



Massachusetts Gaming Commission  
101 Federal Street, 12th Floor, Boston, MA 02110

Appendix C

**2018 COMMUNITY MITIGATION FUND**

*Specific Impact Grant Application*

**BD-18-1068-1068C-1068L-22137**

*Please complete entire Application*

1. NAME OF MUNICIPALITY/GOVERNMENT ENTITY/DISTRICT
2. NAME AND TITLE OF INDIVIDUAL AUTHORIZED TO COMMIT FUNDS ON BEHALF OF MUNICIPALITY/GOVERNMENTAL ENTITY
3. ADDRESS OF INDIVIDUAL AUTHORIZED TO COMMIT FUNDS ON BEHALF OF MUNICIPALITY/GOVERNMENTAL ENTITY
4. PHONE # AND EMAIL ADDRESS OF INDIVIDUAL AUTHORIZED TO COMMIT FUNDS ON BEHALF OF MUNICIPALITY/GOVERNMENTAL ENTITY
5. NAME AND TITLE OF CONTRACT MANAGER RESPONSIBLE FOR HANDLING OF FUNDS ON BEHALF OF MUNICIPALITY/GOVERNMENTAL ENTITY
6. ADDRESS OF CONTRACT MANAGER RESPONSIBLE FOR HANDLING OF FUNDS ON BEHALF OF MUNICIPALITY/GOVERNMENTAL ENTITY
7. PHONE # AND EMAIL ADDRESS OF CONTRACT MANAGER ON BEHALF OF MUNICIPALITY/GOVERNMENTAL ENTITY
8. NAME OF GAMING LICENSEE

**1. IMPACT DESCRIPTION**

Please describe in detail the impact that is attributed to the construction of a gaming facility. Please provide support for the determination that the construction of the gaming facility caused or is causing the impact.

**2. PROPOSED MITIGATION**

- a) Please identify the amount of funding requested.
- b) Please identify below the manner in which the funds are proposed to be used.
- c) Please provide documentation (e.g. - invoices, proposals, estimates, etc.) adequate for the Commission to ensure that the funds will be used for the cost of mitigating the impact from the construction of a proposed gaming establishment.
- d) Please describe how the mitigation request will address the specific impact indicated. Please attach additional sheets/supplemental materials if necessary.

**3. CONNECTION TO GAMING FACILITY**

Please provide specificity/evidence that the requested funds will be used to address issue or impacts directly related to the gaming facility.

**4. IMPACT CONTROLS/ADMINISTRATION OF IMPACT FUNDS**

Please provide detail regarding the controls that will be used to ensure that funds will only be used to address the specific impact. If non-governmental entities will receive any funds, please describe what reporting will be required and how the applicant will remedy any misuse of funds.

**5. RELEVANT EXCERPTS FROM HOST OR SURROUNDING COMMUNITY AGREEMENTS**

Please describe and include excerpts from any relevant sections of any Host or Surrounding Community Agreement. Please explain how this impact was either anticipated or not anticipated in that Agreement.

**CERTIFICATION BY MUNICIPALITY/GOVERNMENTAL ENTITY**

On behalf of the aforementioned municipality/governmental entity I hereby certify that the funds that are requested in this application will be used solely for the purposes articulated in this Application.

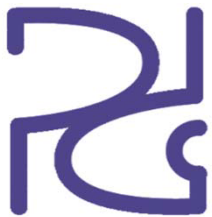
\_\_\_\_\_  
Signature of Responsible Municipal  
Official/Governmental Entity

\_\_\_\_\_  
Date

## **Attachments**

- Traffic Volume Count Data
- 2014 Lynn to Boston Ferry Schedule
- Lynn Commuter Ferry Ridership Data
- Intersection Capacity Analyses
- Preliminary Cost Estimates
- Signal Warrant Worksheet

## Traffic Volume Count Data



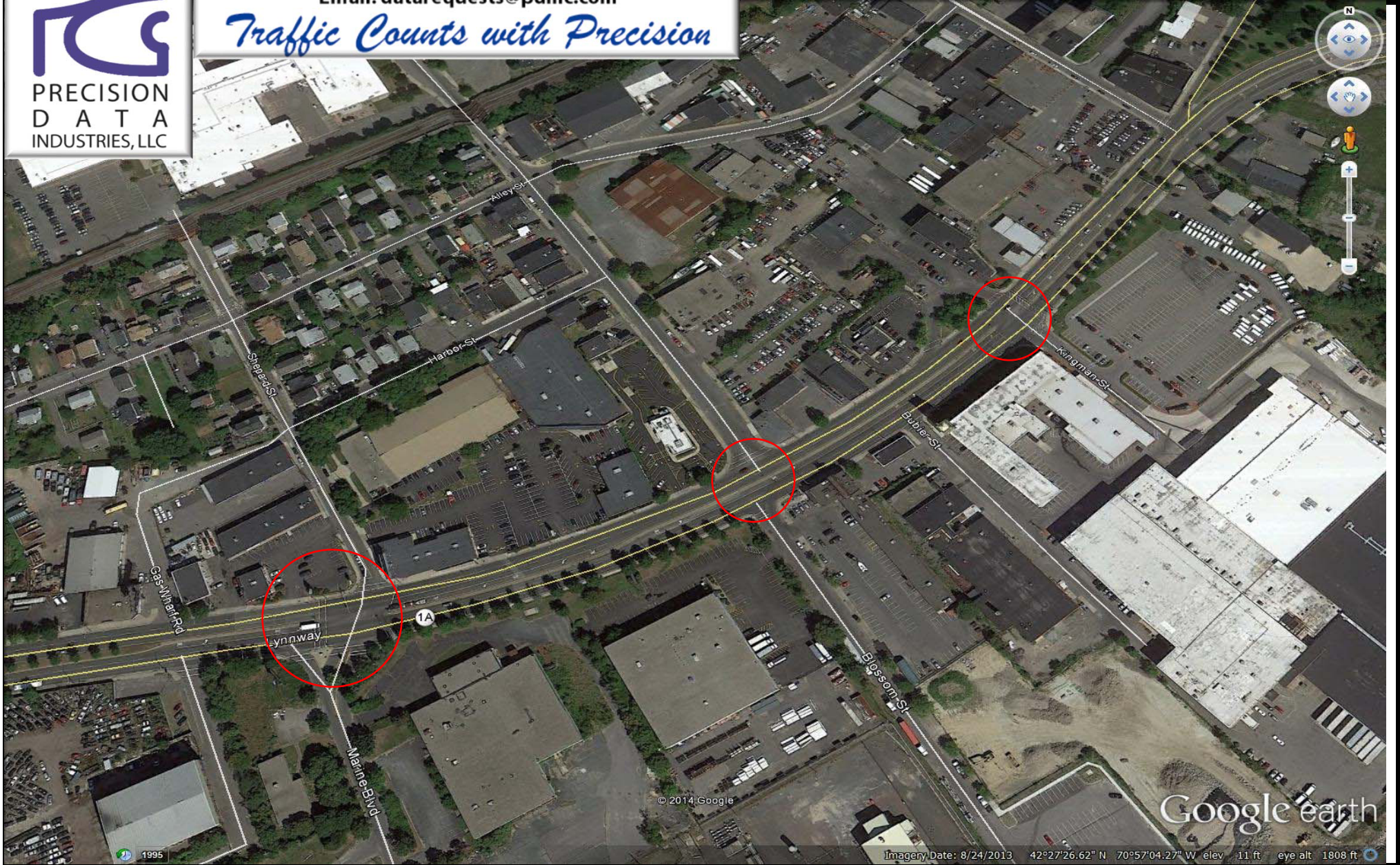
PRECISION  
DATA  
INDUSTRIES, LLC

PRECISION DATA INDUSTRIES, LLC

Office: 508.481.3999 Fax: 508.545.1234

Email: [datarequests@pdillc.com](mailto:datarequests@pdillc.com)

*Traffic Counts with Precision*



Client:  
VHB

Engineer:  
K. Keen

Site Code:  
11942.03

Date:  
Tuesday 11/18/14

PDI Job Number:  
144179

City, State:  
Lynn, MA



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

N/S: Shepard Street/ Marine Boulevard  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 A  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) 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	4	0	7	0	14	640	1	2	2	7	1	0	6	199	3	0	886
07:15 AM	5	0	6	0	12	621	2	5	2	1	1	0	3	227	9	0	894
07:30 AM	6	0	5	0	12	579	0	7	3	1	2	0	4	290	12	1	922
07:45 AM	5	0	6	0	14	554	3	12	2	0	4	0	4	310	11	2	927
Total	20	0	24	0	52	2394	6	26	9	9	8	0	17	1026	35	3	3629
08:00 AM	3	0	12	0	13	545	5	15	4	0	1	0	6	236	10	0	850
08:15 AM	2	0	8	0	12	549	4	7	3	3	2	0	3	287	11	0	891
08:30 AM	4	0	9	0	13	444	3	10	3	0	2	0	4	266	13	0	771
08:45 AM	2	0	6	0	11	457	2	10	4	0	0	0	2	287	9	0	790
Total	11	0	35	0	49	1995	14	42	14	3	5	0	15	1076	43	0	3302
Grand Total	31	0	59	0	101	4389	20	68	23	12	13	0	32	2102	78	3	6931
Apprch %	34.4	0	65.6	0	2.2	95.9	0.4	1.5	47.9	25	27.1	0	1.4	94.9	3.5	0.1	
Total %	0.4	0	0.9	0	1.5	63.3	0.3	1	0.3	0.2	0.2	0	0.5	30.3	1.1	0	
Cars	25	0	50	0	94	4292	13	66	14	7	7	0	16	1993	71	3	6651
% Cars	80.6	0	84.7	0	93.1	97.8	65	97.1	60.9	58.3	53.8	0	50	94.8	91	100	96
Heavy Vehicles	6	0	9	0	7	97	7	2	9	5	6	0	16	109	7	0	280
% Heavy Vehicles	19.4	0	15.3	0	6.9	2.2	35	2.9	39.1	41.7	46.2	0	50	5.2	9	0	4

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	4	0	7	0	11	14	640	1	2	657	2	7	1	0	10	6	199	3	0	208	886
07:15 AM	5	0	6	0	11	12	621	2	5	640	2	1	1	0	4	3	227	9	0	239	894
07:30 AM	6	0	5	0	11	12	579	0	7	598	3	1	2	0	6	4	290	12	1	307	922
07:45 AM	5	0	6	0	11	14	554	3	12	583	2	0	4	0	6	4	310	11	2	327	927
Total Volume	20	0	24	0	44	52	2394	6	26	2478	9	9	8	0	26	17	1026	35	3	1081	3629
% App. Total																					
PHF	.833	.000	.857	.000	1.00	.929	.935	.500	.542	.943	.750	.321	.500	.000	.650	.708	.827	.729	.375	.826	.979
Cars	14	0	17	0	31	48	2350	4	26	2428	2	4	2	0	8	8	962	32	3	1005	3472
% Cars	70.0	0	70.8	0	70.5	92.3	98.2	66.7	100	98.0	22.2	44.4	25.0	0	30.8	47.1	93.8	91.4	100	93.0	95.7
Heavy Vehicles																					
% Heavy Vehicles	30.0	0	29.2	0	29.5	7.7	1.8	33.3	0	2.0	77.8	55.6	75.0	0	69.2	52.9	6.2	8.6	0	7.0	4.3



PRECISION  
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INDUSTRIES, LLC

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N/S: Shepard Street/ Marine Boulevard  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 A  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Cars

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) 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	4	0	4	0	14	625	0	2	0	3	0	0	4	188	2	0	846
07:15 AM	2	0	5	0	11	605	1	5	0	0	0	0	1	219	9	0	858
07:30 AM	3	0	3	0	11	571	0	7	1	1	1	0	2	265	12	1	878
07:45 AM	5	0	5	0	12	549	3	12	1	0	1	0	1	290	9	2	890
Total	14	0	17	0	48	2350	4	26	2	4	2	0	8	962	32	3	3472
08:00 AM	3	0	12	0	11	537	3	15	3	0	1	0	3	228	8	0	824
08:15 AM	2	0	6	0	12	532	4	6	3	3	2	0	2	273	10	0	855
08:30 AM	4	0	9	0	12	429	2	9	2	0	2	0	3	253	12	0	737
08:45 AM	2	0	6	0	11	444	0	10	4	0	0	0	0	277	9	0	763
Total	11	0	33	0	46	1942	9	40	12	3	5	0	8	1031	39	0	3179
Grand Total	25	0	50	0	94	4292	13	66	14	7	7	0	16	1993	71	3	6651
Apprch %	33.3	0	66.7	0	2.1	96.1	0.3	1.5	50	25	25	0	0.8	95.7	3.4	0.1	
Total %	0.4	0	0.8	0	1.4	64.5	0.2	1	0.2	0.1	0.1	0	0.2	30	1.1	0	

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	4	0	4	0	8	14	625	0	2	641	0	3	0	0	3	4	188	2	0	194	846
07:15 AM	2	0	5	0	7	11	605	1	5	622	0	0	0	0	0	1	219	9	0	229	858
07:30 AM	3	0	3	0	6	11	571	0	7	589	1	1	1	0	3	2	265	12	1	280	878
07:45 AM	5	0	5	0	10	12	549	3	12	576	1	0	1	0	2	1	290	9	2	302	890
Total Volume	14	0	17	0	31	48	2350	4	26	2428	2	4	2	0	8	8	962	32	3	1005	3472
% App. Total																					
PHF	.700	.000	.850	.000	.775	.857	.940	.333	.542	.947	.500	.333	.500	.000	.667	.500	.829	.667	.375	.832	.975





PRECISION  
D A T A  
INDUSTRIES, LLC

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N/S: Shepard Street/ Marine Boulevard  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 A  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) 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	3	0	0	15	1	0	2	4	1	0	2	11	1	0	40
07:15 AM	3	0	1	0	1	16	1	0	2	1	1	0	2	8	0	0	36
07:30 AM	3	0	2	0	1	8	0	0	2	0	1	0	2	25	0	0	44
07:45 AM	0	0	1	0	2	5	0	0	1	0	3	0	3	20	2	0	37
Total	6	0	7	0	4	44	2	0	7	5	6	0	9	64	3	0	157
08:00 AM	0	0	0	0	2	8	2	0	1	0	0	0	3	8	2	0	26
08:15 AM	0	0	2	0	0	17	0	1	0	0	0	0	1	14	1	0	36
08:30 AM	0	0	0	0	1	15	1	1	1	0	0	0	1	13	1	0	34
08:45 AM	0	0	0	0	0	13	2	0	0	0	0	0	2	10	0	0	27
Total	0	0	2	0	3	53	5	2	2	0	0	0	7	45	4	0	123
Grand Total	6	0	9	0	7	97	7	2	9	5	6	0	16	109	7	0	280
Apprch %	40	0	60	0	6.2	85.8	6.2	1.8	45	25	30	0	12.1	82.6	5.3	0	
Total %	2.1	0	3.2	0	2.5	34.6	2.5	0.7	3.2	1.8	2.1	0	5.7	38.9	2.5	0	

