

# Appendix A

## Transportation Supporting Documentation



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Note: The following transportation supporting documentation is provided electronically on the enclosed CD-ROM. Hard copies are available upon request.

- Traffic Volume Count Data
  - Turning Movement Counts (TMCs)
  - Automatic Traffic Recorder (ATR)
- Vehicle Crash Data
- Trip Generation
- Intersection Capacity Analyses
  - 2016 Existing Condition (AM and PM Peak)
  - 2016 Build Condition (AM and PM Peak)
  - 2021 Future Condition (AM and PM Peak)

# Traffic Volume Count Data

Cambridge Street at Windsor Street TMC (March 2, 2016)  
Cambridge Street at Willow Street TMC (February 4, 2016)  
Cambridge Street at Berkshire Street TMC (February 4, 2016)  
Cambridge Street at Cardinal Medeiros Avenue TMC (April 29, 2015)  
Willow Street north of Palermo Street ATR (March 1-3, 2016)  
Cambridge Street west of Berkshire Street ATR (March 1-3, 2016)  
Berkshire Street south of Marcella Street ATR (March 1-3, 2016)



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N/S: Windsor Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164973 A  
Site Code : TBA  
Start Date : 3/2/2016  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Windsor Street From North				Cambridge Street From East				Windsor Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:30 AM	16	25	6	0	0	70	10	0	0	0	0	0	4	98	2	0	231
07:45 AM	19	26	4	0	2	75	12	0	0	0	0	0	10	120	6	0	274
Total	35	51	10	0	2	145	22	0	0	0	0	0	14	218	8	0	505
08:00 AM	16	36	5	0	1	77	8	0	0	0	0	0	16	106	3	0	268
08:15 AM	19	33	5	0	0	65	7	0	0	0	0	0	11	120	3	0	263
08:30 AM	17	30	4	0	0	70	3	0	1	0	0	0	13	103	4	0	245
08:45 AM	10	47	5	0	1	73	8	0	0	0	0	0	11	109	6	1	271
Total	62	146	19	0	2	285	26	0	1	0	0	0	51	438	16	1	1047
09:00 AM	15	37	4	0	2	56	9	0	0	0	0	0	10	96	3	0	232
09:15 AM	9	37	13	0	0	79	5	0	0	0	0	0	17	104	2	0	266
Grand Total	121	271	46	0	6	565	62	0	1	0	0	0	92	856	29	1	2050
Apprch %	27.6	61.9	10.5	0	0.9	89.3	9.8	0	100	0	0	0	9.4	87.5	3	0.1	
Total %	5.9	13.2	2.2	0	0.3	27.6	3	0	0	0	0	0	4.5	41.8	1.4	0	
Cars	116	260	37	0	6	505	61	0	1	0	0	0	78	803	27	1	1895
% Cars	95.9	95.9	80.4	0	100	89.4	98.4	0	100	0	0	0	84.8	93.8	93.1	100	92.4
Heavy Vehicles	5	11	9	0	0	60	1	0	0	0	0	0	14	53	2	0	155
% Heavy Vehicles	4.1	4.1	19.6	0	0	10.6	1.6	0	0	0	0	0	15.2	6.2	6.9	0	7.6

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	19	26	4	0	49	2	75	12	0	89	0	0	0	0	0	10	120	6	0	136	274
08:00 AM	16	36	5	0	57	1	77	8	0	86	0	0	0	0	0	16	106	3	0	125	268
08:15 AM	19	33	5	0	57	0	65	7	0	72	0	0	0	0	0	11	120	3	0	134	263
08:30 AM	17	30	4	0	51	0	70	3	0	73	1	0	0	0	1	13	103	4	0	120	245
Total Volume	71	125	18	0	214	3	287	30	0	320	1	0	0	0	1	50	449	16	0	515	1050
% App. Total	33.2	58.4	8.4	0		0.9	89.7	9.4	0		100	0	0	0		9.7	87.2	3.1	0		
PHF	.934	.868	.900	.000	.939	.375	.932	.625	.000	.899	.250	.000	.000	.000	.250	.781	.935	.667	.000	.947	.958
Cars	68	119	14	0	201	3	260	30	0	293	1	0	0	0	1	43	423	16	0	482	977
% Cars	95.8	95.2	77.8	0	93.9	100	90.6	100	0	91.6	100	0	0	0	100	86.0	94.2	100	0	93.6	93.0
Heavy Vehicles	3	6	4	0	13	0	27	0	0	27	0	0	0	0	0	7	26	0	0	33	73
% Heavy Vehicles	4.2	4.8	22.2	0	6.1	0	9.4	0	0	8.4	0	0	0	0	0	14.0	5.8	0	0	6.4	7.0



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Client: VHB/ C. Dube

File Name : 164973 A  
Site Code : TBA  
Start Date : 3/2/2016  
Page No : 1

Groups Printed- Cars

Start Time	Windsor Street From North				Cambridge Street From East				Windsor Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:30 AM	16	25	6	0	0	60	9	0	0	0	0	0	4	90	2	0	212
07:45 AM	18	26	3	0	2	69	12	0	0	0	0	0	9	113	6	0	258
Total	34	51	9	0	2	129	21	0	0	0	0	0	13	203	8	0	470
08:00 AM	15	33	4	0	1	69	8	0	0	0	0	0	14	97	3	0	244
08:15 AM	18	31	4	0	0	59	7	0	0	0	0	0	9	114	3	0	245
08:30 AM	17	29	3	0	0	63	3	0	1	0	0	0	11	99	4	0	230
08:45 AM	10	46	4	0	1	66	8	0	0	0	0	0	11	101	5	1	253
Total	60	139	15	0	2	257	26	0	1	0	0	0	45	411	15	1	972
09:00 AM	14	36	3	0	2	50	9	0	0	0	0	0	5	90	3	0	212
09:15 AM	8	34	10	0	0	69	5	0	0	0	0	0	15	99	1	0	241
Grand Total	116	260	37	0	6	505	61	0	1	0	0	0	78	803	27	1	1895
Apprch %	28.1	63	9	0	1	88.3	10.7	0	100	0	0	0	8.6	88.3	3	0.1	
Total %	6.1	13.7	2	0	0.3	26.6	3.2	0	0.1	0	0	0	4.1	42.4	1.4	0.1	

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	18	26	3	0	47	2	69	12	0	83	0	0	0	0	0	9	113	6	0	128	258
08:00 AM	15	33	4	0	52	1	69	8	0	78	0	0	0	0	0	14	97	3	0	114	244
08:15 AM	18	31	4	0	53	0	59	7	0	66	0	0	0	0	0	9	114	3	0	126	245
08:30 AM	17	29	3	0	49	0	63	3	0	66	1	0	0	0	1	11	99	4	0	114	230
Total Volume	68	119	14	0	201	3	260	30	0	293	1	0	0	0	1	43	423	16	0	482	977
% App. Total	33.8	59.2	7	0		1	88.7	10.2	0		100	0	0	0		8.9	87.8	3.3	0		
PHF	.944	.902	.875	.000	.948	.375	.942	.625	.000	.883	.250	.000	.000	.000	.250	.768	.928	.667	.000	.941	.947



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Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Windsor Street From North				Cambridge Street From East				Windsor Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:30 AM	0	0	0	0	0	10	1	0	0	0	0	0	0	8	0	0	19
07:45 AM	1	0	1	0	0	6	0	0	0	0	0	0	1	7	0	0	16
Total	1	0	1	0	0	16	1	0	0	0	0	0	1	15	0	0	35
08:00 AM	1	3	1	0	0	8	0	0	0	0	0	0	2	9	0	0	24
08:15 AM	1	2	1	0	0	6	0	0	0	0	0	0	2	6	0	0	18
08:30 AM	0	1	1	0	0	7	0	0	0	0	0	0	2	4	0	0	15
08:45 AM	0	1	1	0	0	7	0	0	0	0	0	0	0	8	1	0	18
Total	2	7	4	0	0	28	0	0	0	0	0	0	6	27	1	0	75
09:00 AM	1	1	1	0	0	6	0	0	0	0	0	0	5	6	0	0	20
09:15 AM	1	3	3	0	0	10	0	0	0	0	0	0	2	5	1	0	25
Grand Total	5	11	9	0	0	60	1	0	0	0	0	0	14	53	2	0	155
Apprch %	20	44	36	0	0	98.4	1.6	0	0	0	0	0	20.3	76.8	2.9	0	
Total %	3.2	7.1	5.8	0	0	38.7	0.6	0	0	0	0	0	9	34.2	1.3	0	

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:30 AM																					
08:30 AM	0	1	1	0	2	0	7	0	0	7	0	0	0	0	0	2	4	0	0	6	15
08:45 AM	0	1	1	0	2	0	7	0	0	7	0	0	0	0	0	0	8	1	0	9	18
09:00 AM	1	1	1	0	3	0	6	0	0	6	0	0	0	0	0	5	6	0	0	11	20
09:15 AM	1	3	3	0	7	0	10	0	0	10	0	0	0	0	0	2	5	1	0	8	25
Total Volume	2	6	6	0	14	0	30	0	0	30	0	0	0	0	0	9	23	2	0	34	78
% App. Total	14.3	42.9	42.9	0		0	100	0	0		0	0	0	0		26.5	67.6	5.9	0		
PHF	.500	.500	.500	.000	.500	.000	.750	.000	.000	.750	.000	.000	.000	.000	.000	.450	.719	.500	.000	.773	.780



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Page No : 1

Groups Printed- Peds and Bikes

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
07:30 AM	0	0	0	1	3	0	1	0	2	1	0	0	0	3	6	1	4	0	0	3	25
07:45 AM	0	0	0	5	11	0	3	0	3	6	0	0	0	4	11	0	12	0	1	1	57
Total	0	0	0	6	14	0	4	0	5	7	0	0	0	7	17	1	16	0	1	4	82
08:00 AM	0	0	0	10	6	0	1	0	4	5	0	0	0	3	10	3	7	0	0	5	54
08:15 AM	0	0	0	9	9	0	5	0	4	3	0	0	0	8	15	3	11	0	3	8	78
08:30 AM	1	0	0	5	7	0	2	0	4	4	0	0	0	5	14	4	11	0	0	3	60
08:45 AM	0	1	0	2	6	0	3	0	6	2	0	0	0	6	9	3	7	0	1	1	47
Total	1	1	0	26	28	0	11	0	18	14	0	0	0	22	48	13	36	0	4	17	239
09:00 AM	0	1	0	8	2	0	1	0	7	0	0	0	0	1	8	6	4	0	0	0	38
09:15 AM	0	0	0	6	5	0	1	0	3	2	0	0	0	4	10	4	4	0	0	4	43
Grand Total	1	2	0	46	49	0	17	0	33	23	0	0	0	34	83	24	60	0	5	25	402
Apprch %	1	2	0	46.9	50	0	23.3	0	45.2	31.5	0	0	0	29.1	70.9	21.1	52.6	0	4.4	21.9	
Total %	0.2	0.5	0	11.4	12.2	0	4.2	0	8.2	5.7	0	0	0	8.5	20.6	6	14.9	0	1.2	6.2	

Start Time	Windsor Street From North						Cambridge Street From East						Windsor Street From South						Cambridge Street From West						Int. Total
	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	
Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																									
Peak Hour for Entire Intersection Begins at 07:45 AM																									
07:45 AM	0	0	0	5	11	16	0	3	0	3	6	12	0	0	0	4	11	15	0	12	0	1	1	14	57
08:00 AM	0	0	0	10	6	16	0	1	0	4	5	10	0	0	0	3	10	13	3	7	0	0	5	15	54
08:15 AM	0	0	0	9	9	18	0	5	0	4	3	12	0	0	0	8	15	23	3	11	0	3	8	25	78
08:30 AM	1	0	0	5	7	13	0	2	0	4	4	10	0	0	0	5	14	19	4	11	0	0	3	18	60
Total Volume	1	0	0	29	33	63	0	11	0	15	18	44	0	0	0	20	50	70	10	41	0	4	17	72	249
% App. Total	1.6	0	0	46	52.4	0	25	0	34.1	40.9	0	0	0	28.6	71.4	13.9	56.9	0	5.6	23.6					
PHF	.250	.000	.000	.725	.750	.875	.000	.550	.000	.938	.750	.917	.000	.000	.000	.625	.833	.761	.625	.854	.000	.333	.531	.720	.798



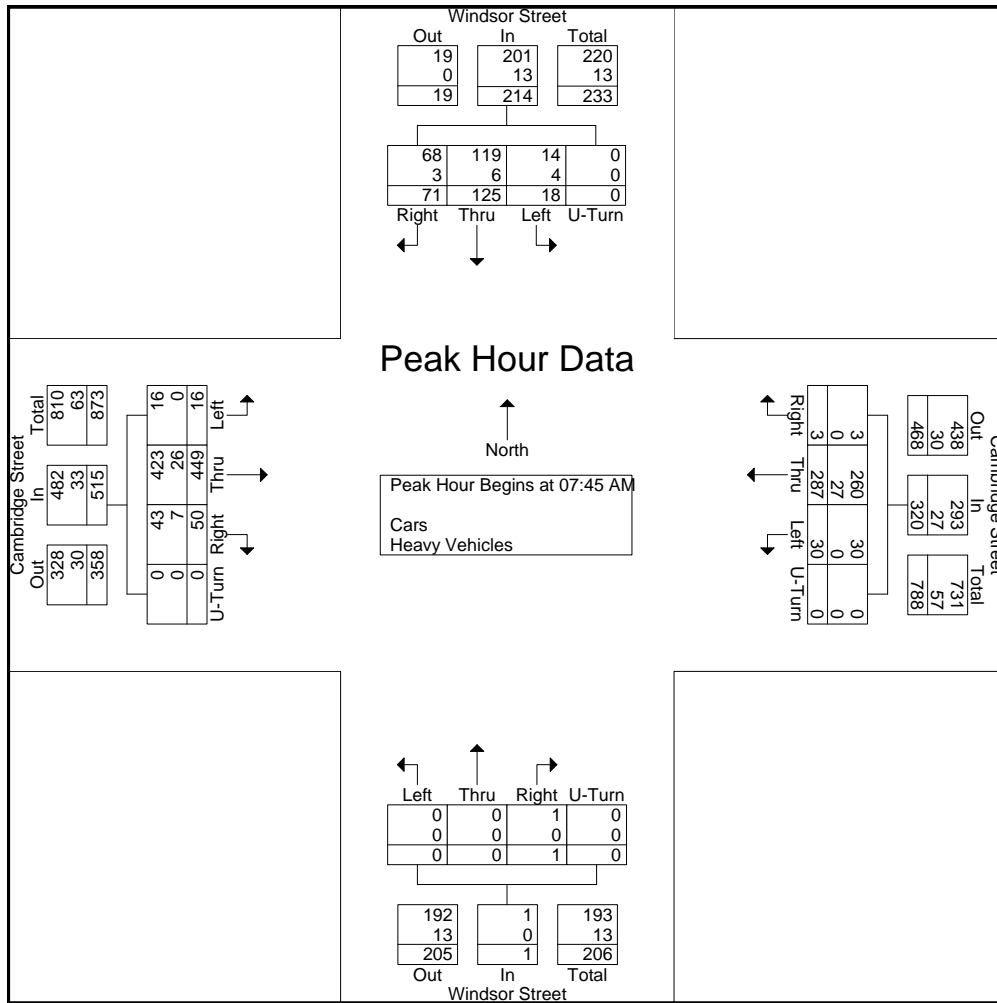
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Peak Hour Analysis From 07:30 AM to 09:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	19	26	4	0	49	2	75	12	0	89	0	0	0	0	0	10	120	6	0	136	274
08:00 AM	16	36	5	0	57	1	77	8	0	86	0	0	0	0	0	16	106	3	0	125	268
08:15 AM	19	33	5	0	57	0	65	7	0	72	0	0	0	0	0	11	120	3	0	134	263
08:30 AM	17	30	4	0	51	0	70	3	0	73	1	0	0	0	1	13	103	4	0	120	245
Total Volume	71	125	18	0	214	3	287	30	0	320	1	0	0	0	1	50	449	16	0	515	1050
% App. Total	33.2	58.4	8.4	0		0.9	89.7	9.4	0		100	0	0	0		9.7	87.2	3.1	0		
PHF	.934	.868	.900	.000	.939	.375	.932	.625	.000	.899	.250	.000	.000	.000	.250	.781	.935	.667	.000	.947	.958
Cars	68	119	14	0	201	3	260	30	0	293	1	0	0	0	1	43	423	16	0	482	977
% Cars	95.8	95.2	77.8	0	93.9	100	90.6	100	0	91.6	100	0	0	0	100	86.0	94.2	100	0	93.6	93.0
Heavy Vehicles	3	6	4	0	13	0	27	0	0	27	0	0	0	0	0	7	26	0	0	33	73
% Heavy Vehicles	4.2	4.8	22.2	0	6.1	0	9.4	0	0	8.4	0	0	0	0	0	14.0	5.8	0	0	6.4	7.0





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Groups Printed- Cars - Heavy Vehicles

Start Time	Windsor Street From North				Cambridge Street From East				Windsor Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:30 PM	10	28	11	0	1	100	10	0	0	0	0	0	9	116	7	0	292
04:45 PM	17	29	8	0	1	98	12	0	0	0	0	0	13	84	1	0	263
Total	27	57	19	0	2	198	22	0	0	0	0	0	22	200	8	0	555
05:00 PM	13	34	7	0	1	113	8	0	0	0	0	0	13	89	3	0	281
05:15 PM	17	28	8	0	1	101	14	0	0	0	0	0	11	98	0	0	278
05:30 PM	14	18	6	0	6	101	13	0	0	0	0	0	13	107	3	0	281
05:45 PM	18	30	6	0	2	92	8	0	0	0	0	0	15	103	1	0	275
Total	62	110	27	0	10	407	43	0	0	0	0	0	52	397	7	0	1115
06:00 PM	12	23	4	0	5	91	12	0	0	0	0	0	13	96	1	0	257
06:15 PM	19	29	4	0	2	78	5	0	0	0	0	0	12	79	2	0	230
Grand Total	120	219	54	0	19	774	82	0	0	0	0	0	99	772	18	0	2157
Apprch %	30.5	55.7	13.7	0	2.2	88.5	9.4	0	0	0	0	0	11.1	86.8	2	0	
Total %	5.6	10.2	2.5	0	0.9	35.9	3.8	0	0	0	0	0	4.6	35.8	0.8	0	
Cars	118	218	48	0	17	748	82	0	0	0	0	0	90	752	15	0	2088
% Cars	98.3	99.5	88.9	0	89.5	96.6	100	0	0	0	0	0	90.9	97.4	83.3	0	96.8
Heavy Vehicles	2	1	6	0	2	26	0	0	0	0	0	0	9	20	3	0	69
% Heavy Vehicles	1.7	0.5	11.1	0	10.5	3.4	0	0	0	0	0	0	9.1	2.6	16.7	0	3.2

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	13	34	7	0	54	1	113	8	0	122	0	0	0	0	0	13	89	3	0	105	281
05:15 PM	17	28	8	0	53	1	101	14	0	116	0	0	0	0	0	11	98	0	0	109	278
05:30 PM	14	18	6	0	38	6	101	13	0	120	0	0	0	0	0	13	107	3	0	123	281
05:45 PM	18	30	6	0	54	2	92	8	0	102	0	0	0	0	0	15	103	1	0	119	275
Total Volume	62	110	27	0	199	10	407	43	0	460	0	0	0	0	0	52	397	7	0	456	1115
% App. Total	31.2	55.3	13.6	0		2.2	88.5	9.3	0		0	0	0	0	0	11.4	87.1	1.5	0		
PHF	.861	.809	.844	.000	.921	.417	.900	.768	.000	.943	.000	.000	.000	.000	.000	.867	.928	.583	.000	.927	.992
Cars	62	110	22	0	194	10	394	43	0	447	0	0	0	0	0	48	388	7	0	443	1084
% Cars	100	100	81.5	0	97.5	100	96.8	100	0	97.2	0	0	0	0	0	92.3	97.7	100	0	97.1	97.2
Heavy Vehicles	0	0	5	0	5	0	13	0	0	13	0	0	0	0	0	4	9	0	0	13	31
% Heavy Vehicles	0	0	18.5	0	2.5	0	3.2	0	0	2.8	0	0	0	0	0	7.7	2.3	0	0	2.9	2.8





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File Name : 164973 AA  
Site Code : TBA  
Start Date : 3/2/2016  
Page No : 1

N/S: Windsor Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Groups Printed- Cars

Start Time	Windsor Street From North				Cambridge Street From East				Windsor Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:30 PM	10	27	11	0	1	95	10	0	0	0	0	0	8	113	4	0	279
04:45 PM	16	29	7	0	0	93	12	0	0	0	0	0	12	82	1	0	252
Total	26	56	18	0	1	188	22	0	0	0	0	0	20	195	5	0	531
05:00 PM	13	34	5	0	1	110	8	0	0	0	0	0	11	86	3	0	271
05:15 PM	17	28	7	0	1	99	14	0	0	0	0	0	11	96	0	0	273
05:30 PM	14	18	5	0	6	94	13	0	0	0	0	0	11	105	3	0	269
05:45 PM	18	30	5	0	2	91	8	0	0	0	0	0	15	101	1	0	271
Total	62	110	22	0	10	394	43	0	0	0	0	0	48	388	7	0	1084
06:00 PM	12	23	4	0	4	89	12	0	0	0	0	0	11	91	1	0	247
06:15 PM	18	29	4	0	2	77	5	0	0	0	0	0	11	78	2	0	226
Grand Total	118	218	48	0	17	748	82	0	0	0	0	0	90	752	15	0	2088
Apprch %	30.7	56.8	12.5	0	2	88.3	9.7	0	0	0	0	0	10.5	87.7	1.8	0	
Total %	5.7	10.4	2.3	0	0.8	35.8	3.9	0	0	0	0	0	4.3	36	0.7	0	

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	13	34	5	0	52	1	110	8	0	119	0	0	0	0	0	11	86	3	0	100	271
05:15 PM	17	28	7	0	52	1	99	14	0	114	0	0	0	0	0	11	96	0	0	107	273
05:30 PM	14	18	5	0	37	6	94	13	0	113	0	0	0	0	0	11	105	3	0	119	269
05:45 PM	18	30	5	0	53	2	91	8	0	101	0	0	0	0	0	15	101	1	0	117	271
Total Volume	62	110	22	0	194	10	394	43	0	447	0	0	0	0	0	48	388	7	0	443	1084
% App. Total	32	56.7	11.3	0		2.2	88.1	9.6	0		0	0	0	0		10.8	87.6	1.6	0		
PHF	.861	.809	.786	.000	.915	.417	.895	.768	.000	.939	.000	.000	.000	.000	.000	.800	.924	.583	.000	.931	.993



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N/S: Windsor Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164973 AA  
Site Code : TBA  
Start Date : 3/2/2016  
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Windsor Street From North				Cambridge Street From East				Windsor Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:30 PM	0	1	0	0	0	5	0	0	0	0	0	0	1	3	3	0	13
04:45 PM	1	0	1	0	1	5	0	0	0	0	0	0	1	2	0	0	11
Total	1	1	1	0	1	10	0	0	0	0	0	0	2	5	3	0	24
05:00 PM	0	0	2	0	0	3	0	0	0	0	0	0	2	3	0	0	10
05:15 PM	0	0	1	0	0	2	0	0	0	0	0	0	0	2	0	0	5
05:30 PM	0	0	1	0	0	7	0	0	0	0	0	0	2	2	0	0	12
05:45 PM	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	4
Total	0	0	5	0	0	13	0	0	0	0	0	0	4	9	0	0	31
06:00 PM	0	0	0	0	1	2	0	0	0	0	0	0	2	5	0	0	10
06:15 PM	1	0	0	0	0	1	0	0	0	0	0	0	1	1	0	0	4
Grand Total	2	1	6	0	2	26	0	0	0	0	0	0	9	20	3	0	69
Apprch %	22.2	11.1	66.7	0	7.1	92.9	0	0	0	0	0	0	28.1	62.5	9.4	0	
Total %	2.9	1.4	8.7	0	2.9	37.7	0	0	0	0	0	0	13	29	4.3	0	

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	0	1	0	0	1	0	5	0	0	5	0	0	0	0	0	1	3	3	0	7	13
04:45 PM	1	0	1	0	2	1	5	0	0	6	0	0	0	0	0	1	2	0	0	3	11
05:00 PM	0	0	2	0	2	0	3	0	0	3	0	0	0	0	0	2	3	0	0	5	10
05:15 PM	0	0	1	0	1	0	2	0	0	2	0	0	0	0	0	0	2	0	0	2	5
Total Volume	1	1	4	0	6	1	15	0	0	16	0	0	0	0	0	4	10	3	0	17	39
% App. Total	16.7	16.7	66.7	0		6.2	93.8	0	0		0	0	0	0		23.5	58.8	17.6	0		
PHF	.250	.250	.500	.000	.750	.250	.750	.000	.000	.667	.000	.000	.000	.000	.000	.500	.833	.250	.000	.607	.750



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City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164973 AA  
Site Code : TBA  
Start Date : 3/2/2016  
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
04:30 PM	0	0	0	5	10	0	2	0	4	9	0	0	0	5	4	1	2	0	3	2	47
04:45 PM	0	0	0	6	13	0	3	0	4	3	0	0	0	8	14	0	1	0	2	0	54
Total	0	0	0	11	23	0	5	0	8	12	0	0	0	13	18	1	3	0	5	2	101
05:00 PM	0	0	0	6	5	0	4	1	4	5	1	0	0	12	17	1	3	0	2	1	62
05:15 PM	0	0	0	6	8	0	13	0	5	4	0	0	0	14	6	0	10	0	3	2	71
05:30 PM	0	0	0	1	14	0	12	4	2	4	0	0	0	15	13	0	6	0	3	1	75
05:45 PM	0	0	0	9	14	0	15	1	3	2	0	0	0	22	9	0	2	0	5	6	88
Total	0	0	0	22	41	0	44	6	14	15	1	0	0	63	45	1	21	0	13	10	296
06:00 PM	2	0	0	6	10	0	13	0	3	6	0	0	0	21	9	0	2	0	2	4	78
06:15 PM	0	2	1	15	8	0	15	0	5	4	1	0	0	10	9	0	7	0	1	3	81
Grand Total	2	2	1	54	82	0	77	6	30	37	2	0	0	107	81	2	33	0	21	19	556
Apprch %	1.4	1.4	0.7	38.3	58.2	0	51.3	4	20	24.7	1.1	0	0	56.3	42.6	2.7	44	0	28	25.3	
Total %	0.4	0.4	0.2	9.7	14.7	0	13.8	1.1	5.4	6.7	0.4	0	0	19.2	14.6	0.4	5.9	0	3.8	3.4	

Start Time	Windsor Street From North						Cambridge Street From East						Windsor Street From South						Cambridge Street From West						Int. Total	
	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		
Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 05:30 PM																										
05:30 PM	0	0	0	1	14	15	0	12	4	2	4	22	0	0	0	15	13	28	0	6	0	3	1	10	10	75
05:45 PM	0	0	0	9	14	23	0	15	1	3	2	21	0	0	0	22	9	31	0	2	0	5	6	13	13	88
06:00 PM	2	0	0	6	10	18	0	13	0	3	6	22	0	0	0	21	9	30	0	2	0	2	4	8	8	78
06:15 PM	0	2	1	15	8	26	0	15	0	5	4	24	1	0	0	10	9	20	0	7	0	1	3	11	11	81
Total Volume	2	2	1	31	46	82	0	55	5	13	16	89	1	0	0	68	40	109	0	17	0	11	14	42	42	322
% App. Total	2.4	2.4	1.2	37.8	56.1		0	61.8	5.6	14.6	18		0.9	0	0	62.4	36.7		0	40.5	0	26.2	33.3			
PHF	.250	.250	.250	.517	.821	.788	.000	.917	.313	.650	.667	.927	.250	.000	.000	.773	.769	.879	.000	.607	.000	.550	.583	.808	.915	



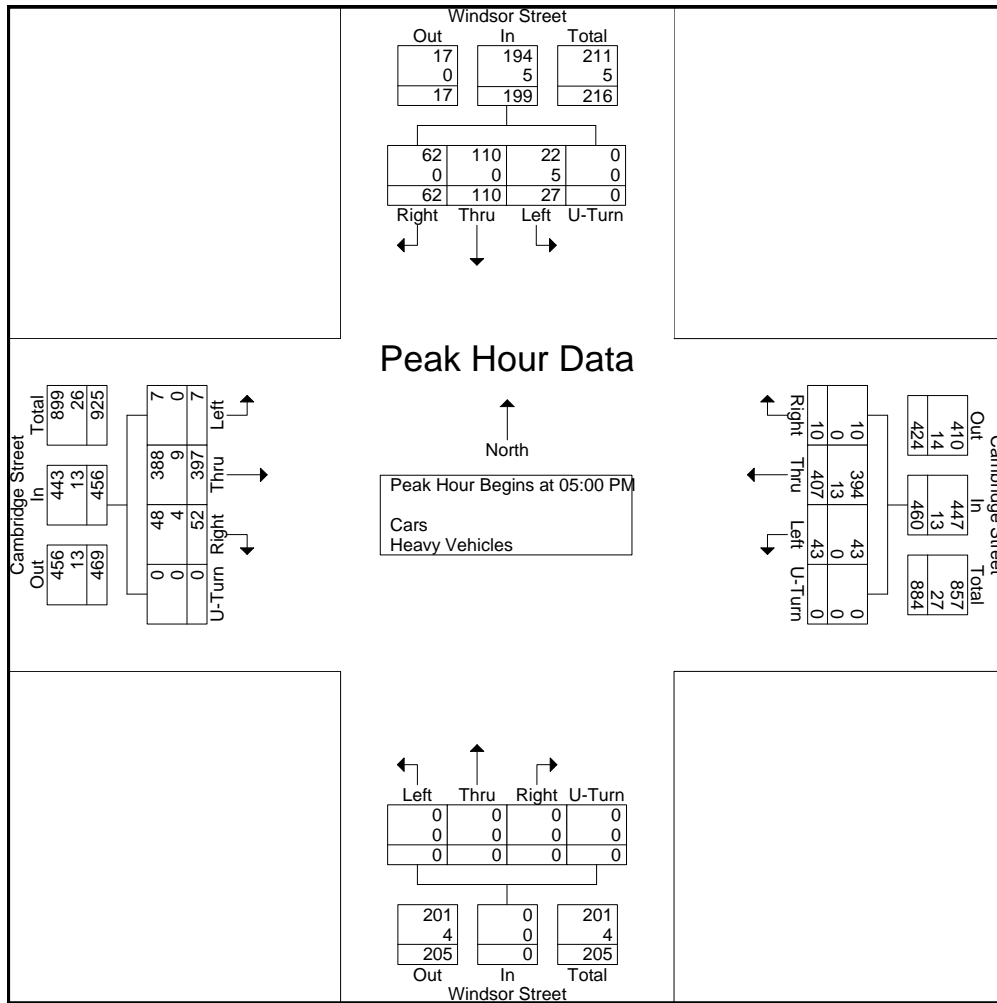
PRECISION  
DATA  
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City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164973 AA  
Site Code : TBA  
Start Date : 3/2/2016  
Page No : 1

Start Time	Windsor Street From North					Cambridge Street From East					Windsor Street From South					Cambridge Street From West					Int. Total
	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	
Peak Hour Analysis From 04:30 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	13	34	7	0	54	1	113	8	0	122	0	0	0	0	0	13	89	3	0	105	281
05:15 PM	17	28	8	0	53	1	101	14	0	116	0	0	0	0	0	11	98	0	0	109	278
05:30 PM	14	18	6	0	38	6	101	13	0	120	0	0	0	0	0	13	107	3	0	123	281
05:45 PM	18	30	6	0	54	2	92	8	0	102	0	0	0	0	0	15	103	1	0	119	275
Total Volume	62	110	27	0	199	10	407	43	0	460	0	0	0	0	0	52	397	7	0	456	1115
% App. Total	31.2	55.3	13.6	0		2.2	88.5	9.3	0		0	0	0	0		11.4	87.1	1.5	0		
PHF	.861	.809	.844	.000	.921	.417	.900	.768	.000	.943	.000	.000	.000	.000	.000	.867	.928	.583	.000	.927	.992
Cars	62	110	22	0	194	10	394	43	0	447	0	0	0	0	0	48	388	7	0	443	1084
% Cars	100	100	81.5	0	97.5	100	96.8	100	0	97.2	0	0	0	0	0	92.3	97.7	100	0	97.1	97.2
Heavy Vehicles	0	0	5	0	5	0	13	0	0	13	0	0	0	0	0	4	9	0	0	13	31
% Heavy Vehicles	0	0	18.5	0	2.5	0	3.2	0	0	2.8	0	0	0	0	0	7.7	2.3	0	0	2.9	2.8





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N/S: Willow Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164936 A  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

