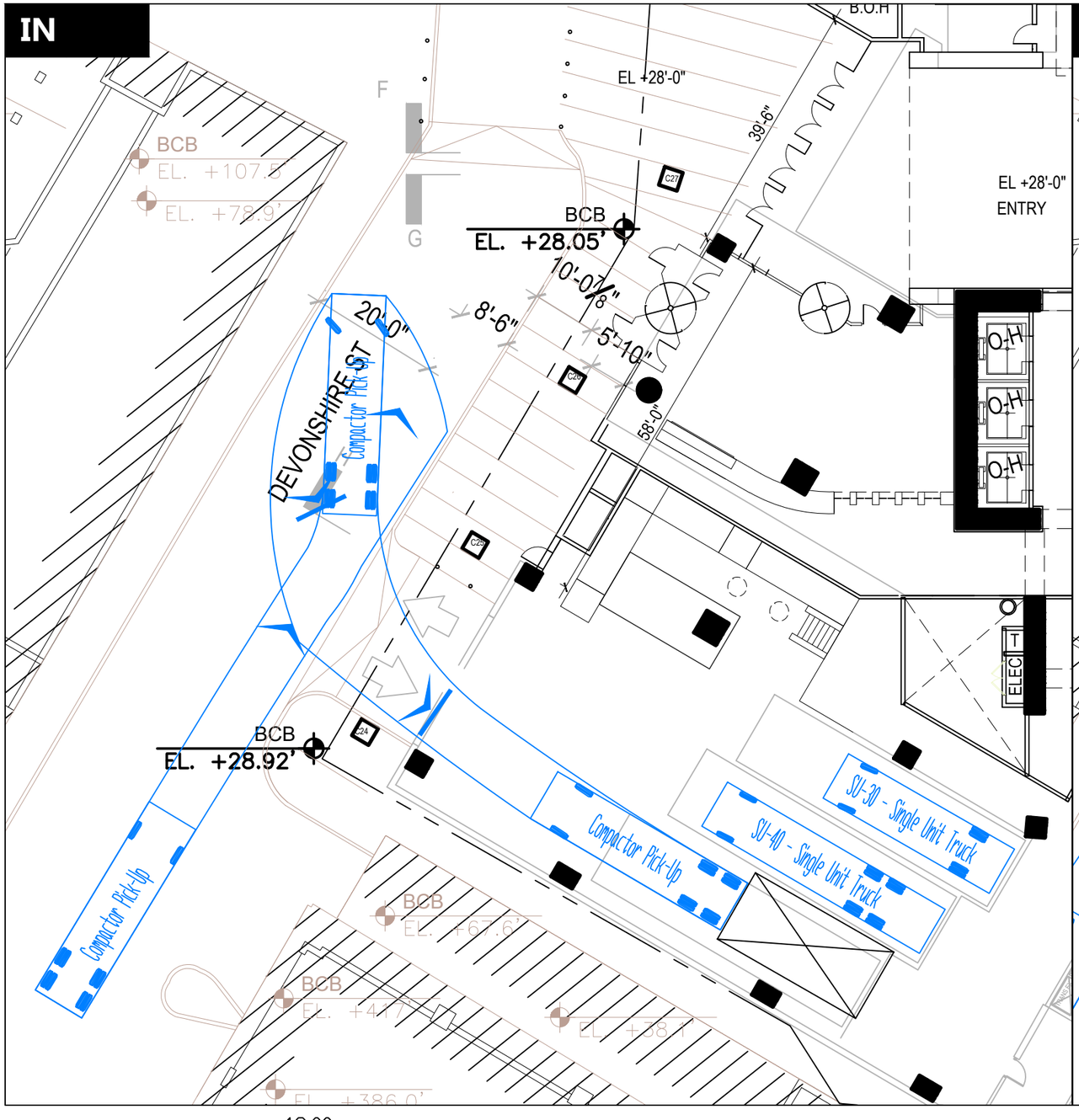


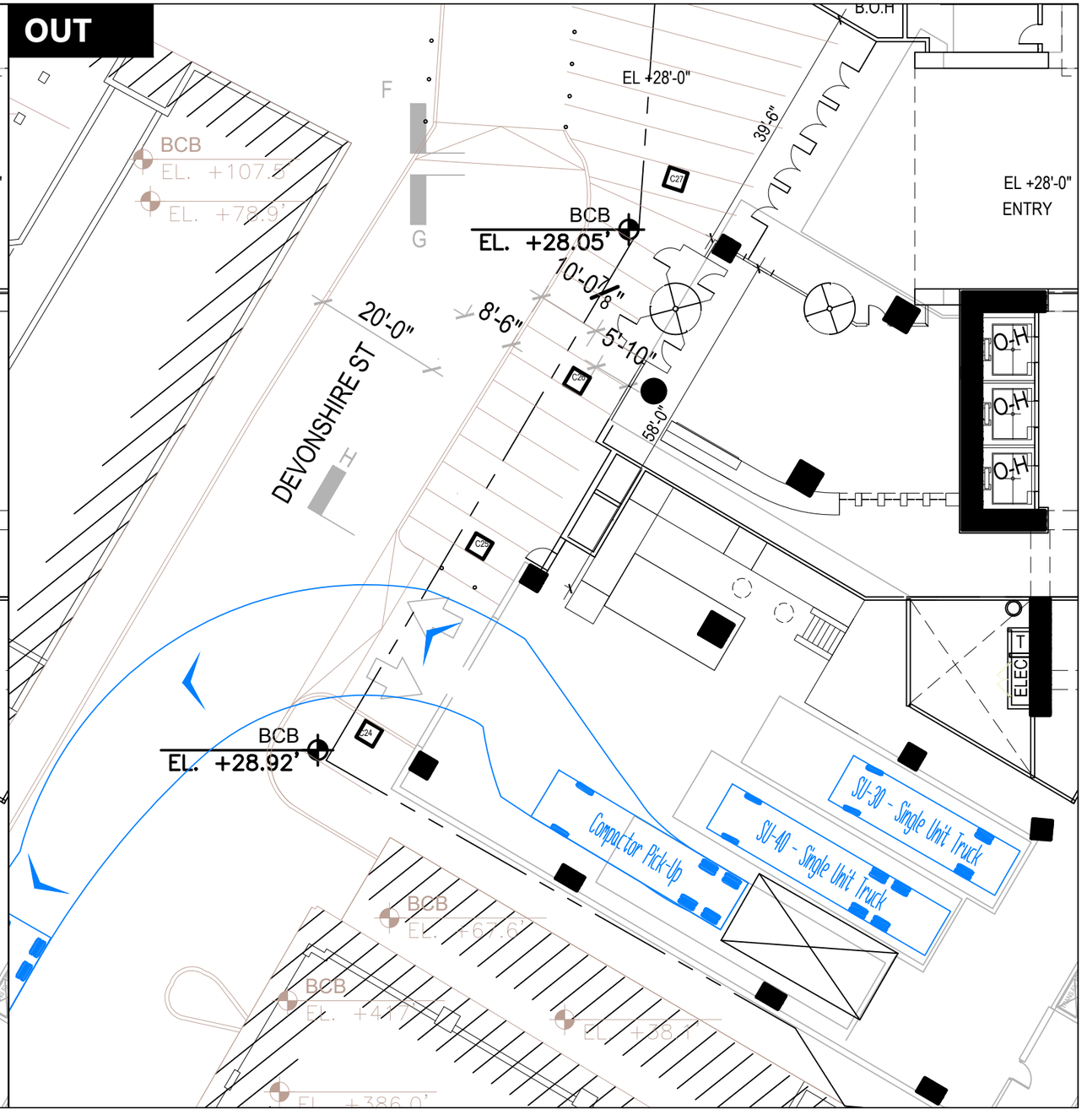
SU-40	feet
Width	: 8.00
Track	: 8.00
Lock to Lock Time	6.0
Steering Angle	: 31.8

0 10 20 Feet

Figure 3
Truck Turn Study (Staggered Dock) - SU-40
Loading Dock 3
115 Winthrop Square
Boston, MA
December 2017

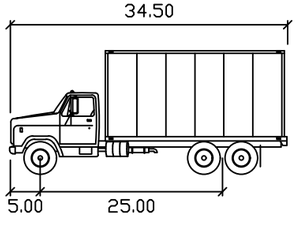
\\vhb\proj\Boston\13706.00 Millennium Winthrop Sq\cad\ld\Traffic\Loading Dock Analysis 12-14-2017.dwg