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	0	0	3	0	3	0	15	1	0	16	2	4	1	0	7	2	11	1	0	14	40
07:15 AM	3	0	1	0	4	1	16	1	0	18	2	1	1	0	4	2	8	0	0	10	36
07:30 AM	3	0	2	0	5	1	8	0	0	9	2	0	1	0	3	2	25	0	0	27	44
07:45 AM	0	0	1	0	1	2	5	0	0	7	1	0	3	0	4	3	20	2	0	25	37
Total Volume	6	0	7	0	13	4	44	2	0	50	7	5	6	0	18	9	64	3	0	76	157
% App. Total	46.2	0	53.8	0		8	88	4	0		38.9	27.8	33.3	0		11.8	84.2	3.9	0		
PHF	.500	.000	.583	.000	.650	.500	.688	.500	.000	.694	.875	.313	.500	.000	.643	.750	.640	.375	.000	.704	.892



PRECISION  
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N/S: Shepard Street/ Marine Boulevard  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 A  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
07:30 AM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3
07:45 AM	0	0	0	2	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	6
Total	0	0	0	4	4	0	0	0	0	0	0	0	0	0	3	0	0	0	1	1	13
08:00 AM	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
Total	0	0	0	2	2	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	7
Grand Total	0	0	0	6	6	0	0	0	0	0	0	0	0	0	4	0	0	0	3	1	20
Apprch %	0	0	0	50	50	0	0	0	0	0	0	0	0	0	100	0	0	0	75	25	
Total %	0	0	0	30	30	0	0	0	0	0	0	0	0	0	20	0	0	0	15	5	

Start Time	Shepard Street From North						Lynnway (Route 1A) From East						Marine Boulevard From South						Lynnway (Route 1A) 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 07:30 AM																											
07:30 AM	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	3
07:45 AM	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	1	1	1	6
08:00 AM	0	0	0	2	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	2
Total Volume	0	0	0	4	5	9	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	3	1	4	4	4	15
% App. Total	0	0	0	44.4	55.6		0	0	0	0	0		0	0	0	0	100		0	0	0	75	25				
PHF	.000	.000	.000	.500	.625	.563	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.000	.000	.000	.375	.250	.500	.625	.625	.625



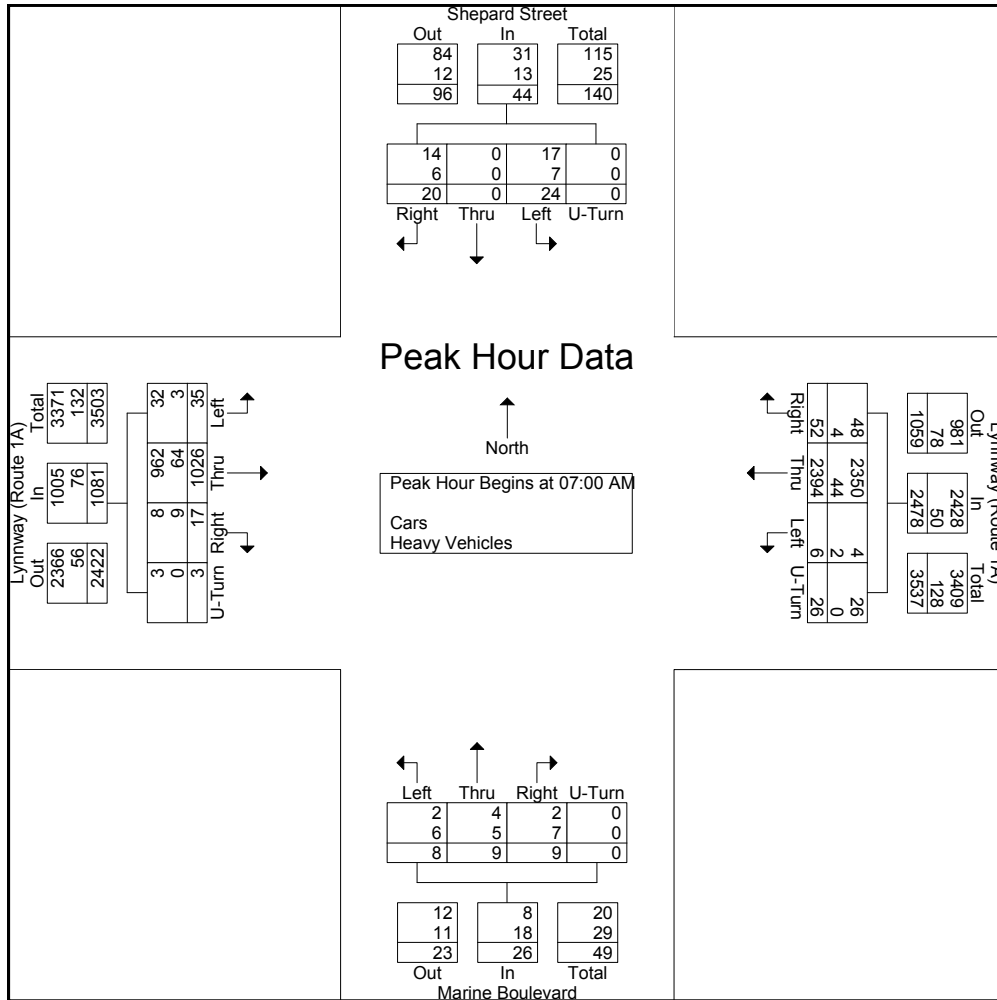
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07:15 AM	5	0	6	0	11	12	621	2	5	640	2	1	1	0	4	3	227	9	0	239	894
07:30 AM	6	0	5	0	11	12	579	0	7	598	3	1	2	0	6	4	290	12	1	307	922
07:45 AM	5	0	6	0	11	14	554	3	12	583	2	0	4	0	6	4	310	11	2	327	927
Total Volume	20	0	24	0	44	52	2394	6	26	2478	9	9	8	0	26	17	1026	35	3	1081	3629
% App. Total	.833	.000	.857	.000	1.000	.929	.935	.500	.542	.943	.750	.321	.500	.000	.650	.708	.827	.729	.375	.826	.979
Cars	14	0	17	0	31	48	2350	4	26	2428	2	4	2	0	8	8	962	32	3	1005	3472
% Cars	70.0	0	70.8	0	70.5	92.3	98.2	66.7	100	98.0	22.2	44.4	25.0	0	30.8	47.1	93.8	91.4	100	93.0	95.7
Heavy Vehicles																					
% Heavy Vehicles	30.0	0	29.2	0	29.5	7.7	1.8	33.3	0	2.0	77.8	55.6	75.0	0	69.2	52.9	6.2	8.6	0	7.0	4.3







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Groups Printed- Cars

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	4	0	6	0	10	285	0	8	3	0	2	1	4	430	16	2	771
04:15 PM	6	0	11	0	15	304	0	8	2	0	12	1	2	464	16	4	845
04:30 PM	7	0	15	0	12	275	0	6	2	1	10	0	2	520	23	2	875
04:45 PM	2	0	14	0	17	277	0	16	1	1	1	0	3	573	17	2	924
Total	19	0	46	0	54	1141	0	38	8	2	25	2	11	1987	72	10	3415
05:00 PM	6	0	11	0	6	315	0	12	4	6	8	0	8	563	29	2	970
05:15 PM	0	0	8	0	10	303	0	5	3	0	0	0	0	576	31	4	940
05:30 PM	6	0	11	0	16	253	0	7	0	0	2	0	1	550	21	3	870
05:45 PM	6	0	6	0	9	244	0	10	1	1	1	0	1	595	20	2	896
Total	18	0	36	0	41	1115	0	34	8	7	11	0	10	2284	101	11	3676
Grand Total	37	0	82	0	95	2256	0	72	16	9	36	2	21	4271	173	21	7091
Apprch %	31.1	0	68.9	0	3.9	93.1	0	3	25.4	14.3	57.1	3.2	0.5	95.2	3.9	0.5	
Total %	0.5	0	1.2	0	1.3	31.8	0	1	0.2	0.1	0.5	0	0.3	60.2	2.4	0.3	

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	7	0	15	0	22	12	275	0	6	293	2	1	10	0	13	2	520	23	2	547	875
04:45 PM	2	0	14	0	16	17	277	0	16	310	1	1	1	0	3	3	573	17	2	595	924
05:00 PM	6	0	11	0	17	6	315	0	12	333	4	6	8	0	18	8	563	29	2	602	970
05:15 PM	0	0	8	0	8	10	303	0	5	318	3	0	0	0	3	0	576	31	4	611	940
Total Volume	15	0	48	0	63	45	1170	0	39	1254	10	8	19	0	37	13	2232	100	10	2355	3709
% App. Total																					
PHF	.536	.000	.800	.000	.716	.662	.929	.000	.609	.941	.625	.333	.475	.000	.514	.406	.969	.806	.625	.964	.956



PRECISION  
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N/S: Shepard Street/ Marine Boulevard  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 AA  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	1	0	0	0	0	8	0	0	0	0	0	0	3	6	0	0	18
04:15 PM	0	0	1	0	0	10	3	0	0	0	1	0	1	14	0	0	30
04:30 PM	0	0	0	0	0	11	1	0	0	0	0	0	2	11	2	0	27
04:45 PM	0	0	0	0	0	4	1	0	0	0	1	0	2	12	1	0	21
Total	1	0	1	0	0	33	5	0	0	0	2	0	8	43	3	0	96
05:00 PM	0	0	0	0	1	9	0	0	0	0	0	0	0	12	1	0	23
05:15 PM	0	0	0	0	0	8	0	0	0	0	0	0	0	6	0	0	14
05:30 PM	0	0	1	0	0	8	0	1	0	0	0	0	1	11	0	0	22
05:45 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	8	1	0	10
Total	0	0	1	0	1	26	0	1	0	0	0	0	1	37	2	0	69
Grand Total	1	0	2	0	1	59	5	1	0	0	2	0	9	80	5	0	165
Apprch %	33.3	0	66.7	0	1.5	89.4	7.6	1.5	0	0	100	0	9.6	85.1	5.3	0	
Total %	0.6	0	1.2	0	0.6	35.8	3	0.6	0	0	1.2	0	5.5	48.5	3	0	

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:15 PM																					
04:15 PM	0	0	1	0	1	0	10	3	0	13	0	0	1	0	1	1	14	0	0	15	30
04:30 PM	0	0	0	0	0	0	11	1	0	12	0	0	0	0	0	2	11	2	0	15	27
04:45 PM	0	0	0	0	0	0	4	1	0	5	0	0	1	0	1	2	12	1	0	15	21
05:00 PM	0	0	0	0	0	1	9	0	0	10	0	0	0	0	0	0	12	1	0	13	23
Total Volume	0	0	1	0	1	1	34	5	0	40	0	0	2	0	2	5	49	4	0	58	101
% App. Total	0	0	100	0		2.5	85	12.5	0		0	0	100	0		8.6	84.5	6.9	0		
PHF	.000	.000	.250	.000	.250	.250	.773	.417	.000	.769	.000	.000	.500	.000	.500	.625	.875	.500	.000	.967	.842



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N/S: Shepard Street/ Marine Boulevard  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 AA  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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		
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
04:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	4	0	6	6
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	0	4	4
Total	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	7	3	13	
05:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	2	2
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	4	4
Total	0	0	0	1	1	0	0	0	0	0	0	0	0	2	1	0	0	0	1	1	7	7
Grand Total	0	0	0	1	1	0	1	0	0	0	0	0	0	2	3	0	0	0	8	4	20	
Apprch %	0	0	0	50	50	0	100	0	0	0	0	0	0	40	60	0	0	0	66.7	33.3		
Total %	0	0	0	5	5	0	5	0	0	0	0	0	0	10	15	0	0	0	40	20		

Start Time	Shepard Street From North						Lynnway (Route 1A) From East						Marine Boulevard From South						Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																										
Peak Hour for Entire Intersection Begins at 04:15 PM																										
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2
04:30 PM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1	0	0	0	4	0	4	6	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	3	0	3	4	
05:00 PM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2	
Total Volume	0	0	0	0	1	1	0	1	0	0	0	1	0	0	0	1	2	3	0	0	0	7	2	9	14	
% App. Total	0	0	0	0	100		0	100	0	0	0	0	0	0	33.3	66.7		0	0	0	77.8	22.2				
PHF	.000	.000	.000	.000	.250	.250	.000	.250	.000	.000	.000	.250	.000	.000	.000	.250	.500	.750	.000	.000	.000	.438	.250	.563	.583	



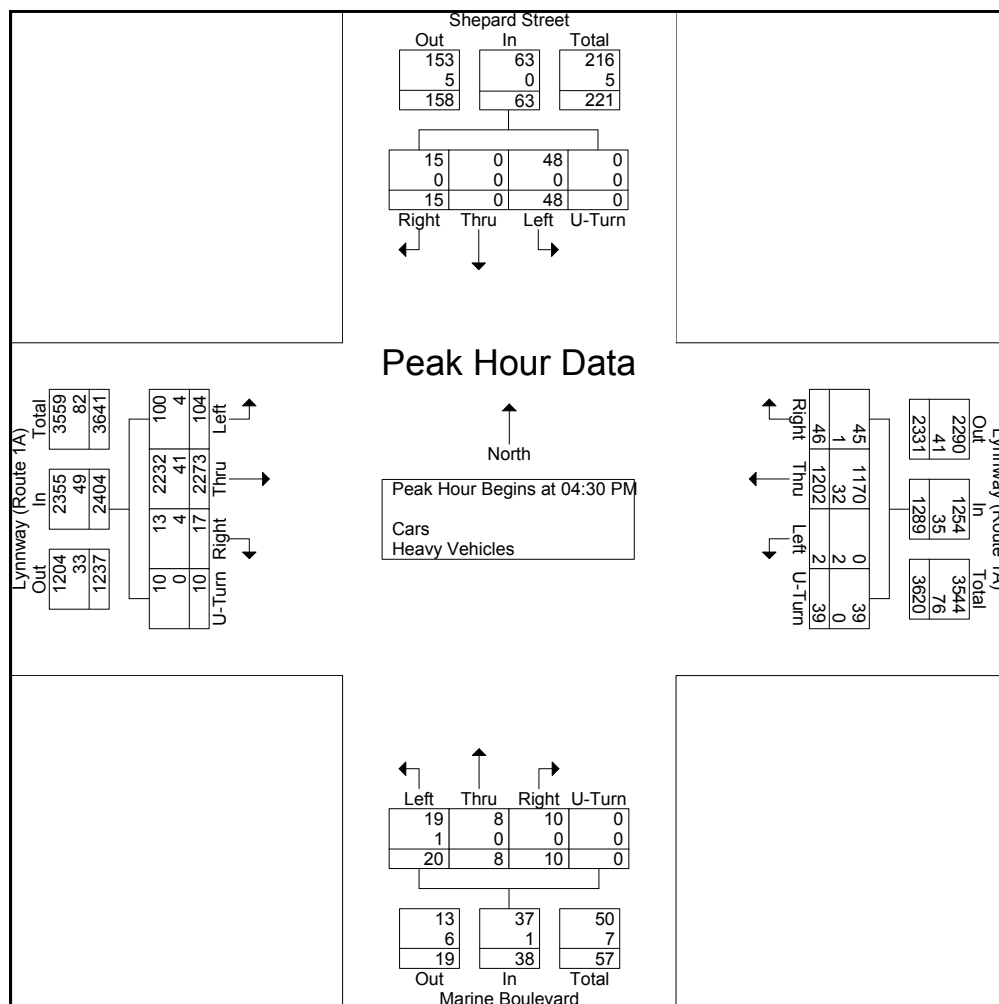
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N/S: Shepard Street/ Marine Boulevard  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 AA  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	7	0	15	0	22	12	286	1	6	305	2	1	10	0	13	4	531	25	2	562	902
04:45 PM	2	0	14	0	16	17	281	1	16	315	1	1	2	0	4	5	585	18	2	610	945
05:00 PM	6	0	11	0	17	7	324	0	12	343	4	6	8	0	18	8	575	30	2	615	993
05:15 PM	0	0	8	0	8	10	311	0	5	326	3	0	0	0	3	0	582	31	4	617	954
Total Volume	15	0	48	0	63	46	1202	2	39	1289	10	8	20	0	38	17	2273	104	10	2404	3794
% App. Total	.536	.000	.800	.000	.716	.676	.927	.500	.609	.940	.625	.333	.500	.000	.528	.531	.971	.839	.625	.974	.955
Cars	15	0	48	0	63	45	1170	0	39	1254	10	8	19	0	37	13	2232	100	10	2355	3709
% Cars	100	0	100	0	100	97.8	97.3	0	100	97.3	100	100	95.0	0	97.4	76.5	98.2	96.2	100	98.0	97.8
Heavy Vehicles	0	0	0	0	0	2.2	2.7	100	0	2.7	0	0	5.0	0	2.6	23.5	1.8	3.8	0	2.0	2.2
% Heavy Vehicles	0	0	0	0	0	2.2	2.7	100	0	2.7	0	0	5.0	0	2.6	23.5	1.8	3.8	0	2.0	2.2