Groups Printed- Cars - Buses - Heavy Vehicles

Start Time	Willow Street From North				Cambridge Street From East				Willow Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	1	88	7	0	1	0	0	0	3	64	6	0	170
07:15 AM	0	0	0	0	1	81	6	0	0	0	0	0	6	92	0	0	186
07:30 AM	0	0	0	0	0	99	9	0	0	0	0	0	3	93	4	0	208
07:45 AM	0	0	0	0	2	94	12	0	0	0	0	0	9	105	4	0	226
Total	0	0	0	0	4	362	34	0	1	0	0	0	21	354	14	0	790
08:00 AM	0	0	0	0	1	94	11	0	0	0	0	0	9	98	2	0	215
08:15 AM	0	0	0	0	3	81	8	0	0	0	0	0	9	99	0	0	200
08:30 AM	0	0	0	0	4	76	0	0	0	0	0	0	0	106	2	1	189
08:45 AM	0	0	0	0	5	89	0	0	0	0	0	0	0	109	0	0	203
Total	0	0	0	0	13	340	19	0	0	0	0	0	18	412	4	1	807
Grand Total	0	0	0	0	17	702	53	0	1	0	0	0	39	766	18	1	1597
Apprch %	0	0	0	0	2.2	90.9	6.9	0	100	0	0	0	4.7	93	2.2	0.1	
Total %	0	0	0	0	1.1	44	3.3	0	0.1	0	0	0	2.4	48	1.1	0.1	
Cars	0	0	0	0	16	642	49	0	1	0	0	0	36	705	13	1	1463
% Cars	0	0	0	0	94.1	91.5	92.5	0	100	0	0	0	92.3	92	72.2	100	91.6
Buses	0	0	0	0	0	22	1	0	0	0	0	0	2	32	0	0	57
% Buses	0	0	0	0	0	3.1	1.9	0	0	0	0	0	5.1	4.2	0	0	3.6
Heavy Vehicles	0	0	0	0	1	38	3	0	0	0	0	0	1	29	5	0	77
% Heavy Vehicles	0	0	0	0	5.9	5.4	5.7	0	0	0	0	0	2.6	3.8	27.8	0	4.8

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
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	0	<b>99</b>	9	0	<b>108</b>	0	0	0	0	0	3	93	<b>4</b>	0	100	208
07:45 AM	0	0	0	0	0	2	94	<b>12</b>	0	108	0	0	0	0	0	<b>9</b>	<b>105</b>	4	0	<b>118</b>	<b>226</b>
08:00 AM	0	0	0	0	0	1	94	11	0	106	0	0	0	0	0	9	98	2	0	109	215
08:15 AM	0	0	0	0	0	<b>3</b>	81	8	0	92	0	0	0	0	0	9	99	0	0	108	200
Total Volume	0	0	0	0	0	6	368	40	0	414	0	0	0	0	0	30	395	10	0	435	849
% App. Total	0	0	0	0	0	1.4	88.9	9.7	0		0	0	0	0	0	6.9	90.8	2.3	0		
PHF	.000	.000	.000	.000	.000	.500	.929	.833	.000	.958	.000	.000	.000	.000	.000	.833	.940	.625	.000	.922	.939
Cars	0	0	0	0	0	6	339	38	0	383	0	0	0	0	0	28	365	8	0	401	784
% Cars	0	0	0	0	0	100	92.1	95.0	0	92.5	0	0	0	0	0	93.3	92.4	80.0	0	92.2	92.3
Buses	0	0	0	0	0	0	14	1	0	15	0	0	0	0	0	1	18	0	0	19	34
% Buses	0	0	0	0	0	0	3.8	2.5	0	3.6	0	0	0	0	0	3.3	4.6	0	0	4.4	4.0
Heavy Vehicles	0	0	0	0	0	0	15	1	0	16	0	0	0	0	0	1	12	2	0	15	31
% Heavy Vehicles	0	0	0	0	0	0	4.1	2.5	0	3.9	0	0	0	0	0	3.3	3.0	20.0	0	3.4	3.7



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Client: VHB/ C. Dube

File Name : 164936 A  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

Groups Printed- Cars

Start Time	Willow Street From North				Cambridge Street From East				Willow Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	1	76	6	0	1	0	0	0	3	54	5	0	146
07:15 AM	0	0	0	0	1	73	5	0	0	0	0	0	5	84	0	0	168
07:30 AM	0	0	0	0	0	90	8	0	0	0	0	0	3	88	2	0	191
07:45 AM	0	0	0	0	2	87	12	0	0	0	0	0	8	97	4	0	210
Total	0	0	0	0	4	326	31	0	1	0	0	0	19	323	11	0	715
08:00 AM	0	0	0	0	1	86	10	0	0	0	0	0	9	88	2	0	196
08:15 AM	0	0	0	0	3	76	8	0	0	0	0	0	8	92	0	0	187
08:30 AM	0	0	0	0	3	72	0	0	0	0	0	0	0	100	0	1	176
08:45 AM	0	0	0	0	5	82	0	0	0	0	0	0	0	102	0	0	189
Total	0	0	0	0	12	316	18	0	0	0	0	0	17	382	2	1	748
Grand Total	0	0	0	0	16	642	49	0	1	0	0	0	36	705	13	1	1463
Apprch %	0	0	0	0	2.3	90.8	6.9	0	100	0	0	0	4.8	93.4	1.7	0.1	
Total %	0	0	0	0	1.1	43.9	3.3	0	0.1	0	0	0	2.5	48.2	0.9	0.1	

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
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	0	<b>90</b>	8	0	98	0	0	0	0	0	3	88	2	0	93	191
07:45 AM	0	0	0	0	0	2	87	<b>12</b>	0	<b>101</b>	0	0	0	0	0	8	<b>97</b>	<b>4</b>	0	<b>109</b>	<b>210</b>
08:00 AM	0	0	0	0	0	1	86	10	0	97	0	0	0	0	0	<b>9</b>	88	2	0	99	196
08:15 AM	0	0	0	0	0	<b>3</b>	76	8	0	87	0	0	0	0	0	8	92	0	0	100	187
Total Volume	0	0	0	0	0	6	339	38	0	383	0	0	0	0	0	28	365	8	0	401	784
% App. Total	0	0	0	0	0	1.6	88.5	9.9	0	.948	0	0	0	0	0	7	91	2	0	.933	
PHF	.000	.000	.000	.000	.000	.500	.942	.792	.000	.948	.000	.000	.000	.000	.000	.778	.941	.500	.000	.920	.933



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E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164936 A  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

Groups Printed- Buses

Start Time	Willow Street From North				Cambridge Street From East				Willow Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	5	0	0	8
07:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	1	3	0	0	5
07:30 AM	0	0	0	0	0	5	0	0	0	0	0	0	0	4	0	0	9
07:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0	7
Total	0	0	0	0	0	11	0	0	0	0	0	0	1	17	0	0	29
08:00 AM	0	0	0	0	0	4	1	0	0	0	0	0	0	4	0	0	9
08:15 AM	0	0	0	0	0	3	0	0	0	0	0	0	1	5	0	0	9
08:30 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0	5
08:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0	5
Total	0	0	0	0	0	11	1	0	0	0	0	0	1	15	0	0	28
Grand Total	0	0	0	0	0	22	1	0	0	0	0	0	2	32	0	0	57
Apprch %	0	0	0	0	0	95.7	4.3	0	0	0	0	0	5.9	94.1	0	0	
Total %	0	0	0	0	0	38.6	1.8	0	0	0	0	0	3.5	56.1	0	0	

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
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	0	5	0	0	5	0	0	0	0	0	0	4	0	0	4	9
07:45 AM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	7
08:00 AM	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	4	0	0	4	9
08:15 AM	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	1	5	0	0	6	9
Total Volume	0	0	0	0	0	0	14	1	0	15	0	0	0	0	0	1	18	0	0	19	34
% App. Total	0	0	0	0	0	0	93.3	6.7	0		0	0	0	0		5.3	94.7	0	0		
PHF	.000	.000	.000	.000	.000	.000	.700	.250	.000	.750	.000	.000	.000	.000	.000	.250	.900	.000	.000	.792	.944



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City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164936 A  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Willow Street From North				Cambridge Street From East				Willow Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
07:00 AM	0	0	0	0	0	9	1	0	0	0	0	0	0	5	1	0	16
07:15 AM	0	0	0	0	0	7	1	0	0	0	0	0	0	5	0	0	13
07:30 AM	0	0	0	0	0	4	1	0	0	0	0	0	0	1	2	0	8
07:45 AM	0	0	0	0	0	5	0	0	0	0	0	0	1	3	0	0	9
Total	0	0	0	0	0	25	3	0	0	0	0	0	1	14	3	0	46
08:00 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	6	0	0	10
08:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
08:30 AM	0	0	0	0	1	3	0	0	0	0	0	0	0	2	2	0	8
08:45 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	5	0	0	9
Total	0	0	0	0	1	13	0	0	0	0	0	0	0	15	2	0	31
Grand Total	0	0	0	0	1	38	3	0	0	0	0	0	1	29	5	0	77
Apprch %	0	0	0	0	2.4	90.5	7.1	0	0	0	0	0	2.9	82.9	14.3	0	
Total %	0	0	0	0	1.3	49.4	3.9	0	0	0	0	0	1.3	37.7	6.5	0	

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
07:00 AM	0	0	0	0	0	0	9	1	0	10	0	0	0	0	0	0	5	1	0	6	16
07:15 AM	0	0	0	0	0	0	7	1	0	8	0	0	0	0	0	0	5	0	0	5	13
07:30 AM	0	0	0	0	0	0	4	1	0	5	0	0	0	0	0	0	1	2	0	3	8
07:45 AM	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	1	3	0	0	4	9
Total Volume	0	0	0	0	0	0	25	3	0	28	0	0	0	0	0	1	14	3	0	18	46
% App. Total	0	0	0	0	0	0	89.3	10.7	0	.700	0	0	0	0	0	5.6	77.8	16.7	0	.719	
PHF	.000	.000	.000	.000	.000	.000	.694	.750	.000	.700	.000	.000	.000	.000	.000	.250	.700	.375	.000	.750	.719

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





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City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164936 A  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

Groups Printed- Peds and Bicycles

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
07:00 AM	0	0	0	4	5	0	2	0	2	5	0	0	0	2	2	0	2	0	2	0	26
07:15 AM	1	0	0	5	5	0	0	0	2	3	0	0	0	1	5	0	4	0	1	1	28
07:30 AM	0	0	0	8	7	0	6	0	3	2	0	0	0	6	13	0	6	0	1	2	54
07:45 AM	0	0	0	12	8	0	5	1	1	2	0	0	0	3	4	0	11	0	1	1	49
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>29</b>	<b>25</b>	<b>0</b>	<b>13</b>	<b>1</b>	<b>8</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>24</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>5</b>	<b>4</b>	<b>157</b>
08:00 AM	0	0	0	21	10	0	7	1	10	2	0	0	0	5	19	0	8	0	1	0	84
08:15 AM	0	0	0	10	12	0	6	0	7	0	0	0	0	10	26	0	10	0	1	0	82
08:30 AM	0	0	0	10	10	0	2	0	7	3	0	0	0	10	49	0	25	0	3	5	124
08:45 AM	0	0	0	9	12	0	9	0	16	3	0	0	0	16	38	0	33	0	0	2	138
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>44</b>	<b>0</b>	<b>24</b>	<b>1</b>	<b>40</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>41</b>	<b>132</b>	<b>0</b>	<b>76</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>428</b>
<b>Grand Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>79</b>	<b>69</b>	<b>0</b>	<b>37</b>	<b>2</b>	<b>48</b>	<b>20</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>53</b>	<b>156</b>	<b>0</b>	<b>99</b>	<b>0</b>	<b>10</b>	<b>11</b>	<b>585</b>
Apprch %	0.7	0	0	53	46.3	0	34.6	1.9	44.9	18.7	0	0	0	25.4	74.6	0	82.5	0	8.3	9.2	
Total %	0.2	0	0	13.5	11.8	0	6.3	0.3	8.2	3.4	0	0	0	9.1	26.7	0	16.9	0	1.7	1.9	

Start Time	Willow Street From North						Cambridge Street From East						Willow Street From South						Cambridge Street From West						Int. Total
	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	
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	<b>21</b>	10	<b>31</b>	0	7	<b>1</b>	10	2	20	0	0	0	5	19	24	0	8	0	1	0	9	84
08:15 AM	0	0	0	10	<b>12</b>	22	0	6	0	7	0	13	0	0	0	10	26	36	0	10	0	1	0	11	82
08:30 AM	0	0	0	10	10	20	0	2	0	7	<b>3</b>	12	0	0	0	10	<b>49</b>	<b>59</b>	0	25	0	<b>3</b>	<b>5</b>	33	124
08:45 AM	0	0	0	9	12	21	0	<b>9</b>	0	<b>16</b>	3	<b>28</b>	0	0	0	<b>16</b>	38	54	0	<b>33</b>	0	0	2	<b>35</b>	<b>138</b>
Total Volume	0	0	0	50	44	94	0	24	1	40	8	73	0	0	0	41	132	173	0	76	0	5	7	88	428
% App. Total	0	0	0	53.2	46.8		0	32.9	1.4	54.8	11		0	0	0	23.7	76.3		0	86.4	0	5.7	8		
<b>PHF</b>	.000	.000	.000	.595	.917	.758	.000	.667	.250	.625	.667	.652	.000	.000	.000	.641	.673	.733	.000	.576	.000	.417	.350	.629	.775



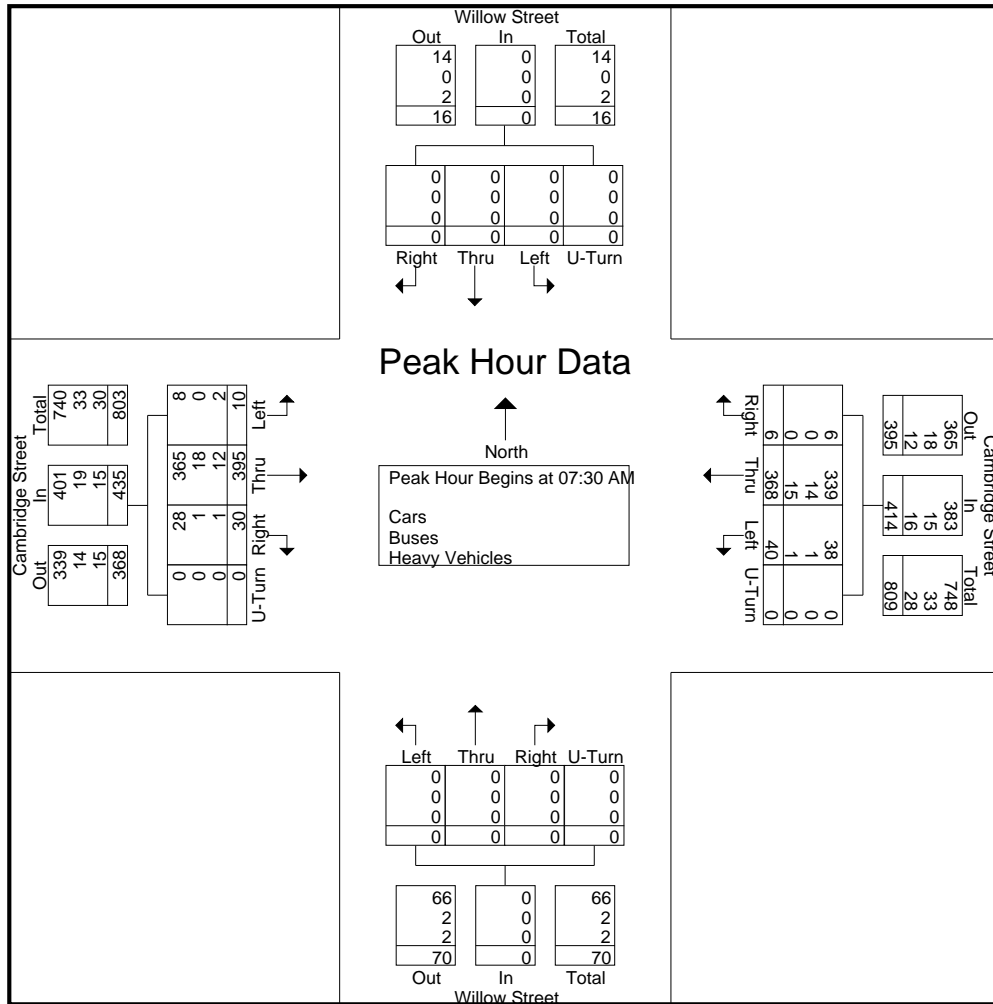
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Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	
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	0	<b>99</b>	9	0	<b>108</b>	0	0	0	0	0	3	93	<b>4</b>	0	100	208
07:45 AM	0	0	0	0	0	2	94	<b>12</b>	0	108	0	0	0	0	0	<b>9</b>	<b>105</b>	4	0	<b>118</b>	<b>226</b>
08:00 AM	0	0	0	0	0	1	94	11	0	106	0	0	0	0	0	9	98	2	0	109	215
08:15 AM	0	0	0	0	0	<b>3</b>	81	8	0	92	0	0	0	0	0	9	99	0	0	108	200
Total Volume	0	0	0	0	0	6	368	40	0	414	0	0	0	0	0	30	395	10	0	435	849
% App. Total	0	0	0	0	0	1.4	88.9	9.7	0		0	0	0	0	0	6.9	90.8	2.3	0		
PHF	.000	.000	.000	.000	.000	.500	.929	.833	.000	.958	.000	.000	.000	.000	.000	.833	.940	.625	.000	.922	.939
Cars	0	0	0	0	0	6	339	38	0	383	0	0	0	0	0	28	365	8	0	401	784
% Cars	0	0	0	0	0	100	92.1	95.0	0	92.5	0	0	0	0	0	93.3	92.4	80.0	0	92.2	92.3
Buses	0	0	0	0	0	0	14	1	0	15	0	0	0	0	0	1	18	0	0	19	34
% Buses	0	0	0	0	0	0	3.8	2.5	0	3.6	0	0	0	0	0	3.3	4.6	0	0	4.4	4.0
Heavy Vehicles	0	0	0	0	0	0	15	1	0	16	0	0	0	0	0	1	12	2	0	15	31
% Heavy Vehicles	0	0	0	0	0	0	4.1	2.5	0	3.9	0	0	0	0	0	3.3	3.0	20.0	0	3.4	3.7





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N/S: Willow Street  
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Client: VHB/ C. Dube

Groups Printed- Cars - Buses - Heavy Vehicles

Start Time	Willow Street From North				Cambridge Street From East				Willow Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
03:00 PM	0	0	0	0	3	110	5	0	0	0	0	0	5	95	4	0	222
03:15 PM	0	0	0	0	2	107	4	0	0	0	0	0	6	112	2	1	234
03:30 PM	1	0	0	0	0	94	6	1	0	0	0	0	4	123	2	0	231
03:45 PM	0	0	0	0	2	106	9	0	0	0	0	0	5	96	2	0	220
Total	1	0	0	0	7	417	24	1	0	0	0	0	20	426	10	1	907
04:00 PM	0	0	0	0	6	100	11	0	0	0	0	0	2	86	2	0	207
04:15 PM	0	0	0	0	8	81	7	0	0	0	0	0	11	92	3	0	202
04:30 PM	0	0	0	0	2	93	11	0	0	0	0	0	8	96	3	0	213
04:45 PM	0	0	0	0	3	109	7	0	0	0	0	0	8	111	2	0	240
Total	0	0	0	0	19	383	36	0	0	0	0	0	29	385	10	0	862
05:00 PM	0	0	0	0	4	113	7	0	1	0	0	0	12	95	5	0	237
05:15 PM	0	0	0	0	5	112	9	0	0	0	0	0	6	96	2	0	230
05:30 PM	0	0	0	0	5	92	12	0	0	0	0	0	8	103	3	0	223
05:45 PM	0	0	0	0	3	109	6	0	0	0	0	0	12	89	1	0	220
Total	0	0	0	0	17	426	34	0	1	0	0	0	38	383	11	0	910
Grand Total	1	0	0	0	43	1226	94	1	1	0	0	0	87	1194	31	1	2679
Apprch %	100	0	0	0	3.2	89.9	6.9	0.1	100	0	0	0	6.6	90.9	2.4	0.1	
Total %	0	0	0	0	1.6	45.8	3.5	0	0	0	0	0	3.2	44.6	1.2	0	
Cars	1	0	0	0	42	1182	92	1	1	0	0	0	82	1141	30	1	2573
% Cars	100	0	0	0	97.7	96.4	97.9	100	100	0	0	0	94.3	95.6	96.8	100	96
Buses	0	0	0	0	0	21	0	0	0	0	0	0	0	33	0	0	54
% Buses	0	0	0	0	0	1.7	0	0	0	0	0	0	0	2.8	0	0	2
Heavy Vehicles	0	0	0	0	1	23	2	0	0	0	0	0	5	20	1	0	52
% Heavy Vehicles	0	0	0	0	2.3	1.9	2.1	0	0	0	0	0	5.7	1.7	3.2	0	1.9

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
04:45 PM	0	0	0	0	0	3	109	7	0	119	0	0	0	0	0	8	<b>111</b>	2	0	<b>121</b>	<b>240</b>
05:00 PM	0	0	0	0	0	4	<b>113</b>	7	0	124	<b>1</b>	0	0	0	<b>1</b>	<b>12</b>	95	<b>5</b>	0	112	237
05:15 PM	0	0	0	0	0	<b>5</b>	112	9	0	<b>126</b>	0	0	0	0	0	6	96	2	0	104	230
05:30 PM	0	0	0	0	0	5	92	<b>12</b>	0	109	0	0	0	0	0	8	103	3	0	114	223
Total Volume	0	0	0	0	0	17	426	35	0	478	1	0	0	0	1	34	405	12	0	451	930
% App. Total	0	0	0	0	0	3.6	89.1	7.3	0		100	0	0	0		7.5	89.8	2.7	0		
PHF	.000	.000	.000	.000	.000	.850	.942	.729	.000	.948	.250	.000	.000	.000	.250	.708	.912	.600	.000	.932	.969
Cars	0	0	0	0	0	16	415	34	0	465	1	0	0	0	1	31	390	11	0	432	898
% Cars	0	0	0	0	0	94.1	97.4	97.1	0	97.3	100	0	0	0	100	91.2	96.3	91.7	0	95.8	96.6
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	8	0	0	8	12
% Buses	0	0	0	0	0	0	0.9	0	0	0.8	0	0	0	0	0	0	2.0	0	0	1.8	1.3
Heavy Vehicles	0	0	0	0	0	1	7	1	0	9	0	0	0	0	0	3	7	1	0	11	20
% Heavy Vehicles	0	0	0	0	0	5.9	1.6	2.9	0	1.9	0	0	0	0	0	8.8	1.7	8.3	0	2.4	2.2

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM



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INDUSTRIES, LLC

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File Name : 164936 AA  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

N/S: Willow Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Groups Printed- Cars

Start Time	Willow Street From North				Cambridge Street From East				Willow Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
03:00 PM	0	0	0	0	3	103	4	0	0	0	0	0	5	88	4	0	207
03:15 PM	0	0	0	0	2	102	4	0	0	0	0	0	5	105	2	1	221
03:30 PM	1	0	0	0	0	90	6	1	0	0	0	0	4	115	2	0	219
03:45 PM	0	0	0	0	2	104	9	0	0	0	0	0	5	92	2	0	214
Total	1	0	0	0	7	399	23	1	0	0	0	0	19	400	10	1	861
04:00 PM	0	0	0	0	6	93	11	0	0	0	0	0	2	84	2	0	198
04:15 PM	0	0	0	0	8	78	7	0	0	0	0	0	10	90	3	0	196
04:30 PM	0	0	0	0	2	90	11	0	0	0	0	0	8	91	3	0	205
04:45 PM	0	0	0	0	2	105	7	0	0	0	0	0	7	109	2	0	232
Total	0	0	0	0	18	366	36	0	0	0	0	0	27	374	10	0	831
05:00 PM	0	0	0	0	4	110	6	0	1	0	0	0	11	91	5	0	228
05:15 PM	0	0	0	0	5	111	9	0	0	0	0	0	5	89	1	0	220
05:30 PM	0	0	0	0	5	89	12	0	0	0	0	0	8	101	3	0	218
05:45 PM	0	0	0	0	3	107	6	0	0	0	0	0	12	86	1	0	215
Total	0	0	0	0	17	417	33	0	1	0	0	0	36	367	10	0	881
Grand Total	1	0	0	0	42	1182	92	1	1	0	0	0	82	1141	30	1	2573
Apprch %	100	0	0	0	3.2	89.7	7	0.1	100	0	0	0	6.5	91	2.4	0.1	
Total %	0	0	0	0	1.6	45.9	3.6	0	0	0	0	0	3.2	44.3	1.2	0	

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
04:45 PM	0	0	0	0	0	2	105	7	0	114	0	0	0	0	0	7	<b>109</b>	2	0	<b>118</b>	<b>232</b>
05:00 PM	0	0	0	0	0	4	110	6	0	120	<b>1</b>	0	0	0	<b>1</b>	<b>11</b>	91	<b>5</b>	0	107	228
05:15 PM	0	0	0	0	0	<b>5</b>	<b>111</b>	9	0	<b>125</b>	0	0	0	0	0	5	89	1	0	95	220
05:30 PM	0	0	0	0	0	5	89	<b>12</b>	0	106	0	0	0	0	0	8	101	3	0	112	218
Total Volume	0	0	0	0	0	16	415	34	0	465	1	0	0	0	1	31	390	11	0	432	898
% App. Total	0	0	0	0	0	3.4	89.2	7.3	0		100	0	0	0		7.2	90.3	2.5	0		
PHF	.000	.000	.000	.000	.000	.800	.935	.708	.000	.930	.250	.000	.000	.000	.250	.705	.894	.550	.000	.915	.968

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM



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INDUSTRIES, LLC

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File Name : 164936 AA  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

N/S: Willow Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Groups Printed- Buses

Start Time	Willow Street From North				Cambridge Street From East				Willow Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
03:00 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0	7
03:15 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	4	0	0	8
03:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0	5
03:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0	5
Total	0	0	0	0	0	9	0	0	0	0	0	0	0	16	0	0	25
04:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	2	0	0	6
04:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
04:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	4
04:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	9	0	0	0	0	0	0	0	7	0	0	16
05:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	3	0	0	4
05:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	4	0	0	5
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
Total	0	0	0	0	0	3	0	0	0	0	0	0	0	10	0	0	13
Grand Total	0	0	0	0	0	21	0	0	0	0	0	0	0	33	0	0	54
Apprch %	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	38.9	0	0	0	0	0	0	0	61.1	0	0	

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
03:00 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	7
03:15 PM	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	4	0	0	4	8
03:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	3	0	0	3	5
03:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	0	0	4	5
Total Volume	0	0	0	0	0	0	9	0	0	9	0	0	0	0	0	0	16	0	0	16	25
% App. Total	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	100	0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.563	.000	.000	.563	.000	.000	.000	.000	.000	.000	.800	.000	.000	.800	.781

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:00 PM



PRECISION  
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INDUSTRIES, LLC

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File Name : 164936 AA  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

N/S: Willow Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Groups Printed- Heavy Vehicles

Start Time	Willow Street From North				Cambridge Street From East				Willow Street From South				Cambridge Street From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
03:00 PM	0	0	0	0	0	5	1	0	0	0	0	0	0	2	0	0	8
03:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	3	0	0	5
03:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0	7
03:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	0	0	9	1	0	0	0	0	0	1	10	0	0	21
04:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	2
04:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	2	0	0	4
04:45 PM	0	0	0	0	1	2	0	0	0	0	0	0	1	2	0	0	6
Total	0	0	0	0	1	8	0	0	0	0	0	0	2	4	0	0	15
05:00 PM	0	0	0	0	0	2	1	0	0	0	0	0	1	1	0	0	5
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	3	1	0	5
05:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	4
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	2
Total	0	0	0	0	0	6	1	0	0	0	0	0	2	6	1	0	16
Grand Total	0	0	0	0	1	23	2	0	0	0	0	0	5	20	1	0	52
Apprch %	0	0	0	0	3.8	88.5	7.7	0	0	0	0	0	19.2	76.9	3.8	0	
Total %	0	0	0	0	1.9	44.2	3.8	0	0	0	0	0	9.6	38.5	1.9	0	

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
03:00 PM	0	0	0	0	0	0	5	1	0	6	0	0	0	0	0	0	2	0	0	2	8
03:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	3	0	0	4	5
03:30 PM	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	5	0	0	5	7
03:45 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	0	9	1	0	10	0	0	0	0	0	1	10	0	0	11	21
% App. Total	0	0	0	0	0	0	90	10	0	417	0	0	0	0	0	9.1	90.9	0	0	550	656
PHF	.000	.000	.000	.000	.000	.000	.450	.250	.000	.417	.000	.000	.000	.000	.000	.250	.500	.000	.000	.550	.656

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:00 PM



PRECISION  
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INDUSTRIES, LLC

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N/S: Willow Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164936 AA  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

Groups Printed- Peds and Bicycles

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
03:00 PM	0	0	0	8	37	0	5	0	5	3	0	0	0	52	13	0	3	0	4	5	135
03:15 PM	0	0	0	11	16	0	3	0	20	4	0	0	0	21	12	0	2	0	0	5	94
03:30 PM	0	0	0	16	10	0	6	0	3	9	0	0	0	13	13	0	3	0	3	1	77
03:45 PM	0	0	0	3	7	0	3	0	0	5	0	0	0	11	14	0	1	0	3	3	50
Total	0	0	0	38	70	0	17	0	28	21	0	0	0	97	52	0	9	0	10	14	356
04:00 PM	0	0	0	8	14	0	5	1	3	3	0	0	0	12	12	0	7	0	2	2	69
04:15 PM	0	0	0	8	14	0	6	0	1	0	0	0	0	21	10	0	4	0	3	4	71
04:30 PM	0	0	0	14	8	0	8	0	2	1	0	0	0	2	6	0	5	0	4	1	51
04:45 PM	0	0	0	9	14	0	11	0	0	0	0	0	0	10	11	0	0	0	1	1	57
Total	0	0	0	39	50	0	30	1	6	4	0	0	0	45	39	0	16	0	10	8	248
05:00 PM	0	0	0	10	13	0	11	0	1	3	0	1	0	8	14	0	3	0	0	1	65
05:15 PM	0	0	0	12	17	0	15	0	5	2	0	0	0	14	7	0	7	0	5	3	87
05:30 PM	0	0	0	8	23	0	14	0	2	8	0	0	0	14	14	0	5	0	2	2	92
05:45 PM	0	0	0	16	24	0	17	0	3	5	1	0	0	13	15	0	7	0	3	9	113
Total	0	0	0	46	77	0	57	0	11	18	1	1	0	49	50	0	22	0	10	15	357
Grand Total	0	0	0	123	197	0	104	1	45	43	1	1	0	191	141	0	47	0	30	37	961
Apprch %	0	0	0	38.4	61.6	0	53.9	0.5	23.3	22.3	0.3	0.3	0	57.2	42.2	0	41.2	0	26.3	32.5	
Total %	0	0	0	12.8	20.5	0	10.8	0.1	4.7	4.5	0.1	0.1	0	19.9	14.7	0	4.9	0	3.1	3.9	

Start Time	Willow Street From North						Cambridge Street From East						Willow Street From South						Cambridge Street From West						Int. Total
	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	
Peak Hour Analysis From 03:00 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	10	13	23	0	11	0	1	3	15	0	1	0	8	14	23	0	3	0	0	1	4	65
05:15 PM	0	0	0	12	17	29	0	15	0	5	2	22	0	0	0	14	7	21	0	7	0	5	3	15	87
05:30 PM	0	0	0	8	23	31	0	14	0	2	8	24	0	0	0	14	14	28	0	5	0	2	2	9	92
05:45 PM	0	0	0	16	24	40	0	17	0	3	5	25	1	0	0	13	15	29	0	7	0	3	9	19	113
Total Volume	0	0	0	46	77	123	0	57	0	11	18	86	1	1	0	49	50	101	0	22	0	10	15	47	357
% App. Total	0	0	0	37.4	62.6		0	66.3	0	12.8	20.9		1	1	0	48.5	49.5		0	46.8	0	21.3	31.9		
PHF	.000	.000	.000	.719	.802	.769	.000	.838	.000	.550	.563	.860	.250	.250	.000	.875	.833	.871	.000	.786	.000	.500	.417	.618	.790