19.00

0 10 20 Feet



Compactor Pick-Up

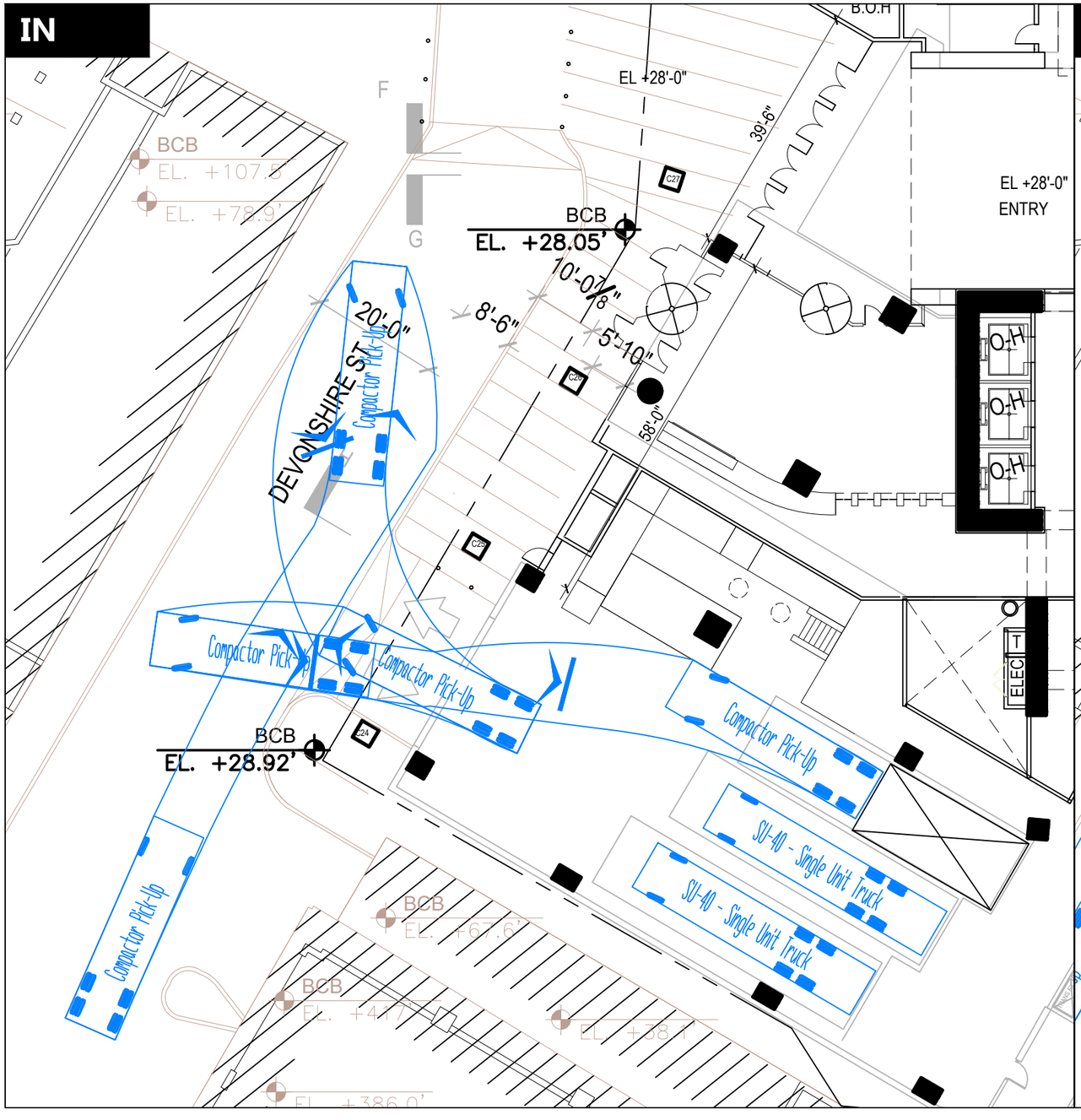
Width	: 8.50
Track	: 8.50
Lock to Lock Time	6.0
Steering Angle	: 40.0