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N/S: Blossom Street/ Blossom Street Ext  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 B  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

**Groups Printed- Cars - Heavy Vehicles**

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) 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	6	0	0	0	19	675	0	0	14	0	0	0	18	200	0	0	932
07:15 AM	6	0	0	0	38	640	0	0	14	0	0	0	20	221	0	0	939
07:30 AM	15	0	0	0	46	591	0	0	23	0	0	0	25	285	0	0	985
07:45 AM	14	0	0	0	44	596	0	0	18	0	0	0	29	300	0	0	1001
<b>Total</b>	<b>41</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>147</b>	<b>2502</b>	<b>0</b>	<b>0</b>	<b>69</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>1006</b>	<b>0</b>	<b>0</b>	<b>3857</b>
08:00 AM	9	0	0	0	40	567	0	0	19	0	0	0	20	251	0	0	906
08:15 AM	14	0	0	0	30	567	0	0	20	0	0	0	34	268	0	0	933
08:30 AM	10	0	0	0	34	483	0	0	17	0	0	0	18	276	0	0	838
08:45 AM	11	0	0	0	36	468	0	0	16	0	0	0	27	277	0	0	835
<b>Total</b>	<b>44</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>140</b>	<b>2085</b>	<b>0</b>	<b>0</b>	<b>72</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>99</b>	<b>1072</b>	<b>0</b>	<b>0</b>	<b>3512</b>
<b>Grand Total</b>	<b>85</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>287</b>	<b>4587</b>	<b>0</b>	<b>0</b>	<b>141</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>191</b>	<b>2078</b>	<b>0</b>	<b>0</b>	<b>7369</b>
Apprch %	100	0	0	0	5.9	94.1	0	0	100	0	0	0	8.4	91.6	0	0	
Total %	1.2	0	0	0	3.9	62.2	0	0	1.9	0	0	0	2.6	28.2	0	0	
Cars	78	0	0	0	268	4480	0	0	129	0	0	0	177	1953	0	0	7085
% Cars	91.8	0	0	0	93.4	97.7	0	0	91.5	0	0	0	92.7	94	0	0	96.1
Heavy Vehicles	7	0	0	0	19	107	0	0	12	0	0	0	14	125	0	0	284
% Heavy Vehicles	8.2	0	0	0	6.6	2.3	0	0	8.5	0	0	0	7.3	6	0	0	3.9

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	6	0	0	0	6	19	675	0	0	694	14	0	0	0	14	18	200	0	0	218	932
07:15 AM	6	0	0	0	6	38	640	0	0	678	14	0	0	0	14	20	221	0	0	241	939
07:30 AM	15	0	0	0	15	46	591	0	0	637	23	0	0	0	23	25	285	0	0	310	985
07:45 AM	14	0	0	0	14	44	596	0	0	640	18	0	0	0	18	29	300	0	0	329	1001
<b>Total Volume</b>	<b>41</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>41</b>	<b>147</b>	<b>2502</b>	<b>0</b>	<b>0</b>	<b>2649</b>	<b>69</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>69</b>	<b>92</b>	<b>1006</b>	<b>0</b>	<b>0</b>	<b>1098</b>	<b>3857</b>
<b>% App. Total</b>	<b>.683</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.683</b>	<b>.799</b>	<b>.927</b>	<b>.000</b>	<b>.000</b>	<b>.954</b>	<b>.750</b>	<b>.000</b>	<b>.000</b>	<b>.000</b>	<b>.750</b>	<b>.793</b>	<b>.838</b>	<b>.000</b>	<b>.000</b>	<b>.834</b>	<b>.963</b>
Cars	38	0	0	0	38	138	2453	0	0	2591	63	0	0	0	63	87	930	0	0	1017	3709
% Cars	92.7	0	0	0	92.7	93.9	98.0	0	0	97.8	91.3	0	0	0	91.3	94.6	92.4	0	0	92.6	96.2
Heavy Vehicles	7.3	0	0	0	7.3	6.1	2.0	0	0	2.2	8.7	0	0	0	8.7	5.4	7.6	0	0	7.4	3.8
% Heavy Vehicles	7.3	0	0	0	7.3	6.1	2.0	0	0	2.2	8.7	0	0	0	8.7	5.4	7.6	0	0	7.4	3.8



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E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 B  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Cars

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) 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	5	0	0	0	15	659	0	0	12	0	0	0	18	183	0	0	892
07:15 AM	5	0	0	0	38	624	0	0	14	0	0	0	18	209	0	0	908
07:30 AM	15	0	0	0	42	581	0	0	20	0	0	0	23	257	0	0	938
07:45 AM	13	0	0	0	43	589	0	0	17	0	0	0	28	281	0	0	971
Total	38	0	0	0	138	2453	0	0	63	0	0	0	87	930	0	0	3709
08:00 AM	9	0	0	0	37	556	0	0	18	0	0	0	20	241	0	0	881
08:15 AM	12	0	0	0	28	550	0	0	20	0	0	0	30	255	0	0	895
08:30 AM	9	0	0	0	32	466	0	0	14	0	0	0	14	260	0	0	795
08:45 AM	10	0	0	0	33	455	0	0	14	0	0	0	26	267	0	0	805
Total	40	0	0	0	130	2027	0	0	66	0	0	0	90	1023	0	0	3376
Grand Total	78	0	0	0	268	4480	0	0	129	0	0	0	177	1953	0	0	7085
Apprch %	100	0	0	0	5.6	94.4	0	0	100	0	0	0	8.3	91.7	0	0	
Total %	1.1	0	0	0	3.8	63.2	0	0	1.8	0	0	0	2.5	27.6	0	0	

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	5	0	0	0	5	15	659	0	0	674	12	0	0	0	12	18	183	0	0	201	892
07:15 AM	5	0	0	0	5	38	624	0	0	662	14	0	0	0	14	18	209	0	0	227	908
07:30 AM	15	0	0	0	15	42	581	0	0	623	20	0	0	0	20	23	257	0	0	280	938
07:45 AM	13	0	0	0	13	43	589	0	0	632	17	0	0	0	17	28	281	0	0	309	971
Total Volume	38	0	0	0	38	138	2453	0	0	2591	63	0	0	0	63	87	930	0	0	1017	3709
% App. Total																					
PHF	.633	.000	.000	.000	.633	.802	.931	.000	.000	.961	.788	.000	.000	.000	.788	.777	.827	.000	.000	.823	.955



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N/S: Blossom Street/ Blossom Street Ext  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 B  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) 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	1	0	0	0	4	16	0	0	2	0	0	0	0	17	0	0	40
07:15 AM	1	0	0	0	0	16	0	0	0	0	0	0	2	12	0	0	31
07:30 AM	0	0	0	0	4	10	0	0	3	0	0	0	2	28	0	0	47
07:45 AM	1	0	0	0	1	7	0	0	1	0	0	0	1	19	0	0	30
Total	3	0	0	0	9	49	0	0	6	0	0	0	5	76	0	0	148
08:00 AM	0	0	0	0	3	11	0	0	1	0	0	0	0	10	0	0	25
08:15 AM	2	0	0	0	2	17	0	0	0	0	0	0	4	13	0	0	38
08:30 AM	1	0	0	0	2	17	0	0	3	0	0	0	4	16	0	0	43
08:45 AM	1	0	0	0	3	13	0	0	2	0	0	0	1	10	0	0	30
Total	4	0	0	0	10	58	0	0	6	0	0	0	9	49	0	0	136
Grand Total	7	0	0	0	19	107	0	0	12	0	0	0	14	125	0	0	284
Apprch %	100	0	0	0	15.1	84.9	0	0	100	0	0	0	10.1	89.9	0	0	
Total %	2.5	0	0	0	6.7	37.7	0	0	4.2	0	0	0	4.9	44	0	0	

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	1	0	0	0	1	4	16	0	0	20	2	0	0	0	2	0	17	0	0	17	40
07:15 AM	1	0	0	0	1	0	16	0	0	16	0	0	0	0	0	2	12	0	0	14	31
07:30 AM	0	0	0	0	0	4	10	0	0	14	3	0	0	0	3	2	28	0	0	30	47
07:45 AM	1	0	0	0	1	1	7	0	0	8	1	0	0	0	1	1	19	0	0	20	30
Total Volume	3	0	0	0	3	9	49	0	0	58	6	0	0	0	6	5	76	0	0	81	148
% App. Total	100	0	0	0		15.5	84.5	0	0		100	0	0	0		6.2	93.8	0	0		
PHF	.750	.000	.000	.000	.750	.563	.766	.000	.000	.725	.500	.000	.000	.000	.500	.625	.679	.000	.000	.675	.787



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City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 B  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
07:30 AM	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
07:45 AM	0	0	0	3	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	1	8
Total	0	0	0	5	5	0	0	0	0	1	0	0	0	1	0	0	0	0	2	1	15
08:00 AM	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45 AM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	3	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	9
Grand Total	0	0	0	8	10	0	0	0	0	1	0	0	0	1	0	0	0	0	2	2	24
Apprch %	0	0	0	44.4	55.6	0	0	0	0	100	0	0	0	100	0	0	0	0	50	50	
Total %	0	0	0	33.3	41.7	0	0	0	0	4.2	0	0	0	4.2	0	0	0	0	8.3	8.3	

Start Time	Shepard Street From North						Lynnway (Route 1A) From East						Marine Boulevard From South						Lynnway (Route 1A) 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 07:15 AM																												
07:15 AM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	3
07:30 AM	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
07:45 AM	0	0	0	3	1	4	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	8
08:00 AM	0	0	0	2	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	7
Total Volume	0	0	0	7	8	15	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	2	2	4	0	0	0	21
% App. Total	0	0	0	46.7	53.3	0	0	0	0	100	0	0	0	100	0	0	0	0	50	50								
PHF	.000	.000	.000	.583	.500	.625	.000	.000	.000	.000	.250	.250	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250	.500	.333	.656			



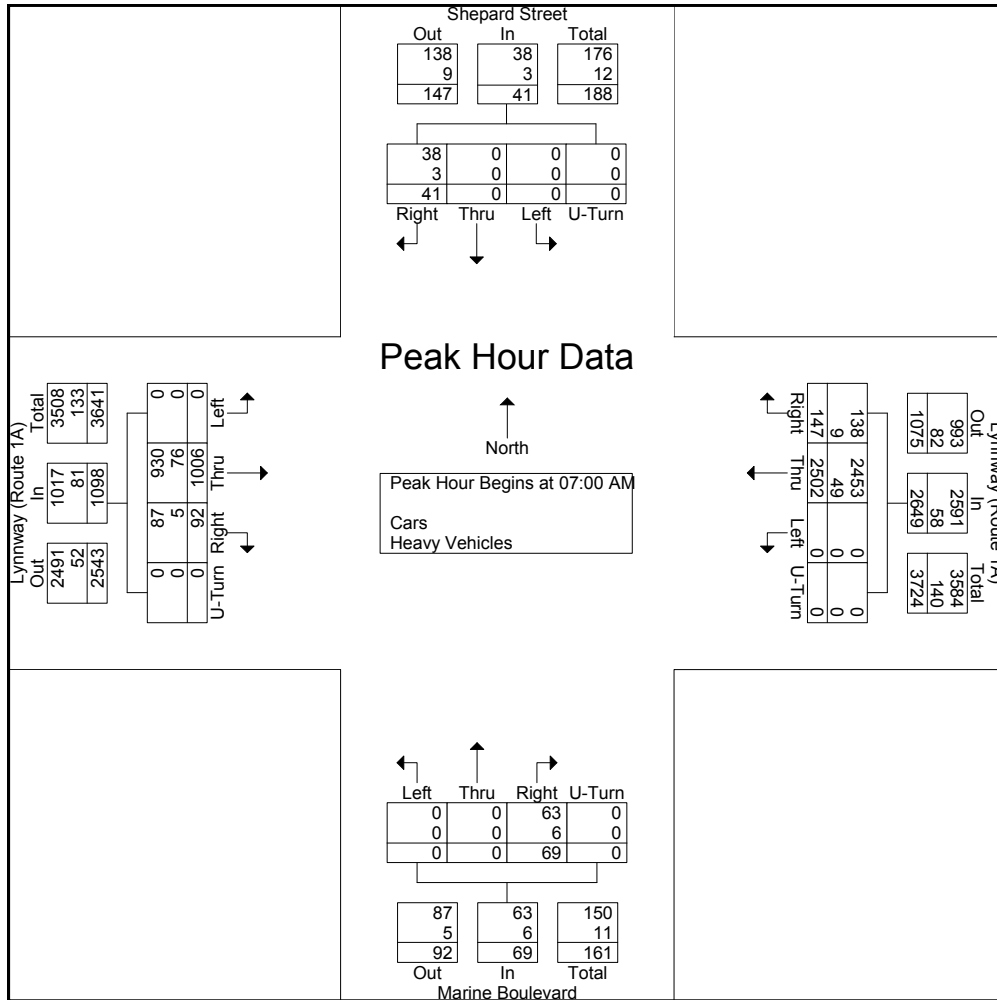
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Client: VHB/K. Keen