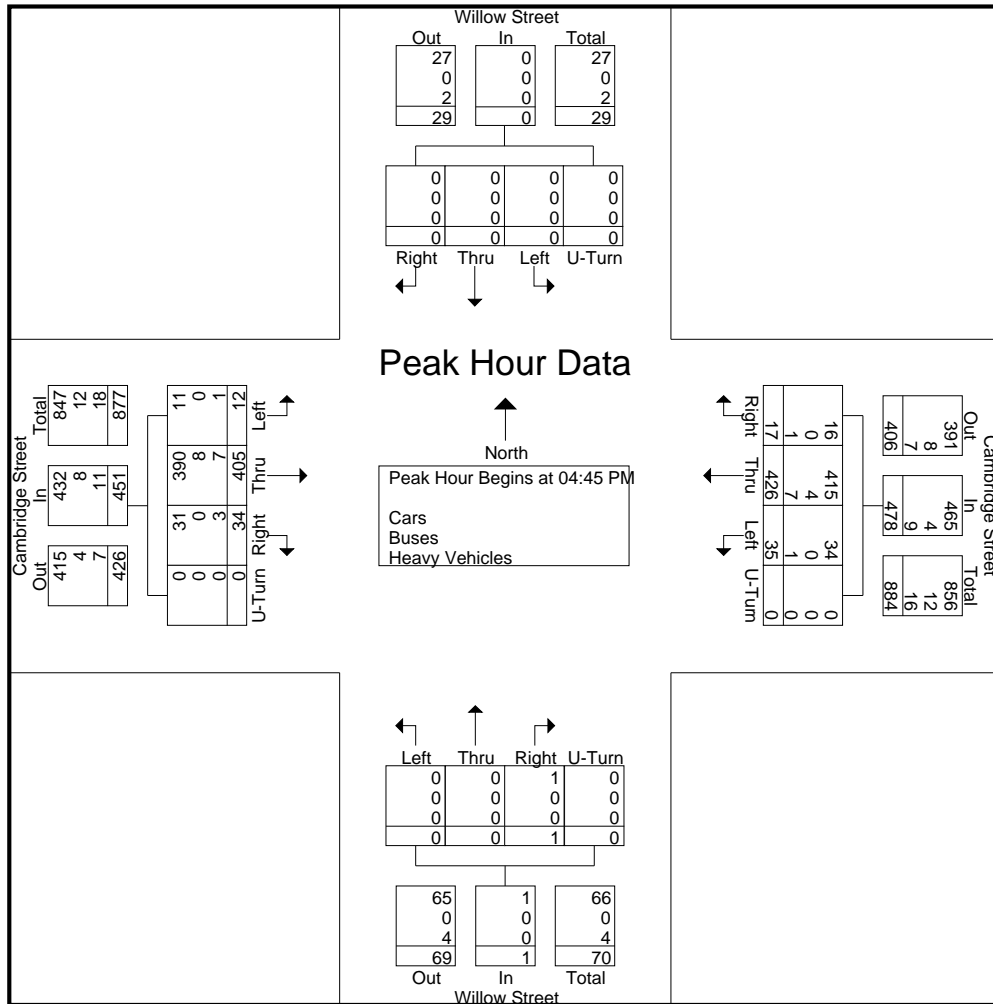
PRECISION  
DATA  
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File Name : 164936 AA  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

N/S: Willow Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Start Time	Willow Street From North					Cambridge Street From East					Willow Street From South					Cambridge Street From West					Int. Total
	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	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	0	0	0	3	109	7	0	119	0	0	0	0	0	8	111	2	0	121	240
05:00 PM	0	0	0	0	0	4	113	7	0	124	1	0	0	0	1	12	95	5	0	112	237
05:15 PM	0	0	0	0	0	5	112	9	0	126	0	0	0	0	0	6	96	2	0	104	230
05:30 PM	0	0	0	0	0	5	92	12	0	109	0	0	0	0	0	8	103	3	0	114	223
Total Volume	0	0	0	0	0	17	426	35	0	478	1	0	0	0	1	34	405	12	0	451	930
% App. Total	0	0	0	0	0	3.6	89.1	7.3	0		100	0	0	0		7.5	89.8	2.7	0		
PHF	.000	.000	.000	.000	.000	.850	.942	.729	.000	.948	.250	.000	.000	.000	.250	.708	.912	.600	.000	.932	.969
Cars	0	0	0	0	0	16	415	34	0	465	1	0	0	0	1	31	390	11	0	432	898
% Cars	0	0	0	0	0	94.1	97.4	97.1	0	97.3	100	0	0	0	100	91.2	96.3	91.7	0	95.8	96.6
Buses	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	8	0	0	8	12
% Buses	0	0	0	0	0	0	0.9	0	0	0.8	0	0	0	0	0	0	2.0	0	0	1.8	1.3
Heavy Vehicles	0	0	0	0	0	1	7	1	0	9	0	0	0	0	0	3	7	1	0	11	20
% Heavy Vehicles	0	0	0	0	0	5.9	1.6	2.9	0	1.9	0	0	0	0	0	8.8	1.7	8.3	0	2.4	2.2







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S: Berkshire Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164936 B  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

Groups Printed- Cars - Buses - Heavy Vehicles

Start Time	Cambridge Street From East			Berkshire Street From South			Cambridge Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
07:00 AM	82	0	0	15	5	0	0	75	0	177
07:15 AM	74	0	0	11	8	0	0	96	0	189
07:30 AM	89	0	0	19	5	0	0	102	0	215
07:45 AM	91	0	0	14	11	0	0	118	0	234
Total	336	0	0	59	29	0	0	391	0	815
08:00 AM	86	0	0	10	9	0	0	106	0	211
08:15 AM	61	0	0	19	9	0	0	109	0	198
08:30 AM	61	0	0	24	26	0	0	112	0	223
08:45 AM	72	0	0	19	13	0	0	124	0	228
Total	280	0	0	72	57	0	0	451	0	860
Grand Total	616	0	0	131	86	0	0	842	0	1675
Apprch %	100	0	0	60.4	39.6	0	0	100	0	
Total %	36.8	0	0	7.8	5.1	0	0	50.3	0	
Cars	553	0	0	126	84	0	0	777	0	1540
% Cars	89.8	0	0	96.2	97.7	0	0	92.3	0	91.9
Buses	19	0	0	2	2	0	0	33	0	56
% Buses	3.1	0	0	1.5	2.3	0	0	3.9	0	3.3
Heavy Vehicles	44	0	0	3	0	0	0	32	0	79
% Heavy Vehicles	7.1	0	0	2.3	0	0	0	3.8	0	4.7

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. 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	<b>91</b>	0	0	<b>91</b>	14	11	0	25	0	<b>118</b>	0	<b>118</b>	<b>234</b>
08:00 AM	86	0	0	86	10	9	0	19	0	106	0	106	211
08:15 AM	61	0	0	61	19	9	0	28	0	109	0	109	198
08:30 AM	61	0	0	61	<b>24</b>	<b>26</b>	0	<b>50</b>	0	112	0	112	223
Total Volume	299	0	0	299	67	55	0	122	0	445	0	445	866
% App. Total	100	0	0		54.9	45.1	0		0	100	0		
PHF	.821	.000	.000	.821	.698	.529	.000	.610	.000	.943	.000	.943	.925
Cars	275	0	0	275	65	55	0	120	0	411	0	411	806
% Cars	92.0	0	0	92.0	97.0	100	0	98.4	0	92.4	0	92.4	93.1
Buses	8	0	0	8	1	0	0	1	0	19	0	19	28
% Buses	2.7	0	0	2.7	1.5	0	0	0.8	0	4.3	0	4.3	3.2
Heavy Vehicles	16	0	0	16	1	0	0	1	0	15	0	15	32
% Heavy Vehicles	5.4	0	0	5.4	1.5	0	0	0.8	0	3.4	0	3.4	3.7



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City, State: Cambridge, MA  
Client: VHB/ C. Dube

File Name : 164936 B  
Site Code : TBA  
Start Date : 2/4/2016  
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Groups Printed- Cars

Start Time	Cambridge Street From East			Berkshire Street From South			Cambridge Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
07:00 AM	68	0	0	15	5	0	0	66	0	154
07:15 AM	66	0	0	11	8	0	0	90	0	175
07:30 AM	78	0	0	18	4	0	0	96	0	196
07:45 AM	85	0	0	13	11	0	0	111	0	220
Total	297	0	0	57	28	0	0	363	0	745
08:00 AM	78	0	0	10	9	0	0	96	0	193
08:15 AM	54	0	0	19	9	0	0	99	0	181
08:30 AM	58	0	0	23	26	0	0	105	0	212
08:45 AM	66	0	0	17	12	0	0	114	0	209
Total	256	0	0	69	56	0	0	414	0	795
Grand Total	553	0	0	126	84	0	0	777	0	1540
Apprch %	100	0	0	60	40	0	0	100	0	
Total %	35.9	0	0	8.2	5.5	0	0	50.5	0	

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. 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	<b>85</b>	0	0	<b>85</b>	13	11	0	24	0	<b>111</b>	0	<b>111</b>	<b>220</b>
08:00 AM	78	0	0	78	10	9	0	19	0	96	0	96	193
08:15 AM	54	0	0	54	19	9	0	28	0	99	0	99	181
08:30 AM	58	0	0	58	<b>23</b>	<b>26</b>	0	<b>49</b>	0	105	0	105	212
Total Volume	275	0	0	275	65	55	0	120	0	411	0	411	806
% App. Total	100	0	0		54.2	45.8	0		0	100	0		
PHF	.809	.000	.000	.809	.707	.529	.000	.612	.000	.926	.000	.926	.916



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Client: VHB/ C. Dube

File Name : 164936 B  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

Groups Printed- Buses

Start Time	Cambridge Street From East			Berkshire Street From South			Cambridge Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
07:00 AM	3	0	0	0	0	0	0	5	0	8
07:15 AM	1	0	0	0	0	0	0	3	0	4
07:30 AM	5	0	0	0	1	0	0	4	0	10
07:45 AM	1	0	0	0	0	0	0	5	0	6
Total	10	0	0	0	1	0	0	17	0	28
08:00 AM	4	0	0	0	0	0	0	3	0	7
08:15 AM	3	0	0	0	0	0	0	7	0	10
08:30 AM	0	0	0	1	0	0	0	4	0	5
08:45 AM	2	0	0	1	1	0	0	2	0	6
Total	9	0	0	2	1	0	0	16	0	28
Grand Total	19	0	0	2	2	0	0	33	0	56
Apprch %	100	0	0	50	50	0	0	100	0	
Total %	33.9	0	0	3.6	3.6	0	0	58.9	0	

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. 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	0	0	5	0	1	0	1	0	4	0	4	10
07:45 AM	1	0	0	1	0	0	0	0	0	5	0	5	6
08:00 AM	4	0	0	4	0	0	0	0	0	3	0	3	7
08:15 AM	3	0	0	3	0	0	0	0	0	7	0	7	10
Total Volume	13	0	0	13	0	1	0	1	0	19	0	19	33
% App. Total	100	0	0		0	100	0		0	100	0		
PHF	.650	.000	.000	.650	.000	.250	.000	.250	.000	.679	.000	.679	.825



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File Name : 164936 B  
Site Code : TBA  
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Groups Printed- Heavy Vehicles

Start Time	Cambridge Street From East			Berkshire Street From South			Cambridge Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
07:00 AM	11	0	0	0	0	0	0	4	0	15
07:15 AM	7	0	0	0	0	0	0	3	0	10
07:30 AM	6	0	0	1	0	0	0	2	0	9
07:45 AM	5	0	0	1	0	0	0	2	0	8
Total	29	0	0	2	0	0	0	11	0	42
08:00 AM	4	0	0	0	0	0	0	7	0	11
08:15 AM	4	0	0	0	0	0	0	3	0	7
08:30 AM	3	0	0	0	0	0	0	3	0	6
08:45 AM	4	0	0	1	0	0	0	8	0	13
Total	15	0	0	1	0	0	0	21	0	37
Grand Total	44	0	0	3	0	0	0	32	0	79
Apprch %	100	0	0	100	0	0	0	100	0	
Total %	55.7	0	0	3.8	0	0	0	40.5	0	

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. 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	11	0	0	11	0	0	0	0	0	4	0	4	15
07:15 AM	7	0	0	7	0	0	0	0	0	3	0	3	10
07:30 AM	6	0	0	6	1	0	0	1	0	2	0	2	9
07:45 AM	5	0	0	5	1	0	0	1	0	2	0	2	8
Total Volume	29	0	0	29	2	0	0	2	0	11	0	11	42
% App. Total	100	0	0		100	0	0		0	100	0		
PHF	.659	.000	.000	.659	.500	.000	.000	.500	.000	.688	.000	.688	.700



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Groups Printed- Peds and Bicycles

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	Peds SB	Peds NB	Right	Left	Peds WB	Peds EB	Right	Thru	Peds NB	Peds SB	
07:00 AM	0	0	0	0	1	0	6	3	0	2	4	0	16
07:15 AM	0	0	0	0	0	0	4	5	0	4	5	2	20
07:30 AM	4	0	0	0	0	1	6	17	0	4	0	8	40
07:45 AM	2	0	0	0	0	2	12	11	0	11	4	3	45
Total	6	0	0	0	1	3	28	36	0	21	13	13	121
08:00 AM	5	0	0	0	0	1	18	15	0	8	4	3	54
08:15 AM	3	0	0	0	0	0	7	15	0	13	4	5	47
08:30 AM	1	0	0	1	0	1	24	15	0	25	1	5	73
08:45 AM	5	0	2	0	1	0	24	27	0	36	5	7	107
Total	14	0	2	1	1	2	73	72	0	82	14	20	281
Grand Total	20	0	2	1	2	5	101	108	0	103	27	33	402
Apprch %	87	0	8.7	4.3	0.9	2.3	46.8	50	0	63.2	16.6	20.2	
Total %	5	0	0.5	0.2	0.5	1.2	25.1	26.9	0	25.6	6.7	8.2	

Start Time	Cambridge Street From East					Berkshire Street From South					Cambridge Street From West					Int. Total
	Thru	Left	Peds SB	Peds NB	App. Total	Right	Left	Peds WB	Peds EB	App. Total	Right	Thru	Peds NB	Peds SB	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																
Peak Hour for Entire Intersection Begins at 08:00 AM																
08:00 AM	5	0	0	0	5	0	1	18	15	34	0	8	4	3	15	54
08:15 AM	3	0	0	0	3	0	0	7	15	22	0	13	4	5	22	47
08:30 AM	1	0	0	1	2	0	1	24	15	40	0	25	1	5	31	73
08:45 AM	5	0	2	0	7	1	0	24	27	52	0	36	5	7	48	107
Total Volume	14	0	2	1	17	1	2	73	72	148	0	82	14	20	116	281
% App. Total	82.4	0	11.8	5.9		0.7	1.4	49.3	48.6		0	70.7	12.1	17.2		
PHF	.700	.000	.250	.250	.607	.250	.500	.760	.667	.712	.000	.569	.700	.714	.604	.657



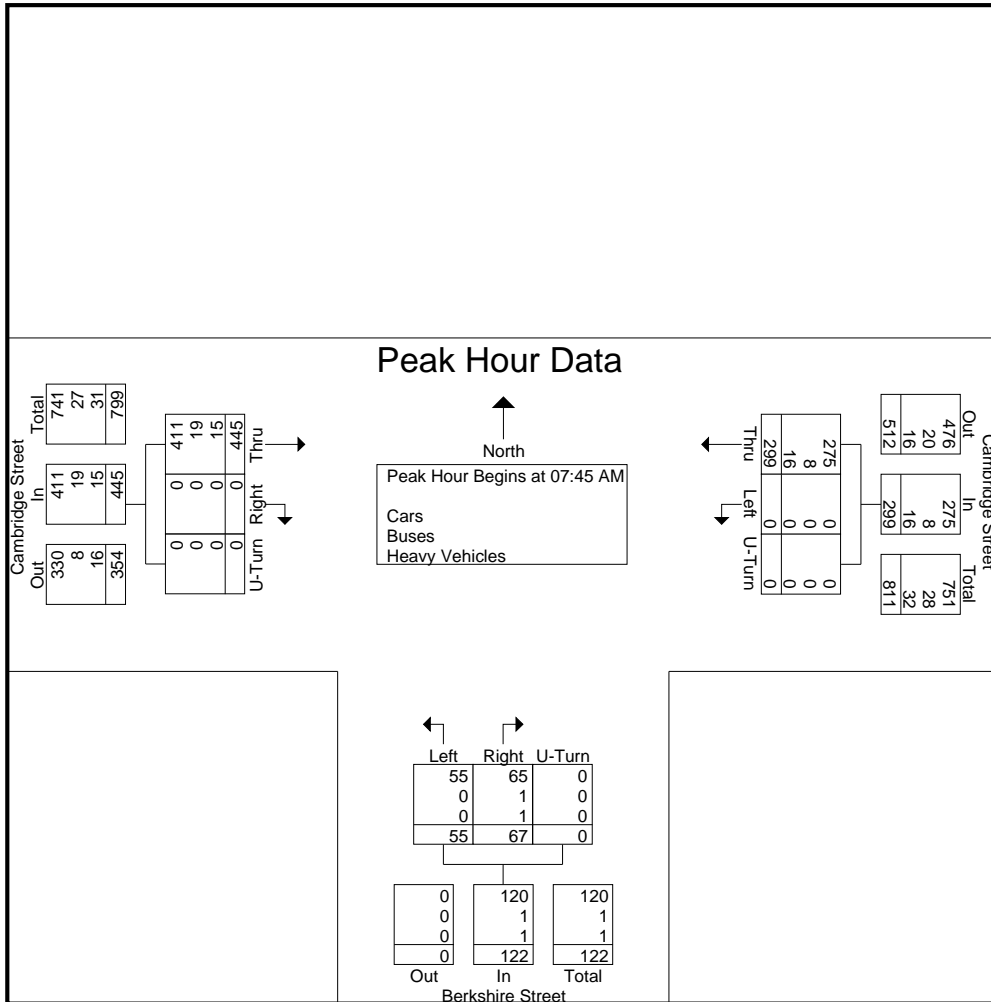
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Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	91	0	0	91	14	11	0	25	0	118	0	118	234
08:00 AM	86	0	0	86	10	9	0	19	0	106	0	106	211
08:15 AM	61	0	0	61	19	9	0	28	0	109	0	109	198
08:30 AM	61	0	0	61	24	26	0	50	0	112	0	112	223
Total Volume	299	0	0	299	67	55	0	122	0	445	0	445	866
% App. Total	100	0	0		54.9	45.1	0		0	100	0		
PHF	.821	.000	.000	.821	.698	.529	.000	.610	.000	.943	.000	.943	.925
Cars	275	0	0	275	65	55	0	120	0	411	0	411	806
% Cars	92.0	0	0	92.0	97.0	100	0	98.4	0	92.4	0	92.4	93.1
Buses	8	0	0	8	1	0	0	1	0	19	0	19	28
% Buses	2.7	0	0	2.7	1.5	0	0	0.8	0	4.3	0	4.3	3.2
Heavy Vehicles	16	0	0	16	1	0	0	1	0	15	0	15	32
% Heavy Vehicles	5.4	0	0	5.4	1.5	0	0	0.8	0	3.4	0	3.4	3.7





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Start Date : 2/4/2016  
Page No : 1

S: Berkshire Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Groups Printed- Cars - Buses - Heavy Vehicles

Start Time	Cambridge Street From East			Berkshire Street From South			Cambridge Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
03:00 PM	90	0	0	35	15	0	0	105	0	245
03:15 PM	103	0	0	22	12	0	0	120	0	257
03:30 PM	100	0	0	39	11	0	0	105	0	255
03:45 PM	95	0	0	42	18	0	0	110	0	265
Total	388	0	0	138	56	0	0	440	0	1022
04:00 PM	89	0	0	32	15	0	0	97	1	234
04:15 PM	84	0	0	28	12	0	0	91	0	215
04:30 PM	79	0	0	52	14	0	0	101	0	246
04:45 PM	94	0	0	49	17	0	0	109	0	269
Total	346	0	0	161	58	0	0	398	1	964
05:00 PM	105	0	0	29	18	0	0	112	0	264
05:15 PM	109	0	0	41	8	0	0	99	0	257
05:30 PM	87	0	0	44	19	0	0	103	0	253
05:45 PM	88	0	0	35	13	0	0	100	0	236
Total	389	0	0	149	58	0	0	414	0	1010
Grand Total	1123	0	0	448	172	0	0	1252	1	2996
Apprch %	100	0	0	72.3	27.7	0	0	99.9	0.1	
Total %	37.5	0	0	15	5.7	0	0	41.8	0	
Cars	1088	0	0	435	164	0	0	1196	1	2884
% Cars	96.9	0	0	97.1	95.3	0	0	95.5	100	96.3
Buses	17	0	0	9	2	0	0	35	0	63
% Buses	1.5	0	0	2	1.2	0	0	2.8	0	2.1
Heavy Vehicles	18	0	0	4	6	0	0	21	0	49
% Heavy Vehicles	1.6	0	0	0.9	3.5	0	0	1.7	0	1.6

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	94	0	0	94	49	17	0	66	0	109	0	109	269
05:00 PM	105	0	0	105	29	18	0	47	0	112	0	112	264
05:15 PM	109	0	0	109	41	8	0	49	0	99	0	99	257
05:30 PM	87	0	0	87	44	19	0	63	0	103	0	103	253
Total Volume	395	0	0	395	163	62	0	225	0	423	0	423	1043
% App. Total	100	0	0		72.4	27.6	0		0	100	0		
PHF	.906	.000	.000	.906	.832	.816	.000	.852	.000	.944	.000	.944	.969
Cars	387	0	0	387	161	59	0	220	0	408	0	408	1015
% Cars	98.0	0	0	98.0	98.8	95.2	0	97.8	0	96.5	0	96.5	97.3
Buses	5	0	0	5	1	0	0	1	0	8	0	8	14
% Buses	1.3	0	0	1.3	0.6	0	0	0.4	0	1.9	0	1.9	1.3
Heavy Vehicles	3	0	0	3	1	3	0	4	0	7	0	7	14
% Heavy Vehicles	0.8	0	0	0.8	0.6	4.8	0	1.8	0	1.7	0	1.7	1.3



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S: Berkshire Street  
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Client: VHB/ C. Dube

Groups Printed- Cars

Start Time	Cambridge Street From East			Berkshire Street From South			Cambridge Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
03:00 PM	86	0	0	33	14	0	0	98	0	231
03:15 PM	99	0	0	21	11	0	0	112	0	243
03:30 PM	96	0	0	36	10	0	0	98	0	240
03:45 PM	92	0	0	40	18	0	0	105	0	255
Total	373	0	0	130	53	0	0	413	0	969
04:00 PM	84	0	0	32	14	0	0	94	1	225
04:15 PM	81	0	0	28	12	0	0	89	0	210
04:30 PM	76	0	0	49	13	0	0	95	0	233
04:45 PM	91	0	0	49	16	0	0	107	0	263
Total	332	0	0	158	55	0	0	385	1	931
05:00 PM	102	0	0	28	17	0	0	108	0	255
05:15 PM	109	0	0	40	8	0	0	92	0	249
05:30 PM	85	0	0	44	18	0	0	101	0	248
05:45 PM	87	0	0	35	13	0	0	97	0	232
Total	383	0	0	147	56	0	0	398	0	984
Grand Total	1088	0	0	435	164	0	0	1196	1	2884
Apprch %	100	0	0	72.6	27.4	0	0	99.9	0.1	
Total %	37.7	0	0	15.1	5.7	0	0	41.5	0	

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
04:45 PM	91	0	0	91	<b>49</b>	16	0	<b>65</b>	0	107	0	107	<b>263</b>
05:00 PM	102	0	0	102	28	17	0	45	0	<b>108</b>	0	<b>108</b>	255
05:15 PM	<b>109</b>	0	0	<b>109</b>	40	8	0	48	0	92	0	92	249
05:30 PM	85	0	0	85	44	<b>18</b>	0	62	0	101	0	101	248
Total Volume	387	0	0	387	161	59	0	220	0	408	0	408	1015
% App. Total	100	0	0		73.2	26.8	0		0	100	0		
PHF	.888	.000	.000	.888	.821	.819	.000	.846	.000	.944	.000	.944	.965

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 04:45 PM





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Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

S: Berkshire Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Groups Printed- Buses

Start Time	Cambridge Street From East			Berkshire Street From South			Cambridge Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
03:00 PM	1	0	0	1	1	0	0	5	0	8
03:15 PM	3	0	0	1	0	0	0	5	0	9
03:30 PM	1	0	0	3	0	0	0	3	0	7
03:45 PM	1	0	0	1	0	0	0	3	0	5
Total	6	0	0	6	1	0	0	16	0	29
04:00 PM	3	0	0	0	0	0	0	3	0	6
04:15 PM	2	0	0	0	0	0	0	2	0	4
04:30 PM	0	0	0	2	1	0	0	4	0	7
04:45 PM	2	0	0	0	0	0	0	0	0	2
Total	7	0	0	2	1	0	0	9	0	19
05:00 PM	2	0	0	0	0	0	0	3	0	5
05:15 PM	0	0	0	1	0	0	0	4	0	5
05:30 PM	1	0	0	0	0	0	0	1	0	2
05:45 PM	1	0	0	0	0	0	0	2	0	3
Total	4	0	0	1	0	0	0	10	0	15
Grand Total	17	0	0	9	2	0	0	35	0	63
Apprch %	100	0	0	81.8	18.2	0	0	100	0	
Total %	27	0	0	14.3	3.2	0	0	55.6	0	

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
03:00 PM	1	0	0	1	1	1	0	2	0	5	0	5	8
03:15 PM	3	0	0	3	1	0	0	1	0	5	0	5	9
03:30 PM	1	0	0	1	3	0	0	3	0	3	0	3	7
03:45 PM	1	0	0	1	1	0	0	1	0	3	0	3	5
Total Volume	6	0	0	6	6	1	0	7	0	16	0	16	29
% App. Total	100	0	0		85.7	14.3	0		0	100	0		
PHF	.500	.000	.000	.500	.500	.250	.000	.583	.000	.800	.000	.800	.806

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:00 PM



PRECISION  
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INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

File Name : 164936 BB  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

S: Berkshire Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Groups Printed- Heavy Vehicles

Start Time	Cambridge Street From East			Berkshire Street From South			Cambridge Street From West			Int. Total
	Thru	Left	U-Turn	Right	Left	U-Turn	Right	Thru	U-Turn	
03:00 PM	3	0	0	1	0	0	0	2	0	6
03:15 PM	1	0	0	0	1	0	0	3	0	5
03:30 PM	3	0	0	0	1	0	0	4	0	8
03:45 PM	2	0	0	1	0	0	0	2	0	5
<b>Total</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>24</b>
04:00 PM	2	0	0	0	1	0	0	0	0	3
04:15 PM	1	0	0	0	0	0	0	0	0	1
04:30 PM	3	0	0	1	0	0	0	2	0	6
04:45 PM	1	0	0	0	1	0	0	2	0	4
<b>Total</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>14</b>
05:00 PM	1	0	0	1	1	0	0	1	0	4
05:15 PM	0	0	0	0	0	0	0	3	0	3
05:30 PM	1	0	0	0	1	0	0	1	0	3
05:45 PM	0	0	0	0	0	0	0	1	0	1
<b>Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>0</b>	<b>11</b>
<b>Grand Total</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>21</b>	<b>0</b>	<b>49</b>
Apprch %	100	0	0	40	60	0	0	100	0	
Total %	36.7	0	0	8.2	12.2	0	0	42.9	0	

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
03:00 PM	3	0	0	3	1	0	0	1	0	2	0	2	6
03:15 PM	1	0	0	1	0	1	0	1	0	3	0	3	5
03:30 PM	3	0	0	3	0	1	0	1	0	4	0	4	8
03:45 PM	2	0	0	2	1	0	0	1	0	2	0	2	5
<b>Total Volume</b>	<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>11</b>	<b>24</b>
<b>% App. Total</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b></b>	<b>50</b>	<b>50</b>	<b>0</b>	<b></b>	<b>0</b>	<b>100</b>	<b>0</b>	<b></b>	<b></b>
<b>PHF</b>	<b>.750</b>	<b>.000</b>	<b>.000</b>	<b>.750</b>	<b>.500</b>	<b>.500</b>	<b>.000</b>	<b>1.00</b>	<b>.000</b>	<b>.688</b>	<b>.000</b>	<b>.688</b>	<b>.750</b>

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:00 PM



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Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

File Name : 164936 BB  
Site Code : TBA  
Start Date : 2/4/2016  
Page No : 1

S: Berkshire Street  
E/W: Cambridge Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

Groups Printed- Peds and Bicycles

Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	Peds SB	Peds NB	Right	Left	Peds WB	Peds EB	Right	Thru	Peds NB	Peds SB	
03:00 PM	6	0	0	0	0	0	13	25	0	4	8	6	62
03:15 PM	2	0	1	0	0	0	9	9	0	3	0	0	24
03:30 PM	6	0	0	0	0	0	7	18	0	3	5	5	44
03:45 PM	2	0	0	0	0	0	9	14	0	1	7	1	34
Total	16	0	1	0	0	0	38	66	0	11	20	12	164
04:00 PM	3	0	1	0	0	0	10	10	0	4	6	2	36
04:15 PM	6	0	0	0	1	1	16	17	0	4	3	0	48
04:30 PM	7	0	0	1	0	0	10	10	0	4	5	2	39
04:45 PM	12	0	0	0	0	0	11	9	0	1	2	1	36
Total	28	0	1	1	1	1	47	46	0	13	16	5	159
05:00 PM	7	0	0	0	0	1	11	19	0	2	6	4	50
05:15 PM	16	0	0	0	0	1	14	7	0	6	4	8	56
05:30 PM	14	0	0	0	0	0	15	10	0	5	1	8	53
05:45 PM	15	0	0	1	0	0	13	20	0	6	2	1	58
Total	52	0	0	1	0	2	53	56	0	19	13	21	217
Grand Total	96	0	2	2	1	3	138	168	0	43	49	38	540
Apprch %	96	0	2	2	0.3	1	44.5	54.2	0	33.1	37.7	29.2	
Total %	17.8	0	0.4	0.4	0.2	0.6	25.6	31.1	0	8	9.1	7	

Start Time	Cambridge Street From East					Berkshire Street From South					Cambridge Street From West					Int. Total
	Thru	Left	Peds SB	Peds NB	App. Total	Right	Left	Peds WB	Peds EB	App. Total	Right	Thru	Peds NB	Peds SB	App. Total	
05:00 PM	7	0	0	0	7	0	1	11	19	31	0	2	6	4	12	50
05:15 PM	16	0	0	0	16	0	1	14	7	22	0	6	4	8	18	56
05:30 PM	14	0	0	0	14	0	0	15	10	25	0	5	1	8	14	53
05:45 PM	15	0	0	1	16	0	0	13	20	33	0	6	2	1	9	58
Total Volume	52	0	0	1	53	0	2	53	56	111	0	19	13	21	53	217
% App. Total	98.1	0	0	1.9		0	1.8	47.7	50.5		0	35.8	24.5	39.6		
PHF	.813	.000	.000	.250	.828	.000	.500	.883	.700	.841	.000	.792	.542	.656	.736	.935

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 05:00 PM



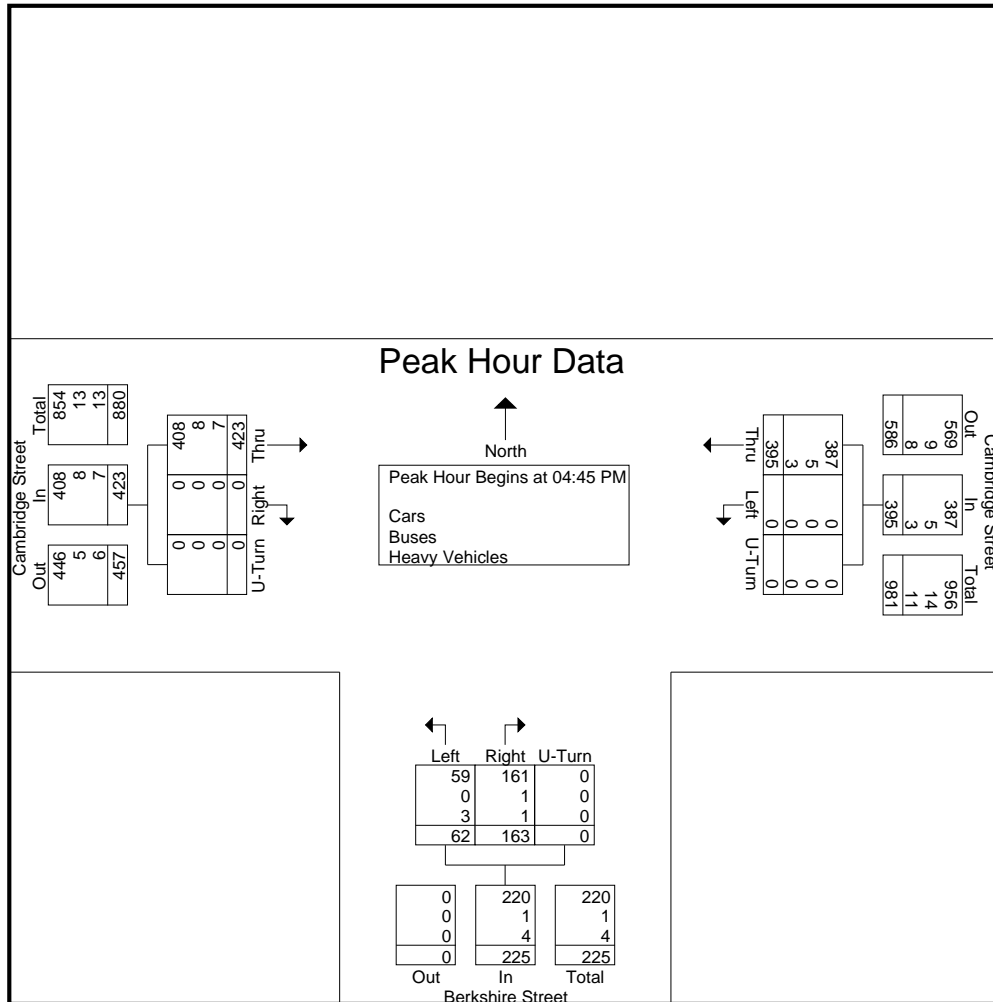
PRECISION  
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S: Berkshire Street  
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Start Time	Cambridge Street From East				Berkshire Street From South				Cambridge Street From West				Int. Total
	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:45 PM													
04:45 PM	94	0	0	94	49	17	0	66	0	109	0	109	269
05:00 PM	105	0	0	105	29	18	0	47	0	112	0	112	264
05:15 PM	109	0	0	109	41	8	0	49	0	99	0	99	257
05:30 PM	87	0	0	87	44	19	0	63	0	103	0	103	253
Total Volume	395	0	0	395	163	62	0	225	0	423	0	423	1043
% App. Total	100	0	0		72.4	27.6	0		0	100	0		
PHF	.906	.000	.000	.906	.832	.816	.000	.852	.000	.944	.000	.944	.969
Cars	387	0	0	387	161	59	0	220	0	408	0	408	1015
% Cars	98.0	0	0	98.0	98.8	95.2	0	97.8	0	96.5	0	96.5	97.3
Buses	5	0	0	5	1	0	0	1	0	8	0	8	14
% Buses	1.3	0	0	1.3	0.6	0	0	0.4	0	1.9	0	1.9	1.3
Heavy Vehicles	3	0	0	3	1	3	0	4	0	7	0	7	14
% Heavy Vehicles	0.8	0	0	0.8	0.6	4.8	0	1.8	0	1.7	0	1.7	1.3