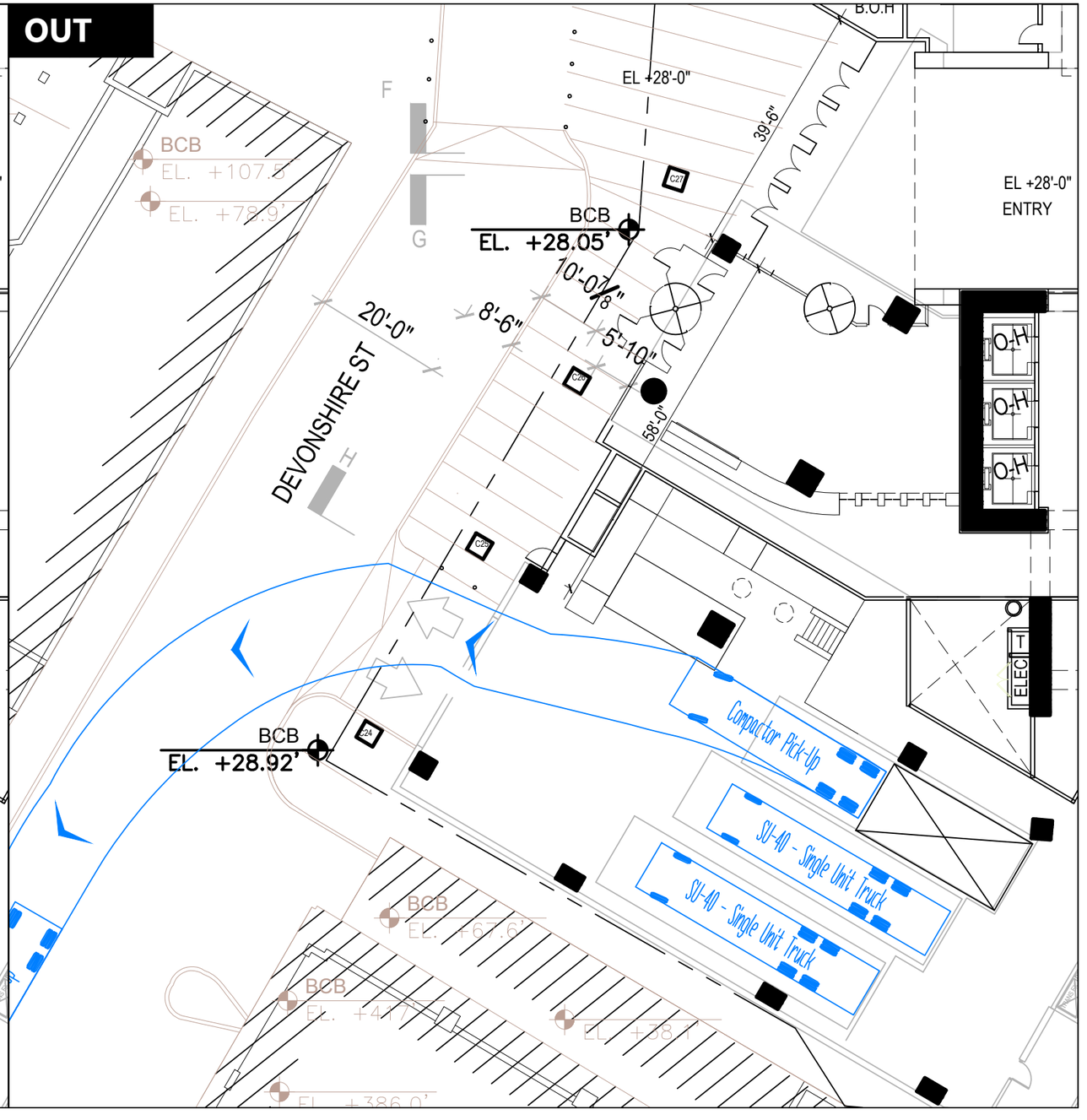
Figure 4

Truck Turn Study (Staggered Dock) - Compactor Pickup
Loading Dock 1 (Compactor Space)
115 Winthrop Square
Boston, MA

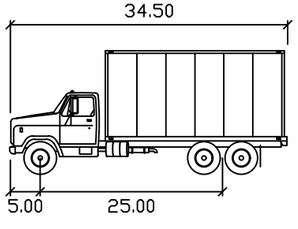
December 2017

\\vhb\proj\Boston\13706.00 Millennium Winthrop Sq\cad\ld\Traffic\Loading Dock Analysis 12-14-2017.dwg





0 10 20 Feet



Compactor Pick-Up

Width	: 8.50
Track	: 8.50
Lock to Lock Time	6.0
Steering Angle	: 40.0

Figure 5

Truck Turn Study (Staggered Dock) - Compactor Pickup
Loading Dock 3 (Compactor Space)
115 Winthrop Square
Boston, MA

December 2017

8. Parking Analysis

ITE Parking Generation

Land Use	**Size**[1]	Land Use	Equation	vehilces per 1000sf	
Office (ksf)	771	701	1894	2.47	1904
Residential (units)	500	222	650	1.37	822
Retail (ksf)	19	820	168	2.55	150
	Total Spaces Needed		2712		2876