File Name : 144179 B  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	6	0	0	0	6	19	675	0	0	694	14	0	0	0	14	18	200	0	0	218	932
07:15 AM	6	0	0	0	6	38	640	0	0	678	14	0	0	0	14	20	221	0	0	241	939
07:30 AM	15	0	0	0	15	46	591	0	0	637	23	0	0	0	23	25	285	0	0	310	985
07:45 AM	14	0	0	0	14	44	596	0	0	640	18	0	0	0	18	29	300	0	0	329	1001
Total Volume	41	0	0	0	41	147	2502	0	0	2649	69	0	0	0	69	92	1006	0	0	1098	3857
% App. Total	.683	.000	.000	.000	.683	.799	.927	.000	.000	.954	.750	.000	.000	.000	.750	.793	.838	.000	.000	.834	.963
Cars	38	0	0	0	38	138	2453	0	0	2591	63	0	0	0	63	87	930	0	0	1017	3709
% Cars	92.7	0	0	0	92.7	93.9	98.0	0	0	97.8	91.3	0	0	0	91.3	94.6	92.4	0	0	92.6	96.2
Heavy Vehicles	7.3	0	0	0	7.3	6.1	2.0	0	0	2.2	8.7	0	0	0	8.7	5.4	7.6	0	0	7.4	3.8
% Heavy Vehicles																					





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Client: VHB/K. Keen

File Name : 144179 BB  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

**Groups Printed- Cars - Heavy Vehicles**

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	10	0	0	0	32	328	0	0	13	0	0	0	12	450	0	0	845
04:15 PM	15	0	0	0	28	331	0	0	10	0	0	0	10	484	0	0	878
04:30 PM	17	0	0	0	29	309	0	0	15	0	0	0	13	550	0	0	933
04:45 PM	7	0	0	0	35	325	0	0	15	0	0	0	12	579	0	0	973
<b>Total</b>	<b>49</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>124</b>	<b>1293</b>	<b>0</b>	<b>0</b>	<b>53</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>47</b>	<b>2063</b>	<b>0</b>	<b>0</b>	<b>3629</b>
05:00 PM	14	0	0	0	52	360	0	0	14	0	0	0	9	595	0	0	1044
05:15 PM	5	0	0	0	40	340	0	0	12	0	0	0	11	594	0	0	1002
05:30 PM	16	0	0	0	38	314	0	0	9	0	0	0	6	591	0	0	974
05:45 PM	11	0	0	0	23	264	0	0	9	0	0	0	8	624	0	0	939
<b>Total</b>	<b>46</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>153</b>	<b>1278</b>	<b>0</b>	<b>0</b>	<b>44</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>34</b>	<b>2404</b>	<b>0</b>	<b>0</b>	<b>3959</b>
<b>Grand Total</b>	<b>95</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>277</b>	<b>2571</b>	<b>0</b>	<b>0</b>	<b>97</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>81</b>	<b>4467</b>	<b>0</b>	<b>0</b>	<b>7588</b>
Apprch %	100	0	0	0	9.7	90.3	0	0	100	0	0	0	1.8	98.2	0	0	
Total %	1.3	0	0	0	3.7	33.9	0	0	1.3	0	0	0	1.1	58.9	0	0	
Cars	93	0	0	0	264	2495	0	0	95	0	0	0	81	4405	0	0	7433
% Cars	97.9	0	0	0	95.3	97	0	0	97.9	0	0	0	100	98.6	0	0	98
Heavy Vehicles	2	0	0	0	13	76	0	0	2	0	0	0	0	62	0	0	155
% Heavy Vehicles	2.1	0	0	0	4.7	3	0	0	2.1	0	0	0	0	1.4	0	0	2

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	7	0	0	0	7	35	325	0	0	360	15	0	0	0	15	12	579	0	0	591	973
05:00 PM	14	0	0	0	14	52	360	0	0	412	14	0	0	0	14	9	595	0	0	604	1044
05:15 PM	5	0	0	0	5	40	340	0	0	380	12	0	0	0	12	11	594	0	0	605	1002
05:30 PM	16	0	0	0	16	38	314	0	0	352	9	0	0	0	9	6	591	0	0	597	974
<b>Total Volume</b>	<b>42</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>42</b>	<b>165</b>	<b>1339</b>	<b>0</b>	<b>0</b>	<b>1504</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>38</b>	<b>2359</b>	<b>0</b>	<b>0</b>	<b>2397</b>	<b>3993</b>
<b>% App. Total</b>																					
PHF	.656	.000	.000	.000	.656	.793	.930	.000	.000	.913	.833	.000	.000	.000	.833	.792	.991	.000	.000	.990	.956
Cars	40	0	0	0	40	159	1308	0	0	1467	49	0	0	0	49	38	2329	0	0	2367	3923
% Cars	95.2	0	0	0	95.2	96.4	97.7	0	0	97.5	98.0	0	0	0	98.0	100	98.7	0	0	98.7	98.2
Heavy Vehicles																					
% Heavy Vehicles	4.8	0	0	0	4.8	3.6	2.3	0	0	2.5	2.0	0	0	0	2.0	0	1.3	0	0	1.3	1.8



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File Name : 144179 BB  
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Page No : 1

Groups Printed- Cars

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	10	0	0	0	30	310	0	0	13	0	0	0	12	447	0	0	822
04:15 PM	15	0	0	0	26	319	0	0	9	0	0	0	10	472	0	0	851
04:30 PM	17	0	0	0	26	296	0	0	15	0	0	0	13	542	0	0	909
04:45 PM	6	0	0	0	34	320	0	0	15	0	0	0	12	574	0	0	961
Total	48	0	0	0	116	1245	0	0	52	0	0	0	47	2035	0	0	3543
05:00 PM	13	0	0	0	49	352	0	0	14	0	0	0	9	586	0	0	1023
05:15 PM	5	0	0	0	38	331	0	0	11	0	0	0	11	590	0	0	986
05:30 PM	16	0	0	0	38	305	0	0	9	0	0	0	6	579	0	0	953
05:45 PM	11	0	0	0	23	262	0	0	9	0	0	0	8	615	0	0	928
Total	45	0	0	0	148	1250	0	0	43	0	0	0	34	2370	0	0	3890
Grand Total	93	0	0	0	264	2495	0	0	95	0	0	0	81	4405	0	0	7433
Apprch %	100	0	0	0	9.6	90.4	0	0	100	0	0	0	1.8	98.2	0	0	
Total %	1.3	0	0	0	3.6	33.6	0	0	1.3	0	0	0	1.1	59.3	0	0	

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	6	0	0	0	6	34	320	0	0	354	15	0	0	0	15	12	574	0	0	586	961
05:00 PM	13	0	0	0	13	49	352	0	0	401	14	0	0	0	14	9	586	0	0	595	1023
05:15 PM	5	0	0	0	5	38	331	0	0	369	11	0	0	0	11	11	590	0	0	601	986
05:30 PM	16	0	0	0	16	38	305	0	0	343	9	0	0	0	9	6	579	0	0	585	953
Total Volume	40	0	0	0	40	159	1308	0	0	1467	49	0	0	0	49	38	2329	0	0	2367	3923
% App. Total																					
PHF	.625	.000	.000	.000	.625	.811	.929	.000	.000	.915	.817	.000	.000	.000	.817	.792	.987	.000	.000	.985	.959



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Groups Printed- Heavy Vehicles

Start Time	Shepard Street From North				Lynnway (Route 1A) From East				Marine Boulevard From South				Lynnway (Route 1A) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	2	18	0	0	0	0	0	0	0	3	0	0	23
04:15 PM	0	0	0	0	2	12	0	0	1	0	0	0	0	12	0	0	27
04:30 PM	0	0	0	0	3	13	0	0	0	0	0	0	0	8	0	0	24
04:45 PM	1	0	0	0	1	5	0	0	0	0	0	0	0	5	0	0	12
Total	1	0	0	0	8	48	0	0	1	0	0	0	0	28	0	0	86
05:00 PM	1	0	0	0	3	8	0	0	0	0	0	0	0	9	0	0	21
05:15 PM	0	0	0	0	2	9	0	0	1	0	0	0	0	4	0	0	16
05:30 PM	0	0	0	0	0	9	0	0	0	0	0	0	0	12	0	0	21
05:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	9	0	0	11
Total	1	0	0	0	5	28	0	0	1	0	0	0	0	34	0	0	69
Grand Total	2	0	0	0	13	76	0	0	2	0	0	0	0	62	0	0	155
Apprch %	100	0	0	0	14.6	85.4	0	0	100	0	0	0	0	100	0	0	
Total %	1.3	0	0	0	8.4	49	0	0	1.3	0	0	0	0	40	0	0	

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	2	18	0	0	20	0	0	0	0	0	0	3	0	0	3	23
04:15 PM	0	0	0	0	0	2	12	0	0	14	1	0	0	0	1	0	12	0	0	12	27
04:30 PM	0	0	0	0	0	3	13	0	0	16	0	0	0	0	0	0	8	0	0	8	24
04:45 PM	1	0	0	0	1	1	5	0	0	6	0	0	0	0	0	0	5	0	0	5	12
Total Volume	1	0	0	0	1	8	48	0	0	56	1	0	0	0	1	0	28	0	0	28	86
% App. Total	100	0	0	0		14.3	85.7	0	0		100	0	0	0		0	100	0	0		
PHF	.250	.000	.000	.000	.250	.667	.667	.000	.000	.700	.250	.000	.000	.000	.250	.000	.583	.000	.000	.583	.796





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N/S: Blossom Street/ Blossom Street Ext  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 BB  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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	
04:00 PM	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	6	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
04:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total	0	0	0	13	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
05:00 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	4
05:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	3	2	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	8
Grand Total	0	0	0	16	7	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	26
Apprch %	0	0	0	69.6	30.4	0	0	0	50	50	0	0	0	0	0	0	0	0	100	0	
Total %	0	0	0	61.5	26.9	0	0	0	3.8	3.8	0	0	0	0	0	0	0	0	3.8	0	

Start Time	Shepard Street From North						Lynnway (Route 1A) From East						Marine Boulevard From South						Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																												
Peak Hour for Entire Intersection Begins at 04:00 PM																												
04:00 PM	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
04:15 PM	0	0	0	6	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
04:30 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
04:45 PM	0	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Total Volume	0	0	0	13	5	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
% App. Total	0	0	0	72.2	27.8		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	
PHF	.000	.000	.000	.542	.313	.450	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.450



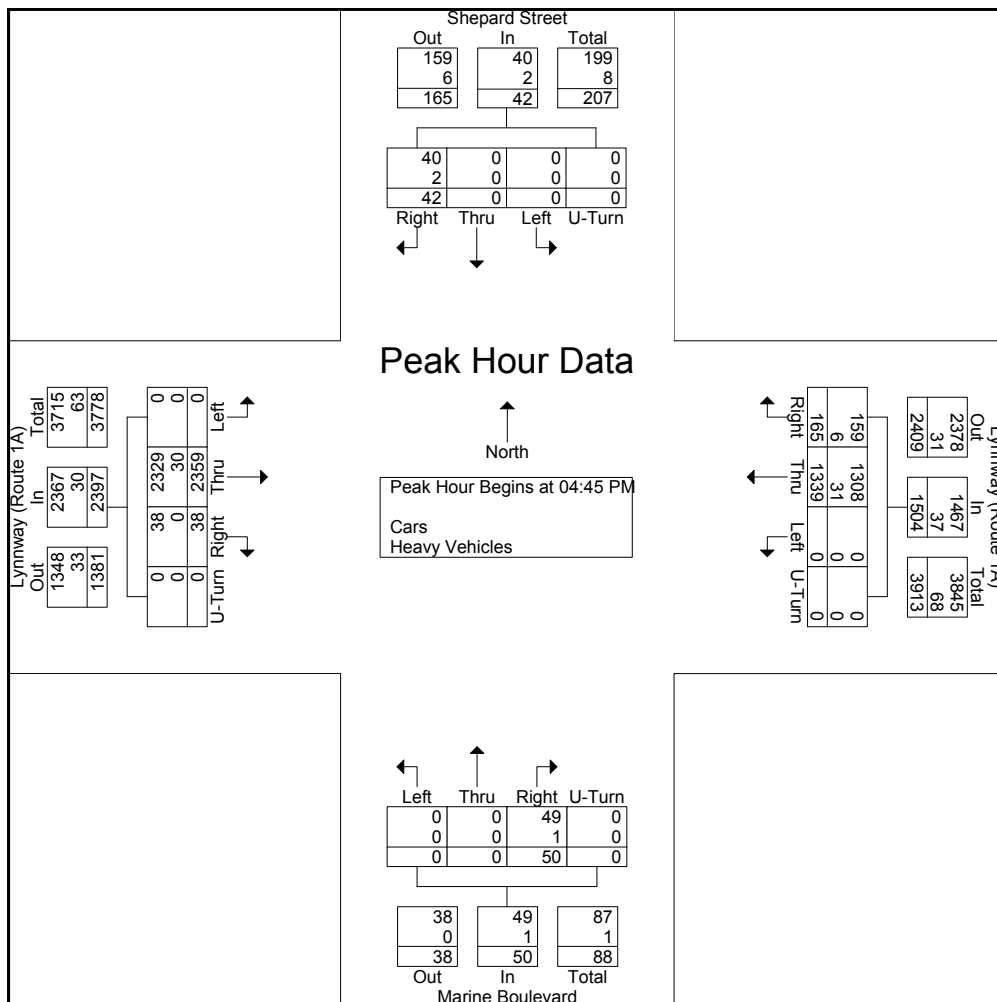
PRECISION  
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N/S: Blossom Street/ Blossom Street Ext  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 BB  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Start Time	Shepard Street From North					Lynnway (Route 1A) From East					Marine Boulevard From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	7	0	0	0	7	35	325	0	0	360	15	0	0	0	15	12	579	0	0	591	973
05:00 PM	14	0	0	0	14	52	360	0	0	412	14	0	0	0	14	9	595	0	0	604	1044
05:15 PM	5	0	0	0	5	40	340	0	0	380	12	0	0	0	12	11	594	0	0	605	1002
05:30 PM	16	0	0	0	16	38	314	0	0	352	9	0	0	0	9	6	591	0	0	597	974
Total Volume	42	0	0	0	42	165	1339	0	0	1504	50	0	0	0	50	38	2359	0	0	2397	3993
% App. Total	.656	.000	.000	.000	.656	.793	.930	.000	.000	.913	.833	.000	.000	.000	.833	.792	.991	.000	.000	.990	.956
Cars	40	0	0	0	40	159	1308	0	0	1467	49	0	0	0	49	38	2329	0	0	2367	3923
% Cars	95.2	0	0	0	95.2	96.4	97.7	0	0	97.5	98.0	0	0	0	98.0	100	98.7	0	0	98.7	98.2
Heavy Vehicles	4.8	0	0	0	4.8	3.6	2.3	0	0	2.5	2.0	0	0	2.0	0	1.3	0	0	1.3	1.8	
% Heavy Vehicles																					