File Name: H:\Cambridge\Counts\TMCs\Cambridge St at Cardinal Medeiros Ave\7-9AM.ppd

Start Date: 4/29/2015

Start Time: 7:00:00 AM

Site Code: 11234567

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	From North				From East				From South				From West					
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds		
07:00 AM	0	0	0	0	3	76	60	0	13	24	5	0	15	68	15	0	279	
07:15 AM	0	0	0	0	5	70	49	0	16	17	5	0	17	90	14	0	283	
07:30 AM	0	0	0	0	7	77	67	0	19	23	13	0	14	105	16	0	341	
07:45 AM	0	0	0	0	5	85	48	0	15	21	9	0	16	95	18	0	312	1215
08:00 AM	0	0	0	0	8	70	61	0	17	23	4	0	20	91	26	0	320	1256
08:15 AM	0	0	0	0	5	71	63	0	19	21	2	0	13	91	17	0	302	1275
08:30 AM	0	0	0	0	4	70	64	0	11	16	8	0	13	93	19	0	298	1232
08:45 AM	0	0	0	0	6	75	67	0	14	16	4	0	19	90	19	0	310	1230
					25	303	239	567	70	88	28	186	63	382	77	522		
					151				55				135					
					138				45				129					
					139				44				137					
					139				42				121					

Cars + HV

File Name: H:\Cambridge\Counts\TMCs\Cambridge St at Cardinal Medeiros Ave\7-9AM.ppd

Start Date: 4/29/2015

Start Time: 7:00:00 AM

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Comment 4: Then Click the Comments Tab

Start Time	From North				From East				From South				From West			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
07:00 AM	0	0	0	0	3	69	59	0	11	23	5	0	15	63	11	0
07:15 AM	0	0	0	0	4	62	47	0	15	17	5	0	16	84	8	0
07:30 AM	0	0	0	0	6	70	66	0	14	22	13	0	14	98	14	0
07:45 AM	0	0	0	0	4	75	48	0	13	19	9	0	15	88	18	0
08:00 AM	0	0	0	0	8	66	60	0	17	20	3	0	20	85	24	0
08:15 AM	0	0	0	0	5	59	62	0	17	20	2	0	12	82	12	0
08:30 AM	0	0	0	0	4	67	64	1	11	13	8	0	12	86	18	0
08:45 AM	0	0	0	0	6	67	67	0	13	13	4	0	18	85	16	0

Cars

File Name: H:\Cambridge\Counts\TMCs\Cambridge St at Cardinal Medeiros Ave\7-9AM.ppd

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Start Time	From North				From East				From South				From West			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
07:00 AM	0	0	0	0	0	7	1	0	2	1	0	0	0	5	4	0
07:15 AM	0	0	0	0	1	8	2	0	1	0	0	1	1	6	6	0
07:30 AM	0	0	0	0	1	7	1	0	5	1	0	0	0	7	2	0
07:45 AM	0	0	0	0	1	10	0	0	2	2	0	0	1	7	0	0
08:00 AM	0	0	0	0	0	4	1	0	0	3	1	0	0	6	2	0
08:15 AM	0	0	0	0	0	12	1	0	2	1	0	0	1	9	5	0
08:30 AM	0	0	0	0	0	3	0	0	0	3	0	0	1	7	1	0
08:45 AM	0	0	0	0	0	8	0	0	1	3	0	0	1	5	3	0
					2	33	3	38	9	7	1	17	2	29	9	40

HV

File Name: H:\Cambridge\Counts\TMCs\Cambridge St at Cardinal Medeiros Ave\7-9AM.ppd

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Start Time	From North				From East				From South				From West			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
07:00 AM	0	0	0	0	0	1	3	0	0	0	0	0	0	9	0	0
07:15 AM	0	0	0	0	0	2	1	0	1	1	0	0	1	9	0	0
07:30 AM	0	0	0	0	0	5	3	0	1	0	0	0	1	18	0	0
07:45 AM	0	0	0	0	0	7	0	0	0	0	1	0	0	24	0	0
08:00 AM	0	0	0	0	0	5	1	0	2	0	0	0	0	15	0	0
08:15 AM	0	0	0	0	0	7	0	0	1	0	0	0	1	24	2	0
08:30 AM	0	0	0	0	0	5	3	0	2	2	0	0	2	36	0	0
08:45 AM	0	0	0	0	0	7	0	0	1	0	0	0	1	25	1	0

Bikes



File Name: H:\Cambridge\Counts\TMCs\Cambridge St at Cardinal Medeiros Ave\4-6PM.ppd

Start Date: 4/29/2015

Start Time: 4:00:00 PM

Site Code: 11112345

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	From North				From East				From South				From West					
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds		
04:00 PM	0	0	0	0	10	95	26	0	13	60	6	0	3	90	41	0	344	
04:15 PM	0	0	0	0	6	78	27	0	12	56	3	0	5	86	36	0	309	
04:30 PM	0	0	0	0	9	88	30	0	14	62	5	0	12	95	33	0	348	
04:45 PM	0	0	0	0	7	93	34	0	10	57	5	0	8	86	50	0	350 1351	
05:00 PM	0	0	0	0	5	94	32	0	17	41	2	0	7	96	59	0	353 1360	
05:15 PM	0	0	0	0	6	90	32	0	13	53	6	0	13	83	56	0	352 1403	
05:30 PM	0	0	0	0	5	89	31	0	10	53	6	0	4	86	48	0	332 1387	
05:45 PM	0	0	0	0	9	66	49	0	14	41	6	0	5	92	64	0	346 1383	
					27	365	128	520	54	213	18	285	40	360	198	598		
					127				81				140					
					134				72				144					
					131				60				162					
					128				72				152					

Cars + HV

File Name: H:\Cambridge\Counts\TMCs\Cambridge St at Cardinal Medeiros Ave\4-6PM.ppd

Start Date: 4/29/2015

Start Time: 4:00:00 PM

Site Code: 11112345

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	From North				From East				From South				From West			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
04:00 PM	0	0	0	0	10	93	25	0	13	59	6	0	3	83	39	0
04:15 PM	0	0	0	0	5	73	27	0	11	52	1	0	5	82	35	0
04:30 PM	0	0	0	0	9	82	29	0	14	60	2	0	12	86	32	0
04:45 PM	0	0	0	0	7	89	34	0	9	50	4	0	8	82	48	0
05:00 PM	0	0	0	0	5	90	30	0	17	40	2	0	7	90	59	0
05:15 PM	0	0	0	0	5	88	32	0	12	52	5	0	13	79	55	0
05:30 PM	0	0	0	0	5	86	31	1	10	52	6	0	4	83	47	0
05:45 PM	0	0	0	0	9	63	49	2	14	41	6	0	5	87	63	0

Cars

File Name: H:\Cambridge\Counts\TMCs\Cambridge St at Cardinal Medeiros Ave\4-6PM.ppd

Start Date: 4/29/2015

Start Time: 4:00:00 PM

Site Code: 11112345

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	From North				From East				From South				From West			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
04:00 PM	0	0	0	0	0	2	1	0	0	1	0	0	0	7	2	0
04:15 PM	0	0	0	0	1	5	0	0	1	4	2	0	0	4	1	0
04:30 PM	0	0	0	0	0	6	1	0	0	2	3	0	0	9	1	0
04:45 PM	0	0	0	0	0	4	0	0	1	7	1	0	0	4	2	0
05:00 PM	0	0	0	0	0	4	2	1	0	1	0	0	0	6	0	0
05:15 PM	0	0	0	0	1	2	0	0	1	1	1	0	0	4	1	0
05:30 PM	0	0	0	0	0	3	0	0	0	1	0	0	0	3	1	0
05:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	5	1	0
					1	16	3	20	2	11	5	18	0	23	4	27

HV

File Name: H:\Cambridge\Counts\TMCs\Cambridge St at Cardinal Medeiros Ave\4-6PM.ppd

Start Date: 4/29/2015

Start Time: 4:00:00 PM

Site Code: 11112345

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Scree

Comment 4: Then Click the Comments Tab

Start Time	From North				From East				From South				From West			
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds
04:00 PM	0	0	0	0	1	11	1	0	0	0	0	0	0	2	1	0
04:15 PM	0	0	0	0	0	17	0	0	0	2	1	0	1	4	2	0
04:30 PM	0	0	0	0	0	12	1	0	1	2	0	0	0	4	0	0
04:45 PM	0	0	0	0	0	18	0	0	0	3	0	0	0	3	0	0
05:00 PM	0	0	0	0	1	15	2	0	3	1	0	0	1	6	0	0
05:15 PM	0	0	0	0	0	21	1	0	3	4	2	0	0	8	0	0
05:30 PM	0	0	0	0	2	30	2	0	2	4	2	0	0	6	0	0
05:45 PM	0	0	0	0	0	31	2	0	1	3	1	0	1	3	0	0

Bikes

Willow Street  
north of Palermo Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube



PRECISION  
D A T A  
INDUSTRIES, LLC

P.O.Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

164973 A Class  
Site Code: TBA  
Date Start: 01-Mar-16

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/01/1														
6	0	7	1	0	0	0	0	0	0	0	0	0	0	8
01:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
04:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
05:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
06:00	0	14	1	0	2	0	0	0	0	0	0	0	0	17
07:00	0	30	10	0	2	0	0	0	0	0	0	0	0	42
08:00	0	36	7	0	1	0	0	0	0	0	0	0	0	44
09:00	0	36	9	0	2	0	0	0	0	0	0	0	0	47
10:00	1	26	8	0	3	0	0	0	0	0	0	0	0	38
11:00	1	29	6	0	1	1	0	0	0	0	0	0	0	38
12 PM	0	36	6	0	3	0	0	0	0	0	0	0	0	45
13:00	1	38	11	0	1	0	0	0	0	0	0	0	0	51
14:00	0	34	10	0	0	0	0	0	0	0	0	0	0	44
15:00	0	46	13	0	3	0	0	0	0	0	0	0	0	62
16:00	0	37	13	0	2	0	0	0	0	0	0	0	0	52
17:00	0	42	20	0	1	0	0	0	0	0	0	0	0	63
18:00	0	48	2	0	2	0	0	0	0	0	0	0	0	52
19:00	0	24	14	0	2	0	0	0	0	0	0	0	0	40
20:00	0	23	2	0	0	0	0	0	0	0	0	0	0	25
21:00	0	25	3	0	0	0	0	0	0	0	0	0	0	28
22:00	0	22	3	0	1	0	0	0	0	0	0	0	0	26
23:00	0	6	1	0	0	0	0	0	0	0	0	0	0	7
Total	3	568	141	0	26	1	0	0	0	0	0	0	0	739
Percent	0.4%	76.9%	19.1%	0.0%	3.5%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	08:00	07:00		10:00	11:00								09:00
Vol.	1	36	10		3	1								47
PM Peak	13:00	18:00	17:00		12:00									17:00
Vol.	1	48	20		3									63

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164973 A Class  
Site Code: TBA  
Date Start: 01-Mar-16

SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/02/1														
6	0	7	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	1	0	0	1	0	0	0	0	0	0	0	0	2
04:00	0	2	2	1	0	0	0	0	0	0	0	0	0	5
05:00	0	7	1	0	0	0	0	0	0	0	0	0	0	8
06:00	0	14	4	0	2	0	0	0	0	0	0	0	0	20
07:00	0	18	8	0	1	2	0	0	0	0	0	0	0	29
08:00	0	24	13	0	1	0	0	0	0	0	0	0	0	38
09:00	1	29	2	0	3	0	0	0	0	0	0	0	0	35
10:00	0	15	6	0	2	0	0	0	0	0	0	0	0	23
11:00	0	23	13	0	4	0	0	0	0	0	0	0	0	40
12 PM	0	25	8	0	1	0	0	0	0	0	0	0	0	34
13:00	0	24	7	0	0	0	0	0	0	0	0	0	0	31
14:00	0	24	8	0	2	0	0	0	0	0	0	0	0	34
15:00	0	27	11	0	3	0	0	0	0	0	0	0	0	41
16:00	0	31	16	0	2	0	0	0	0	0	0	0	0	49
17:00	0	50	20	0	3	0	0	0	0	0	0	0	0	73
18:00	0	34	5	0	1	0	0	0	0	0	0	0	0	40
19:00	0	42	1	0	0	0	0	0	0	0	0	0	0	43
20:00	0	21	2	0	1	0	0	0	0	0	0	0	0	24
21:00	0	30	5	0	0	0	0	0	0	0	0	0	0	35
22:00	0	13	1	0	0	0	0	0	0	0	0	0	0	14
23:00	0	10	1	0	0	0	0	0	0	0	0	0	0	11
Total	1	475	134	1	27	2	0	0	0	0	0	0	0	640
Percent	0.2%	74.2%	20.9%	0.2%	4.2%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.	09:00	09:00	08:00	04:00	11:00	07:00								11:00
PM Peak Vol.		17:00	17:00		15:00									17:00
		50	20		3									73

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SB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/03/1														
6	0	7	0	0	0	0	0	0	0	0	0	0	0	7
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00	0	0	2	0	0	0	0	0	0	0	0	0	0	2
05:00	0	5	3	0	1	0	0	0	0	0	0	0	0	9
06:00	0	7	3	1	1	1	0	0	0	0	0	0	0	13
07:00	2	25	8	0	3	0	0	0	0	0	0	0	0	38
08:00	0	28	9	0	2	0	0	0	0	0	0	0	0	39
09:00	0	31	4	0	5	0	0	0	0	0	0	0	0	40
10:00	1	23	8	0	2	1	0	0	0	0	0	0	0	35
11:00	0	29	3	0	0	0	0	0	0	0	0	0	0	32
12 PM	0	34	13	2	3	1	0	0	0	0	0	0	0	53
13:00	0	18	10	0	2	0	0	0	0	0	0	0	0	30
14:00	0	24	7	0	1	0	0	0	0	0	0	0	0	32
15:00	0	28	10	0	2	0	0	0	0	0	0	0	0	40
16:00	0	44	20	1	3	0	0	0	0	0	0	0	0	68
17:00	1	39	10	0	2	0	0	0	0	0	0	0	0	52
18:00	0	13	15	0	5	0	0	0	0	0	0	0	0	33
19:00	0	31	11	0	1	0	0	0	0	0	0	0	0	43
20:00	0	23	10	0	0	0	0	0	0	0	0	0	0	33
21:00	0	21	8	0	0	0	0	0	0	0	0	0	0	29
22:00	0	17	1	0	1	0	0	0	0	0	0	0	0	19
23:00	0	10	0	0	0	0	0	0	0	0	0	0	0	10
Total	4	459	155	4	34	3	0	0	0	0	0	0	0	659
Percent	0.6%	69.7%	23.5%	0.6%	5.2%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	09:00	08:00	06:00	09:00	06:00								09:00
Vol.	2	31	9	1	5	1								40
PM Peak	17:00	16:00	16:00	12:00	18:00	12:00								16:00
Vol.	1	44	20	2	5	1								68
Total		1502	430	5	87	6	0	0	0	0	0	0	0	2038

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164973 A Speed  
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Date Start: 01-Mar-16

SB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
	14	19	24	29	34	39	44	49	54	59	64	69	9999			
03/01/16	1	4	1	2	0	0	0	0	0	0	0	0	0	8	26	19
01:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2	22	20
02:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
03:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11	8
04:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2	22	20
05:00	1	4	0	0	0	0	0	0	0	0	0	0	0	5	18	15
06:00	4	6	6	1	0	0	0	0	0	0	0	0	0	17	22	17
07:00	7	18	17	0	0	0	0	0	0	0	0	0	0	42	22	17
08:00	7	13	21	3	0	0	0	0	0	0	0	0	0	44	23	19
09:00	11	11	21	4	0	0	0	0	0	0	0	0	0	47	23	18
10:00	8	17	13	0	0	0	0	0	0	0	0	0	0	38	21	17
11:00	14	11	12	1	0	0	0	0	0	0	0	0	0	38	22	15
12 PM	13	18	11	3	0	0	0	0	0	0	0	0	0	45	22	16
13:00	19	16	14	2	0	0	0	0	0	0	0	0	0	51	21	15
14:00	12	20	11	1	0	0	0	0	0	0	0	0	0	44	21	16
15:00	25	21	14	2	0	0	0	0	0	0	0	0	0	62	21	15
16:00	10	21	17	4	0	0	0	0	0	0	0	0	0	52	22	18
17:00	13	22	28	0	0	0	0	0	0	0	0	0	0	63	22	17
18:00	15	24	13	0	0	0	0	0	0	0	0	0	0	52	21	16
19:00	9	12	16	3	0	0	0	0	0	0	0	0	0	40	23	18
20:00	3	14	7	1	0	0	0	0	0	0	0	0	0	25	22	18
21:00	6	14	8	0	0	0	0	0	0	0	0	0	0	28	21	16
22:00	3	11	11	1	0	0	0	0	0	0	0	0	0	26	22	18
23:00	3	1	3	0	0	0	0	0	0	0	0	0	0	7	22	15
Total	185	280	246	28	0	0	0	0	0	0	0	0	0	739		
%	25.0%	37.9%	33.3%	3.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

AM Peak	09:00	07:00	08:00	09:00													09:00
Vol.	11	18	21	4													47
Midday Peak	13:00	14:00	13:00	12:00													13:00
Vol.	19	20	14	3													51
PM Peak	15:00	18:00	17:00	16:00													17:00
Vol.	25	24	28	4													63

%iles	15th Percentile :			8 MPH												
	50th Percentile :			17 MPH												
	85th Percentile :			22 MPH												
	95th Percentile :			23 MPH												

Stats	10 MPH Pace Speed :	15-24 MPH														
	Number in Pace :	526														
	Percent in Pace :	71.2%														
	Number of Vehicles > 20 MPH :	225														
	Percent of Vehicles > 20 MPH :	30.4%														
	Mean Speed(Average) :	17 MPH														



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164973 A Speed  
Site Code: TBA  
Date Start: 01-Mar-16

SB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
	14	19	24	29	34	39	44	49	54	59	64	69	9999			
03/02/16	2	4	1	0	0	0	0	0	0	0	0	0	0	7	18	15
01:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3	21	19
02:00	0	0	1	0	0	0	0	0	0	0	0	0	0	1	23	22
03:00	0	0	2	0	0	0	0	0	0	0	0	0	0	2	23	22
04:00	1	4	0	0	0	0	0	0	0	0	0	0	0	5	18	15
05:00	1	3	4	0	0	0	0	0	0	0	0	0	0	8	22	18
06:00	6	9	5	0	0	0	0	0	0	0	0	0	0	20	21	15
07:00	7	15	7	0	0	0	0	0	0	0	0	0	0	29	20	16
08:00	18	11	7	2	0	0	0	0	0	0	0	0	0	38	21	14
09:00	7	16	12	0	0	0	0	0	0	0	0	0	0	35	21	17
10:00	6	8	8	1	0	0	0	0	0	0	0	0	0	23	22	17
11:00	15	18	6	1	0	0	0	0	0	0	0	0	0	40	19	14
12 PM	12	20	2	0	0	0	0	0	0	0	0	0	0	34	18	14
13:00	8	13	10	0	0	0	0	0	0	0	0	0	0	31	21	16
14:00	9	16	6	3	0	0	0	0	0	0	0	0	0	34	22	16
15:00	7	15	14	4	1	0	0	0	0	0	0	0	0	41	23	18
16:00	7	18	21	3	0	0	0	0	0	0	0	0	0	49	22	18
17:00	10	29	30	3	1	0	0	0	0	0	0	0	0	73	22	18
18:00	13	21	6	0	0	0	0	0	0	0	0	0	0	40	19	15
19:00	18	18	7	0	0	0	0	0	0	0	0	0	0	43	19	14
20:00	4	9	10	1	0	0	0	0	0	0	0	0	0	24	22	18
21:00	6	15	11	2	1	0	0	0	0	0	0	0	0	35	22	18
22:00	3	7	3	1	0	0	0	0	0	0	0	0	0	14	22	17
23:00	2	4	5	0	0	0	0	0	0	0	0	0	0	11	22	18
Total	162	275	179	21	3	0	0	0	0	0	0	0	0	640		
%	25.3%	43.0%	28.0%	3.3%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			

AM Peak	08:00	09:00	09:00	08:00													08:00
Vol.	18	16	12	2													38
Midday Peak	11:00	12:00	13:00	14:00													11:00
Vol.	15	20	10	3													40
PM Peak	19:00	17:00	17:00	15:00	15:00												17:00
Vol.	18	29	30	4	1												73

%iles	15th Percentile :			8 MPH												
	50th Percentile :			16 MPH												
	85th Percentile :			21 MPH												
	95th Percentile :			23 MPH												

Stats	10 MPH Pace Speed :	15-24 MPH														
	Number in Pace :	454														
	Percent in Pace :	70.9%														
	Number of Vehicles > 20 MPH :	167														
	Percent of Vehicles > 20 MPH :	26.1%														
	Mean Speed(Average) :	16 MPH														

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SB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
	14	19	24	29	34	39	44	49	54	59	64	69	9999			
03/03/16	0	2	5	0	0	0	0	0	0	0	0	0	0	7	22	21
01:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18	17
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1	18	17
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	*	*
04:00	1	1	0	0	0	0	0	0	0	0	0	0	0	2	17	12
05:00	0	5	4	0	0	0	0	0	0	0	0	0	0	9	22	19
06:00	2	10	1	0	0	0	0	0	0	0	0	0	0	13	18	16
07:00	12	11	13	2	0	0	0	0	0	0	0	0	0	38	22	16
08:00	2	20	14	3	0	0	0	0	0	0	0	0	0	39	22	19
09:00	5	16	17	2	0	0	0	0	0	0	0	0	0	40	22	18
10:00	6	11	17	1	0	0	0	0	0	0	0	0	0	35	22	18
11:00	9	14	8	1	0	0	0	0	0	0	0	0	0	32	21	16
12 PM	16	24	11	2	0	0	0	0	0	0	0	0	0	53	21	16
13:00	5	16	8	1	0	0	0	0	0	0	0	0	0	30	21	17
14:00	6	14	11	1	0	0	0	0	0	0	0	0	0	32	22	17
15:00	6	20	14	0	0	0	0	0	0	0	0	0	0	40	21	17
16:00	9	31	24	4	0	0	0	0	0	0	0	0	0	68	22	18
17:00	7	26	13	6	0	0	0	0	0	0	0	0	0	52	23	18
18:00	0	15	12	4	2	0	0	0	0	0	0	0	0	33	25	21
19:00	6	21	15	1	0	0	0	0	0	0	0	0	0	43	22	18
20:00	6	16	10	1	0	0	0	0	0	0	0	0	0	33	22	17
21:00	5	13	9	2	0	0	0	0	0	0	0	0	0	29	22	18
22:00	1	8	8	2	0	0	0	0	0	0	0	0	0	19	23	20
23:00	3	7	0	0	0	0	0	0	0	0	0	0	0	10	17	14
Total	107	303	214	33	2	0	0	0	0	0	0	0	0	659		
%	16.2%	46.0%	32.5%	5.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	08:00	09:00	08:00										09:00		
Vol.	12	20	17	3										40		
Midda y Peak	12:00	12:00	12:00	12:00										12:00		
Vol.	16	24	11	2										53		
PM Peak	16:00	16:00	16:00	17:00	18:00									16:00		
Vol.	9	31	24	6	2									68		
% ile			15th Percentile :				12 MPH									
			50th Percentile :				17 MPH									
			85th Percentile :				22 MPH									
			95th Percentile :				24 MPH									

Stats  
10 MPH Pace Speed : 15-24 MPH  
Number in Pace : 517  
Percent in Pace : 78.5%  
Number of Vehicles > 20 MPH : 206  
Percent of Vehicles > 20 MPH : 31.3%  
Mean Speed(Average) : 18 MPH

Willow Street  
north of Palermo Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube



PRECISION  
D A T A  
INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

164973 A Volume  
Site Code: TBA  
Date Start: 01-Mar-16

Start Time	A.M.	SB	P.M.																Tue 01-Mar-16
12:00	2		15																
12:15	4		8																
12:30	1		14																
12:45	1	8	8	45															
01:00	0		12																
01:15	0		19																
01:30	2		12																
01:45	0	2	8	51															
02:00	0		10																
02:15	0		4																
02:30	0		12																
02:45	0	0	18	44															
03:00	0		17																
03:15	0		16																
03:30	1		16																
03:45	0	1	13	62															
04:00	0		12																
04:15	1		13																
04:30	0		15																
04:45	1	2	12	52															
05:00	1		19																
05:15	2		18																
05:30	0		12																
05:45	2	5	14	63															
06:00	1		9																
06:15	2		16																
06:30	6		10																
06:45	8	17	17	52															
07:00	5		10																
07:15	9		12																
07:30	15		9																
07:45	13	42	9	40															
08:00	14		9																
08:15	14		3																
08:30	8		8																
08:45	8	44	5	25															
09:00	15		5																
09:15	6		7																
09:30	9		9																
09:45	17	47	7	28															
10:00	10		4																
10:15	8		12																
10:30	8		5																
10:45	12	38	5	26															
11:00	17		0																
11:15	5		6																
11:30	9		0																
11:45	7	38	1	7															
Total	244		495																
Percent			100.0%		0.0%				0.0%										
Day Total			739																
Peak	07:30	-	02:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	56	-	67	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.933		0.931																

Willow Street  
north of Palermo Street  
City, State: Cambridge, MA  
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164973 A Volume  
Site Code: TBA  
Date Start: 01-Mar-16

Start Time	A.M.	SB	P.M.												
12:00	3		12												
12:15	2		7												
12:30	1		6												
12:45	1	7	9	34											
01:00	1		6												
01:15	2		9												
01:30	0		8												
01:45	0	3	8	31											
02:00	1		6												
02:15	0		8												
02:30	0		11												
02:45	0	1	9	34											
03:00	1		12												
03:15	0		10												
03:30	1		9												
03:45	0	2	10	41											
04:00	2		16												
04:15	1		9												
04:30	1		10												
04:45	1	5	14	49											
05:00	1		19												
05:15	1		27												
05:30	3		12												
05:45	3	8	15	73											
06:00	5		8												
06:15	3		15												
06:30	8		7												
06:45	4	20	10	40											
07:00	6		18												
07:15	4		12												
07:30	11		8												
07:45	8	29	5	43											
08:00	7		7												
08:15	15		9												
08:30	8		5												
08:45	8	38	3	24											
09:00	13		9												
09:15	9		6												
09:30	7		10												
09:45	6	35	10	35											
10:00	6		4												
10:15	2		3												
10:30	8		2												
10:45	7	23	5	14											
11:00	14		1												
11:15	10		5												
11:30	3		3												
11:45	13	40	2	11											
Total	211		429												
Percent		100.0%		0.0%	0.0%										
Day Total		640													
Peak	08:15	-	05:00	-	-	-	-	-	-	-	-	-	-	-	
Vol.	44	-	73	-	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.733		0.676												

Willow Street  
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164973 A Volume  
Site Code: TBA  
Date Start: 01-Mar-16

Start Time	A.M.	SB	P.M.																Thu 03-Mar- 16
12:00	4		14																
12:15	0		19																
12:30	3		8																
12:45	0	7	12	53															
01:00	0		7																
01:15	1		8																
01:30	0		5																
01:45	0	1	10	30															
02:00	1		8																
02:15	0		6																
02:30	0		9																
02:45	0	1	9	32															
03:00	0		9																
03:15	0		11																
03:30	0		13																
03:45	0	0	7	40															
04:00	0		25																
04:15	1		13																
04:30	1		14																
04:45	0	2	16	68															
05:00	0		11																
05:15	5		18																
05:30	3		13																
05:45	1	9	10	52															
06:00	1		9																
06:15	5		5																
06:30	1		10																
06:45	6	13	9	33															
07:00	12		12																
07:15	11		12																
07:30	5		10																
07:45	10	38	9	43															
08:00	11		5																
08:15	9		8																
08:30	6		11																
08:45	13	39	9	33															
09:00	9		9																
09:15	4		8																
09:30	13		6																
09:45	14	40	6	29															
10:00	4		8																
10:15	4		4																
10:30	12		5																
10:45	15	35	2	19															
11:00	7		1																
11:15	8		6																
11:30	7		0																
11:45	10	32	3	10															
Total	217		442																
Percent			100.0%		0.0%		0.0%												
Day Total			659																
Peak	10:30	-	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	42	-	68	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.700		0.680																

Cambridge Street  
west of Berkshire Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube



PRECISION  
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Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

164973 B Class  
Site Code: TBA  
Date Start: 01-Mar-16

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/01/1														
6	0	53	7	3	1	0	0	0	0	0	0	0	0	64
01:00	0	24	3	0	2	0	0	0	0	0	0	0	0	29
02:00	0	18	1	0	1	0	0	0	0	0	0	0	0	20
03:00	0	13	4	0	1	2	0	1	0	0	0	0	0	21
04:00	0	29	5	5	0	1	0	1	2	0	0	0	0	43
05:00	1	72	29	4	3	2	0	0	0	0	0	0	0	111
06:00	2	153	38	6	10	1	1	1	0	0	0	0	0	212
07:00	1	351	40	3	12	2	0	0	0	0	0	0	0	409
08:00	2	341	53	8	14	3	0	1	0	0	0	0	0	422
09:00	6	349	52	4	28	6	0	1	0	0	0	0	0	446
10:00	6	289	61	3	23	1	0	1	0	0	0	0	0	384
11:00	4	291	55	8	17	2	0	2	0	0	0	0	0	379
12 PM	3	297	52	5	19	4	0	3	0	0	0	0	0	383
13:00	1	311	67	7	26	2	1	0	0	0	0	0	0	415
14:00	5	286	50	11	17	3	0	1	2	0	0	0	0	375
15:00	3	312	66	6	22	1	0	3	0	0	0	0	0	413
16:00	2	332	35	2	10	2	0	0	0	0	0	0	1	384
17:00	3	336	29	2	6	0	0	0	0	0	0	0	0	376
18:00	2	338	28	4	3	1	0	0	0	0	0	0	0	376
19:00	0	272	45	2	9	1	0	1	0	0	0	0	0	330
20:00	0	247	20	5	0	0	0	2	1	0	0	0	0	275
21:00	1	206	12	1	0	0	0	0	0	0	0	0	0	220
22:00	0	166	25	2	3	1	0	0	0	0	0	0	0	197
23:00	0	110	18	4	1	0	0	0	0	0	0	0	0	133
Total	42	5196	795	95	228	35	2	18	5	0	0	0	1	6417
Percent	0.7%	81.0%	12.4%	1.5%	3.6%	0.5%	0.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	07:00	10:00	08:00	09:00	09:00	06:00	11:00	04:00					09:00
Vol.	6	351	61	8	28	6	1	2	2					446
PM Peak	14:00	18:00	13:00	14:00	13:00	12:00	13:00	12:00	14:00				16:00	13:00
Vol.	5	338	67	11	26	4	1	3	2				1	415

Cambridge Street  
west of Berkshire Street  
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164973 B Class  
Site Code: TBA  
Date Start: 01-Mar-16

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/02/1														
6	0	49	5	1	3	0	0	0	0	0	0	0	0	58
01:00	0	40	2	0	1	0	0	0	0	0	0	0	0	43
02:00	0	14	3	0	3	1	0	0	0	0	0	0	0	21
03:00	0	21	2	0	0	0	0	0	0	0	0	0	0	23
04:00	0	30	4	6	2	0	0	0	0	0	0	0	0	42
05:00	0	67	20	1	6	1	0	1	0	0	0	0	0	96
06:00	1	156	42	6	17	5	0	0	1	0	0	0	0	228
07:00	0	321	52	4	20	3	0	0	0	0	0	0	0	400
08:00	7	374	51	5	14	2	1	0	1	0	0	0	0	455
09:00	3	330	52	9	18	2	0	0	0	0	0	0	0	414
10:00	2	243	75	9	30	0	0	1	2	0	0	0	0	362
11:00	0	249	62	6	20	0	0	1	1	0	0	0	0	339
12 PM	3	301	64	6	18	4	0	1	0	0	0	0	0	397
13:00	1	350	41	8	12	1	0	0	0	0	0	0	0	413
14:00	4	290	59	10	17	1	0	1	1	0	0	0	0	383
15:00	0	307	61	9	20	5	0	1	0	0	0	0	0	403
16:00	3	330	42	5	3	2	0	0	0	0	0	0	0	385
17:00	5	385	14	2	3	1	0	0	0	0	0	0	0	410
18:00	2	322	25	2	2	3	0	0	0	0	0	0	0	356
19:00	3	291	15	3	0	0	0	0	0	0	0	0	0	312
20:00	1	230	16	3	1	0	0	0	0	0	0	0	0	251
21:00	1	227	13	0	1	0	0	0	0	0	0	0	0	242
22:00	1	186	12	3	0	0	0	0	0	0	0	0	0	202
23:00	0	125	4	0	1	0	0	0	0	0	0	0	0	130
Total	37	5238	736	98	212	31	1	6	6	0	0	0	0	6365
Percent	0.6%	82.3%	11.6%	1.5%	3.3%	0.5%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	08:00	08:00	10:00	09:00	10:00	06:00	08:00	05:00	10:00					08:00
Vol.	7	374	75	9	30	5	1	1	2					455
PM Peak	17:00	17:00	12:00	14:00	15:00	15:00		12:00	14:00					13:00
Vol.	5	385	64	10	20	5		1	1					413