	Unadjusted Parking Demand	VOR	"Person vehicles"	SOV Share	HOV Share	Local VOR	SOV	HOV	Total Vehicle
Office	1894	1.13	2140	27%	6%	1.10	578	117	695
Residential	650	1.67	1086	17%	1%	1.07	172	10	183
Retail	168	1.13	190	27%	6%	1.67	31	7	38
Totals	2712		3416				781	134	915

ULI Parking Generation

Land Use – User Group	Size (KSF or Units)	ULI Parking Ratio	Unadjusted Demand	Mode Split	Unshared Demand	Non-Captive Factor	Monthly Adjustment (Oct)	Peak Hour Adjustment (8 AM)	Shared Parking Demand	Peak Hour Adjustment (2 PM)	Shared Parking Demand	Peak Hour Adjustment (5 PM)	Shared Parking Demand	Peak Hour Adjustment (10 PM)	Shared Parking Demand
Office/R&D - Employee	771	2.6	2,005	33%	662	98%	100%	75%	487	100%	649	50%	324	1%	6
Retail - Employee	19	0.7	13	33%	4	100%	80%	40%	1	100%	3	95%	3	40%	1
Residential	500	0.5	250	82%	205	100%	100%	85%	174	70%	144	85%	174	100%	205
Total Parking Space Demand			**2,268**		**871**				**662**		**796**		**501**		**212**

Land Use – User Group	Size (KSF or Units)	Project Parking Ratio	Unadjusted Demand	Mode Split	Unshared Demand	Non-Captive Factor	Monthly Adjustment (Oct)	Peak Hour Adjustment (8 AM)	Shared Parking Demand	Peak Hour Adjustment (2 PM)	Shared Parking Demand	Peak Hour Adjustment (5 PM)	Shared Parking Demand	Peak Hour Adjustment (10 PM)	Shared Parking Demand
Office/R&D - Employee	771	0.4	308	33%	102	98%	100%	75%	75	100%	100	50%	50	1%	1
Office/R&D - Visitor	0	0.4	0	33%	0	100%	100%	20%	0	100%	0	10%	0	0%	0
Retail - Employee	19	0.4	8	33%	3	100%	80%	40%	1	95%	2	95%	2	40%	0
Retail - Visitor	0	0.4	0	33%	0	25%	66%	15%	0	100%	0	95%	0	30%	0
Residential	500	0.4	200	82%	164	100%	100%	85%	139	70%	115	85%	139	100%	118
Total Parking Space Demand			**516**		**269**				**215**		**217**		**191**		**119**

Drive Alone and Rideshare

Land Use – User Group	Size (KSF or Units)	ULI Parking Ratio	Unadjusted Demand	Mode Split	Unshared Demand	Non-Captive Factor	Monthly Adjustment (Oct)	Peak Hour Adjustment (8 AM)	Shared Parking Demand	Peak Hour Adjustment (2 PM)	Shared Parking Demand	Peak Hour Adjustment (5 PM)	Shared Parking Demand	Peak Hour Adjustment (10 PM)	Shared Parking Demand
Office SOV	771	2.6	2,005	27%	541	98%	100%	75%	398	100%	530	50%	265	1%	3
Office HOV	771	2.6	2,005	6%	49	98%	100%	75%	36	100%	48	50%	24	1%	0
Retail SOV	19	0.7	13	27%	2	100%	80%	40%	1	95%	2	95%	2	40%	0
Retail HOV	19	0.7	13	6%	1	100%	80%	40%	0	95%	0	95%	0	40%	0
Residential SOV	500	0.5	250	83%	208	100%	100%	60%	125	70%	146	85%	177	100%	75
Residential HOV	500	0.5	250	99%	87	100%	100%	60%	52	70%	61	85%	74	100%	31
Total Parking Space Demand			**4,536**		**888**				**612**		**787**		**542**		**109**

9. Truck Trip Generation

Millennium Tower Servicing (Data Collected from Existing Buildings)								Generation Rate (KSF/units)			115 Winthrop Square			
Land Use	KSF/units	MT Loading Dock (Large)	MT Short Term (Small)	Burnham Loading Dock (Large)	Burnham Short Term (Small)	Total Deliveries		Long	Short	Total	KSF/units	Long	Short	Total
Office	120			1	2	3		0.008	0.017	0.025	771	6	13	19
Retail	130	2	15	12	5	34		0.108	0.154	0.262	19	2	3	5
Residential (542 units)	675	2	75			77		0.003	0.111	0.114	500	1	56	57
Total	925	4	90	13	7	114	114	0.018	0.105	0.123		10	71	81