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N/S: Jughandle/Kingman Street  
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City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 C  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Jughandle From North				Lynnway (Route 1A) From East				Kingman Street From South				Lynnway (Route 1A) 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	41	731	11	0	6	0	8	0	9	199	3	2	1010
07:15 AM	0	0	0	0	44	725	12	0	11	2	11	0	8	218	5	1	1037
07:30 AM	0	0	0	0	41	632	17	3	9	1	6	0	6	275	3	9	1002
07:45 AM	0	0	0	0	40	636	18	2	9	0	6	0	11	290	6	5	1023
Total	0	0	0	0	166	2724	58	5	35	3	31	0	34	982	17	17	4072
08:00 AM	0	0	0	0	44	542	20	5	5	0	14	0	17	241	5	13	906
08:15 AM	0	0	0	0	39	568	21	5	16	0	13	0	16	237	5	2	922
08:30 AM	0	0	0	0	41	474	26	0	5	1	10	0	30	257	12	8	864
08:45 AM	1	0	1	0	33	447	30	3	7	0	8	0	14	247	5	5	801
Total	1	0	1	0	157	2031	97	13	33	1	45	0	77	982	27	28	3493
Grand Total	1	0	1	0	323	4755	155	18	68	4	76	0	111	1964	44	45	7565
Apprch %	50	0	50	0	6.2	90.6	3	0.3	45.9	2.7	51.4	0	5.1	90.8	2	2.1	
Total %	0	0	0	0	4.3	62.9	2	0.2	0.9	0.1	1	0	1.5	26	0.6	0.6	
Cars	1	0	1	0	314	4682	146	18	37	2	43	0	101	1849	42	44	7280
% Cars	100	0	100	0	97.2	98.5	94.2	100	54.4	50	56.6	0	91	94.1	95.5	97.8	96.2
Heavy Vehicles	0	0	0	0	9	73	9	0	31	2	33	0	10	115	2	1	285
% Heavy Vehicles	0	0	0	0	2.8	1.5	5.8	0	45.6	50	43.4	0	9	5.9	4.5	2.2	3.8

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	0	0	0	0	0	41	731	11	0	783	6	0	8	0	14	9	199	3	2	213	1010
07:15 AM	0	0	0	0	0	44	725	12	0	781	11	2	11	0	24	8	218	5	1	232	1037
07:30 AM	0	0	0	0	0	41	632	17	3	693	9	1	6	0	16	6	275	3	9	293	1002
07:45 AM	0	0	0	0	0	40	636	18	2	696	9	0	6	0	15	11	290	6	5	312	1023
Total Volume	0	0	0	0	0	166	2724	58	5	2953	35	3	31	0	69	34	982	17	17	1050	4072
% App. Total																					
PHF	.000	.000	.000	.000	.000	.943	.932	.806	.417	.943	.795	.375	.705	.000	.719	.773	.847	.708	.472	.841	.982
Cars	0	0	0	0	0	163	2696	54	5	2918	20	1	12	0	33	29	917	15	16	977	3928
% Cars	0	0	0	0	0	98.2	99.0	93.1	100	98.8	57.1	33.3	38.7	0	47.8	85.3	93.4	88.2	94.1	93.0	96.5
Heavy Vehicles																					
% Heavy Vehicles	0	0	0	0	0	1.8	1.0	6.9	0	1.2	42.9	66.7	61.3	0	52.2	14.7	6.6	11.8	5.9	7.0	3.5



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N/S: Jughandle/Kingman Street  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 C  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Cars

Start Time	Jughandle From North				Lynnway (Route 1A) From East				Kingman Street From South				Lynnway (Route 1A) 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	39	721	9	0	3	0	3	0	8	183	1	2	969
07:15 AM	0	0	0	0	43	719	11	0	8	1	3	0	7	210	5	1	1008
07:30 AM	0	0	0	0	41	626	16	3	5	0	2	0	6	250	3	9	961
07:45 AM	0	0	0	0	40	630	18	2	4	0	4	0	8	274	6	4	990
Total	0	0	0	0	163	2696	54	5	20	1	12	0	29	917	15	16	3928
08:00 AM	0	0	0	0	44	531	19	5	2	0	13	0	15	230	5	13	877
08:15 AM	0	0	0	0	37	557	20	5	5	0	6	0	15	227	5	2	879
08:30 AM	0	0	0	0	39	461	25	0	3	1	6	0	29	240	12	8	824
08:45 AM	1	0	1	0	31	437	28	3	7	0	6	0	13	235	5	5	772
Total	1	0	1	0	151	1986	92	13	17	1	31	0	72	932	27	28	3352
Grand Total	1	0	1	0	314	4682	146	18	37	2	43	0	101	1849	42	44	7280
Apprch %	50	0	50	0	6.1	90.7	2.8	0.3	45.1	2.4	52.4	0	5	90.8	2.1	2.2	
Total %	0	0	0	0	4.3	64.3	2	0.2	0.5	0	0.6	0	1.4	25.4	0.6	0.6	

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	0	0	0	0	0	39	721	9	0	769	3	0	3	0	6	8	183	1	2	194	969
07:15 AM	0	0	0	0	0	43	719	11	0	773	8	1	3	0	12	7	210	5	1	223	1008
07:30 AM	0	0	0	0	0	41	626	16	3	686	5	0	2	0	7	6	250	3	9	268	961
07:45 AM	0	0	0	0	0	40	630	18	2	690	4	0	4	0	8	8	274	6	4	292	990
Total Volume	0	0	0	0	0	163	2696	54	5	2918	20	1	12	0	33	29	917	15	16	977	3928
% App. Total																					
PHF	.000	.000	.000	.000	.000	.948	.935	.750	.417	.944	.625	.250	.750	.000	.688	.906	.837	.625	.444	.836	.974



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File Name : 144179 C  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Heavy Vehicles

Start Time	Jughandle From North				Lynnway (Route 1A) From East				Kingman Street From South				Lynnway (Route 1A) 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	2	10	2	0	3	0	5	0	1	16	2	0	41
07:15 AM	0	0	0	0	1	6	1	0	3	1	8	0	1	8	0	0	29
07:30 AM	0	0	0	0	0	6	1	0	4	1	4	0	0	25	0	0	41
07:45 AM	0	0	0	0	0	6	0	0	5	0	2	0	3	16	0	1	33
Total	0	0	0	0	3	28	4	0	15	2	19	0	5	65	2	1	144
08:00 AM	0	0	0	0	0	11	1	0	3	0	1	0	2	11	0	0	29
08:15 AM	0	0	0	0	2	11	1	0	11	0	7	0	1	10	0	0	43
08:30 AM	0	0	0	0	2	13	1	0	2	0	4	0	1	17	0	0	40
08:45 AM	0	0	0	0	2	10	2	0	0	0	2	0	1	12	0	0	29
Total	0	0	0	0	6	45	5	0	16	0	14	0	5	50	0	0	141
Grand Total	0	0	0	0	9	73	9	0	31	2	33	0	10	115	2	1	285
Apprch %	0	0	0	0	9.9	80.2	9.9	0	47	3	50	0	7.8	89.8	1.6	0.8	
Total %	0	0	0	0	3.2	25.6	3.2	0	10.9	0.7	11.6	0	3.5	40.4	0.7	0.4	

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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	6	1	0	7	4	1	4	0	9	0	25	0	0	25	41
07:45 AM	0	0	0	0	0	0	6	0	0	6	5	0	2	0	7	3	16	0	1	20	33
08:00 AM	0	0	0	0	0	0	11	1	0	12	3	0	1	0	4	2	11	0	0	13	29
08:15 AM	0	0	0	0	0	2	11	1	0	14	11	0	7	0	18	1	10	0	0	11	43
Total Volume	0	0	0	0	0	2	34	3	0	39	23	1	14	0	38	6	62	0	1	69	146
% App. Total	0	0	0	0	0	5.1	87.2	7.7	0		60.5	2.6	36.8	0		8.7	89.9	0	1.4		
PHF	.000	.000	.000	.000	.000	.250	.773	.750	.000	.696	.523	.250	.500	.000	.528	.500	.620	.000	.250	.690	.849



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Page No : 1

Groups Printed- Peds and Bikes

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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	2	2	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	8
07:15 AM	0	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	1	0	4
07:30 AM	0	0	0	0	2	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	5
07:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3
Total	0	0	0	4	5	0	0	0	3	1	0	0	0	6	0	0	0	0	1	0	0	0	0	1	0	20
08:00 AM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	0	1	0	0	0	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	6
08:45 AM	0	0	0	0	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	4
Total	0	0	0	1	1	0	0	0	4	1	0	0	0	5	2	0	0	0	1	0	0	0	0	1	0	15
Grand Total	0	0	0	5	6	0	0	0	7	2	0	0	0	11	2	0	0	0	2	0	0	0	0	2	0	35
Apprch %	0	0	0	45.5	54.5	0	0	0	77.8	22.2	0	0	0	84.6	15.4	0	0	0	100	0	0	0	0	100	0	
Total %	0	0	0	14.3	17.1	0	0	0	20	5.7	0	0	0	31.4	5.7	0	0	0	5.7	0	0	0	0	5.7	0	

Start Time	Jughandle From North						Lynnway (Route 1A) From East						Kingman Street From South						Lynnway (Route 1A) 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 07:00 AM																															
07:00 AM	0	0	0	2	2	4	0	0	0	2	0	2	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	8
07:15 AM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	1	0	1	4
07:30 AM	0	0	0	0	2	2	0	0	0	1	1	2	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	5
07:45 AM	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	2	0	2	0	0	0	0	0	0	3
Total Volume	0	0	0	4	5	9	0	0	0	3	1	4	0	0	0	6	0	6	0	0	0	6	0	6	0	0	0	1	0	1	20
% App. Total	0	0	0	44.4	55.6	0	0	0	75	25	0	0	0	100	0	0	0	0	100	0	0	0	0	100	0	0	0	0	100	0	
PHF	.000	.000	.000	.500	.625	.563	.000	.000	.000	.375	.250	.500	.000	.000	.000	.750	.000	.750	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250	.000	.625	



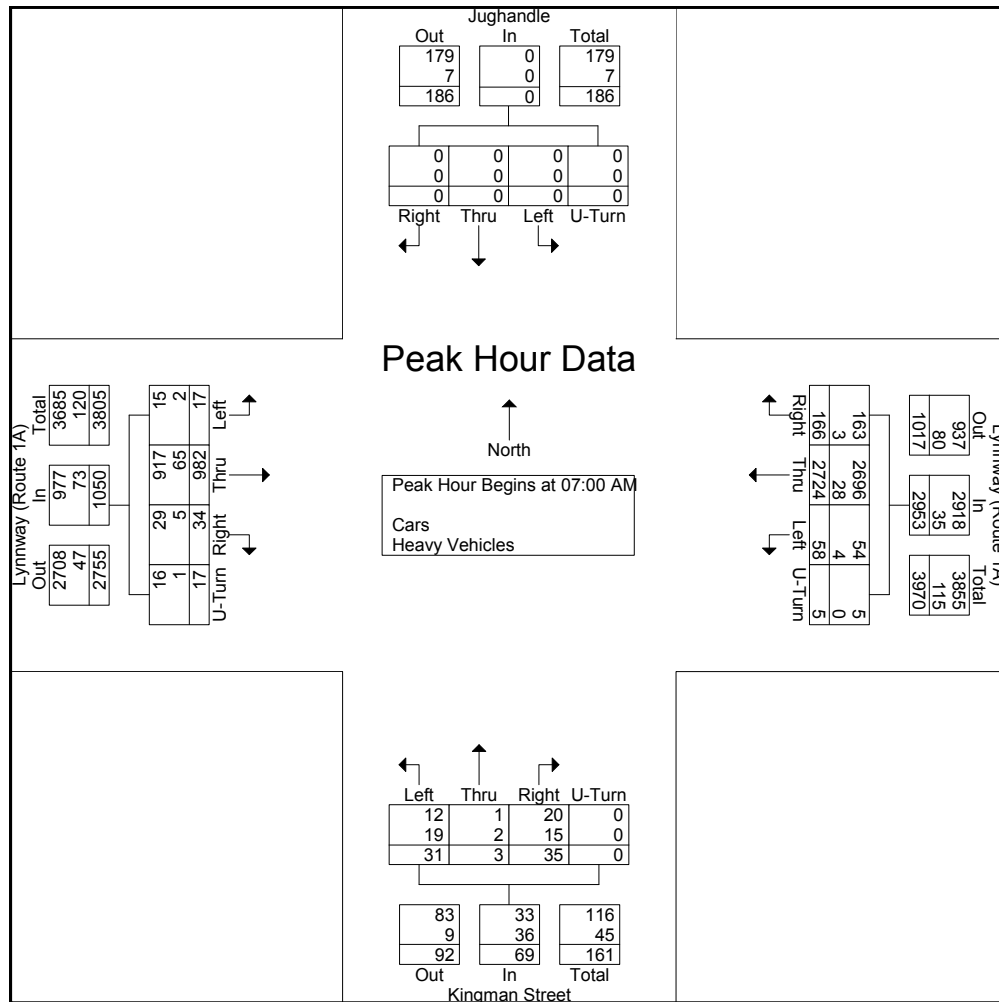
PRECISION  
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N/S: Jughandle/Kingman Street  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 C  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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 07:00 AM																					
07:00 AM	0	0	0	0	0	41	731	11	0	783	6	0	8	0	14	9	199	3	2	213	1010
07:15 AM	0	0	0	0	0	44	725	12	0	781	11	2	11	0	24	8	218	5	1	232	1037
07:30 AM	0	0	0	0	0	41	632	17	3	693	9	1	6	0	16	6	275	3	9	293	1002
07:45 AM	0	0	0	0	0	40	636	18	2	696	9	0	6	0	15	11	290	6	5	312	1023
Total Volume	0	0	0	0	0	166	2724	58	5	2953	35	3	31	0	69	34	982	17	17	1050	4072
% App. Total	.000	.000	.000	.000	.000	.943	.932	.806	.417	.943	.795	.375	.705	.000	.719	.773	.847	.708	.472	.841	.982
PHF	.000	.000	.000	.000	.000	.943	.932	.806	.417	.943	.795	.375	.705	.000	.719	.773	.847	.708	.472	.841	.982
Cars	0	0	0	0	0	163	2696	54	5	2918	20	1	12	0	33	29	917	15	16	977	3928
% Cars	0	0	0	0	0	98.2	99.0	93.1	100	98.8	57.1	33.3	38.7	0	47.8	85.3	93.4	88.2	94.1	93.0	96.5
Heavy Vehicles	0	0	0	0	0	1.8	1.0	6.9	0	1.2	42.9	66.7	61.3	0	52.2	14.7	6.6	11.8	5.9	7.0	3.5
% Heavy Vehicles	0	0	0	0	0	1.8	1.0	6.9	0	1.2	42.9	66.7	61.3	0	52.2	14.7	6.6	11.8	5.9	7.0	3.5





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N/S: Jughandle/Kingman Street  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 CC  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Cars - Heavy Vehicles