Cambridge Street  
 west of Berkshire Street  
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164973 B Class  
 Site Code: TBA  
 Date Start: 01-Mar-16

EB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/03/1														
6	0	70	3	1	2	0	0	0	0	0	0	0	0	76
01:00	0	41	2	0	0	1	0	0	0	0	0	0	0	44
02:00	0	21	4	0	1	0	0	0	0	0	0	0	0	26
03:00	0	22	1	0	1	1	0	0	0	0	0	0	0	25
04:00	0	30	5	4	3	1	0	0	2	0	0	0	0	45
05:00	0	84	15	1	4	2	0	1	0	0	0	0	0	107
06:00	2	180	42	4	3	2	0	1	1	0	0	0	0	235
07:00	1	325	25	8	8	1	0	1	0	0	0	0	0	369
08:00	2	428	25	6	10	2	0	0	2	0	0	0	0	475
09:00	4	367	48	4	8	5	1	1	0	0	0	0	0	438
10:00	1	348	62	6	5	3	0	0	1	0	0	0	0	426
11:00	3	275	52	2	7	6	0	0	0	0	0	0	0	345
12 PM	2	305	53	4	13	0	0	2	0	0	0	0	0	379
13:00	3	297	68	3	13	9	0	2	0	0	0	0	0	395
14:00	4	306	54	5	15	0	0	1	1	0	0	0	0	386
15:00	4	370	74	4	11	3	0	0	0	0	0	0	0	466
16:00	0	349	42	3	7	3	0	0	0	0	0	0	0	404
17:00	3	362	30	4	5	3	0	1	0	0	0	0	0	408
18:00	0	315	33	2	11	1	0	1	0	0	0	0	0	363
19:00	4	299	20	3	2	1	0	0	0	0	0	0	0	329
20:00	0	283	27	2	1	0	0	0	0	0	0	0	0	313
21:00	2	207	17	2	1	0	0	0	0	0	0	0	0	229
22:00	0	177	14	1	1	1	0	0	0	0	0	0	0	194
23:00	0	136	9	1	3	0	0	0	0	0	0	0	0	149
Total	35	5597	725	70	135	45	1	11	7	0	0	0	0	6626
Percent	0.5%	84.5%	10.9%	1.1%	2.0%	0.7%	0.0%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	09:00	08:00	10:00	07:00	08:00	11:00	09:00	05:00	04:00					08:00
Vol.	4	428	62	8	10	6	1	1	2					475
PM Peak	14:00	15:00	15:00	14:00	14:00	13:00		12:00	14:00					15:00
Vol.	4	370	74	5	15	9		2	1					466
Total		16031	2256	263	575	111	4	35	18	0	0	0	1	19408



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164973 B Class  
Site Code: TBA  
Date Start: 01-Mar-16

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/01/1														
6	0	35	6	2	1	0	0	0	0	0	0	0	0	44
01:00	0	26	5	2	0	0	0	0	0	1	0	0	0	34
02:00	0	13	3	0	2	1	0	0	0	0	0	0	0	19
03:00	0	14	3	1	0	0	0	0	0	0	0	0	0	18
04:00	0	26	7	2	1	3	0	0	0	0	0	0	0	39
05:00	0	84	20	4	11	2	0	0	0	0	0	0	0	121
06:00	0	201	28	3	14	2	0	1	0	0	0	0	0	249
07:00	1	286	47	9	16	0	0	0	0	0	0	0	0	359
08:00	1	246	48	4	18	1	1	1	0	0	0	0	0	320
09:00	1	263	56	5	18	6	1	2	0	0	0	0	0	352
10:00	2	259	54	4	28	3	0	2	0	0	0	0	0	352
11:00	0	325	62	6	18	4	0	1	0	0	0	0	0	416
12 PM	0	269	62	6	27	3	1	1	0	0	0	0	0	369
13:00	5	281	57	2	16	2	0	0	0	0	0	0	0	363
14:00	7	298	62	8	25	0	0	2	0	0	0	0	0	402
15:00	0	316	53	4	23	3	0	0	0	0	0	0	0	399
16:00	4	368	40	3	18	2	0	1	0	0	0	0	0	436
17:00	1	384	27	5	10	1	0	0	0	0	0	0	0	428
18:00	3	370	39	2	9	2	0	0	0	0	0	0	0	425
19:00	1	283	41	1	14	0	0	0	0	0	0	0	0	340
20:00	3	215	32	3	6	2	0	0	0	0	0	0	0	261
21:00	0	196	39	0	2	1	0	0	0	0	0	0	0	238
22:00	1	148	24	1	5	0	0	0	0	0	0	0	0	179
23:00	0	94	13	3	3	0	0	0	1	0	0	0	0	114
Total	30	5000	828	80	285	38	3	11	1	1	0	0	0	6277
Percent	0.5%	79.7%	13.2%	1.3%	4.5%	0.6%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	10:00	11:00	11:00	07:00	10:00	09:00	08:00	09:00		01:00				11:00
Vol.	2	325	62	9	28	6	1	2		1				416
PM Peak	14:00	17:00	12:00	14:00	12:00	12:00	12:00	14:00	23:00					16:00
Vol.	7	384	62	8	27	3	1	2	1					436

Cambridge Street  
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Client: VHB/ C. Dube



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D A T A  
INDUSTRIES, LLC

P.O.Box 301 Berlin, MA 01503  
Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

164973 B Class  
Site Code: TBA  
Date Start: 01-Mar-16

WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/02/1														
6	0	54	6	1	1	0	0	0	0	0	0	0	0	62
01:00	0	32	5	0	0	0	0	0	0	0	0	0	0	37
02:00	0	14	3	0	1	0	0	0	0	0	0	0	0	18
03:00	0	19	3	0	0	0	0	0	1	0	0	0	0	23
04:00	0	23	5	0	3	5	0	0	1	0	0	0	0	37
05:00	0	62	15	4	7	1	0	1	1	0	0	0	0	91
06:00	1	192	48	1	15	3	0	0	1	0	0	0	0	261
07:00	3	228	53	10	13	2	0	0	0	0	0	0	0	309
08:00	1	286	37	2	11	1	0	0	0	0	0	0	0	338
09:00	2	252	53	2	17	4	1	1	0	0	0	0	0	332
10:00	1	273	70	2	16	1	0	1	1	0	0	0	0	365
11:00	2	271	82	1	17	4	0	1	0	0	0	0	0	378
12 PM	3	265	71	7	30	3	0	2	0	0	0	0	0	381
13:00	1	293	53	7	14	3	0	1	0	0	0	0	0	372
14:00	0	306	52	8	24	2	0	0	0	0	0	0	0	392
15:00	2	301	44	5	21	1	0	1	0	0	0	0	0	375
16:00	1	387	35	1	14	1	0	0	0	0	0	0	0	439
17:00	6	418	39	1	8	3	0	0	0	0	0	0	0	475
18:00	5	339	39	2	6	0	0	0	0	0	0	0	0	391
19:00	0	310	26	3	9	0	0	0	0	0	0	0	0	348
20:00	0	254	28	2	9	0	0	0	0	0	0	0	0	293
21:00	1	187	17	0	4	0	0	0	0	0	0	0	0	209
22:00	1	163	21	2	2	0	0	0	0	0	0	0	0	189
23:00	0	109	10	2	0	0	0	0	0	0	0	0	0	121
Total	30	5038	815	63	242	34	1	8	5	0	0	0	0	6236
Percent	0.5%	80.8%	13.1%	1.0%	3.9%	0.5%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	11:00	07:00	09:00	04:00	09:00	05:00	03:00					11:00
Vol.	3	286	82	10	17	5	1	1	1					378
PM Peak	17:00	17:00	12:00	14:00	12:00	12:00		12:00						17:00
Vol.	6	418	71	8	30	3		2						475

Cambridge Street  
 west of Berkshire Street  
 City, State: Cambridge, MA  
 Client: VHB/ C. Dube



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WB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/03/1														
6	0	57	7	2	0	0	0	0	0	0	0	0	0	66
01:00	0	28	1	1	1	0	0	0	0	0	0	0	0	31
02:00	0	21	1	1	3	0	0	0	0	0	0	0	0	26
03:00	1	16	2	0	1	2	0	0	0	0	0	0	0	22
04:00	0	24	6	3	2	4	0	0	0	0	0	0	0	39
05:00	0	80	16	1	7	2	0	1	0	0	0	0	0	107
06:00	0	186	33	5	8	1	0	0	0	0	0	0	0	233
07:00	2	293	47	11	6	4	0	0	1	0	0	0	0	364
08:00	2	277	36	4	13	4	0	0	0	0	0	0	0	336
09:00	1	275	48	2	19	3	2	1	0	0	0	0	0	351
10:00	1	302	57	5	15	2	0	1	1	0	0	0	0	384
11:00	4	315	58	3	22	2	0	0	0	0	0	0	0	404
12 PM	1	292	53	6	19	3	1	1	0	0	0	0	0	376
13:00	2	276	50	3	24	1	0	0	1	1	0	0	0	358
14:00	3	328	68	8	13	3	0	0	0	1	0	0	0	424
15:00	0	297	57	8	21	2	0	0	1	0	0	0	0	386
16:00	1	303	54	3	14	1	0	1	0	0	0	0	0	377
17:00	1	390	56	2	18	1	0	0	0	0	0	0	0	468
18:00	4	347	28	1	7	1	0	0	0	0	0	0	0	388
19:00	1	308	30	2	10	0	0	0	0	0	0	0	0	351
20:00	2	235	31	1	5	0	0	1	0	0	0	0	0	275
21:00	2	203	39	1	6	0	0	0	0	0	0	0	0	251
22:00	0	153	30	1	3	0	0	0	0	0	0	0	0	187
23:00	1	98	15	2	1	0	0	0	0	0	0	0	0	117
Total	29	5104	823	76	238	36	3	6	4	2	0	0	0	6321
Percent	0.5%	80.7%	13.0%	1.2%	3.8%	0.6%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	11:00	11:00	07:00	11:00	04:00	09:00	05:00	07:00					11:00
Vol.	4	315	58	11	22	4	2	1	1					404
PM Peak	18:00	17:00	14:00	14:00	13:00	12:00	12:00	12:00	13:00	13:00				17:00
Vol.	4	390	68	8	24	3	1	1	1	1				468
Total		15142	2466	219	765	108	7	25	10	3	0	0	0	18834

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164973 B Speed  
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Date Start: 01-Mar-16

EB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
03/01/16	14	19	24	29	34	39	44	49	54	59	64	69	9999			
01:00	0	2	14	19	<b>26</b>	2	<b>1</b>	0	0	0	0	0	0	64	32	28
02:00	1	2	4	14	7	1	0	0	0	0	0	0	0	29	31	26
03:00	0	0	3	12	5	0	0	0	0	0	0	0	0	20	31	28
04:00	0	2	5	7	6	1	0	0	0	0	0	0	0	21	32	27
05:00	0	0	9	21	13	0	0	0	0	0	0	0	0	43	31	27
06:00	0	5	27	58	20	1	0	0	0	0	0	0	0	111	30	26
07:00	1	12	85	<b>83</b>	26	<b>4</b>	1	0	0	0	0	0	0	212	28	25
08:00	38	91	223	55	2	0	0	0	0	0	0	0	0	409	23	20
09:00	<b>51</b>	<b>112</b>	221	36	1	1	0	0	0	0	0	0	0	422	23	19
10:00	43	103	<b>224</b>	67	9	0	0	0	0	0	0	0	0	<b>446</b>	24	20
11:00	13	76	197	93	4	1	0	0	0	0	0	0	0	384	26	22
12 PM	22	64	212	74	5	<b>2</b>	0	0	0	0	0	0	0	379	25	22
13:00	12	71	<b>233</b>	60	7	0	0	0	0	0	0	0	0	383	24	22
14:00	<b>35</b>	<b>98</b>	216	60	6	0	0	0	0	0	0	0	0	<b>415</b>	24	20
15:00	16	80	189	<b>78</b>	<b>11</b>	1	0	0	0	0	0	0	0	375	26	22
16:00	35	87	<b>233</b>	51	7	0	0	0	0	0	0	0	0	<b>413</b>	23	21
17:00	24	<b>109</b>	190	57	4	0	0	0	0	0	0	0	0	384	24	21
18:00	<b>66</b>	79	222	9	0	0	0	0	0	0	0	0	0	376	22	19
19:00	31	98	212	32	3	0	0	0	0	0	0	0	0	376	23	20
20:00	13	50	194	70	3	0	0	0	0	0	0	0	0	330	25	22
21:00	6	43	125	86	14	1	0	0	0	0	0	0	0	275	27	23
22:00	4	18	90	88	20	0	0	0	0	0	0	0	0	220	28	24
23:00	1	11	66	<b>93</b>	<b>23</b>	<b>3</b>	0	0	0	0	0	0	0	197	28	25
Total	1	6	43	60	22	1	0	0	0	0	0	0	0	133	29	26
Total %	413	1219	3237	1283	244	19	2	0	0	0	0	0	0	6417		
	6.4%	19.0%	50.4%	20.0%	3.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	09:00	06:00	00:00	06:00	00:00							09:00		
Vol.	51	112	224	83	26	4	1							446		
Midday Peak	13:00	13:00	12:00	14:00	14:00	11:00								13:00		
Vol.	35	98	233	78	11	2								415		
PM Peak	17:00	16:00	15:00	22:00	22:00	22:00								15:00		
Vol.	66	109	233	93	23	3								413		
%iles			15th Percentile :			16 MPH										
			50th Percentile :			21 MPH										
			85th Percentile :			26 MPH										
			95th Percentile :			28 MPH										

Stats  
10 MPH Pace Speed : 20-29 MPH  
Number in Pace : 4520  
Percent in Pace : 70.4%  
Number of Vehicles > 25 MPH : 1291  
Percent of Vehicles > 25 MPH : 20.1%  
Mean Speed(Average) : 22 MPH

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EB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
03/02/16	0	1	11	29	14	3	0	0	0	0	0	0	0	58	31	28
01:00	1	5	20	12	2	3	0	0	0	0	0	0	0	43	28	24
02:00	0	0	3	7	9	1	1	0	0	0	0	0	0	21	33	30
03:00	2	0	7	8	4	0	2	0	0	0	0	0	0	23	32	26
04:00	0	0	9	13	14	5	1	0	0	0	0	0	0	42	33	29
05:00	0	4	16	48	25	2	1	0	0	0	0	0	0	96	31	27
06:00	1	30	91	87	16	3	0	0	0	0	0	0	0	228	28	24
07:00	13	84	231	64	8	0	0	0	0	0	0	0	0	400	24	21
08:00	49	166	194	45	1	0	0	0	0	0	0	0	0	455	23	19
09:00	8	105	209	82	9	1	0	0	0	0	0	0	0	414	25	22
10:00	10	48	180	102	20	2	0	0	0	0	0	0	0	362	27	23
11:00	10	43	171	99	14	2	0	0	0	0	0	0	0	339	27	23
12 PM	17	61	219	86	11	2	1	0	0	0	0	0	0	397	26	22
13:00	23	83	215	81	11	0	0	0	0	0	0	0	0	413	25	21
14:00	23	69	223	64	4	0	0	0	0	0	0	0	0	383	24	21
15:00	23	67	224	73	16	0	0	0	0	0	0	0	0	403	25	22
16:00	15	77	222	64	7	0	0	0	0	0	0	0	0	385	25	21
17:00	53	102	231	24	0	0	0	0	0	0	0	0	0	410	23	19
18:00	12	69	216	52	7	0	0	0	0	0	0	0	0	356	24	21
19:00	16	66	167	58	5	0	0	0	0	0	0	0	0	312	25	21
20:00	4	24	126	80	16	1	0	0	0	0	0	0	0	251	27	24
21:00	4	25	141	57	14	1	0	0	0	0	0	0	0	242	27	23
22:00	2	17	103	65	13	2	0	0	0	0	0	0	0	202	27	24
23:00	1	12	59	43	15	0	0	0	0	0	0	0	0	130	28	24
Total	287	1158	3288	1343	255	28	6	0	0	0	0	0	0	6365		
%	4.5%	18.2%	51.7%	21.1%	4.0%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	07:00	06:00	05:00	04:00	03:00							08:00		
Vol.	49	166	231	87	25	5	2							455		
Midday Peak	13:00	13:00	14:00	11:00	11:00	11:00	12:00							13:00		
Vol.	23	83	223	99	14	2	1							413		
PM Peak	17:00	17:00	17:00	20:00	15:00	22:00								17:00		
Vol.	53	102	231	80	16	2								410		
%iles			15th Percentile :			16 MPH										
			50th Percentile :			21 MPH										
			85th Percentile :			26 MPH										
			95th Percentile :			28 MPH										

Stats  
10 MPH Pace Speed : 20-29 MPH  
Number in Pace : 4631  
Percent in Pace : 72.8%  
Number of Vehicles > 25 MPH : 1363  
Percent of Vehicles > 25 MPH : 21.4%  
Mean Speed(Average) : 22 MPH

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EB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
03/03/16	0	6	24	36	8	2	0	0	0	0	0	0	0	76	28	25
01:00	1	1	13	19	9	1	0	0	0	0	0	0	0	44	30	26
02:00	0	2	9	8	5	2	0	0	0	0	0	0	0	26	32	26
03:00	0	1	6	7	11	0	0	0	0	0	0	0	0	25	32	28
04:00	1	3	17	19	5	0	0	0	0	0	0	0	0	45	28	25
05:00	0	6	40	43	15	3	0	0	0	0	0	0	0	107	29	26
06:00	12	38	107	68	9	1	0	0	0	0	0	0	0	235	27	22
07:00	31	123	177	38	0	0	0	0	0	0	0	0	0	369	23	20
08:00	72	189	191	23	0	0	0	0	0	0	0	0	0	475	22	18
09:00	25	109	254	47	2	1	0	0	0	0	0	0	0	438	23	21
10:00	34	100	246	44	2	0	0	0	0	0	0	0	0	426	23	20
11:00	21	90	188	42	4	0	0	0	0	0	0	0	0	345	23	21
12 PM	11	90	197	75	6	0	0	0	0	0	0	0	0	379	25	22
13:00	20	81	195	92	6	0	1	0	0	0	0	0	0	395	26	22
14:00	8	90	222	59	7	0	0	0	0	0	0	0	0	386	24	21
15:00	26	103	261	70	6	0	0	0	0	0	0	0	0	466	24	21
16:00	22	55	244	74	9	0	0	0	0	0	0	0	0	404	25	22
17:00	47	94	225	39	2	1	0	0	0	0	0	0	0	408	23	20
18:00	12	81	197	62	10	1	0	0	0	0	0	0	0	363	25	22
19:00	11	33	190	78	17	0	0	0	0	0	0	0	0	329	26	23
20:00	7	50	155	94	7	0	0	0	0	0	0	0	0	313	26	23
21:00	2	24	118	69	14	2	0	0	0	0	0	0	0	229	27	24
22:00	1	16	83	78	15	1	0	0	0	0	0	0	0	194	28	24
23:00	0	8	49	69	19	3	1	0	0	0	0	0	0	149	29	26
Total	364	1393	3408	1253	188	18	2	0	0	0	0	0	0	6626		
%	5.5%	21.0%	51.4%	18.9%	2.8%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	09:00	06:00	05:00	05:00								08:00		
Vol.	72	189	254	68	15	3								475		
Midday Peak	11:00	11:00	14:00	13:00	14:00		13:00							13:00		
Vol.	21	90	222	92	7		1							395		
PM Peak	17:00	15:00	15:00	20:00	23:00	23:00	23:00							15:00		
Vol.	47	103	261	94	19	3	1							466		
% ile			15th Percentile :			16 MPH										
			50th Percentile :			21 MPH										
			85th Percentile :			25 MPH										
			95th Percentile :			28 MPH										

Stats  
 10 MPH Pace Speed : 15-24 MPH  
 Number in Pace : 4801  
 Percent in Pace : 72.5%  
 Number of Vehicles > 25 MPH : 1210  
 Percent of Vehicles > 25 MPH : 18.3%  
 Mean Speed(Average) : 21 MPH



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WB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
03/01/16	1	6	10	17	7	3	0	0	0	0	0	0	0	44	31	26
01:00	0	5	9	7	11	2	0	0	0	0	0	0	0	34	32	26
02:00	0	2	4	7	4	2	0	0	0	0	0	0	0	19	32	27
03:00	1	2	5	4	4	0	2	0	0	0	0	0	0	18	33	26
04:00	1	1	7	14	12	4	0	0	0	0	0	0	0	39	33	28
05:00	3	8	36	49	22	2	1	0	0	0	0	0	0	121	30	26
06:00	3	25	83	103	30	4	0	1	0	0	0	0	0	249	28	25
07:00	31	100	192	28	8	0	0	0	0	0	0	0	0	359	23	20
08:00	30	85	157	42	5	1	0	0	0	0	0	0	0	320	24	20
09:00	14	92	176	62	8	0	0	0	0	0	0	0	0	352	25	21
10:00	24	85	185	45	12	1	0	0	0	0	0	0	0	352	24	21
11:00	22	94	233	53	14	0	0	0	0	0	0	0	0	416	24	21
12 PM	19	97	186	60	6	1	0	0	0	0	0	0	0	369	24	21
13:00	38	101	170	45	8	1	0	0	0	0	0	0	0	363	23	20
14:00	20	106	219	44	12	1	0	0	0	0	0	0	0	402	23	21
15:00	52	105	186	53	3	0	0	0	0	0	0	0	0	399	23	20
16:00	55	134	191	51	4	1	0	0	0	0	0	0	0	436	23	19
17:00	77	139	193	16	3	0	0	0	0	0	0	0	0	428	22	18
18:00	65	131	194	31	4	0	0	0	0	0	0	0	0	425	23	19
19:00	23	79	189	45	3	1	0	0	0	0	0	0	0	340	23	21
20:00	12	41	112	79	15	2	0	0	0	0	0	0	0	261	27	23
21:00	5	26	82	102	19	4	0	0	0	0	0	0	0	238	28	24
22:00	1	13	47	94	20	4	0	0	0	0	0	0	0	179	28	26
23:00	3	9	32	46	17	7	0	0	0	0	0	0	0	114	31	26
Total	500	1486	2898	1097	251	41	3	1	0	0	0	0	0	6277		
%	8.0%	23.7%	46.2%	17.5%	4.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	06:00	06:00	04:00	03:00	06:00						07:00		
Vol.	31	100	192	103	30	4	2	1						359		
Midday Peak	13:00	14:00	11:00	12:00	11:00	12:00								11:00		
Vol.	38	106	233	60	14	1								416		
PM Peak	17:00	17:00	18:00	21:00	22:00	23:00								16:00		
Vol.	77	139	194	102	20	7								436		
%iles			15th Percentile :			15 MPH										
			50th Percentile :			20 MPH										
			85th Percentile :			26 MPH										
			95th Percentile :			28 MPH										

Stats  
 10 MPH Pace Speed : 15-24 MPH  
 Number in Pace : 4384  
 Percent in Pace : 69.8%  
 Number of Vehicles > 25 MPH : 1174  
 Percent of Vehicles > 25 MPH : 18.7%  
 Mean Speed(Average) : 21 MPH



PRECISION  
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INDUSTRIES, LLC

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Cambridge Street  
west of Berkshire Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

164973 B Speed  
Site Code: TBA  
Date Start: 01-Mar-16

WB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
03/02/16	1	9	10	30	8	4	0	0	0	0	0	0	0	62	30	26
01:00	2	6	20	6	2	1	0	0	0	0	0	0	0	37	26	22
02:00	0	0	5	7	5	0	1	0	0	0	0	0	0	18	32	28
03:00	0	3	9	5	5	1	0	0	0	0	0	0	0	23	31	25
04:00	0	3	11	11	8	4	0	0	0	0	0	0	0	37	33	27
05:00	1	4	19	45	17	3	2	0	0	0	0	0	0	91	31	27
06:00	17	31	105	83	22	2	0	0	1	0	0	0	0	261	28	23
07:00	26	89	140	49	3	2	0	0	0	0	0	0	0	309	24	20
08:00	42	111	167	18	0	0	0	0	0	0	0	0	0	338	23	19
09:00	11	70	184	56	10	1	0	0	0	0	0	0	0	332	25	22
10:00	23	72	166	92	10	2	0	0	0	0	0	0	0	365	26	22
11:00	10	53	187	104	24	0	0	0	0	0	0	0	0	378	27	23
12 PM	17	87	175	88	13	1	0	0	0	0	0	0	0	381	26	22
13:00	14	88	174	78	16	2	0	0	0	0	0	0	0	372	26	22
14:00	25	123	188	49	6	1	0	0	0	0	0	0	0	392	23	20
15:00	19	66	206	69	15	0	0	0	0	0	0	0	0	375	26	22
16:00	53	122	199	60	5	0	0	0	0	0	0	0	0	439	23	20
17:00	54	172	223	24	1	1	0	0	0	0	0	0	0	475	22	19
18:00	15	111	182	66	15	1	1	0	0	0	0	0	0	391	25	21
19:00	26	78	163	65	15	0	0	1	0	0	0	0	0	348	26	21
20:00	6	41	128	100	18	0	0	0	0	0	0	0	0	293	27	23
21:00	3	28	96	70	11	1	0	0	0	0	0	0	0	209	27	23
22:00	2	30	68	72	17	0	0	0	0	0	0	0	0	189	28	24
23:00	1	16	39	47	16	1	0	0	1	0	0	0	0	121	28	25
Total	368	1413	2864	1294	262	28	4	1	2	0	0	0	0	6236		
%	5.9%	22.7%	45.9%	20.8%	4.2%	0.4%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	09:00	06:00	06:00	00:00	05:00		06:00					08:00		
Vol.	42	111	184	83	22	4	2		1					338		
Midday Peak	14:00	14:00	14:00	11:00	11:00	13:00								14:00		
Vol.	25	123	188	104	24	2								392		
PM Peak	17:00	17:00	17:00	20:00	20:00	17:00	18:00	19:00	23:00					17:00		
Vol.	54	172	223	100	18	1	1	1	1					475		
%iles			15th Percentile :			16 MPH										
			50th Percentile :			21 MPH										
			85th Percentile :			26 MPH										
			95th Percentile :			28 MPH										

Stats  
 10 MPH Pace Speed : 15-24 MPH  
 Number in Pace : 4277  
 Percent in Pace : 68.6%  
 Number of Vehicles > 25 MPH : 1332  
 Percent of Vehicles > 25 MPH : 21.4%  
 Mean Speed(Average) : 22 MPH





PRECISION  
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INDUSTRIES, LLC

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Cambridge Street  
west of Berkshire Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

164973 B Speed  
Site Code: TBA  
Date Start: 01-Mar-16

WB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
03/03/16	14	19	24	29	34	39	44	49	54	59	64	69	9999			
01:00	2	10	13	29	9	2	1	0	0	0	0	0	0	66	30	25
02:00	0	3	10	12	5	1	0	0	0	0	0	0	0	31	30	26
03:00	0	0	9	10	7	0	0	0	0	0	0	0	0	26	31	27
04:00	1	2	5	6	6	2	0	0	0	0	0	0	0	22	32	26
05:00	1	6	11	11	7	2	1	0	0	0	0	0	0	39	31	25
06:00	3	9	36	36	15	7	1	0	0	0	0	0	0	107	31	25
07:00	3	20	97	76	32	3	2	0	0	0	0	0	0	233	29	25
08:00	31	95	195	40	3	0	0	0	0	0	0	0	0	364	23	20
09:00	27	107	168	31	3	0	0	0	0	0	0	0	0	336	23	20
10:00	15	73	197	56	9	1	0	0	0	0	0	0	0	351	25	21
11:00	26	98	207	48	4	1	0	0	0	0	0	0	0	384	23	21
12 PM	29	117	202	50	6	0	0	0	0	0	0	0	0	404	23	20
13:00	15	74	187	90	8	1	1	0	0	0	0	0	0	376	26	22
14:00	22	79	188	54	15	0	0	0	0	0	0	0	0	358	25	21
15:00	36	117	199	66	6	0	0	0	0	0	0	0	0	424	24	20
16:00	30	134	170	44	7	1	0	0	0	0	0	0	0	386	23	20
17:00	20	78	203	70	6	0	0	0	0	0	0	0	0	377	25	21
18:00	53	158	213	40	4	0	0	0	0	0	0	0	0	468	23	19
19:00	31	115	172	64	6	0	0	0	0	0	0	0	0	388	24	20
20:00	11	79	182	68	11	0	0	0	0	0	0	0	0	351	25	22
21:00	8	53	134	67	12	1	0	0	0	0	0	0	0	275	26	22
22:00	10	28	88	101	19	4	1	0	0	0	0	0	0	251	28	24
23:00	1	19	58	73	29	5	2	0	0	0	0	0	0	187	30	26
Total	3	13	33	41	25	1	1	0	0	0	0	0	0	117	30	25
Total %	378	1487	2977	1183	254	32	10	0	0	0	0	0	0	6321		
AM Peak	07:00	08:00	09:00	06:00	06:00	05:00	06:00							07:00		
Vol.	31	107	197	76	32	7	2							364		
Midday Peak	14:00	11:00	11:00	12:00	13:00	12:00	12:00							14:00		
Vol.	36	117	202	90	15	1	1							424		
PM Peak	17:00	17:00	17:00	21:00	22:00	22:00	22:00							17:00		
Vol.	53	158	213	101	29	5	2							468		
% ile			15th Percentile :			15 MPH										
			50th Percentile :			21 MPH										
			85th Percentile :			26 MPH										
			95th Percentile :			28 MPH										

Stats  
 10 MPH Pace Speed : 15-24 MPH  
 Number in Pace : 4464  
 Percent in Pace : 70.6%  
 Number of Vehicles > 25 MPH : 1242  
 Percent of Vehicles > 25 MPH : 19.7%  
 Mean Speed(Average) : 21 MPH

Cambridge Street  
west of Berkshire Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube



PRECISION  
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INDUSTRIES, LLC

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164973 B Volume  
Site Code: TBA  
Date Start: 01-Mar-16

Start Time	EB		WB		Combin ed		01-Mar-16 Tue							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
12:00	16	90	16	110	32	200								
12:15	24	90	14	92	38	182								
12:30	17	105	7	85	24	190								
12:45	7	98	383	7	44	82	369							
01:00	8	101	8	8	16	99	108							
01:15	10	96	7	7	17	86								
01:30	6	103	7	7	13	82								
01:45	5	115	415	12	34	96	363							
02:00	7	92	7	7	14	113	63							
02:15	8	95	5	5	13	83								
02:30	3	84	2	2	5	96								
02:45	2	104	375	5	19	110	402							
03:00	6	104	5	5	11	125	39							
03:15	3	108	3	3	6	94								
03:30	5	102	7	7	12	96								
03:45	7	99	413	3	18	84	399							
04:00	5	113	10	10	15	109	39							
04:15	8	90	11	11	19	115								
04:30	15	85	8	8	23	117								
04:45	15	96	384	10	39	95	436							
05:00	17	109	20	20	37	103	82							
05:15	20	102	30	30	50	113								
05:30	39	82	27	27	66	102								
05:45	35	111	83	376	44	121	110	428						
06:00	38	105	48	48	86	112	232							
06:15	56	97	58	58	114	110								
06:30	62	91	64	64	126	100								
06:45	56	212	83	376	79	249	103	425						
07:00	85	81	66	66	151	95	135	461						
07:15	97	85	108	108	205	76	205							
07:30	101	83	98	98	199	80	199							
07:45	126	409	81	330	87	359	89	340	213	768				
08:00	111	77	95	77	206	77	206							
08:15	117	79	77	77	194	62	194							
08:30	101	58	74	74	175	62	175							
08:45	93	422	61	275	74	320	60	261	167	742				
09:00	115	56	77	77	192	71	192							
09:15	92	64	99	66	191	66	191							
09:30	121	60	90	45	211	45	211							
09:45	118	446	40	220	86	352	56	238	204	798				
10:00	98	65	92	46	190	46	190							
10:15	97	46	77	52	174	52	174							
10:30	95	42	85	46	180	46	180							
10:45	94	384	44	197	98	352	35	179	192	736				
11:00	73	33	107	39	180	39	180							
11:15	101	34	102	31	203	31	203							
11:30	113	41	104	23	217	23	217							
11:45	92	379	25	133	103	416	21	114	195	795				
Total	2540	3877	2323	3954	4863	7831								
Percent	52.2%	49.5%	47.8%	50.5%										
Day Total		6417		6277		12694								
Peak	07:30	-	03:15	-	11:00	-	05:15	-	07:15	-	02:45	-	-	-
Vol.	455	-	422	-	416	-	437	-	823	-	843	-	-	-
P.H.F.	0.903		0.934		0.972		0.934		0.966		0.920			

Cambridge Street  
west of Berkshire Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube



PRECISION  
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INDUSTRIES, LLC

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164973 B Volume  
Site Code: TBA  
Date Start: 01-Mar-16