Start Time	Jughandle From North				Lynnway (Route 1A) From East				Kingman Street From South				Lynnway (Route 1A) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	9	314	14	6	23	0	34	0	3	439	2	7	851
04:15 PM	0	0	0	0	13	297	7	5	11	0	24	0	7	467	1	8	840
04:30 PM	0	1	0	0	4	303	8	3	21	1	16	0	11	534	12	11	925
04:45 PM	1	0	0	0	12	315	19	5	20	0	25	0	12	549	3	11	972
Total	1	1	0	0	38	1229	48	19	75	1	99	0	33	1989	18	37	3588
05:00 PM	0	0	0	0	7	321	13	4	47	0	59	0	2	564	2	20	1039
05:15 PM	0	0	0	0	8	345	10	4	17	1	33	0	3	609	3	10	1043
05:30 PM	1	0	0	0	6	291	14	2	14	0	24	0	5	587	2	7	953
05:45 PM	0	0	0	0	7	255	17	0	14	0	14	0	5	622	3	9	946
Total	1	0	0	0	28	1212	54	10	92	1	130	0	15	2382	10	46	3981
Grand Total	2	1	0	0	66	2441	102	29	167	2	229	0	48	4371	28	83	7569
Apprch %	66.7	33.3	0	0	2.5	92.5	3.9	1.1	42	0.5	57.5	0	1.1	96.5	0.6	1.8	
Total %	0	0	0	0	0.9	32.2	1.3	0.4	2.2	0	3	0	0.6	57.7	0.4	1.1	
Cars	2	1	0	0	65	2377	74	29	162	1	214	0	37	4321	25	83	7391
% Cars	100	100	0	0	98.5	97.4	72.5	100	97	50	93.4	0	77.1	98.9	89.3	100	97.6
Heavy Vehicles	0	0	0	0	1	64	28	0	5	1	15	0	11	50	3	0	178
% Heavy Vehicles	0	0	0	0	1.5	2.6	27.5	0	3	50	6.6	0	22.9	1.1	10.7	0	2.4

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	1	0	0	0	1	12	315	19	5	351	20	0	25	0	45	12	549	3	11	575	972
05:00 PM	0	0	0	0	0	7	321	13	4	345	47	0	59	0	106	2	564	2	20	588	1039
05:15 PM	0	0	0	0	0	8	345	10	4	367	17	1	33	0	51	3	609	3	10	625	1043
05:30 PM	1	0	0	0	1	6	291	14	2	313	14	0	24	0	38	5	587	2	7	601	953
Total Volume	2	0	0	0	2	33	1272	56	15	1376	98	1	141	0	240	22	2309	10	48	2389	4007
% App. Total																					
PHF	.500	.000	.000	.000	.500	.688	.922	.737	.750	.937	.521	.250	.597	.000	.566	.458	.948	.833	.600	.956	.960
Cars	2	0	0	0	2	32	1241	42	15	1330	95	0	135	0	230	16	2286	10	48	2360	3922
% Cars	100	0	0	0	100	97.0	97.6	75.0	100	96.7	96.9	0	95.7	0	95.8	72.7	99.0	100	100	98.8	97.9
Heavy Vehicles	0	0	0	0	0	1	64	28	0	3.3	3	1	15	0	4.2	11	50	3	0	1.2	2.1
% Heavy Vehicles	0	0	0	0	0	3.0	2.4	25.0	0	3.3	3.1	100	4.3	0	4.2	27.3	1.0	0	0	1.2	2.1





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N/S: Jughandle/Kingman Street  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 CC  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Cars

Start Time	Jughandle From North				Lynnway (Route 1A) From East				Kingman Street From South				Lynnway (Route 1A) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	9	304	11	6	23	0	30	0	3	434	2	7	829
04:15 PM	0	0	0	0	13	285	7	5	11	0	21	0	5	457	0	8	812
04:30 PM	0	1	0	0	4	294	5	3	20	1	14	0	10	529	10	11	902
04:45 PM	1	0	0	0	12	309	14	5	20	0	25	0	11	542	3	11	953
Total	1	1	0	0	38	1192	37	19	74	1	90	0	29	1962	15	37	3496
05:00 PM	0	0	0	0	6	313	11	4	46	0	55	0	1	559	2	20	1017
05:15 PM	0	0	0	0	8	336	9	4	15	0	32	0	1	605	3	10	1023
05:30 PM	1	0	0	0	6	283	8	2	14	0	23	0	3	580	2	7	929
05:45 PM	0	0	0	0	7	253	9	0	13	0	14	0	3	615	3	9	926
Total	1	0	0	0	27	1185	37	10	88	0	124	0	8	2359	10	46	3895
Grand Total	2	1	0	0	65	2377	74	29	162	1	214	0	37	4321	25	83	7391
Apprch %	66.7	33.3	0	0	2.6	93.4	2.9	1.1	43	0.3	56.8	0	0.8	96.8	0.6	1.9	
Total %	0	0	0	0	0.9	32.2	1	0.4	2.2	0	2.9	0	0.5	58.5	0.3	1.1	

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	1	0	0	0	1	12	309	14	5	340	20	0	25	0	45	11	542	3	11	567	953
05:00 PM	0	0	0	0	0	6	313	11	4	334	46	0	55	0	101	1	559	2	20	582	1017
05:15 PM	0	0	0	0	0	8	336	9	4	357	15	0	32	0	47	1	605	3	10	619	1023
05:30 PM	1	0	0	0	1	6	283	8	2	299	14	0	23	0	37	3	580	2	7	592	929
Total Volume	2	0	0	0	2	32	1241	42	15	1330	95	0	135	0	230	16	2286	10	48	2360	3922
% App. Total																					
PHF	.500	.000	.000	.000	.500	.667	.923	.750	.750	.931	.516	.000	.614	.000	.569	.364	.945	.833	.600	.953	.958



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Start Date : 11/18/2014  
Page No : 1

N/S: Jughandle/Kingman Street  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

Groups Printed- Heavy Vehicles

Start Time	Jughandle From North				Lynnway (Route 1A) From East				Kingman Street From South				Lynnway (Route 1A) From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
04:00 PM	0	0	0	0	0	10	3	0	0	0	4	0	0	5	0	0	22
04:15 PM	0	0	0	0	0	12	0	0	0	0	3	0	2	10	1	0	28
04:30 PM	0	0	0	0	0	9	3	0	1	0	2	0	1	5	2	0	23
04:45 PM	0	0	0	0	0	6	5	0	0	0	0	0	1	7	0	0	19
Total	0	0	0	0	0	37	11	0	1	0	9	0	4	27	3	0	92
05:00 PM	0	0	0	0	1	8	2	0	1	0	4	0	1	5	0	0	22
05:15 PM	0	0	0	0	0	9	1	0	2	1	1	0	2	4	0	0	20
05:30 PM	0	0	0	0	0	8	6	0	0	0	1	0	2	7	0	0	24
05:45 PM	0	0	0	0	0	2	8	0	1	0	0	0	2	7	0	0	20
Total	0	0	0	0	1	27	17	0	4	1	6	0	7	23	0	0	86
Grand Total	0	0	0	0	1	64	28	0	5	1	15	0	11	50	3	0	178
Apprch %	0	0	0	0	1.1	68.8	30.1	0	23.8	4.8	71.4	0	17.2	78.1	4.7	0	
Total %	0	0	0	0	0.6	36	15.7	0	2.8	0.6	8.4	0	6.2	28.1	1.7	0	

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	0	0	0	0	0	0	10	3	0	13	0	0	4	0	4	0	5	0	0	5	22
04:15 PM	0	0	0	0	0	0	12	0	0	12	0	0	3	0	3	2	10	1	0	13	28
04:30 PM	0	0	0	0	0	0	9	3	0	12	1	0	2	0	3	1	5	2	0	8	23
04:45 PM	0	0	0	0	0	0	6	5	0	11	0	0	0	0	0	1	7	0	0	8	19
Total Volume	0	0	0	0	0	0	37	11	0	48	1	0	9	0	10	4	27	3	0	34	92
% App. Total	0	0	0	0	0	0	77.1	22.9	0		10	0	90	0		11.8	79.4	8.8	0		
PHF	.000	.000	.000	.000	.000	.000	.771	.550	.000	.923	.250	.000	.563	.000	.625	.500	.675	.375	.000	.654	.821



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Client: VHB/K. Keen

File Name : 144179 CC  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Groups Printed- Peds and Bikes

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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	
04:00 PM	0	0	0	2	4	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	8
04:15 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	2	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	6
04:45 PM	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	5	6	0	0	0	2	2	0	0	0	0	3	0	0	0	0	0	18
05:00 PM	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	2
05:30 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	0	0	1	0	5
Total	0	0	0	0	0	0	0	0	1	6	0	0	0	1	1	0	0	0	2	0	11
Grand Total	0	0	0	5	6	0	0	0	3	8	0	0	0	1	4	0	0	0	2	0	29
Apprch %	0	0	0	45.5	54.5	0	0	0	27.3	72.7	0	0	0	20	80	0	0	0	100	0	
Total %	0	0	0	17.2	20.7	0	0	0	10.3	27.6	0	0	0	3.4	13.8	0	0	0	6.9	0	

Start Time	Jughandle From North						Lynnway (Route 1A) From East						Kingman Street From South						Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 04:00 PM																															
04:00 PM	0	0	0	2	4	6	0	0	0	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	8
04:15 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
04:30 PM	0	0	0	0	2	2	0	0	0	0	2	2	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	6
04:45 PM	0	0	0	1	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	5	6	11	0	0	0	2	2	4	0	0	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	18
% App. Total	0	0	0	45.5	54.5	0	0	0	50	50	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PHF	.000	.000	.000	.625	.375	.458	.000	.000	.000	.500	.250	.500	.000	.000	.000	.000	.375	.375	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.563	



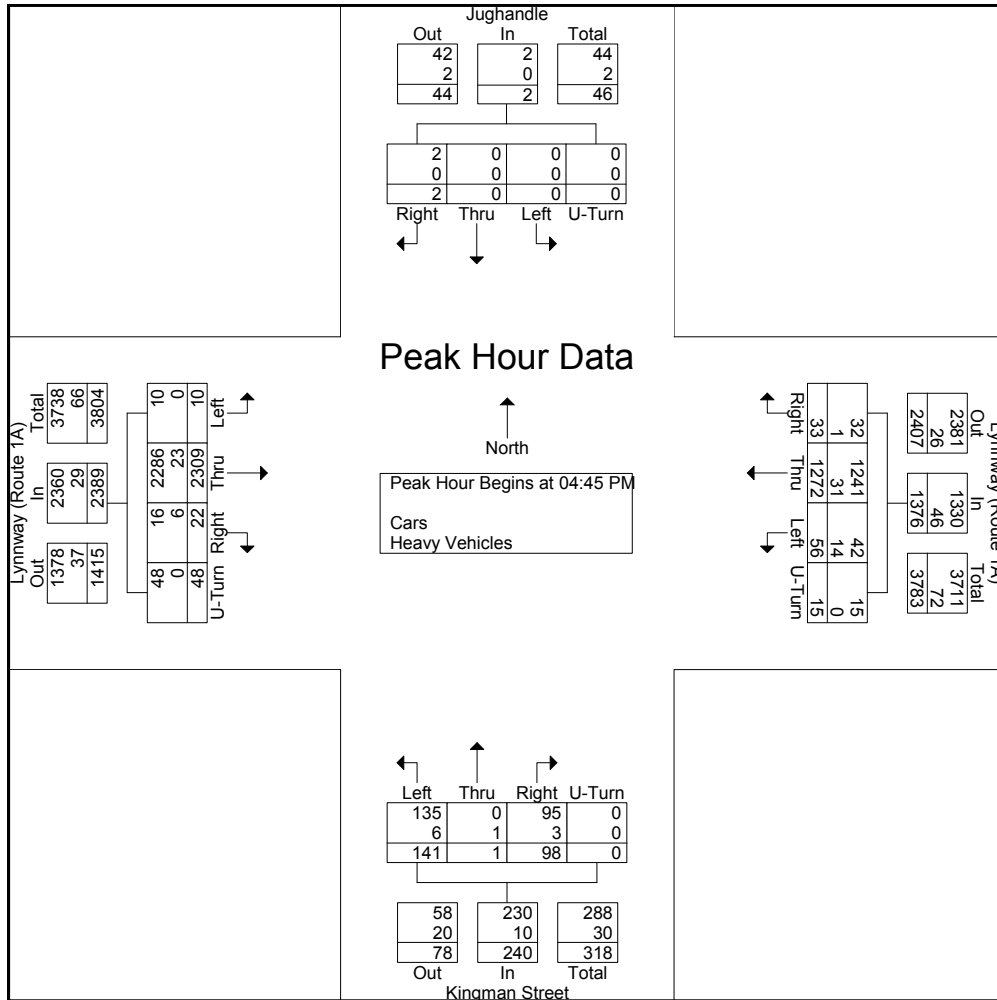
PRECISION  
D A T A  
INDUSTRIES, LLC

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

N/S: Jughandle/Kingman Street  
E/W: Lynnway (Route 1A)  
City, State: Lynn, MA  
Client: VHB/K. Keen

File Name : 144179 CC  
Site Code : 11942.03  
Start Date : 11/18/2014  
Page No : 1

Start Time	Jughandle From North					Lynnway (Route 1A) From East					Kingman Street From South					Lynnway (Route 1A) 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 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	1	0	0	0	1	12	315	19	5	351	20	0	25	0	45	12	549	3	11	575	972
05:00 PM	0	0	0	0	0	7	321	13	4	345	47	0	59	0	106	2	564	2	20	588	1039
05:15 PM	0	0	0	0	0	8	345	10	4	367	17	1	33	0	51	3	609	3	10	625	1043
05:30 PM	1	0	0	0	1	6	291	14	2	313	14	0	24	0	38	5	587	2	7	601	953
Total Volume	2	0	0	0	2	33	1272	56	15	1376	98	1	141	0	240	22	2309	10	48	2389	4007
% App. Total	.500	.000	.000	.000	.500	.688	.922	.737	.750	.937	.521	.250	.597	.000	.566	.458	.948	.833	.600	.956	.960
PHF	.500	.000	.000	.000	.500	.688	.922	.737	.750	.937	.521	.250	.597	.000	.566	.458	.948	.833	.600	.956	.960
Cars	2	0	0	0	2	32	1241	42	15	1330	95	0	135	0	230	16	2286	10	48	2360	3922
% Cars	100	0	0	0	100	97.0	97.6	75.0	100	96.7	96.9	0	95.7	0	95.8	72.7	99.0	100	100	98.8	97.9
Heavy Vehicles	0	0	0	0	0	3.0	2.4	25.0	0	3.3	3.1	100	4.3	0	4.2	27.3	1.0	0	0	1.2	2.1
% Heavy Vehicles	0	0	0	0	0	3.0	2.4	25.0	0	3.3	3.1	100	4.3	0	4.2	27.3	1.0	0	0	1.2	2.1



## 2014 Lynn to Boston Ferry Schedule

# Lynn to Boston Ferry Schedule

## Monday through Friday Service

May 19, 2014 through September 12, 2014

### Inbound

Depart Lynn (Blossom Street) Arrive Boston (Central Wharf)

6:30 am	7:05 am
8:00 am	8:35 am
6:30 pm	7:05 pm

### Outbound

Depart Boston (Central Wharf)

7:15 am
5:45 pm
7:15 pm

Arrive Lynn (Blossom Street)

7:45 am
6:20 pm
7:50 pm



### Rates

One way: \$7.00

Children (3-12) and Seniors: \$3.50

Children under three years of age and under: FREE

MBTA Zone 2 pass or higher



## Lynn Commuter Ferry Ridership Data

BOSTON HARBOR CRUISES  
RIDERSHIP BY DAY OF THE WEEK BY TIME  
THE LYNN FERRY

September-14

DEPARTING	mon 9/1	tue 9/2	wed 9/3	thu 9/4	fri 9/5	mon 9/8	tue 9/9	wed 9/10	thu 9/11	fri 9/12	mon 9/15	tue 9/16	wed 9/17	thu 9/18	fri 9/19	mon 9/22	tue 9/23	wed 9/24	thu 9/25	fri 9/26	mon 9/29	tue 9/30	TOTAL
06:30 AM	18	24	24	23	16	15	15	18	17	18	16	19	15	13	19	15	12	15	9	15			312
08:00 AM	48	51	51	54	49	45	48	40	37	47	48	37	42	35	56	43	37	47	36	41			841
06:30 PM	0	2	2	5	8	9	4	2	7	13	0	0	0	0	3	0	6	0	0	7			66
<b>Total Lynn Departures</b>	<b>0</b>	<b>66</b>	<b>77</b>	<b>82</b>	<b>73</b>	<b>69</b>	<b>67</b>	<b>60</b>	<b>61</b>	<b>78</b>	<b>64</b>	<b>56</b>	<b>57</b>	<b>48</b>	<b>78</b>	<b>58</b>	<b>55</b>	<b>62</b>	<b>45</b>	<b>63</b>	<b>0</b>	<b>0</b>	<b>1,219</b>

DEPARTING	9/1	9/2	9/3	9/4	9/5	9/8	9/9	9/10	9/11	9/12	9/15	9/16	9/17	9/18	9/19	9/22	9/23	9/24	9/25	9/26	9/29	9/30	TOTAL
07:15 AM	4	4	4	0	3	3	3	1	0	1	0	1	1	0	2	1	0	2	1	3			30
05:45 PM	64	54	54	57	57	49	47	40	49	60	41	41	46	35	61	52	49	43	39	41			925
07:15 PM	9	22	22	20	18	30	10	13	13	21	13	12	10	14	6	6	10	8	3	17			255
<b>Total Boston Departures</b>	<b>0</b>	<b>77</b>	<b>80</b>	<b>77</b>	<b>78</b>	<b>82</b>	<b>60</b>	<b>54</b>	<b>62</b>	<b>82</b>	<b>54</b>	<b>54</b>	<b>57</b>	<b>49</b>	<b>69</b>	<b>59</b>	<b>59</b>	<b>53</b>	<b>43</b>	<b>61</b>	<b>0</b>	<b>0</b>	<b>1,210</b>

<b>TOTAL RIDERS</b>	<b>0</b>	<b>143</b>	<b>157</b>	<b>159</b>	<b>151</b>	<b>151</b>	<b>127</b>	<b>114</b>	<b>123</b>	<b>160</b>	<b>118</b>	<b>110</b>	<b>114</b>	<b>97</b>	<b>147</b>	<b>117</b>	<b>114</b>	<b>115</b>	<b>88</b>	<b>124</b>	<b>0</b>	<b>0</b>	<b>2,429</b>
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Subtotal A.M.	0	70	79	77	68	63	66	59	54	66	64	57	58	48	77	59	49	64	46	59	0	0	1,183
Subtotal P.M.	0	73	78	82	83	88	61	55	69	94	54	53	56	49	70	58	65	51	42	65	0	0	1,246

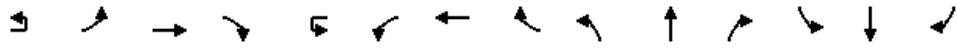
<b>Weekly Ridership</b>	<b>610</b>	<b>675</b>	<b>586</b>	<b>558</b>
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END DATE : EXTENDED PERIOD

Cumulative ridership from inception 13,136



## Intersection Capacity Analyses



Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Volume (vph)	5	35	1040	15	75	5	2395	50	10	10	10	25	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		200		0		350		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Taper Length (ft)		25				25			25			25		
Satd. Flow (prot)	0	1687	4836	0	0	1770	5067	0	0	1056	0	0	1328	0
Fit Permitted		0.950				0.950				0.871			0.802	
Satd. Flow (perm)	0	1686	4836	0	0	1767	5067	0	0	934	0	0	1094	0
Right Turn on Red				Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			3				4			15			65	
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			520				631			362			232	
Travel Time (s)			11.8				14.3			8.2			5.3	
Confl. Peds. (#/hr)		8		3		3		8	2					2
Peak Hour Factor	0.83	0.83	0.83	0.83	0.94	0.94	0.94	0.94	0.65	0.65	0.65	1.00	1.00	1.00
Heavy Vehicles (%)	7%	7%	7%	7%	2%	2%	2%	2%	69%	69%	69%	30%	30%	30%
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	48	1271	0	0	85	2601	0	0	45	0	0	45	0
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	1	6		5	5	2			4			4	
Permitted Phases									4			4		4
Detector Phase	1	1	6		5	5	2		4	4		4	4	
Switch Phase														
Minimum Initial (s)	7.0	7.0	15.0		7.0	7.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.0	12.0	20.0		12.0	12.0	20.0		27.0	27.0		27.0	27.0	
Total Split (s)	25.0	25.0	65.0		25.0	25.0	65.0		27.0	27.0		27.0	27.0	
Total Split (%)	21.4%	21.4%	55.6%		21.4%	21.4%	55.6%		23.1%	23.1%		23.1%	23.1%	
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0			0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0			5.0	5.0			6.0			6.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?														
Recall Mode	None	None	Max		None	None	Max		None	None		None	None	
Act Effect Green (s)		8.0	65.4			9.3	69.2			10.0			10.0	
Actuated g/C Ratio		0.09	0.70			0.10	0.74			0.11			0.11	
v/c Ratio		0.34	0.38			0.49	0.70			0.40			0.26	
Control Delay		50.0	9.2			51.6	12.3			40.0			8.6	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		50.0	9.2			51.6	12.3			40.0			8.6	
LOS		D	A			D	B			D			A	
Approach Delay			10.7				13.5			40.0			8.6	
Approach LOS			B				B			D			A	
Queue Length 50th (ft)		27	114			48	330			17			0	
Queue Length 95th (ft)		65	208			107	648			34			19	
Internal Link Dist (ft)			440				551			282			152	
Turn Bay Length (ft)		200				350								
Base Capacity (vph)		363	3370			381	3739			223			298	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.13	0.38			0.22	0.70			0.20			0.15	

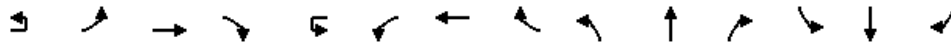
Intersection Summary

Area Type: Other  
 Cycle Length: 117  
 Actuated Cycle Length: 93.8  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 12.9  
 Intersection Capacity Utilization 73.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service D

Splits and Phases: 1: Marine Boulevard/Shepard Street & Lynnway (Route 1A)

25 s	65 s	27 s
25 s	65 s	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑				↑			↑
Volume (veh/h)	0	1005	145	0	2550	145	0	0	75	0	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.95	0.95	0.95	0.75	0.75	0.75	0.68	0.68	0.68
Hourly flow rate (vph)	0	1211	175	0	2684	153	0	0	100	0	0	59
Pedestrians		3			1			1			10	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		631			594							
pX, platoon unblocked	0.44			0.95			0.46	0.46	0.95	0.46	0.46	0.44
vC, conflicting volume	2847			1387			2256	4146	392	3174	4157	984
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	745			1168			0	2928	126	829	2952	0
tC, single (s)	4.2			4.1			7.7	6.7	7.1	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			100			100	100	88	100	100	87
cM capacity (veh/h)	361			567			401	6	838	102	6	465
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>EB 3</b>	<b>EB 4</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	346	346	346	348	1074	1074	689	100	59			
Volume Left	0	0	0	0	0	0	0	0	0			
Volume Right	0	0	0	175	0	0	153	100	59			
cSH	1700	1700	1700	1700	1700	1700	1700	838	465			
Volume to Capacity	0.20	0.20	0.20	0.20	0.63	0.63	0.41	0.12	0.13			
Queue Length 95th (ft)	0	0	0	0	0	0	0	10	11			
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.9	13.9			
Lane LOS								A	B			
Approach Delay (s)	0.0				0.0			9.9	13.9			
Approach LOS								A	B			
<b>Intersection Summary</b>												
Average Delay				0.4								
Intersection Capacity Utilization			63.5%		ICU Level of Service				B			
Analysis Period (min)			15									

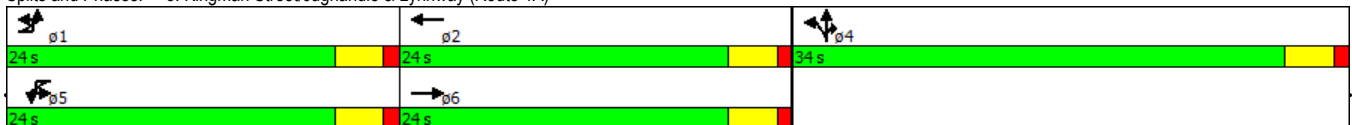


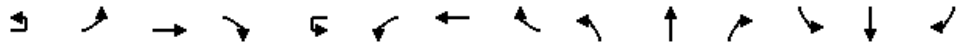
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Volume (vph)	15	15	985	35	5	60	2775	165	30	5	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0		275		0	0		50	0		0
Storage Lanes		1		0		1		0	0		1	0		0
Taper Length (ft)		25				25		25				25		
Satd. Flow (prot)	0	1687	4818	0	0	1787	5084	0	0	1199	1062	0	0	0
Fit Permitted		0.950				0.950				0.959				
Satd. Flow (perm)	0	1687	4818	0	0	1783	5084	0	0	1198	1062	0	0	0
Right Turn on Red				Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			6				11				67			
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			594				410			266			157	
Travel Time (s)			13.5				9.3			6.0			3.6	
Confl. Peds. (#/hr)		9		6		6		9	1		4	4		1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.94	0.94	0.94	0.94	0.72	0.72	0.72	0.92	0.92	0.92
Heavy Vehicles (%)	7%	7%	7%	7%	1%	1%	1%	1%	52%	52%	52%	2%	2%	2%
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	36	1215	0	0	69	3128	0	0	49	49	0	0	0
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Split	NA	Prot			
Protected Phases	1	1	6		5	5	2		4	4	4			
Permitted Phases														
Detector Phase	1	1	6		5	5	2		4	4	4			
Switch Phase														
Minimum Initial (s)	7.0	7.0	7.0		7.0	7.0	7.0		7.0	7.0	7.0			
Minimum Split (s)	11.0	11.0	26.0		11.0	11.0	26.0		26.0	26.0	26.0			
Total Split (s)	24.0	24.0	24.0		24.0	24.0	24.0		34.0	34.0	34.0			
Total Split (%)	29.3%	29.3%	29.3%		29.3%	29.3%	29.3%		41.5%	41.5%	41.5%			
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0			
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0			
Lost Time Adjust (s)		0.0	0.0			0.0	0.0			0.0	0.0			
Total Lost Time (s)		4.0	4.0			4.0	4.0			4.0	4.0			
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?														
Recall Mode	None	None	Max		None	None	Min		None	None	None			
Act Effect Green (s)		7.3	31.7			7.6	34.1			9.5	9.5			
Actuated g/C Ratio		0.15	0.65			0.16	0.70			0.20	0.20			
v/c Ratio		0.14	0.39			0.25	0.88			0.21	0.19			
Control Delay		23.3	10.0			23.5	20.2			19.1	5.4			
Queue Delay		0.0	0.0			0.0	0.0			0.0	0.0			
Total Delay		23.3	10.0			23.5	20.2			19.1	5.4			
LOS		C	B			C	C			B	A			
Approach Delay			10.4				20.2			12.3				
Approach LOS			B				C			B				
Queue Length 50th (ft)		9	82			17	186			12	0			
Queue Length 95th (ft)		35	182			58	#797			27	8			
Internal Link Dist (ft)			514				330			186			77	
Turn Bay Length (ft)						275					50			
Base Capacity (vph)		712	3134			754	3567			759	697			
Starvation Cap Reductn		0	0			0	0			0	0			
Spillback Cap Reductn		0	0			0	0			0	0			
Storage Cap Reductn		0	0			0	0			0	0			
Reduced v/c Ratio		0.05	0.39			0.09	0.88			0.06	0.07			

Intersection Summary

Area Type: Other  
 Cycle Length: 82  
 Actuated Cycle Length: 48.7  
 Natural Cycle: 100  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 17.4  
 Intersection LOS: B  
 Intersection Capacity Utilization 73.8%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Kingman Street/Jughandle & Lynnway (Route 1A)





Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔↔↔			↔	↔↔↔			↔			↔	
Volume (vph)	10	100	2305	15	55	0	1180	50	10	5	10	45	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		200		0		350		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Taper Length (ft)		25				25			25			25		
Satd. Flow (prot)	0	1770	5080	0	0	1752	5001	0	0	1694	0	0	1729	0
Fit Permitted		0.950				0.950				0.878			0.832	
Satd. Flow (perm)	0	1768	5080	0	0	1752	5001	0	0	1515	0	0	1492	0
Right Turn on Red				Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			1				8			25			65	
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			520				631			362			232	
Travel Time (s)			11.8				14.3			8.2			5.3	
Confl. Peds. (#/hr)		2		2		2		2	3					3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.92	0.92	0.92	0.92	0.38	0.38	0.38	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	112	2367	0	0	60	1337	0	0	65	0	0	73	0
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	1	6		5	5	2			4			4	
Permitted Phases									4			4		4
Detector Phase	1	1	6		5	5	2		4	4		4	4	
Switch Phase														
Minimum Initial (s)	7.0	7.0	15.0		7.0	7.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.0	12.0	20.0		12.0	12.0	20.0		27.0	27.0		27.0	27.0	
Total Split (s)	25.0	25.0	65.0		25.0	25.0	65.0		27.0	27.0		27.0	27.0	
Total Split (%)	21.4%	21.4%	55.6%		21.4%	21.4%	55.6%		23.1%	23.1%		23.1%	23.1%	
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0			0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0			5.0	5.0			6.0			6.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?														
Recall Mode	None	None	Max		None	None	Max		None	None		None	None	
Act Effect Green (s)		10.6	67.2			8.4	60.9			9.7			9.7	
Actuated g/C Ratio		0.11	0.71			0.09	0.65			0.10			0.10	
v/c Ratio		0.56	0.65			0.38	0.41			0.37			0.34	
Control Delay		53.0	12.2			51.1	10.2			33.6			17.2	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		53.0	12.2			51.1	10.2			33.6			17.2	
LOS		D	B			D	B			C			B	
Approach Delay			14.0				12.0			33.6			17.2	
Approach LOS			B				B			C			B	
Queue Length 50th (ft)		64	277			34	125			23			4	
Queue Length 95th (ft)		134	551			85	257			17			37	
Internal Link Dist (ft)			440				551			282			152	
Turn Bay Length (ft)		200				350								
Base Capacity (vph)		380	3623			377	3232			361			387	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.29	0.65			0.16	0.41			0.18			0.19	

Intersection Summary

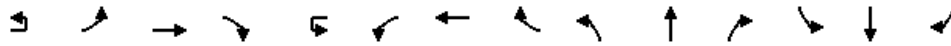
Area Type: Other  
 Cycle Length: 117  
 Actuated Cycle Length: 94.3  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.65  
 Intersection Signal Delay: 13.7  
 Intersection Capacity Utilization 71.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service C

Splits and Phases: 1: Marine Boulevard/Shepard Street & Lynnway (Route 1A)