Start Time	EB		WB		Combin ed		02-Mar-16 Wed						
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.							
12:00	18	106	9	104	27	210							
12:15	12	102	22	101	34	203							
12:30	17	78	15	91	32	169							
12:45	11	111	397	16	62	85	381	120	196	778			
01:00	12	101	12	92	24	193							
01:15	16	88	7	85	23	173							
01:30	9	110	10	108	19	218							
01:45	6	43	114	413	8	37	87	372	14	80	201	785	
02:00	8	123	6	95	14	218							
02:15	5	77	8	91	13	168							
02:30	3	80	2	119	5	199							
02:45	5	21	103	383	2	18	87	392	7	39	190	775	
03:00	7	90	4	95	11	185							
03:15	5	109	9	79	14	188							
03:30	3	114	5	103	8	217							
03:45	8	23	90	403	5	23	98	375	13	46	188	778	
04:00	12	102	7	98	19	200							
04:15	11	83	7	99	18	182							
04:30	10	122	12	112	22	234							
04:45	9	42	78	385	11	37	130	439	20	79	208	824	
05:00	18	108	17	119	35	227							
05:15	17	87	27	141	44	228							
05:30	28	119	24	103	52	222							
05:45	33	96	96	410	23	91	112	475	56	187	208	885	
06:00	42	96	43	104	85	200							
06:15	40	84	62	95	102	179							
06:30	83	98	80	73	163	171							
06:45	63	228	78	356	76	261	119	391	139	489	197	747	
07:00	80	65	69	99	149	164							
07:15	92	70	79	100	171	170							
07:30	99	83	77	77	176	160							
07:45	129	400	94	312	84	309	72	348	213	709	166	660	
08:00	108	53	91	76	199	129							
08:15	124	74	86	72	210	146							
08:30	110	68	65	71	175	139							
08:45	113	455	56	251	96	338	74	293	209	793	130	544	
09:00	95	60	69	60	164	120							
09:15	116	70	82	46	198	116							
09:30	97	56	95	61	192	117							
09:45	106	414	56	242	86	332	42	209	192	746	98	451	
10:00	79	63	86	42	165	105							
10:15	89	53	97	55	186	108							
10:30	93	45	97	57	190	102							
10:45	101	362	41	202	85	365	35	189	186	727	76	391	
11:00	83	39	104	40	187	79							
11:15	86	29	84	24	170	53							
11:30	83	42	99	35	182	77							
11:45	87	339	20	130	91	378	22	121	178	717	42	251	
Total	2481	3884	2251	3985	4732	7869							
Percent	52.4%	49.4%	47.6%	50.6%									
Day Total		6365		6236		12601							
Peak	07:45	-	01:15	-	10:15	-	04:30	-	07:30	-	04:30	-	-
Vol.	471	-	435	-	383	-	502	-	798	-	897	-	-
P.H.F.	0.913	-	0.884	-	0.921	-	0.890	-	0.937	-	0.958	-	-

Cambridge Street  
west of Berkshire Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube



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Email: datarequests@pdillc.com

164973 B Volume  
Site Code: TBA  
Date Start: 01-Mar-16

Start Time	EB		WB		Combin ed		03-Mar-16 Thu							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
12:00	26	95	22	98	48	193								
12:15	20	88	16	96	36	184								
12:30	13	85	16	98	29	183								
12:45	17	111	379	12	66	84	376	29	142	195	755			
01:00	14	92		8		95		22		187				
01:15	17	119		13		81		30		200				
01:30	7	79		4		83		11		162				
01:45	6	44	105	395	6	31	99	358	12	75	204	753		
02:00	11	102		9		98		20		200				
02:15	6	80		6		113		12		193				
02:30	5	95		5		99		10		194				
02:45	4	26	109	386	6	26	114	424	10	52	223	810		
03:00	5	118		6		107		11		225				
03:15	9	113		3		90		12		203				
03:30	5	131		7		96		12		227				
03:45	6	25	104	466	6	22	93	386	12	47	197	852		
04:00	8	112		8		91		16		203				
04:15	9	101		8		94		17		195				
04:30	22	87		11		98		33		185				
04:45	6	45	104	404	12	39	94	377	18	84	198	781		
05:00	17	115		17		123		34		238				
05:15	25	87		25		116		50		203				
05:30	30	99		33		114		63		213				
05:45	35	107	107	408	32	107	115	468	67	214	222	876		
06:00	45	95		35		113		80		208				
06:15	50	102		57		90		107		192				
06:30	58	78		70		83		128		161				
06:45	82	235	88	363	71	233	102	388	153	468	190	751		
07:00	70	80		89		96		159		176				
07:15	94	79		89		88		183		167				
07:30	103	91		88		87		191		178				
07:45	102	369	79	329	98	364	80	351	200	733	159	680		
08:00	137	79		78		70		215		149				
08:15	125	79		79		66		204		145				
08:30	117	81		76		61		193		142				
08:45	96	475	74	313	103	336	78	275	199	811	152	588		
09:00	122	67		81		61		203		128				
09:15	108	60		82		60		190		120				
09:30	99	45		106		62		205		107				
09:45	109	438	57	229	82	351	68	251	191	789	125	480		
10:00	110	53		105		64		215		117				
10:15	101	51		97		53		198		104				
10:30	111	52		84		38		195		90				
10:45	104	426	38	194	98	384	32	187	202	810	70	381		
11:00	68	32		92		37		160		69				
11:15	94	37		105		29		199		66				
11:30	90	40		114		30		204		70				
11:45	93	345	40	149	93	404	21	117	186	749	61	266		
Total	2611	4015		2363		3958		4974		7973				
Percent	52.5%	50.4%		47.5%		49.6%								
Day Total		6626		6321		12947								
Peak	07:45	-	02:45	-	10:45	-	05:00	-	07:45	-	02:45	-	-	-
Vol.	481	-	471	-	409	-	468	-	812	-	878	-	-	-
P.H.F.	0.878		0.899		0.897		0.951		0.944		0.967			

Berkshire Street  
 south of Marcella Street  
 City, State: Cambridge, MA  
 Client: VHB/ C. Dube



PRECISION  
 D A T A  
 INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
 Office: 508.481.3999 Fax: 508.545.1234  
 Email: datarequests@pdillc.com

164973 C Class  
 Site Code: TBA  
 Date Start: 01-Mar-16

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/01/1														
6	0	8	0	0	0	0	0	0	0	0	0	0	0	8
01:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9
02:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
03:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3
04:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
05:00	0	17	5	0	1	0	0	0	0	0	0	0	0	23
06:00	0	47	5	0	2	0	0	0	0	0	0	0	0	54
07:00	2	93	13	0	4	0	0	0	0	0	0	0	0	112
08:00	1	101	19	0	2	0	0	0	0	0	0	0	0	123
09:00	0	28	2	0	0	0	0	0	0	0	0	0	0	30
10:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
11:00	0	4	0	0	0	0	0	0	0	0	0	0	0	4
12 PM	0	3	0	0	0	0	0	0	0	0	0	0	0	3
13:00	0	29	3	0	1	0	0	0	0	0	0	0	0	33
14:00	0	9	0	0	0	0	0	0	0	0	0	0	0	9
15:00	2	120	22	2	1	0	0	0	0	0	0	0	0	147
16:00	1	183	15	1	2	0	0	0	0	0	0	0	0	202
17:00	2	218	11	0	5	0	0	0	0	0	0	0	0	236
18:00	0	143	9	0	5	0	0	0	0	0	0	0	0	157
19:00	0	65	6	0	1	0	0	0	0	0	0	0	0	72
20:00	0	59	2	0	1	0	0	0	0	0	0	0	0	62
21:00	1	50	1	1	0	0	0	0	0	0	0	0	0	53
22:00	0	40	2	0	0	0	0	0	0	0	0	0	0	42
23:00	0	25	1	1	0	0	0	0	0	0	0	0	0	27
Total	9	1261	119	5	25	0	0	0	0	0	0	0	0	1419
Percent	0.6%	88.9%	8.4%	0.4%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak Vol.	07:00	08:00	08:00		07:00									08:00
PM Peak Vol.	15:00	17:00	15:00	15:00	17:00									17:00
	2	218	22	2	5									236

Berkshire Street  
 south of Marcella Street  
 City, State: Cambridge, MA  
 Client: VHB/ C. Dube



PRECISION  
 D A T A  
 INDUSTRIES, LLC

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 Email: datarequests@pdillc.com

164973 C Class  
 Site Code: TBA  
 Date Start: 01-Mar-16

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/02/1														
6	0	14	0	0	0	0	0	0	0	0	0	0	0	14
01:00	0	5	3	0	0	0	0	0	0	0	0	0	0	8
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	6	3	0	0	0	0	0	0	0	0	0	0	9
05:00	0	19	4	0	0	0	0	0	0	0	0	0	0	23
06:00	0	35	7	0	0	0	0	0	0	0	0	0	0	42
07:00	1	87	11	0	0	3	0	0	0	0	0	0	0	102
08:00	0	88	19	1	0	0	0	0	0	0	0	0	0	108
09:00	0	66	9	0	3	0	0	0	0	0	0	0	0	78
10:00	1	55	14	1	3	1	0	0	0	0	0	0	0	75
11:00	0	53	11	0	0	0	0	0	0	0	0	0	0	64
12 PM	2	58	14	0	2	1	0	0	0	0	0	0	0	77
13:00	0	60	16	0	3	1	0	0	0	0	0	0	0	80
14:00	1	68	25	0	5	0	0	0	0	0	0	0	0	99
15:00	0	104	26	2	3	0	0	0	0	0	0	0	0	135
16:00	2	132	23	2	6	0	0	0	0	0	0	0	0	165
17:00	0	187	22	2	7	0	0	0	0	0	0	0	0	218
18:00	0	115	21	0	1	0	0	0	0	0	0	0	0	137
19:00	0	49	14	1	1	0	0	0	0	0	0	0	0	65
20:00	0	47	10	0	1	0	0	0	0	0	0	0	0	58
21:00	0	47	8	0	0	0	0	0	0	0	0	0	0	55
22:00	0	27	8	0	1	0	0	0	0	0	0	0	0	36
23:00	0	23	6	0	0	0	0	0	0	0	0	0	0	29
Total	7	1350	274	9	36	6	0	0	0	0	0	0	0	1682
Percent	0.4%	80.3%	16.3%	0.5%	2.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	08:00	08:00	08:00	09:00	07:00								08:00
Vol.	1	88	19	1	3	3								108
PM Peak	12:00	17:00	15:00	15:00	17:00	12:00								17:00
Vol.	2	187	26	2	7	1								218

Berkshire Street  
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164973 C Class  
Site Code: TBA  
Date Start: 01-Mar-16

NB

Start Time	Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
03/03/1														
6	0	22	3	0	0	0	0	0	0	0	0	0	0	25
01:00	0	5	0	0	0	0	0	0	0	0	0	0	0	5
02:00	0	3	0	0	0	0	0	0	0	0	0	0	0	3
03:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
04:00	0	0	1	0	1	0	0	0	0	0	0	0	0	2
05:00	0	10	9	0	1	0	0	1	0	0	0	0	0	21
06:00	0	38	9	0	4	0	0	0	0	0	0	0	0	51
07:00	2	74	15	0	5	0	1	0	0	0	0	0	0	97
08:00	0	13	3	0	2	0	0	0	0	0	0	0	0	18
09:00	0	9	3	0	0	0	0	0	0	0	0	0	0	12
10:00	0	1	1	0	0	0	0	0	0	0	0	0	0	2
11:00	2	1	0	0	0	0	0	0	0	0	0	0	0	3
12 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1
13:00	1	2	0	0	0	0	0	0	0	0	0	0	0	3
14:00	4	29	3	0	0	0	0	0	0	0	0	0	0	36
15:00	1	82	32	1	7	0	0	0	0	0	0	0	0	123
16:00	0	140	31	2	4	0	0	1	0	0	0	0	0	178
17:00	0	191	26	1	2	0	0	0	0	0	0	0	0	220
18:00	1	117	11	0	3	0	0	0	0	0	0	0	0	132
19:00	0	62	9	1	1	0	0	1	0	0	0	0	0	74
20:00	1	73	3	0	0	0	0	0	0	0	0	0	0	77
21:00	0	69	4	0	0	0	0	0	0	0	0	0	0	73
22:00	0	38	2	0	1	0	0	0	0	0	0	0	0	41
23:00	0	28	1	0	0	0	0	0	0	0	0	0	0	29
Total	12	1009	166	5	32	0	1	3	0	0	0	0	0	1228
Percent	1.0%	82.2%	13.5%	0.4%	2.6%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	
AM Peak	07:00	07:00	07:00		07:00		07:00	05:00						07:00
Vol.	2	74	15		5		1	1						97
PM Peak	14:00	17:00	15:00	16:00	15:00			16:00						17:00
Vol.	4	191	32	2	7			1						220
Total		3620	559	19	93	6	1	3	0	0	0	0	0	4329



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Berkshire Street  
south of Marcella Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

164973 C Speed  
Site Code: TBA  
Date Start: 01-Mar-16

NB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
03/01/16	2	2	3	0	1	0	0	0	0	0	0	0	0	8	23	18
01:00	1	2	5	1	0	0	0	0	0	0	0	0	0	9	23	20
02:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11	8
03:00	0	1	2	0	0	0	0	0	0	0	0	0	0	3	22	20
04:00	0	1	2	1	0	0	0	0	0	0	0	0	0	4	26	22
05:00	2	7	11	3	0	0	0	0	0	0	0	0	0	23	23	20
06:00	10	13	22	9	0	0	0	0	0	0	0	0	0	54	24	19
07:00	25	40	38	8	0	1	0	0	0	0	0	0	0	112	22	17
08:00	35	55	27	6	0	0	0	0	0	0	0	0	0	123	21	16
09:00	14	7	9	0	0	0	0	0	0	0	0	0	0	30	21	14
10:00	2	0	3	0	0	0	0	0	0	0	0	0	0	5	22	16
11:00	1	0	3	0	0	0	0	0	0	0	0	0	0	4	23	18
12 PM	1	0	2	0	0	0	0	0	0	0	0	0	0	3	22	17
13:00	7	9	16	1	0	0	0	0	0	0	0	0	0	33	22	18
14:00	0	0	9	0	0	0	0	0	0	0	0	0	0	9	23	22
15:00	36	61	48	2	0	0	0	0	0	0	0	0	0	147	21	16
16:00	38	96	64	4	0	0	0	0	0	0	0	0	0	202	21	17
17:00	42	119	72	3	0	0	0	0	0	0	0	0	0	236	21	17
18:00	45	75	34	3	0	0	0	0	0	0	0	0	0	157	20	16
19:00	12	27	28	5	0	0	0	0	0	0	0	0	0	72	22	18
20:00	11	26	20	3	2	0	0	0	0	0	0	0	0	62	22	18
21:00	9	22	16	6	0	0	0	0	0	0	0	0	0	53	23	18
22:00	6	15	16	5	0	0	0	0	0	0	0	0	0	42	23	19
23:00	4	15	6	2	0	0	0	0	0	0	0	0	0	27	22	17
Total	304	593	456	62	3	1	0	0	0	0	0	0	0	1419		
%	21.4%	41.8%	32.1%	4.4%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	08:00	07:00	06:00	00:00	07:00								08:00		
Vol.	35	55	38	9	1	1								123		
Midda y Peak	13:00	13:00	13:00	13:00										13:00		
Vol.	7	9	16	1										33		
PM Peak	18:00	17:00	17:00	21:00	20:00									17:00		
Vol.	45	119	72	6	2									236		
% ile			15th Percentile :			9 MPH										
			50th Percentile :			17 MPH										
			85th Percentile :			22 MPH										
			95th Percentile :			23 MPH										

Stats  
 10 MPH Pace Speed : 15-24 MPH  
 Number in Pace : 1049  
 Percent in Pace : 73.9%  
 Number of Vehicles > 20 MPH : 431  
 Percent of Vehicles > 20 MPH : 30.4%  
 Mean Speed(Average) : 17 MPH





PRECISION  
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INDUSTRIES, LLC

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Berkshire Street  
south of Marcella Street  
City, State: Cambridge, MA  
Client: VHB/ C. Dube

164973 C Speed  
Site Code: TBA  
Date Start: 01-Mar-16

NB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th %ile	Ave Speed
03/02/16	2	5	7	0	0	0	0	0	0	0	0	0	0	14	22	18
01:00	1	3	4	0	0	0	0	0	0	0	0	0	0	8	22	18
02:00	1	0	2	0	0	0	0	0	0	0	0	0	0	3	22	17
03:00	0	0	2	0	0	0	0	0	0	0	0	0	0	2	23	22
04:00	0	1	6	1	1	0	0	0	0	0	0	0	0	9	27	23
05:00	0	10	7	5	1	0	0	0	0	0	0	0	0	23	26	21
06:00	12	15	11	4	0	0	0	0	0	0	0	0	0	42	22	17
07:00	18	56	26	1	1	0	0	0	0	0	0	0	0	102	21	17
08:00	28	41	30	9	0	0	0	0	0	0	0	0	0	108	22	17
09:00	22	33	20	3	0	0	0	0	0	0	0	0	0	78	21	16
10:00	40	25	10	0	0	0	0	0	0	0	0	0	0	75	18	13
11:00	28	30	5	1	0	0	0	0	0	0	0	0	0	64	18	13
12 PM	25	29	20	3	0	0	0	0	0	0	0	0	0	77	21	16
13:00	19	26	31	4	0	0	0	0	0	0	0	0	0	80	22	17
14:00	28	32	36	3	0	0	0	0	0	0	0	0	0	99	22	16
15:00	23	53	51	8	0	0	0	0	0	0	0	0	0	135	22	18
16:00	18	66	68	10	3	0	0	0	0	0	0	0	0	165	23	19
17:00	27	94	80	13	4	0	0	0	0	0	0	0	0	218	23	19
18:00	20	57	46	14	0	0	0	0	0	0	0	0	0	137	23	18
19:00	8	19	25	13	0	0	0	0	0	0	0	0	0	65	25	20
20:00	10	20	24	4	0	0	0	0	0	0	0	0	0	58	23	18
21:00	7	18	25	4	1	0	0	0	0	0	0	0	0	55	23	19
22:00	8	14	11	3	0	0	0	0	0	0	0	0	0	36	22	17
23:00	6	8	12	1	2	0	0	0	0	0	0	0	0	29	23	18
Total	351	655	559	104	13	0	0	0	0	0	0	0	0	1682		
%	20.9%	38.9%	33.2%	6.2%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	08:00	07:00	08:00	08:00	04:00									08:00		
Vol.	28	56	30	9	1									108		
Midday Peak	11:00	14:00	14:00	13:00										14:00		
Vol.	28	32	36	4										99		
PM Peak	17:00	17:00	17:00	18:00	17:00									17:00		
Vol.	27	94	80	14	4									218		
%iles			15th Percentile :				10 MPH									
			50th Percentile :				17 MPH									
			85th Percentile :				22 MPH									
			95th Percentile :				25 MPH									

Stats  
 10 MPH Pace Speed : 15-24 MPH  
 Number in Pace : 1214  
 Percent in Pace : 72.2%  
 Number of Vehicles > 20 MPH : 564  
 Percent of Vehicles > 20 MPH : 33.5%  
 Mean Speed(Average) : 17 MPH



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Client: VHB/ C. Dube

164973 C Speed  
Site Code: TBA  
Date Start: 01-Mar-16

NB

Start Time	1	15	20	25	30	35	40	45	50	55	60	65	70	Total	85th % ile	Ave Speed
	14	19	24	29	34	39	44	49	54	59	64	69	9999			
03/03/16	9	10	6	0	0	0	0	0	0	0	0	0	0	25	20	15
01:00	1	2	2	0	0	0	0	0	0	0	0	0	0	5	22	17
02:00	0	2	1	0	0	0	0	0	0	0	0	0	0	3	21	19
03:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2	22	15
04:00	0	0	1	1	0	0	0	0	0	0	0	0	0	2	27	25
05:00	4	3	10	2	2	0	0	0	0	0	0	0	0	21	26	20
06:00	8	12	22	7	1	1	0	0	0	0	0	0	0	51	24	20
07:00	29	41	26	1	0	0	0	0	0	0	0	0	0	97	21	16
08:00	7	5	6	0	0	0	0	0	0	0	0	0	0	18	21	15
09:00	5	1	6	0	0	0	0	0	0	0	0	0	0	12	22	16
10:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2	22	15
11:00	2	0	1	0	0	0	0	0	0	0	0	0	0	3	21	12
12 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	1	11	8
13:00	2	0	1	0	0	0	0	0	0	0	0	0	0	3	21	12
14:00	6	9	21	0	0	0	0	0	0	0	0	0	0	36	22	18
15:00	32	39	42	10	0	0	0	0	0	0	0	0	0	123	22	17
16:00	25	72	68	11	1	1	0	0	0	0	0	0	0	178	22	18
17:00	19	99	76	26	0	0	0	0	0	0	0	0	0	220	23	19
18:00	17	54	53	7	1	0	0	0	0	0	0	0	0	132	22	18
19:00	13	32	24	5	0	0	0	0	0	0	0	0	0	74	22	18
20:00	16	37	17	7	0	0	0	0	0	0	0	0	0	77	22	17
21:00	26	28	18	1	0	0	0	0	0	0	0	0	0	73	21	15
22:00	14	13	12	1	1	0	0	0	0	0	0	0	0	41	22	16
23:00	7	14	8	0	0	0	0	0	0	0	0	0	0	29	21	16
Total	245	473	423	79	6	2	0	0	0	0	0	0	0	1228		
%	20.0%	38.5%	34.4%	6.4%	0.5%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			
AM Peak	07:00	07:00	07:00	06:00	05:00	06:00									07:00	
Vol.	29	41	26	7	2	1									97	
Midday Peak	14:00	14:00	14:00												14:00	
Vol.	6	9	21												36	
PM Peak	15:00	17:00	17:00	17:00	16:00	16:00									17:00	
Vol.	32	99	76	26	1	1									220	
% ile			15th Percentile :			10 MPH										
			50th Percentile :			17 MPH										
			85th Percentile :			22 MPH										
			95th Percentile :			25 MPH										

Stats  
 10 MPH Pace Speed : 15-24 MPH  
 Number in Pace : 896  
 Percent in Pace : 73.0%  
 Number of Vehicles > 20 MPH : 425  
 Percent of Vehicles > 20 MPH : 34.6%  
 Mean Speed(Average) : 18 MPH

Berkshire Street  
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164973 C Volume  
 Site Code: TBA  
 Date Start: 01-Mar-16

Start Time	A.M.	NB												Tue 01-Mar-16		
			P.M.													
12:00	3		2													
12:15	3		1													
12:30	1		0													
12:45	1	8	0	3												
01:00	5		1													
01:15	1		11													
01:30	0		15													
01:45	3	9	6	33												
02:00	0		0													
02:15	0		9													
02:30	0		0													
02:45	1	1	0	9												
03:00	2		30													
03:15	0		40													
03:30	0		37													
03:45	1	3	40	147												
04:00	1		41													
04:15	0		62													
04:30	2		51													
04:45	1	4	48	202												
05:00	2		37													
05:15	5		74													
05:30	4		68													
05:45	12	23	57	236												
06:00	10		48													
06:15	17		38													
06:30	11		39													
06:45	16	54	32	157												
07:00	21		19													
07:15	26		21													
07:30	38		18													
07:45	27	112	14	72												
08:00	22		15													
08:15	25		18													
08:30	35		20													
08:45	41	123	9	62												
09:00	22		15													
09:15	3		9													
09:30	4		21													
09:45	1	30	8	53												
10:00	2		12													
10:15	3		14													
10:30	0		10													
10:45	0	5	6	42												
11:00	3		6													
11:15	0		12													
11:30	1		7													
11:45	0	4	2	27												
Total	376		1043													
Percent			100.0%		0.0%			0.0%								
Day Total			1419													
Peak	08:00	-	05:15	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	123	-	247	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.750		0.834													

Berkshire Street  
 south of Marcella Street  
 City, State: Cambridge, MA  
 Client: VHB/ C. Dube



PRECISION  
 D A T A  
 INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
 Office: 508.481.3999 Fax: 508.545.1234  
 Email: datarequests@pdillc.com

164973 C Volume  
 Site Code: TBA  
 Date Start: 01-Mar-16

Start Time	A.M.	NB												Wed 02-Mar-16		
			P.M.													
12:00	2		20													
12:15	3		19													
12:30	6		27													
12:45	3	14	11	77												
01:00	1		24													
01:15	2		19													
01:30	3		16													
01:45	2	8	21	80												
02:00	1		20													
02:15	0		23													
02:30	2		26													
02:45	0	3	30	99												
03:00	0		34													
03:15	1		31													
03:30	0		44													
03:45	1	2	26	135												
04:00	2		34													
04:15	1		41													
04:30	2		44													
04:45	4	9	46	165												
05:00	4		41													
05:15	4		54													
05:30	6		64													
05:45	9	23	59	218												
06:00	6		38													
06:15	12		38													
06:30	10		31													
06:45	14	42	30	137												
07:00	16		24													
07:15	33		12													
07:30	27		14													
07:45	26	102	15	65												
08:00	24		20													
08:15	24		16													
08:30	25		11													
08:45	35	108	11	58												
09:00	24		15													
09:15	19		11													
09:30	18		12													
09:45	17	78	17	55												
10:00	14		8													
10:15	20		7													
10:30	17		13													
10:45	24	75	8	36												
11:00	15		4													
11:15	16		8													
11:30	13		11													
11:45	20	64	6	29												
Total	528		1154													
Percent			100.0%		0.0%			0.0%								
Day Total			1682													
Peak	07:15	-	05:00	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	110	-	218	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.833		0.852													

Berkshire Street  
 south of Marcella Street  
 City, State: Cambridge, MA  
 Client: VHB/ C. Dube



PRECISION  
 D A T A  
 INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
 Office: 508.481.3999 Fax: 508.545.1234  
 Email: datarequests@pdillc.com

164973 C Volume  
 Site Code: TBA  
 Date Start: 01-Mar-16

Start Time	A.M.	NB												Thu 03-Mar-16			
			P.M.														
12:00	5		0														
12:15	10		0														
12:30	5		0														
12:45	5	25	1				1										
01:00	3		0														
01:15	1		1														
01:30	1		1														
01:45	0	5	1														3
02:00	1		3														
02:15	1		12														
02:30	1		8														
02:45	0	3	13														36
03:00	1		25														
03:15	1		35														
03:30	0		32														
03:45	0	2	31														123
04:00	1		32														
04:15	0		46														
04:30	0		63														
04:45	1	2	37														178
05:00	2		51														
05:15	3		71														
05:30	6		54														
05:45	10	21	44														220
06:00	9		55														
06:15	13		29														
06:30	13		26														
06:45	16	51	22														132
07:00	21		16														
07:15	21		25														
07:30	26		15														
07:45	29	97	18														74
08:00	13		21														
08:15	3		21														
08:30	1		15														
08:45	1	18	20														77
09:00	3		17														
09:15	6		17														
09:30	1		15														
09:45	2	12	24														73
10:00	1		14														
10:15	0		10														
10:30	1		6														
10:45	0	2	11														41
11:00	3		4														
11:15	0		5														
11:30	0		5														
11:45	0	3	15														29
Total	241		987														
Percent		100.0%		0.0%				0.0%									
Day Total			1228														
Peak Vol.	07:00	-	05:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	97	-	224	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.836		0.789														

# Vehicle Crash Data

## CRASH RATE WORKSHEET

CITY/TOWN : Cambridge

COUNT DATE :

DISTRICT : 6

UNSIGNALIZED : X

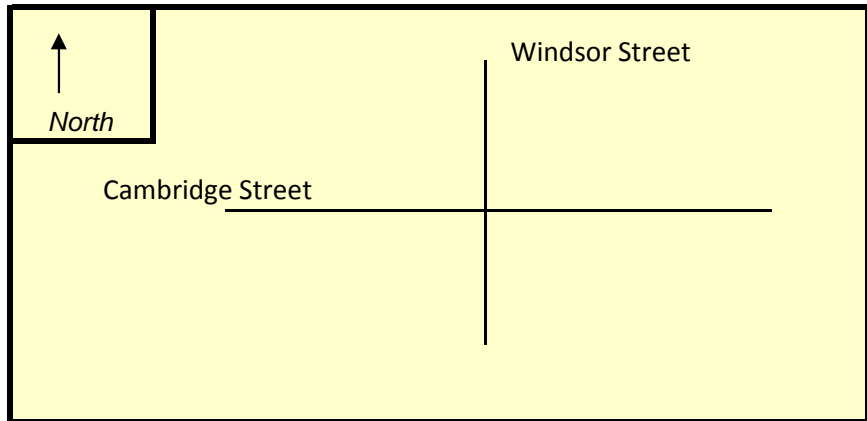
SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cambridge Street

MINOR STREET(S) : Windsor Street

**INTERSECTION  
 DIAGRAM**  
 (Label Approaches)



**Peak Hour Volumes**

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	0	210	444	460		

" K " FACTOR : 0.09 APPROACH ADT : 12377.78 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 21 # OF YEARS : 3 AVERAGE # OF ACCIDENTS ( A ) : 7.00

**CRASH RATE CALCULATION :**

1.55

$$\text{RATE} = \frac{(A * 1,000,000)}{(ADT * 365)}$$

Source (optional): Volumes from Existing Condition PM Peak

Comments:

## CRASH RATE WORKSHEET

CITY/TOWN : Cambridge

COUNT DATE :

DISTRICT : 6

UNSIGNALIZED :

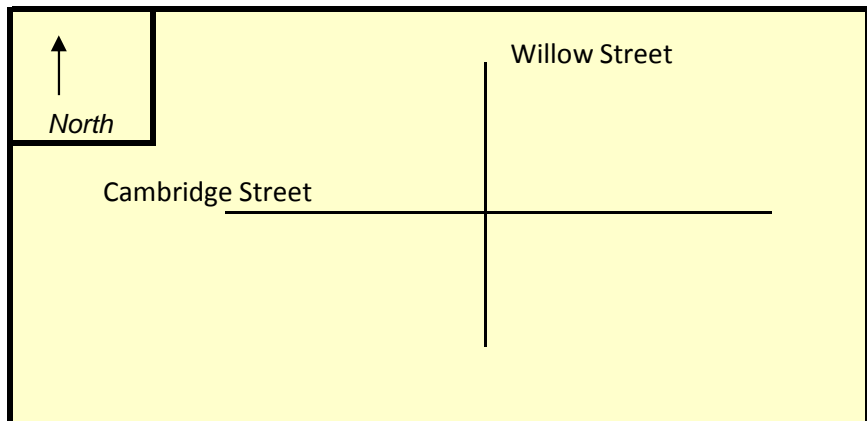
SIGNALIZED : X

~ INTERSECTION DATA ~

MAJOR STREET : Cambridge Street

MINOR STREET(S) : Willow Street

**INTERSECTION  
 DIAGRAM**  
 (Label Approaches)



**Peak Hour Volumes**

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	0	0	444	475		

" K " FACTOR :

0.09

APPROACH ADT :

10211.111

ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS :

3

# OF YEARS :

3

AVERAGE # OF ACCIDENTS ( A ) :

1.00

CRASH RATE CALCULATION :

0.27

RATE =

$$\frac{(A * 1,000,000)}{(ADT * 365)}$$

Source (optional): Volumes from Existing Condition PM Peak

Comments:



## CRASH RATE WORKSHEET

CITY/TOWN : Cambridge

COUNT DATE :

DISTRICT : 6

UNSIGNALIZED : X

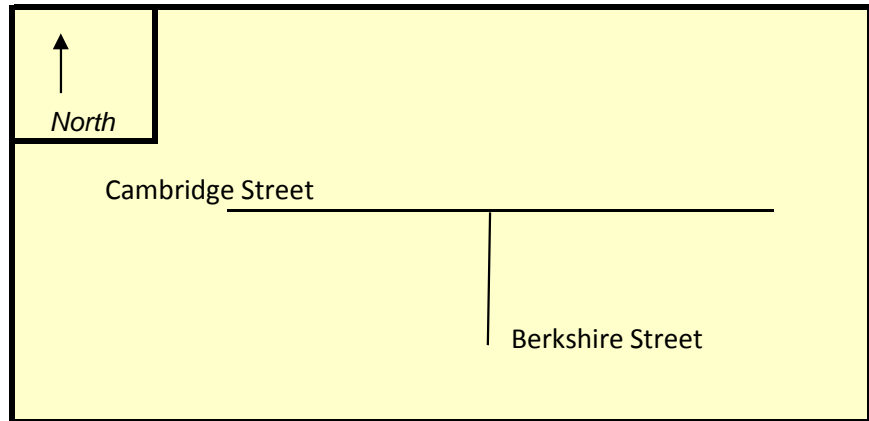
SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cambridge Street

MINOR STREET(S) : Berkshire Street

**INTERSECTION  
 DIAGRAM**  
 (Label Approaches)



**Peak Hour Volumes**

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	228	0	421	387		

" K " FACTOR : 0.09      APPROACH ADT : 11511.111      ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 2      # OF YEARS : 3      AVERAGE # OF ACCIDENTS ( A ) : 0.67

**CRASH RATE CALCULATION :**

0.16

$$\text{RATE} = \frac{(A * 1,000,000)}{(ADT * 365)}$$

Source (optional): Volumes from Existing Condition PM Peak

Comments:

## CRASH RATE WORKSHEET

CITY/TOWN : Cambridge

COUNT DATE :

DISTRICT : 6

UNSIGNALIZED : X

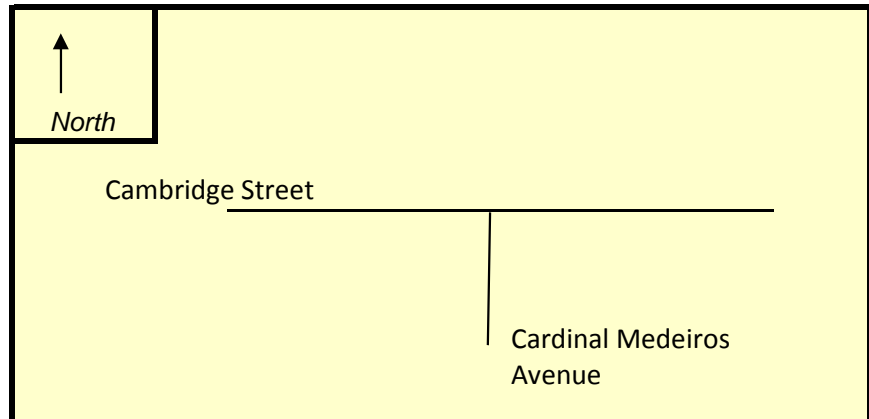
SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Cambridge Street

MINOR STREET(S) : Cardinal Medeiros Avenue

**INTERSECTION  
 DIAGRAM**  
 (Label Approaches)



**Peak Hour Volumes**

APPROACH :	1	2	3	4	5	6
DIRECTION :	NB	SB	EB	WB		
VOLUMES (PM) :	72	0	598	493		

" K " FACTOR : 0.09 APPROACH ADT : 12922.222 ADT = TOTAL VOL/"K" FACT.

TOTAL # OF ACCIDENTS : 10 # OF YEARS : 3 AVERAGE # OF ACCIDENTS ( A ) : 3.33

**CRASH RATE CALCULATION :**

0.71

$$\text{RATE} = \frac{(A * 1,000,000)}{(ADT * 365)}$$

Source (optional): Volumes from Existing Condition PM Peak

Comments:

# Trip Generation

Preliminary Trip Generation Estimate

	Size	Distri- bution	Trip Rate	Unadjusted Vehicle Trips									Local VOR	HOV Trips (not cars)						HOV Vehicles	SOV+HOV Vehicles
				VOR	Person Trips	Drive Alone	HOV	Transit	Bike	Walk	Other	SOV Trips		Transit	Bike	Walk	Other				
Daily CSD ADMIN BUILDING			11.03	237		268								190	10	22	0	24	22	8	198
In	21.5	50%		119	1.13	134	71%	4%	8%	0%	9%	8%	1.22	95	5	11	0	12	11	4	99
Out	GFA	50%		119	1.13	134	71%	4%	8%	0%	9%	8%	1.22	95	5	11	0	12	11	4	99
<b>Total Daily</b>				237		268								190	10	22	0	24	22		
In				119		134								95	5	11	0	12	11		
Out				119		134								95	5	11	0	12	11		
AM CSD ADMIN BUILDING			1.56	34		38								27	1	3	0	3	3	1	28
In	21.5	88%		30	1.13	33	71%	4%	8%	0%	9%	8%	1.22	24	1	3	0	3	3	1	24
Out	GFA	12%		4	1.13	5	71%	4%	8%	0%	9%	8%	1.22	3	0	0	0	0	0	0	3
<b>Total AM Peak Hour</b>				34		38								27	1	3	0	3	3		
In				30		33								24	1	3	0	3	3		
Out				4		5								3	0	0	0	0	0		
PM CSD ADMIN BUILDING			1.49	32		36								26	1	4	0	4	2	1	27
In	21.5	17%		5	1.13	6	71%	4%	8%	0%	9%	8%	1.22	4	0	1	0	1	0	0	4
Out	GFA	83%		27	1.13	30	71%	4%	8%	0%	9%	8%	1.22	21	1	3	0	3	2	1	22
<b>Total PM Peak Hour</b>				32		36								26	1	4	0	4	2		
In				5		6								4	0	1	0	1	0		
Out				27		30								21	1	3	0	3	2		

Notes:

Trip Generation based on *ITE Trip Generation Manual*, 9th Edition, using:  
 LUC 710 - General Office Building (used average rate)  
 Mode shares for Admin based on Scoping Letter (Page 3, source CPS Administrative Offices from DEP Ridesharing Survey 2014)  
 VOR stands for Vehicle Occupancy Rate from 2009 NHTS  
 1.13 - To or From Work  
 1.84 - Other Family/Personal Errands  
 2.20 - Social and Recreational

# Intersection Capacity Analysis

2016 Existing Condition  
2016 Build Condition  
2021 Future Condition

# 2016 Existing Condition

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (vph)	15	425	40	40	315	5	0	0	0	15	120	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	16	16	16	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.998						0.954	
Flt Protected		0.998			0.995						0.996	
Satd. Flow (prot)	0	1525	0	0	1492	0	0	0	0	0	1754	0
Flt Permitted		0.998			0.995						0.996	
Satd. Flow (perm)	0	1525	0	0	1492	0	0	0	0	0	1754	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			384			389			410	
Travel Time (s)		7.8			8.7			8.8			9.3	
Confl. Peds. (#/hr)	75		81	88		82				82		75
Confl. Bikes (#/hr)			34			10						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	7%	7%	10%	10%	10%	2%	2%	2%	5%	5%	5%
Adj. Flow (vph)	16	462	43	43	342	5	0	0	0	16	130	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	521	0	0	390	0	0	0	0	0	222	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	0.97	0.97	0.97	1.14	0.97	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	60.2%
ICU Level of Service	B
Analysis Period (min)	15

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (veh/h)	15	425	40	40	315	5	0	0	0	15	120	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	462	43	43	342	5	0	0	0	16	130	76
Pedestrians		75			82			88			82	
Lane Width (ft)		11.0			11.0			0.0			16.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		6			6			0			9	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					384							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	430			593			1253	1121	654	1112	1140	502
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	156			593			1189	1024	654	1013	1048	247
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			95			100	100	100	87	15	86
cM capacity (veh/h)	1009			944			27	160	438	129	153	535

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	522	391	223
Volume Left	16	43	16
Volume Right	43	5	76
cSH	1009	944	199
Volume to Capacity	0.02	0.05	1.12
Queue Length 95th (ft)	1	4	269
Control Delay (s)	0.5	1.5	150.0
Lane LOS	A	A	F
Approach Delay (s)	0.5	1.5	150.0
Approach LOS			F

Intersection Summary		
Average Delay		30.1
Intersection Capacity Utilization	60.2%	ICU Level of Service
Analysis Period (min)		15
		B



King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	395	30	40	370	5	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99							
Frt		0.991			0.998							
Flt Protected		0.999			0.995							
Satd. Flow (prot)	0	1499	0	0	1517	0	0	0	0	0	0	0
Flt Permitted		0.988			0.930							
Satd. Flow (perm)	0	1481	0	0	1412	0	0	0	0	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		384			572			402				466
Travel Time (s)		8.7			13.0			9.1				10.6
Confl. Peds. (#/hr)	88		86	86		88						
Confl. Bikes (#/hr)			35			24						
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	429	33	42	385	5	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	473	0	0	432	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Minimum Split (s)	21.0	21.0		21.0	21.0							
Total Split (s)	35.0	35.0		35.0	35.0							
Total Split (%)	46.7%	46.7%		46.7%	46.7%							
Maximum Green (s)	30.0	30.0		30.0	30.0							
Yellow Time (s)	4.0	4.0		4.0	4.0							
All-Red Time (s)	1.0	1.0		1.0	1.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.0			5.0							
Lead/Lag	Lead	Lead		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							

Lane Group	ø2	ø3
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	3
Permitted Phases		
Minimum Split (s)	20.0	9.0
Total Split (s)	20.0	20.0
Total Split (%)	27%	27%
Maximum Green (s)	17.0	15.0
Yellow Time (s)	2.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)	9.0	
Flash Dont Walk (s)	8.0	
Pedestrian Calls (#/hr)	60	
Act Effect Green (s)		
Actuated g/C Ratio		

King Open/Cambridge Street Upper School  
 2: Willow Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
 7:30 AM - 8:30 AM

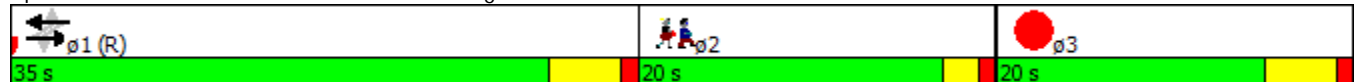


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.80			0.77							
Control Delay		32.3			30.6							
Queue Delay		0.0			0.0							
Total Delay		32.3			30.6							
LOS		C			C							
Approach Delay		32.3			30.6							
Approach LOS		C			C							

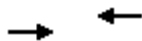
Intersection Summary

Area Type:	CBD
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	31.5
Intersection LOS:	C
Intersection Capacity Utilization	49.0%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 2: Willow Street & Cambridge Street



Lane Group	ø2	ø3
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		



Lane Group	EBT	WBT
Lane Group Flow (vph)	473	432
v/c Ratio	0.80	0.77
Control Delay	32.3	30.6
Queue Delay	0.0	0.0
Total Delay	32.3	30.6
Queue Length 50th (ft)	188	169
Queue Length 95th (ft)	#348	#315
Internal Link Dist (ft)	304	492
Turn Bay Length (ft)		
Base Capacity (vph)	592	564
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.80	0.77

**Intersection Summary**

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

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	395	30	40	370	5	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0							
Lane Util. Factor		1.00			1.00							
Frbp, ped/bikes		0.99			1.00							
Flpb, ped/bikes		1.00			1.00							
Frt		0.99			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		1496			1512							
Flt Permitted		0.99			0.93							
Satd. Flow (perm)		1480			1412							
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	429	33	42	385	5	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	473	0	0	432	0	0	0	0	0	0	0
Confl. Peds. (#/hr)	88		86	86		88						
Confl. Bikes (#/hr)			35			24						
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Actuated Green, G (s)		30.0			30.0							
Effective Green, g (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							
Clearance Time (s)		5.0			5.0							
Lane Grp Cap (vph)		592			564							
v/s Ratio Prot												
v/s Ratio Perm		c0.32			0.31							
v/c Ratio		0.80			0.77							
Uniform Delay, d1		19.8			19.5							
Progression Factor		1.00			1.00							
Incremental Delay, d2		10.8			9.6							
Delay (s)		30.6			29.0							
Level of Service		C			C							
Approach Delay (s)		30.6			29.0		0.0				0.0	
Approach LOS		C			C		A				A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			29.9		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				13.0			
Intersection Capacity Utilization			49.0%		ICU Level of Service				A			
Analysis Period (min)			15									

c Critical Lane Group

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (vph)	435	0	0	325	35	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.915	
Flt Protected					0.982	
Satd. Flow (prot)	1531	0	0	1555	1691	0
Flt Permitted					0.982	
Satd. Flow (perm)	1531	0	0	1555	1691	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	572			361	533	
Travel Time (s)	13.0			8.2	12.1	
Confl. Peds. (#/hr)					132	101
Peak Hour Factor	0.92	0.92	0.90	0.90	0.86	0.86
Heavy Vehicles (%)	8%	8%	10%	10%	3%	3%
Adj. Flow (vph)	473	0	0	361	41	70
Shared Lane Traffic (%)						
Lane Group Flow (vph)	473	0	0	361	111	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.19	1.19	1.14	1.14	0.97	0.97
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	45.3%
Analysis Period (min)	15
	ICU Level of Service A

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
7:30 AM - 8:30 AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (veh/h)	435	0	0	325	35	60
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.90	0.90	0.86	0.86
Hourly flow rate (vph)	473	0	0	361	41	70
Pedestrians	132			101		
Lane Width (ft)	11.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	10			8		
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	572					
pX, platoon unblocked			0.77		0.77	0.77
vC, conflicting volume			473		966	574
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			168		807	299
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			100		83	87
cM capacity (veh/h)			1051		242	521

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	473	361	110
Volume Left	0	0	41
Volume Right	0	0	70
cSH	1700	1700	366
Volume to Capacity	0.28	0.21	0.30
Queue Length 95th (ft)	0	0	31
Control Delay (s)	0.0	0.0	19.0
Lane LOS			C
Approach Delay (s)	0.0	0.0	19.0
Approach LOS			C

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization	45.3%		ICU Level of Service A
Analysis Period (min)		15	



King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
 7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	70	370	60	240	275	25	50	90	30	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.984			0.994			0.976				
Flt Protected		0.993			0.978			0.985				
Satd. Flow (prot)	0	1547	0	0	1554	0	0	1508	0	0	0	0
Flt Permitted		0.993			0.978			0.985				
Satd. Flow (perm)	0	1547	0	0	1554	0	0	1508	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		361			369			510				227
Travel Time (s)		8.2			8.4			11.6				5.2
Confl. Bikes (#/hr)			81									
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.85	0.85	0.85	1.00	1.00	1.00
Heavy Vehicles (%)	8%	8%	8%	7%	7%	7%	9%	9%	9%	2%	2%	2%
Adj. Flow (vph)	74	389	63	255	293	27	59	106	35	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	526	0	0	575	0	0	200	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	82.9%
Analysis Period (min)	15
	ICU Level of Service E

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2016 Existing Condition AM Peak Hour  
 7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (veh/h)	70	370	60	240	275	25	50	90	30	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.85	0.85	0.85	1.00	1.00	1.00
Hourly flow rate (vph)	74	389	63	255	293	27	59	106	35	0	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)		933										
pX, platoon unblocked				0.82			0.82	0.82	0.82	0.82	0.82	
vC, conflicting volume	319			453			1385	1398	421	1473	1416	306
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	319			215			1359	1375	177	1467	1398	306
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	94			76			24	0	95	0	100	100
cM capacity (veh/h)	1208			1081			77	82	692	0	82	734

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	526	574	200
Volume Left	74	255	59
Volume Right	63	27	35
cSH	1208	1081	95
Volume to Capacity	0.06	0.24	2.10
Queue Length 95th (ft)	5	23	435
Control Delay (s)	1.7	5.7	601.6
Lane LOS	A	A	F
Approach Delay (s)	1.7	5.7	601.6
Approach LOS			F

Intersection Summary		
Average Delay		95.7
Intersection Capacity Utilization	82.9%	ICU Level of Service
Analysis Period (min)		15
		E

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2016 Existing Conditions PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	400	45	45	370	5	0	0	0	40	120	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	16	16	16	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.987			0.998						0.965	
Flt Protected		0.999			0.995						0.991	
Satd. Flow (prot)	0	1567	0	0	1578	0	0	0	0	0	1799	0
Flt Permitted		0.999			0.995						0.991	
Satd. Flow (perm)	0	1567	0	0	1578	0	0	0	0	0	1799	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			384			389			410	
Travel Time (s)		7.8			8.7			8.8			9.3	
Confl. Peds. (#/hr)	74		95	118		97				97		74
Confl. Bikes (#/hr)			16			22						
Peak Hour Factor	0.94	0.94	0.94	0.84	0.84	0.84	0.92	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	11	426	48	54	440	6	0	0	0	41	124	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	485	0	0	500	0	0	0	0	0	222	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	0.97	0.97	0.97	1.14	0.97	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	69.5%
Analysis Period (min)	15
	ICU Level of Service C

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2016 Existing Conditions PM Peak  
4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (veh/h)	10	400	45	45	370	5	0	0	0	40	120	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.84	0.84	0.84	0.92	0.92	0.92	0.97	0.97	0.97
Hourly flow rate (vph)	11	426	48	54	440	6	0	0	0	41	124	57
Pedestrians		74			97			118			97	
Lane Width (ft)		11.0			11.0			0.0			16.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		6			7			0			11	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					384							
pX, platoon unblocked	0.75						0.75	0.75		0.75	0.75	0.75
vC, conflicting volume	543			591			1332	1239	664	1215	1260	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	217			591			1274	1150	664	1118	1178	312
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			0	100	100	58	0	88
cM capacity (veh/h)	892			975			0	123	426	98	118	455

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	484	500	222
Volume Left	11	54	41
Volume Right	48	6	57
cSH	892	975	139
Volume to Capacity	0.01	0.05	1.59
Queue Length 95th (ft)	1	4	391
Control Delay (s)	0.3	1.5	354.9
Lane LOS	A	A	F
Approach Delay (s)	0.3	1.5	354.9
Approach LOS			F

Intersection Summary		
Average Delay		66.0
Intersection Capacity Utilization	69.5%	ICU Level of Service C
Analysis Period (min)		15

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2016 Existing Conditions PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	400	36	35	425	15	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99							
Frt		0.989			0.996							
Flt Protected		0.999			0.996							
Satd. Flow (prot)	0	1540	0	0	1586	0	0	0	0	0	0	0
Flt Permitted		0.987			0.948							
Satd. Flow (perm)	0	1521	0	0	1506	0	0	0	0	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		384			572			402			466	
Travel Time (s)		8.7			13.0			9.1			10.6	
Confl. Peds. (#/hr)	45		72	72		45						
Confl. Bikes (#/hr)			15			45						
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	435	39	37	452	16	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	485	0	0	505	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Minimum Split (s)	21.0	21.0		21.0	21.0							
Total Split (s)	35.0	35.0		35.0	35.0							
Total Split (%)	46.7%	46.7%		46.7%	46.7%							
Maximum Green (s)	30.0	30.0		30.0	30.0							
Yellow Time (s)	4.0	4.0		4.0	4.0							
All-Red Time (s)	1.0	1.0		1.0	1.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.0			5.0							
Lead/Lag	Lead	Lead		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							

Lane Group	ø2	ø3
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	3
Permitted Phases		
Minimum Split (s)	20.0	9.0
Total Split (s)	20.0	20.0
Total Split (%)	27%	27%
Maximum Green (s)	17.0	15.0
Yellow Time (s)	2.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)	9.0	
Flash Dont Walk (s)	8.0	
Pedestrian Calls (#/hr)	60	
Act Effect Green (s)		
Actuated g/C Ratio		

King Open/Cambridge Street Upper School  
 2: Willow Street & Cambridge Street

2016 Existing Conditions PM Peak  
 4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.80			0.84							
Control Delay		31.9			35.4							
Queue Delay		0.0			0.0							
Total Delay		31.9			35.4							
LOS		C			D							
Approach Delay		31.9			35.4							
Approach LOS		C			D							

Intersection Summary

Area Type:	CBD
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	33.7
Intersection LOS:	C
Intersection Capacity Utilization	50.0%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 2: Willow Street & Cambridge Street



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Lane Group	ø2	ø3
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Lane Group	EBT	WBT
Lane Group Flow (vph)	485	505
v/c Ratio	0.80	0.84
Control Delay	31.9	35.4
Queue Delay	0.0	0.0
Total Delay	31.9	35.4
Queue Length 50th (ft)	193	206
Queue Length 95th (ft)	#353	#379
Internal Link Dist (ft)	304	492
Turn Bay Length (ft)		
Base Capacity (vph)	608	602
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.80	0.84

**Intersection Summary**

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

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2016 Existing Conditions PM Peak  
4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	400	36	35	425	15	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0							
Lane Util. Factor		1.00			1.00							
Frbp, ped/bikes		0.99			1.00							
Flpb, ped/bikes		1.00			1.00							
Frt		0.99			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		1540			1582							
Flt Permitted		0.99			0.95							
Satd. Flow (perm)		1521			1505							
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	435	39	37	452	16	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	485	0	0	505	0	0	0	0	0	0	0
Confl. Peds. (#/hr)	45		72	72		45						
Confl. Bikes (#/hr)			15			45						
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Actuated Green, G (s)		30.0			30.0							
Effective Green, g (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							
Clearance Time (s)		5.0			5.0							
Lane Grp Cap (vph)		608			602							
v/s Ratio Prot												
v/s Ratio Perm		0.32			0.34							
v/c Ratio		0.80			0.84							
Uniform Delay, d1		19.8			20.3							
Progression Factor		1.00			1.00							
Incremental Delay, d2		10.5			13.2							
Delay (s)		30.3			33.5							
Level of Service		C			C							
Approach Delay (s)		30.3			33.5		0.0				0.0	
Approach LOS		C			C		A				A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			31.9		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				13.0			
Intersection Capacity Utilization			50.0%		ICU Level of Service				A			
Analysis Period (min)			15									

c Critical Lane Group

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2016 Existing Conditions PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (vph)	420	0	0	385	55	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.898	
Flt Protected					0.988	
Satd. Flow (prot)	1574	0	0	1676	1653	0
Flt Permitted					0.988	
Satd. Flow (perm)	1574	0	0	1676	1653	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	572			361	533	
Travel Time (s)	13.0			8.2	12.1	
Confl. Peds. (#/hr)					123	91
Peak Hour Factor	0.94	0.94	0.89	0.89	0.86	0.86
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Adj. Flow (vph)	447	0	0	433	64	198
Shared Lane Traffic (%)						
Lane Group Flow (vph)	447	0	0	433	262	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.19	1.19	1.14	1.14	0.97	0.97
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	50.6%
Analysis Period (min)	15
	ICU Level of Service A

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2016 Existing Conditions PM Peak  
4:30 PM - 5:30 PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (veh/h)	420	0	0	385	55	170
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.89	0.89	0.86	0.86
Hourly flow rate (vph)	447	0	0	433	64	198
Pedestrians	123			91		
Lane Width (ft)	11.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	9			8		
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)	572					
pX, platoon unblocked			0.77		0.77	0.77
vC, conflicting volume			447		1002	538
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			128		852	247
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		72	65
cM capacity (veh/h)			1119		228	558

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	447	433	262
Volume Left	0	0	64
Volume Right	0	0	198
cSH	1700	1700	412
Volume to Capacity	0.26	0.25	0.63
Queue Length 95th (ft)	0	0	106
Control Delay (s)	0.0	0.0	27.7
Lane LOS			D
Approach Delay (s)	0.0	0.0	27.7
Approach LOS			D

Intersection Summary			
Average Delay		6.4	
Intersection Capacity Utilization	50.6%		ICU Level of Service A
Analysis Period (min)		15	

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2016 Existing Conditions PM Peak  
 4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	200	360	40	130	365	25	20	215	55	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.991			0.993			0.975				
Fl <sub>t</sub> Protected		0.984			0.988			0.997				
Satd. Flow (prot)	0	1429	0	0	1403	0	0	1568	0	0	0	0
Fl <sub>t</sub> Permitted		0.984			0.988			0.997				
Satd. Flow (perm)	0	1429	0	0	1403	0	0	1568	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		361			369			510				181
Travel Time (s)		8.2			8.4			11.6				4.1
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97	0.88	0.88	0.88	1.00	1.00	1.00
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		0			0							
Adj. Flow (vph)	217	391	43	134	376	26	23	244	63	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	651	0	0	536	0	0	329	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.30	1.14	1.19	1.36	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary		
Area Type:	CBD	
Control Type:	Unsignalized	
Intersection Capacity Utilization	78.1%	ICU Level of Service D
Analysis Period (min)	15	

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2016 Existing Conditions PM Peak  
 4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (veh/h)	200	360	40	130	365	25	20	215	55	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97	0.88	0.88	0.88	1.00	1.00	1.00
Hourly flow rate (vph)	217	391	43	134	376	26	23	244	62	0	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)		933										
pX, platoon unblocked				0.80			0.80	0.80	0.80	0.80	0.80	0.80
vC, conflicting volume	402			435			1505	1518	413	1690	1527	389
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	402			164			1506	1522	136	1738	1534	389
tC, single (s)	4.1			4.1			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	81			88			62	0	91	0	100	100
cM capacity (veh/h)	1141			1118			60	66	719	0	66	659

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	652	536	330
Volume Left	217	134	23
Volume Right	43	26	62
cSH	1141	1118	79
Volume to Capacity	0.19	0.12	4.18
Queue Length 95th (ft)	18	10	Err
Control Delay (s)	4.5	3.2	Err
Lane LOS	A	A	F
Approach Delay (s)	4.5	3.2	Err
Approach LOS			F

Intersection Summary		
Average Delay		2174.0
Intersection Capacity Utilization	78.1%	ICU Level of Service
Analysis Period (min)		15
		D

# 2016 Build Condition

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2016 Build Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (vph)	15	433	40	40	317	5	0	0	0	15	120	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	16	16	16	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.998						0.954	
Flt Protected		0.998			0.995						0.996	
Satd. Flow (prot)	0	1525	0	0	1492	0	0	0	0	0	1754	0
Flt Permitted		0.998			0.995						0.996	
Satd. Flow (perm)	0	1525	0	0	1492	0	0	0	0	0	1754	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			384			389			410	
Travel Time (s)		7.8			8.7			8.8			9.3	
Confl. Peds. (#/hr)	75		81	88		82				82		75
Confl. Bikes (#/hr)			34			10						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	7%	7%	10%	10%	10%	2%	2%	2%	5%	5%	5%
Adj. Flow (vph)	16	471	43	43	345	5	0	0	0	16	130	76
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	530	0	0	393	0	0	0	0	0	222	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	0.97	0.97	0.97	1.14	0.97	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	60.5%
Analysis Period (min)	15
	ICU Level of Service B



King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2016 Build Condition AM Peak Hour  
7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (veh/h)	15	433	40	40	317	5	0	0	0	15	120	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	471	43	43	345	5	0	0	0	16	130	76
Pedestrians		75			82			88			82	
Lane Width (ft)		11.0			11.0			0.0			16.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		6			6			0			9	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					384							
pX, platoon unblocked	0.79						0.79	0.79		0.79	0.79	0.79
vC, conflicting volume	432			602			1264	1132	662	1123	1151	504
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	155			602			1202	1036	662	1025	1060	246
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			95			100	100	100	87	13	86
cM capacity (veh/h)	1007			937			24	157	433	126	150	534

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	530	393	223
Volume Left	16	43	16
Volume Right	43	5	76
cSH	1007	937	195
Volume to Capacity	0.02	0.05	1.14
Queue Length 95th (ft)	1	4	276
Control Delay (s)	0.5	1.5	158.1
Lane LOS	A	A	F
Approach Delay (s)	0.5	1.5	158.1
Approach LOS			F

Intersection Summary		
Average Delay		31.4
Intersection Capacity Utilization	60.5%	ICU Level of Service
Analysis Period (min)		15
		B

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2016 Build Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	396	37	40	372	5	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99							
Frt		0.989			0.998							
Flt Protected		0.999			0.995							
Satd. Flow (prot)	0	1493	0	0	1517	0	0	0	0	0	0	0
Flt Permitted		0.988			0.929							
Satd. Flow (perm)	0	1475	0	0	1411	0	0	0	0	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		384			572			402				466
Travel Time (s)		8.7			13.0			9.1				10.6
Confl. Peds. (#/hr)	88		86	86		88						
Confl. Bikes (#/hr)			35			24						
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	430	40	42	388	5	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	481	0	0	435	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Minimum Split (s)	21.0	21.0		21.0	21.0							
Total Split (s)	35.0	35.0		35.0	35.0							
Total Split (%)	46.7%	46.7%		46.7%	46.7%							
Maximum Green (s)	30.0	30.0		30.0	30.0							
Yellow Time (s)	4.0	4.0		4.0	4.0							
All-Red Time (s)	1.0	1.0		1.0	1.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.0			5.0							
Lead/Lag	Lead	Lead		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							

Lane Group	ø2	ø3
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	3
Permitted Phases		
Minimum Split (s)	20.0	9.0
Total Split (s)	20.0	20.0
Total Split (%)	27%	27%
Maximum Green (s)	17.0	15.0
Yellow Time (s)	2.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)	9.0	
Flash Dont Walk (s)	8.0	
Pedestrian Calls (#/hr)	60	
Act Effect Green (s)		
Actuated g/C Ratio		

King Open/Cambridge Street Upper School  
 2: Willow Street & Cambridge Street

2016 Build Condition AM Peak Hour  
 7:30 AM - 8:30 AM

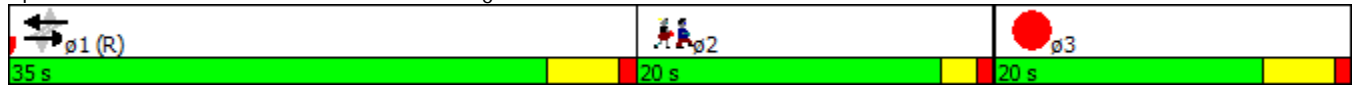


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.82			0.77							
Control Delay		33.6			30.9							
Queue Delay		0.0			0.0							
Total Delay		33.6			30.9							
LOS		C			C							
Approach Delay		33.6			30.9							
Approach LOS		C			C							

Intersection Summary

Area Type:	CBD
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.82
Intersection Signal Delay:	32.3
Intersection LOS:	C
Intersection Capacity Utilization	49.3%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 2: Willow Street & Cambridge Street



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Lane Group	ø2	ø3
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Lane Group	EBT	WBT
Lane Group Flow (vph)	481	435
v/c Ratio	0.82	0.77
Control Delay	33.6	30.9
Queue Delay	0.0	0.0
Total Delay	33.6	30.9
Queue Length 50th (ft)	193	170
Queue Length 95th (ft)	#358	#320
Internal Link Dist (ft)	304	492
Turn Bay Length (ft)		
Base Capacity (vph)	590	564
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.82	0.77

**Intersection Summary**

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

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2016 Build Condition AM Peak Hour  
7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	396	37	40	372	5	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0							
Lane Util. Factor		1.00			1.00							
Frbp, ped/bikes		0.99			1.00							
Flpb, ped/bikes		1.00			1.00							
Frt		0.99			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		1491			1512							
Flt Permitted		0.99			0.93							
Satd. Flow (perm)		1475			1411							
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	430	40	42	388	5	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	481	0	0	435	0	0	0	0	0	0	0
Confl. Peds. (#/hr)	88		86	86		88						
Confl. Bikes (#/hr)			35			24						
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Actuated Green, G (s)		30.0			30.0							
Effective Green, g (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							
Clearance Time (s)		5.0			5.0							
Lane Grp Cap (vph)		590			564							
v/s Ratio Prot												
v/s Ratio Perm		c0.33			0.31							
v/c Ratio		0.82			0.77							
Uniform Delay, d1		20.0			19.5							
Progression Factor		1.00			1.00							
Incremental Delay, d2		11.8			9.8							
Delay (s)		31.8			29.3							
Level of Service		C			C							
Approach Delay (s)		31.8			29.3		0.0				0.0	
Approach LOS		C			C		A				A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			30.6		HCM 2000 Level of Service				C			
HCM 2000 Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				13.0			
Intersection Capacity Utilization			49.3%		ICU Level of Service				A			
Analysis Period (min)			15									

c Critical Lane Group

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2016 Build Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (vph)	436	0	0	325	37	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.916	
Flt Protected					0.981	
Satd. Flow (prot)	1531	0	0	1555	1691	0
Flt Permitted					0.981	
Satd. Flow (perm)	1531	0	0	1555	1691	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	572			361	533	
Travel Time (s)	13.0			8.2	12.1	
Confl. Peds. (#/hr)					132	101
Peak Hour Factor	0.92	0.92	0.90	0.90	0.86	0.86
Heavy Vehicles (%)	8%	8%	10%	10%	3%	3%
Adj. Flow (vph)	474	0	0	361	43	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	474	0	0	361	114	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.19	1.19	1.14	1.14	0.97	0.97
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	45.4%
ICU Level of Service	A
Analysis Period (min)	15





Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (veh/h)	436	0	0	325	37	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.90	0.90	0.86	0.86
Hourly flow rate (vph)	474	0	0	361	43	71
Pedestrians	132			101		
Lane Width (ft)	11.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	10			8		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	572					
pX, platoon unblocked			0.77		0.77	0.77
vC, conflicting volume			474		967	575
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			162		805	294
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			100		82	86
cM capacity (veh/h)			1050		242	522

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	474	361	114
Volume Left	0	0	43
Volume Right	0	0	71
cSH	1700	1700	363
Volume to Capacity	0.28	0.21	0.31
Queue Length 95th (ft)	0	0	33
Control Delay (s)	0.0	0.0	19.4
Lane LOS			C
Approach Delay (s)	0.0	0.0	19.4
Approach LOS			C

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization	45.4%		ICU Level of Service A
Analysis Period (min)		15	

King Open/Cambridge Street Upper School

2016 Build Condition AM Peak Hour

4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	70	371	61	248	275	25	50	90	30	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.984			0.994			0.976				
Flt Protected		0.993			0.978			0.985				
Satd. Flow (prot)	0	1547	0	0	1554	0	0	1508	0	0	0	0
Flt Permitted		0.993			0.978			0.985				
Satd. Flow (perm)	0	1547	0	0	1554	0	0	1508	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		361			369			510				227
Travel Time (s)		8.2			8.4			11.6				5.2
Confl. Bikes (#/hr)			81									
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.85	0.85	0.85	1.00	1.00	1.00
Heavy Vehicles (%)	8%	8%	8%	7%	7%	7%	9%	9%	9%	2%	2%	2%
Adj. Flow (vph)	74	391	64	264	293	27	59	106	35	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	529	0	0	584	0	0	200	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	83.5%
Analysis Period (min)	15
	ICU Level of Service E

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2016 Build Condition AM Peak Hour  
 7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	371	61	248	275	25	50	90	30	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.85	0.85	0.85	1.00	1.00	1.00
Hourly flow rate (vph)	74	391	64	264	293	27	59	106	35	0	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)		933										
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	0.81
vC, conflicting volume	319			455			1404	1417	423	1492	1436	306
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	319			214			1381	1398	175	1490	1421	306
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	94			76			20	0	95	0	100	100
cM capacity (veh/h)	1208			1079			74	78	692	0	79	734

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	528	583	200
Volume Left	74	264	59
Volume Right	64	27	35
cSH	1208	1079	91
Volume to Capacity	0.06	0.24	2.20
Queue Length 95th (ft)	5	24	446
Control Delay (s)	1.7	5.8	647.7
Lane LOS	A	A	F
Approach Delay (s)	1.7	5.8	647.7
Approach LOS			F

Intersection Summary		
Average Delay		102.1
Intersection Capacity Utilization	83.5%	ICU Level of Service
Analysis Period (min)		15
		E

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2016 Build Conditions PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (vph)	10	401	45	45	381	5	0	0	0	40	120	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	16	16	16	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.987			0.998						0.965	
Flt Protected		0.999			0.995						0.991	
Satd. Flow (prot)	0	1567	0	0	1578	0	0	0	0	0	1799	0
Flt Permitted		0.999			0.995						0.991	
Satd. Flow (perm)	0	1567	0	0	1578	0	0	0	0	0	1799	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			384			389			410	
Travel Time (s)		7.8			8.7			8.8			9.3	
Confl. Peds. (#/hr)	74		95	118		97				97		74
Confl. Bikes (#/hr)			16			22						
Peak Hour Factor	0.94	0.94	0.94	0.84	0.84	0.84	0.92	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	11	427	48	54	454	6	0	0	0	41	124	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	486	0	0	514	0	0	0	0	0	222	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	0.97	0.97	0.97	1.14	0.97	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	70.1%
Analysis Period (min)	15
	ICU Level of Service C

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2016 Build Conditions PM Peak  
4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (veh/h)	10	401	45	45	381	5	0	0	0	40	120	55
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.84	0.84	0.84	0.92	0.92	0.92	0.97	0.97	0.97
Hourly flow rate (vph)	11	427	48	54	454	6	0	0	0	41	124	57
Pedestrians		74			97			118			97	
Lane Width (ft)		11.0			11.0			0.0			16.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		6			7			0			11	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					384							
pX, platoon unblocked	0.73						0.73	0.73		0.73	0.73	0.73
vC, conflicting volume	557			592			1346	1253	666	1229	1274	628
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	216			592			1290	1164	666	1132	1193	313
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			0	100	100	57	0	87
cM capacity (veh/h)	880			974			0	119	426	95	114	449

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	485	513	222
Volume Left	11	54	41
Volume Right	48	6	57
cSH	880	974	135
Volume to Capacity	0.01	0.06	1.65
Queue Length 95th (ft)	1	4	402
Control Delay (s)	0.4	1.5	380.0
Lane LOS	A	A	F
Approach Delay (s)	0.4	1.5	380.0
Approach LOS			F

Intersection Summary		
Average Delay		69.8
Intersection Capacity Utilization	70.1%	ICU Level of Service C
Analysis Period (min)		15

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2016 Build Conditions PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	400	36	35	436	15	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99							
Frt		0.989			0.996							
Flt Protected		0.999			0.996							
Satd. Flow (prot)	0	1540	0	0	1586	0	0	0	0	0	0	0
Flt Permitted		0.987			0.949							
Satd. Flow (perm)	0	1521	0	0	1508	0	0	0	0	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		384			572			402				466
Travel Time (s)		8.7			13.0			9.1				10.6
Confl. Peds. (#/hr)	45		72	72		45						
Confl. Bikes (#/hr)			15			45						
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	435	39	37	464	16	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	485	0	0	517	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Minimum Split (s)	21.0	21.0		21.0	21.0							
Total Split (s)	35.0	35.0		35.0	35.0							
Total Split (%)	46.7%	46.7%		46.7%	46.7%							
Maximum Green (s)	30.0	30.0		30.0	30.0							
Yellow Time (s)	4.0	4.0		4.0	4.0							
All-Red Time (s)	1.0	1.0		1.0	1.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.0			5.0							
Lead/Lag	Lead	Lead		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							

Lane Group	ø2	ø3
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	3
Permitted Phases		
Minimum Split (s)	20.0	9.0
Total Split (s)	20.0	20.0
Total Split (%)	27%	27%
Maximum Green (s)	17.0	15.0
Yellow Time (s)	2.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)	9.0	
Flash Dont Walk (s)	8.0	
Pedestrian Calls (#/hr)	60	
Act Effct Green (s)		
Actuated g/C Ratio		

King Open/Cambridge Street Upper School  
 2: Willow Street & Cambridge Street

2016 Build Conditions PM Peak  
 4:30 PM - 5:30 PM

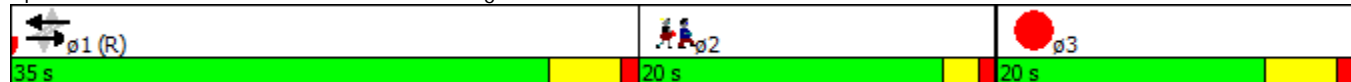


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.80			0.86							
Control Delay		31.9			37.1							
Queue Delay		0.0			0.0							
Total Delay		31.9			37.1							
LOS		C			D							
Approach Delay		31.9			37.1							
Approach LOS		C			D							

Intersection Summary

Area Type:	CBD
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.86
Intersection Signal Delay:	34.6
Intersection LOS:	C
Intersection Capacity Utilization	50.6%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 2: Willow Street & Cambridge Street





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Lane Group	ø2	ø3
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Lane Group	EBT	WBT
Lane Group Flow (vph)	485	517
v/c Ratio	0.80	0.86
Control Delay	31.9	37.1
Queue Delay	0.0	0.0
Total Delay	31.9	37.1
Queue Length 50th (ft)	193	213
Queue Length 95th (ft)	#353	#391
Internal Link Dist (ft)	304	492
Turn Bay Length (ft)		
Base Capacity (vph)	608	603
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.80	0.86

**Intersection Summary**

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

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2016 Build Conditions PM Peak  
4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	400	36	35	436	15	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0							
Lane Util. Factor		1.00			1.00							
Frbp, ped/bikes		0.99			1.00							
Flpb, ped/bikes		1.00			1.00							
Frt		0.99			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		1540			1583							
Flt Permitted		0.99			0.95							
Satd. Flow (perm)		1521			1507							
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	435	39	37	464	16	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	485	0	0	517	0	0	0	0	0	0	0
Confl. Peds. (#/hr)	45		72	72		45						
Confl. Bikes (#/hr)			15			45						
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Actuated Green, G (s)		30.0			30.0							
Effective Green, g (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							
Clearance Time (s)		5.0			5.0							
Lane Grp Cap (vph)		608			602							
v/s Ratio Prot												
v/s Ratio Perm		0.32			0.34							
v/c Ratio		0.80			0.86							
Uniform Delay, d1		19.8			20.6							
Progression Factor		1.00			1.00							
Incremental Delay, d2		10.5			14.8							
Delay (s)		30.3			35.3							
Level of Service		C			D							
Approach Delay (s)		30.3			35.3			0.0			0.0	
Approach LOS		C			D			A			A	

Intersection Summary

HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2016 Build Conditions PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (vph)	420	0	0	385	66	177
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.902	
Flt Protected					0.987	
Satd. Flow (prot)	1574	0	0	1676	1659	0
Flt Permitted					0.987	
Satd. Flow (perm)	1574	0	0	1676	1659	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	572			361	533	
Travel Time (s)	13.0			8.2	12.1	
Confl. Peds. (#/hr)					123	91
Peak Hour Factor	0.94	0.94	0.89	0.89	0.86	0.86
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Adj. Flow (vph)	447	0	0	433	77	206
Shared Lane Traffic (%)						
Lane Group Flow (vph)	447	0	0	433	283	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.19	1.19	1.14	1.14	0.97	0.97
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	51.6%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (veh/h)	420	0	0	385	66	177
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.89	0.89	0.86	0.86
Hourly flow rate (vph)	447	0	0	433	77	206
Pedestrians	123			91		
Lane Width (ft)	11.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	9			8		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	572					
pX, platoon unblocked			0.77		0.77	0.77
vC, conflicting volume			447		1002	538
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			128		852	247
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		66	63
cM capacity (veh/h)			1119		228	558

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	447	433	283
Volume Left	0	0	77
Volume Right	0	0	206
cSH	1700	1700	400
Volume to Capacity	0.26	0.25	0.71
Queue Length 95th (ft)	0	0	132
Control Delay (s)	0.0	0.0	32.8
Lane LOS			D
Approach Delay (s)	0.0	0.0	32.8
Approach LOS			D

Intersection Summary			
Average Delay		8.0	
Intersection Capacity Utilization		51.6%	ICU Level of Service
Analysis Period (min)		15	A

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2016 Build Conditions PM Peak  
 4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	203	364	40	131	365	25	20	215	55	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.993			0.975				
Flt Protected		0.984			0.988			0.997				
Satd. Flow (prot)	0	1429	0	0	1403	0	0	1568	0	0	0	0
Flt Permitted		0.984			0.988			0.997				
Satd. Flow (perm)	0	1429	0	0	1403	0	0	1568	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		361			369			510				181
Travel Time (s)		8.2			8.4			11.6				4.1
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97	0.88	0.88	0.88	1.00	1.00	1.00
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		0			0							
Adj. Flow (vph)	221	396	43	135	376	26	23	244	63	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	660	0	0	537	0	0	329	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.30	1.14	1.19	1.36	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	78.7%
Analysis Period (min)	15
	ICU Level of Service D

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2016 Build Conditions PM Peak  
 4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (veh/h)	203	364	40	131	365	25	20	215	55	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97	0.88	0.88	0.88	1.00	1.00	1.00
Hourly flow rate (vph)	221	396	43	135	376	26	23	244	62	0	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)		933										
pX, platoon unblocked				0.80			0.80	0.80	0.80	0.80	0.80	
vC, conflicting volume	402			439			1518	1531	417	1703	1540	389
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	402			169			1523	1539	142	1754	1550	389
tC, single (s)	4.1			4.1			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	81			88			61	0	91	0	100	100
cM capacity (veh/h)	1141			1113			59	64	714	0	64	659

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	660	537	330
Volume Left	221	135	23
Volume Right	43	26	62
cSH	1141	1113	77
Volume to Capacity	0.19	0.12	4.30
Queue Length 95th (ft)	18	10	Err
Control Delay (s)	4.5	3.2	Err
Lane LOS	A	A	F
Approach Delay (s)	4.5	3.2	Err
Approach LOS			F

Intersection Summary		
Average Delay		2161.8
Intersection Capacity Utilization	78.7%	ICU Level of Service
Analysis Period (min)		15
		D

# 2021 Future Condition



King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2021 Future Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (vph)	15	449	41	41	326	5	0	0	0	15	123	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	16	16	16	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.989			0.998						0.954	
Flt Protected		0.999			0.994						0.997	
Satd. Flow (prot)	0	1526	0	0	1491	0	0	0	0	0	1756	0
Flt Permitted		0.999			0.994						0.997	
Satd. Flow (perm)	0	1526	0	0	1491	0	0	0	0	0	1756	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			384			389			410	
Travel Time (s)		7.8			8.7			8.8			9.3	
Confl. Peds. (#/hr)	75		81	88		82				82		75
Confl. Bikes (#/hr)			34			10						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	7%	7%	10%	10%	10%	2%	2%	2%	5%	5%	5%
Adj. Flow (vph)	16	488	45	45	354	5	0	0	0	16	134	78
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	549	0	0	404	0	0	0	0	0	228	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	0.97	0.97	0.97	1.14	0.97	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	62.2%
ICU Level of Service	B
Analysis Period (min)	15

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2021 Future Condition AM Peak Hour  
7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (veh/h)	15	449	41	41	326	5	0	0	0	15	123	72
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	16	488	45	45	354	5	0	0	0	16	134	78
Pedestrians		75			82			88			82	
Lane Width (ft)		11.0			11.0			0.0			16.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		6			6			0			9	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					384							
pX, platoon unblocked	0.78						0.78	0.78		0.78	0.78	0.78
vC, conflicting volume	442			621			1297	1162	680	1153	1181	514
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	152			621			1242	1069	680	1058	1094	244
tC, single (s)	4.2			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			95			100	100	100	86	5	85
cM capacity (veh/h)	998			922			13	148	423	118	141	530

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	549	404	228
Volume Left	16	45	16
Volume Right	45	5	78
cSH	998	922	185
Volume to Capacity	0.02	0.05	1.23
Queue Length 95th (ft)	1	4	308
Control Delay (s)	0.5	1.5	193.3
Lane LOS	A	A	F
Approach Delay (s)	0.5	1.5	193.3
Approach LOS			F

Intersection Summary		
Average Delay		38.1
Intersection Capacity Utilization	62.2%	ICU Level of Service
Analysis Period (min)		15
		B

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2021 Future Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	411	38	41	382	5	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99							
Frt		0.989			0.998							
Flt Protected		0.999			0.995							
Satd. Flow (prot)	0	1493	0	0	1517	0	0	0	0	0	0	0
Flt Permitted		0.988			0.925							
Satd. Flow (perm)	0	1475	0	0	1405	0	0	0	0	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		384			572			402				466
Travel Time (s)		8.7			13.0			9.1				10.6
Confl. Peds. (#/hr)	88		86	86		88						
Confl. Bikes (#/hr)			35			24						
Peak Hour Factor	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	447	41	43	398	5	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	499	0	0	446	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Minimum Split (s)	21.0	21.0		21.0	21.0							
Total Split (s)	35.0	35.0		35.0	35.0							
Total Split (%)	46.7%	46.7%		46.7%	46.7%							
Maximum Green (s)	30.0	30.0		30.0	30.0							
Yellow Time (s)	4.0	4.0		4.0	4.0							
All-Red Time (s)	1.0	1.0		1.0	1.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.0			5.0							
Lead/Lag	Lead	Lead		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							

Lane Group	ø2	ø3
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	3
Permitted Phases		
Minimum Split (s)	20.0	9.0
Total Split (s)	20.0	20.0
Total Split (%)	27%	27%
Maximum Green (s)	17.0	15.0
Yellow Time (s)	2.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)	9.0	
Flash Dont Walk (s)	8.0	
Pedestrian Calls (#/hr)	60	
Act Effect Green (s)		
Actuated g/C Ratio		

King Open/Cambridge Street Upper School  
 2: Willow Street & Cambridge Street

2021 Future Condition AM Peak Hour  
 7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.85			0.79							
Control Delay		36.3			32.5							
Queue Delay		0.0			0.0							
Total Delay		36.3			32.5							
LOS		D			C							
Approach Delay		36.3			32.5							
Approach LOS		D			C							

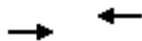
Intersection Summary

Area Type:	CBD
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	34.5
Intersection LOS:	C
Intersection Capacity Utilization	50.8%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 2: Willow Street & Cambridge Street



Lane Group	ø2	ø3
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		



Lane Group	EBT	WBT
Lane Group Flow (vph)	499	446
v/c Ratio	0.85	0.79
Control Delay	36.3	32.5
Queue Delay	0.0	0.0
Total Delay	36.3	32.5
Queue Length 50th (ft)	204	177
Queue Length 95th (ft)	#379	#333
Internal Link Dist (ft)	304	492
Turn Bay Length (ft)		
Base Capacity (vph)	590	562
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.85	0.79

**Intersection Summary**

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

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2021 Future Condition AM Peak Hour  
7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	411	38	41	382	5	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0							
Lane Util. Factor		1.00			1.00							
Frbp, ped/bikes		0.99			1.00							
Flpb, ped/bikes		1.00			1.00							
Frt		0.99			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		1491			1512							
Flt Permitted		0.99			0.92							
Satd. Flow (perm)		1476			1405							
Peak-hour factor, PHF	0.92	0.92	0.92	0.96	0.96	0.96	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	447	41	43	398	5	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	499		0	0	446	0	0	0	0	0	0
Confl. Peds. (#/hr)	88		86	86		88						
Confl. Bikes (#/hr)			35			24						
Heavy Vehicles (%)	8%	8%	8%	8%	8%	8%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Actuated Green, G (s)		30.0			30.0							
Effective Green, g (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							
Clearance Time (s)		5.0			5.0							
Lane Grp Cap (vph)		590			562							
v/s Ratio Prot												
v/s Ratio Perm		c0.34			0.32							
v/c Ratio		0.85			0.79							
Uniform Delay, d1		20.4			19.8							
Progression Factor		1.00			1.00							
Incremental Delay, d2		13.9			11.0							
Delay (s)		34.3			30.8							
Level of Service		C			C							
Approach Delay (s)		34.3			30.8			0.0			0.0	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2021 Future Condition AM Peak Hour  
7:30 AM - 8:30 AM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (vph)	452	0	0	334	38	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.916	
Flt Protected					0.982	
Satd. Flow (prot)	1531	0	0	1555	1692	0
Flt Permitted					0.982	
Satd. Flow (perm)	1531	0	0	1555	1692	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	572			361	533	
Travel Time (s)	13.0			8.2	12.1	
Confl. Peds. (#/hr)					132	101
Peak Hour Factor	0.92	0.92	0.90	0.90	0.86	0.86
Heavy Vehicles (%)	8%	8%	10%	10%	3%	3%
Adj. Flow (vph)	491	0	0	371	44	73
Shared Lane Traffic (%)						
Lane Group Flow (vph)	491	0	0	371	117	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.19	1.19	1.14	1.14	0.97	0.97
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	46.3%
ICU Level of Service	A
Analysis Period (min)	15

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2021 Future Condition AM Peak Hour  
7:30 AM - 8:30 AM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (veh/h)	452	0	0	334	38	63
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.90	0.90	0.86	0.86
Hourly flow rate (vph)	491	0	0	371	44	73
Pedestrians	132			101		
Lane Width (ft)	11.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	10			8		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	572					
pX, platoon unblocked			0.75		0.75	0.75
vC, conflicting volume			491		994	592
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			154		825	289
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.3
p0 queue free %			100		81	86
cM capacity (veh/h)			1033		230	513

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	491	371	117
Volume Left	0	0	44
Volume Right	0	0	73
cSH	1700	1700	350
Volume to Capacity	0.29	0.22	0.34
Queue Length 95th (ft)	0	0	36
Control Delay (s)	0.0	0.0	20.4
Lane LOS			C
Approach Delay (s)	0.0	0.0	20.4
Approach LOS			C

Intersection Summary			
Average Delay		2.4	
Intersection Capacity Utilization	46.3%		ICU Level of Service A
Analysis Period (min)		15	

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2021 Future Condition AM Peak Hour  
 7:30 AM - 8:30 AM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	72	383	65	275	283	26	51	92	37	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.983			0.994			0.972				
Flt Protected		0.993			0.977			0.986				
Satd. Flow (prot)	0	1546	0	0	1552	0	0	1504	0	0	0	0
Flt Permitted		0.993			0.977			0.986				
Satd. Flow (perm)	0	1546	0	0	1552	0	0	1504	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		361			369			510				227
Travel Time (s)		8.2			8.4			11.6				5.2
Confl. Bikes (#/hr)			81									
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.85	0.85	0.85	1.00	1.00	1.00
Heavy Vehicles (%)	8%	8%	8%	7%	7%	7%	9%	9%	9%	2%	2%	2%
Adj. Flow (vph)	76	403	68	293	301	28	60	108	44	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	547	0	0	622	0	0	212	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	87.4%
Analysis Period (min)	15
	ICU Level of Service E

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2021 Future Condition AM Peak Hour  
 7:30 AM - 8:30 AM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (veh/h)	72	383	65	275	283	26	51	92	37	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.94	0.94	0.94	0.85	0.85	0.85	1.00	1.00	1.00
Hourly flow rate (vph)	76	403	68	293	301	28	60	108	44	0	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)		933										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	329			472			1489	1503	437	1587	1523	315
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	329			206			1486	1503	163	1609	1529	315
tC, single (s)	4.2			4.2			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.3			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	94			72			0	0	94	0	100	100
cM capacity (veh/h)	1198			1062			59	63	686	0	63	726

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	547	621	212
Volume Left	76	293	60
Volume Right	68	28	44
cSH	1198	1062	76
Volume to Capacity	0.06	0.28	2.79
Queue Length 95th (ft)	5	28	520
Control Delay (s)	1.8	6.3	926.6
Lane LOS	A	A	F
Approach Delay (s)	1.8	6.3	926.6
Approach LOS			F

Intersection Summary		
Average Delay		145.7
Intersection Capacity Utilization	87.4%	ICU Level of Service
Analysis Period (min)		15
		E

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2021 Future Condition PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (vph)	10	412	46	46	394	5	0	0	0	41	123	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	16	16	16	12	16	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.987			0.998						0.966	
Flt Protected		0.999			0.995						0.991	
Satd. Flow (prot)	0	1567	0	0	1578	0	0	0	0	0	1801	0
Flt Permitted		0.999			0.995						0.991	
Satd. Flow (perm)	0	1567	0	0	1578	0	0	0	0	0	1801	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			384			389			410	
Travel Time (s)		7.8			8.7			8.8			9.3	
Confl. Peds. (#/hr)	74		95	118		97				97		74
Confl. Bikes (#/hr)			16			22						
Peak Hour Factor	0.94	0.94	0.94	0.84	0.84	0.84	0.92	0.92	0.92	0.97	0.97	0.97
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	2%	2%	2%	3%	3%	3%
Adj. Flow (vph)	11	438	49	55	469	6	0	0	0	42	127	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	498	0	0	530	0	0	0	0	0	227	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	0.97	0.97	0.97	1.14	0.97	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	72.0%
ICU Level of Service	C
Analysis Period (min)	15

King Open/Cambridge Street Upper School  
1: Windsor Street & Cambridge Street

2021 Future Condition PM Peak  
4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Volume (veh/h)	10	412	46	46	394	5	0	0	0	41	123	56
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.84	0.84	0.84	0.92	0.92	0.92	0.97	0.97	0.97
Hourly flow rate (vph)	11	438	49	55	469	6	0	0	0	42	127	58
Pedestrians		74			97			118			97	
Lane Width (ft)		11.0			11.0			0.0			16.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		6			7			0			11	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					384							
pX, platoon unblocked	0.72						0.72	0.72		0.72	0.72	0.72
vC, conflicting volume	572			605			1379	1284	678	1260	1305	643
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	211			605			1331	1199	678	1166	1229	309
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			0	100	100	52	0	87
cM capacity (veh/h)	866			963			0	111	419	88	106	441

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	498	530	227
Volume Left	11	55	42
Volume Right	49	6	58
cSH	866	963	125
Volume to Capacity	0.01	0.06	1.81
Queue Length 95th (ft)	1	5	438
Control Delay (s)	0.4	1.6	453.3
Lane LOS	A	A	F
Approach Delay (s)	0.4	1.6	453.3
Approach LOS			F

Intersection Summary		
Average Delay		82.8
Intersection Capacity Utilization	72.0%	ICU Level of Service C
Analysis Period (min)		15

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2021 Future Condition PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	410	37	36	451	15	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99							
Frt		0.989			0.996							
Flt Protected		0.999			0.996							
Satd. Flow (prot)	0	1540	0	0	1587	0	0	0	0	0	0	0
Flt Permitted		0.987			0.947							
Satd. Flow (perm)	0	1521	0	0	1505	0	0	0	0	0	0	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		30			30			30				30
Link Distance (ft)		384			572			402				466
Travel Time (s)		8.7			13.0			9.1				10.6
Confl. Peds. (#/hr)	45		72	72		45						
Confl. Bikes (#/hr)			15			45						
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	11	446	40	38	480	16	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	497	0	0	534	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.19	1.19	1.19	1.19	1.19	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Minimum Split (s)	21.0	21.0		21.0	21.0							
Total Split (s)	35.0	35.0		35.0	35.0							
Total Split (%)	46.7%	46.7%		46.7%	46.7%							
Maximum Green (s)	30.0	30.0		30.0	30.0							
Yellow Time (s)	4.0	4.0		4.0	4.0							
All-Red Time (s)	1.0	1.0		1.0	1.0							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.0			5.0							
Lead/Lag	Lead	Lead		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							

Lane Group	ø2	ø3
Lane Configurations		
Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Lane Util. Factor		
Ped Bike Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Confl. Peds. (#/hr)		
Confl. Bikes (#/hr)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Turn Type		
Protected Phases	2	3
Permitted Phases		
Minimum Split (s)	20.0	9.0
Total Split (s)	20.0	20.0
Total Split (%)	27%	27%
Maximum Green (s)	17.0	15.0
Yellow Time (s)	2.0	4.0
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Walk Time (s)	9.0	
Flash Dont Walk (s)	8.0	
Pedestrian Calls (#/hr)	60	
Act Effect Green (s)		
Actuated g/C Ratio		



King Open/Cambridge Street Upper School  
 2: Willow Street & Cambridge Street

2021 Future Condition PM Peak  
 4:30 PM - 5:30 PM

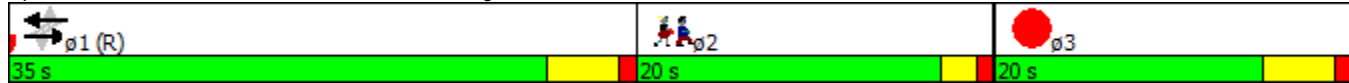


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.82			0.89							
Control Delay		33.4			40.6							
Queue Delay		0.0			0.0							
Total Delay		33.4			40.6							
LOS		C			D							
Approach Delay		33.4			40.6							
Approach LOS		C			D							

Intersection Summary

Area Type:	CBD
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 1:EBWB, Start of Green
Natural Cycle:	60
Control Type:	Pretimed
Maximum v/c Ratio:	0.89
Intersection Signal Delay:	37.1
Intersection LOS:	D
Intersection Capacity Utilization	52.2%
ICU Level of Service	A
Analysis Period (min)	15

Splits and Phases: 2: Willow Street & Cambridge Street



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Lane Group	ø2	ø3
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Intersection Summary		

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Lane Group	EBT	WBT
Lane Group Flow (vph)	497	534
v/c Ratio	0.82	0.89
Control Delay	33.4	40.6
Queue Delay	0.0	0.0
Total Delay	33.4	40.6
Queue Length 50th (ft)	200	224
Queue Length 95th (ft)	#367	#411
Internal Link Dist (ft)	304	492
Turn Bay Length (ft)		
Base Capacity (vph)	608	602
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.82	0.89

**Intersection Summary**

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

King Open/Cambridge Street Upper School  
2: Willow Street & Cambridge Street

2021 Future Condition PM Peak  
4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕							
Volume (vph)	10	410	37	36	451	15	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	11	11	11	12	12	12	12	12	12
Total Lost time (s)		5.0			5.0							
Lane Util. Factor		1.00			1.00							
Frbp, ped/bikes		0.99			1.00							
Flpb, ped/bikes		1.00			1.00							
Frt		0.99			1.00							
Flt Protected		1.00			1.00							
Satd. Flow (prot)		1540			1583							
Flt Permitted		0.99			0.95							
Satd. Flow (perm)		1521			1505							
Peak-hour factor, PHF	0.92	0.92	0.92	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	11	446	40	38	480	16	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	497	0	0	534	0	0	0	0	0	0	0
Confl. Peds. (#/hr)	45		72	72		45						
Confl. Bikes (#/hr)			15			45						
Heavy Vehicles (%)	5%	5%	5%	3%	3%	3%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA							
Protected Phases		1			1							
Permitted Phases	1			1								
Actuated Green, G (s)		30.0			30.0							
Effective Green, g (s)		30.0			30.0							
Actuated g/C Ratio		0.40			0.40							
Clearance Time (s)		5.0			5.0							
Lane Grp Cap (vph)		608			602							
v/s Ratio Prot												
v/s Ratio Perm		0.33			0.35							
v/c Ratio		0.82			0.89							
Uniform Delay, d1		20.1			20.9							
Progression Factor		1.00			1.00							
Incremental Delay, d2		11.6			17.5							
Delay (s)		31.7			38.4							
Level of Service		C			D							
Approach Delay (s)		31.7			38.4		0.0				0.0	
Approach LOS		C			D		A				A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.2		HCM 2000 Level of Service				D			
HCM 2000 Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			75.0		Sum of lost time (s)				13.0			
Intersection Capacity Utilization			52.2%		ICU Level of Service				A			
Analysis Period (min)			15									
c Critical Lane Group												

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2021 Future Condition PM Peak  
4:30 PM - 5:30 PM



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (vph)	431	0	0	399	67	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	12	16	16
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.902	
Flt Protected					0.987	
Satd. Flow (prot)	1574	0	0	1676	1659	0
Flt Permitted					0.987	
Satd. Flow (perm)	1574	0	0	1676	1659	0
Link Speed (mph)	30			30	30	
Link Distance (ft)	572			361	533	
Travel Time (s)	13.0			8.2	12.1	
Confl. Peds. (#/hr)					123	91
Peak Hour Factor	0.94	0.94	0.89	0.89	0.86	0.86
Heavy Vehicles (%)	5%	5%	2%	2%	4%	4%
Adj. Flow (vph)	459	0	0	448	78	210
Shared Lane Traffic (%)						
Lane Group Flow (vph)	459	0	0	448	288	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	0			0	16	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.19	1.19	1.14	1.14	0.97	0.97
Turning Speed (mph)		9	15		15	9
Sign Control	Free			Free	Stop	

**Intersection Summary**

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	52.5%
ICU Level of Service	A
Analysis Period (min)	15

King Open/Cambridge Street Upper School  
3: Berkshire Street & Cambridge Street

2021 Future Condition PM Peak  
4:30 PM - 5:30 PM



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑			↑	↘	
Volume (veh/h)	431	0	0	399	67	181
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.89	0.89	0.86	0.86
Hourly flow rate (vph)	459	0	0	448	78	210
Pedestrians	123			91		
Lane Width (ft)	11.0			12.0		
Walking Speed (ft/s)	4.0			4.0		
Percent Blockage	9			8		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)	572					
pX, platoon unblocked			0.76		0.76	0.76
vC, conflicting volume			459		1030	550
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			125		879	245
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		64	62
cM capacity (veh/h)			1107		216	552

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	459	448	288
Volume Left	0	0	78
Volume Right	0	0	210
cSH	1700	1700	389
Volume to Capacity	0.27	0.26	0.74
Queue Length 95th (ft)	0	0	147
Control Delay (s)	0.0	0.0	36.5
Lane LOS			E
Approach Delay (s)	0.0	0.0	36.5
Approach LOS			E

Intersection Summary			
Average Delay		8.8	
Intersection Capacity Utilization		52.5%	ICU Level of Service A
Analysis Period (min)		15	

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2021 Future Condition PM Peak  
 4:30 PM - 5:30 PM



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (vph)	208	373	41	138	376	26	23	220	88	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	12	12	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.991			0.993			0.964				
Flt Protected		0.984			0.987			0.997				
Satd. Flow (prot)	0	1429	0	0	1402	0	0	1550	0	0	0	0
Flt Permitted		0.984			0.987			0.997				
Satd. Flow (perm)	0	1429	0	0	1402	0	0	1550	0	0	0	0
Link Speed (mph)		30			30			30				30
Link Distance (ft)		361			369			510				181
Travel Time (s)		8.2			8.4			11.6				4.1
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97	0.88	0.88	0.88	1.00	1.00	1.00
Heavy Vehicles (%)	5%	5%	5%	4%	4%	4%	6%	6%	6%	2%	2%	2%
Parking (#/hr)		0			0							
Adj. Flow (vph)	226	405	45	142	388	27	26	250	100	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	676	0	0	557	0	0	376	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0				0
Link Offset(ft)		0			0			0				0
Crosswalk Width(ft)		16			16			16				16
Two way Left Turn Lane												
Headway Factor	1.14	1.30	1.14	1.19	1.36	1.19	1.14	1.14	1.14	1.14	1.14	1.14
Turning Speed (mph)	15		9	15		9	15		9	15		9
Sign Control		Free			Free			Stop				Stop

Intersection Summary

Area Type:	CBD
Control Type:	Unsignalized
Intersection Capacity Utilization	82.3%
Analysis Period (min)	15
	ICU Level of Service E

King Open/Cambridge Street Upper School  
 4: Cardinal Medeiros Ave/Warren Street & Cambridge Street

2021 Future Condition PM Peak  
 4:30 PM - 5:30 PM



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕				
Volume (veh/h)	208	373	41	138	376	26	23	220	88	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.97	0.97	0.97	0.88	0.88	0.88	1.00	1.00	1.00
Hourly flow rate (vph)	226	405	45	142	388	27	26	250	100	0	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)		933										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	414			450			1565	1579	428	1790	1588	401
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	414			163			1583	1600	135	1870	1612	401
tC, single (s)	4.1			4.1			7.2	6.6	6.3	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.1	3.4	3.5	4.0	3.3
p0 queue free %	80			87			49	0	86	0	100	100
cM capacity (veh/h)	1129			1102			52	57	710	0	57	649

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	676	557	376
Volume Left	226	142	26
Volume Right	45	27	100
cSH	1129	1102	74
Volume to Capacity	0.20	0.13	5.05
Queue Length 95th (ft)	19	11	Err
Control Delay (s)	4.6	3.3	Err
Lane LOS	A	A	F
Approach Delay (s)	4.6	3.3	Err
Approach LOS			F

Intersection Summary		
Average Delay		2340.7
Intersection Capacity Utilization	82.3%	ICU Level of Service E
Analysis Period (min)		15