φ1 25 s	φ2 65 s	φ4 27 s
φ5 25 s	φ6 65 s	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑↑				↑			↑
Volume (veh/h)	0	2360	55	0	1360	165	0	0	115	0	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.91	0.91	0.91	0.83	0.83	0.83	0.66	0.66	0.66
Hourly flow rate (vph)	0	2384	56	0	1495	181	0	0	139	0	0	61
Pedestrians		1			1						9	
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		631			594							
pX, platoon unblocked	0.81			0.78			0.87	0.87	0.78	0.87	0.87	0.81
vC, conflicting volume	1685			2439			2971	4096	625	2330	4034	599
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1014			1412			874	2163	0	138	2091	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.6	6.6	7.0
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 %	100			100			100	100	84	100	100	93
cM capacity (veh/h)	550			372			197	40	841	582	43	861
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>EB 3</b>	<b>EB 4</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	681	681	681	396	598	598	480	139	61			
Volume Left	0	0	0	0	0	0	0	0	0			
Volume Right	0	0	0	56	0	0	181	139	61			
cSH	1700	1700	1700	1700	1700	1700	1700	841	861			
Volume to Capacity	0.40	0.40	0.40	0.23	0.35	0.35	0.28	0.16	0.07			
Queue Length 95th (ft)	0	0	0	0	0	0	0	15	6			
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.1	9.5			
Lane LOS								B	A			
Approach Delay (s)	0.0				0.0			10.1	9.5			
Approach LOS								B	A			
<b>Intersection Summary</b>												
Average Delay				0.5								
Intersection Capacity Utilization			49.2%							A		
Analysis Period (min)			15									

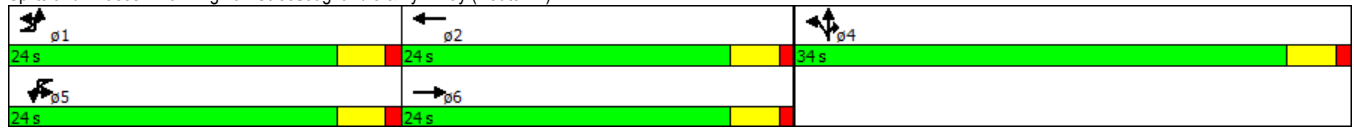


Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔↔↔			↔	↔↔↔			↔	↔			
Volume (vph)	55	10	2370	20	15	55	1285	35	140	0	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0		0		275		0	0		50	0		0
Storage Lanes		1		0		1		0	0		1	0		0
Taper Length (ft)		25				25			25			25		
Satd. Flow (prot)	0	1787	5130	0	0	1752	5013	0	0	1736	1553	0	0	0
Fit Permitted		0.950				0.950				0.950				
Satd. Flow (perm)	0	1787	5130	0	0	1752	5013	0	0	1734	1553	0	0	0
Right Turn on Red				Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			1				5				148			
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			594				410			266			157	
Travel Time (s)			13.5				9.3			6.0			3.6	
Confl. Peds. (#/hr)		1		1		1		1	1		5	5		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.57	0.57	0.57	0.92	0.92	0.92
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	67	2490	0	0	75	1404	0	0	246	175	0	0	0
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Split	NA	Prot			
Protected Phases	1	1	6		5	5	2		4	4	4			
Permitted Phases														
Detector Phase	1	1	6		5	5	2		4	4	4			
Switch Phase														
Minimum Initial (s)	7.0	7.0	7.0		7.0	7.0	7.0		7.0	7.0	7.0			
Minimum Split (s)	11.0	11.0	26.0		11.0	11.0	26.0		26.0	26.0	26.0			
Total Split (s)	24.0	24.0	24.0		24.0	24.0	24.0		34.0	34.0	34.0			
Total Split (%)	29.3%	29.3%	29.3%		29.3%	29.3%	29.3%		41.5%	41.5%	41.5%			
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0			
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0			
Lost Time Adjust (s)		0.0	0.0			0.0	0.0			0.0	0.0			
Total Lost Time (s)		4.0	4.0			4.0	4.0			4.0	4.0			
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?														
Recall Mode	None	None	Max		None	None	Min		None	None	None			
Act Effect Green (s)		7.7	23.3			7.9	23.5			12.5	12.5			
Actuated g/C Ratio		0.15	0.46			0.16	0.47			0.25	0.25			
v/c Ratio		0.25	1.05			0.27	0.60			0.57	0.35			
Control Delay		25.1	54.3			25.2	14.1			23.2	7.2			
Queue Delay		0.0	0.0			0.0	0.0			0.0	0.0			
Total Delay		25.1	54.3			25.2	14.1			23.2	7.2			
LOS		C	D			C	B			C	A			
Approach Delay			53.5				14.7			16.6				
Approach LOS			D				B			B				
Queue Length 50th (ft)		19	~355			22	122			70	7			
Queue Length 95th (ft)		58	#619			62	238			77	12			
Internal Link Dist (ft)			514				330			186			77	
Turn Bay Length (ft)						275					50			
Base Capacity (vph)		738	2369			723	2331			1075	1018			
Starvation Cap Reductn		0	0			0	0			0	0			
Spillback Cap Reductn		0	0			0	0			0	0			
Storage Cap Reductn		0	0			0	0			0	0			
Reduced v/c Ratio		0.09	1.05			0.10	0.60			0.23	0.17			

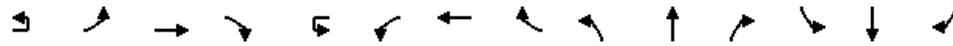
**Intersection Summary**

Area Type: Other  
 Cycle Length: 82  
 Actuated Cycle Length: 50.5  
 Natural Cycle: 80  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 1.05  
 Intersection Signal Delay: 37.1  
 Intersection LOS: D  
 Intersection Capacity Utilization 77.1%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Kingman Street/Jughandle & Lynnway (Route 1A)







Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Volume (vph)	5	35	1040	15	25	5	2395	50	10	10	10	25	0	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		200		0		350		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Taper Length (ft)		25				25			25			25		
Satd. Flow (prot)	0	1687	4836	0	0	1770	5067	0	0	1056	0	0	1328	0
Fit Permitted		0.950				0.950				0.871			0.802	
Satd. Flow (perm)	0	1686	4836	0	0	1767	5067	0	0	934	0	0	1094	0
Right Turn on Red				Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			3				4			15			65	
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			520				631			362			232	
Travel Time (s)			11.8				14.3			8.2			5.3	
Confl. Peds. (#/hr)		8		3		3		8	2					2
Peak Hour Factor	0.83	0.83	0.83	0.83	0.94	0.94	0.94	0.94	0.65	0.65	0.65	1.00	1.00	1.00
Heavy Vehicles (%)	7%	7%	7%	7%	2%	2%	2%	2%	69%	69%	69%	30%	30%	30%
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	48	1271	0	0	32	2601	0	0	45	0	0	45	0
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	1	6		5	5	2			4			4	
Permitted Phases									4			4		4
Detector Phase	1	1	6		5	5	2		4	4		4	4	
Switch Phase														
Minimum Initial (s)	7.0	7.0	15.0		7.0	7.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.0	12.0	20.0		12.0	12.0	20.0		27.0	27.0		27.0	27.0	
Total Split (s)	25.0	25.0	65.0		25.0	25.0	65.0		27.0	27.0		27.0	27.0	
Total Split (%)	21.4%	21.4%	55.6%		21.4%	21.4%	55.6%		23.1%	23.1%		23.1%	23.1%	
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0			0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0			5.0	5.0			6.0			6.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?														
Recall Mode	None	None	Max		None	None	Max		None	None		None	None	
Act Effect Green (s)		7.9	65.8			7.4	65.3			9.9			9.9	
Actuated g/C Ratio		0.09	0.73			0.08	0.73			0.11			0.11	
v/c Ratio		0.32	0.36			0.22	0.71			0.39			0.25	
Control Delay		47.8	7.3			46.4	12.7			38.1			8.4	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		47.8	7.3			46.4	12.7			38.1			8.4	
LOS		D	A			D	B			D			A	
Approach Delay			8.8				13.1			38.1			8.4	
Approach LOS			A				B			D			A	
Queue Length 50th (ft)		27	105			18	328			17			0	
Queue Length 95th (ft)		64	186			52	648			33			19	
Internal Link Dist (ft)			440				551			282			152	
Turn Bay Length (ft)		200				350								
Base Capacity (vph)		380	3545			399	3684			232			309	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.13	0.36			0.08	0.71			0.19			0.15	

Intersection Summary

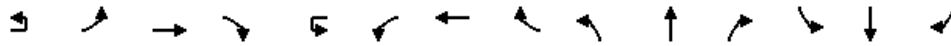
Area Type: Other  
 Cycle Length: 117  
 Actuated Cycle Length: 89.8  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 11.9  
 Intersection Capacity Utilization 63.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service B

Splits and Phases: 1: Marine Boulevard/Shepard Street & Lynnway (Route 1A)

25 s	65 s	27 s
25 s	65 s	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↔	↑↑↑				↔			↔
Volume (veh/h)	0	1005	95	50	2500	145	0	0	75	0	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.92	0.95	0.95	0.75	0.75	0.75	0.68	0.68	0.68
Hourly flow rate (vph)	0	1211	114	54	2632	153	0	0	100	0	0	59
Pedestrians		3			1			1			10	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			0			0			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		631			594							
pX, platoon unblocked	0.44			0.91			0.49	0.49	0.91	0.49	0.49	0.44
vC, conflicting volume	2794			1326			2317	4172	463	3331	4153	967
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	661			1012			0	2587	63	869	2548	0
tC, single (s)	4.2			4.1			7.7	6.7	7.1	7.6	6.6	7.0
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.6	4.1	3.4	3.6	4.1	3.4
p0 queue free %	100			91			100	100	89	100	100	87
cM capacity (veh/h)	392			619			396	10	878	95	11	470
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>EB 3</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	484	484	357	54	1053	1053	679	100	59			
Volume Left	0	0	0	54	0	0	0	0	0			
Volume Right	0	0	114	0	0	0	153	100	59			
cSH	1700	1700	1700	619	1700	1700	1700	878	470			
Volume to Capacity	0.28	0.28	0.21	0.09	0.62	0.62	0.40	0.11	0.13			
Queue Length 95th (ft)	0	0	0	7	0	0	0	10	11			
Control Delay (s)	0.0	0.0	0.0	11.4	0.0	0.0	0.0	9.6	13.8			
Lane LOS				B				A	B			
Approach Delay (s)	0.0			0.2				9.6	13.8			
Approach LOS								A	B			
<b>Intersection Summary</b>												
Average Delay				0.6								
Intersection Capacity Utilization			62.5%		ICU Level of Service				B			
Analysis Period (min)			15									

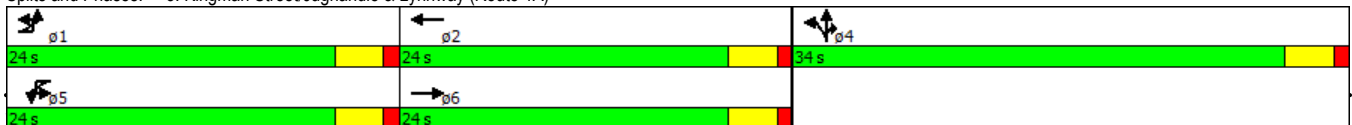


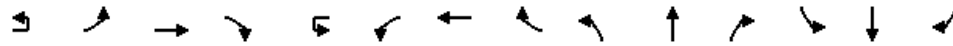
Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations														
Volume (vph)	15	15	985	35	5	60	2775	165	30	5	35	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		275		0	0		50	0		0
Storage Lanes		1		0		1		0	0		1	0		0
Taper Length (ft)		25				25			25			25		
Satd. Flow (prot)	0	1687	4818	0	0	1787	5084	0	0	1199	1062	0	0	0
Fit Permitted		0.950				0.950				0.959				
Satd. Flow (perm)	0	1687	4818	0	0	1783	5084	0	0	1198	1062	0	0	0
Right Turn on Red				Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			6				11				67			
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			594				410			266			157	
Travel Time (s)			13.5				9.3			6.0			3.6	
Confl. Peds. (#/hr)		9		6		6		9	1		4	4		1
Peak Hour Factor	0.84	0.84	0.84	0.84	0.94	0.94	0.94	0.94	0.72	0.72	0.72	0.92	0.92	0.92
Heavy Vehicles (%)	7%	7%	7%	7%	1%	1%	1%	1%	52%	52%	52%	2%	2%	2%
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	36	1215	0	0	69	3128	0	0	49	49	0	0	0
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Split	NA	Prot			
Protected Phases	1	1	6		5	5	2		4	4	4			
Permitted Phases														
Detector Phase	1	1	6		5	5	2		4	4	4			
Switch Phase														
Minimum Initial (s)	7.0	7.0	7.0		7.0	7.0	7.0		7.0	7.0	7.0			
Minimum Split (s)	11.0	11.0	26.0		11.0	11.0	26.0		26.0	26.0	26.0			
Total Split (s)	24.0	24.0	24.0		24.0	24.0	24.0		34.0	34.0	34.0			
Total Split (%)	29.3%	29.3%	29.3%		29.3%	29.3%	29.3%		41.5%	41.5%	41.5%			
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0			
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0			
Lost Time Adjust (s)		0.0	0.0			0.0	0.0			0.0	0.0			
Total Lost Time (s)		4.0	4.0			4.0	4.0			4.0	4.0			
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?														
Recall Mode	None	None	Max		None	None	Min		None	None	None			
Act Effect Green (s)		7.3	31.7			7.6	34.1			9.5	9.5			
Actuated g/C Ratio		0.15	0.65			0.16	0.70			0.20	0.20			
v/c Ratio		0.14	0.39			0.25	0.88			0.21	0.19			
Control Delay		23.3	10.0			23.5	20.2			19.1	5.4			
Queue Delay		0.0	0.0			0.0	0.0			0.0	0.0			
Total Delay		23.3	10.0			23.5	20.2			19.1	5.4			
LOS		C	B			C	C			B	A			
Approach Delay			10.4				20.2			12.3				
Approach LOS			B				C			B				
Queue Length 50th (ft)		9	82			17	186			12	0			
Queue Length 95th (ft)		35	182			58	#797			27	8			
Internal Link Dist (ft)			514				330			186			77	
Turn Bay Length (ft)		250				275					50			
Base Capacity (vph)		712	3134			754	3567			759	697			
Starvation Cap Reductn		0	0			0	0			0	0			
Spillback Cap Reductn		0	0			0	0			0	0			
Storage Cap Reductn		0	0			0	0			0	0			
Reduced v/c Ratio		0.05	0.39			0.09	0.88			0.06	0.07			

Intersection Summary

Area Type: Other  
 Cycle Length: 82  
 Actuated Cycle Length: 48.7  
 Natural Cycle: 100  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 17.4  
 Intersection Capacity Utilization 73.8%  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Kingman Street/Jughandle & Lynnway (Route 1A)





Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔↔↔			↔	↔↔↔			↔			↔	
Volume (vph)	10	100	2305	15	40	0	1180	50	10	5	10	45	0	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		200		0		350		0	0		0	0		0
Storage Lanes		1		0		1		0	0		0	0		0
Taper Length (ft)		25				25			25			25		
Satd. Flow (prot)	0	1770	5080	0	0	1752	5001	0	0	1694	0	0	1729	0
Fit Permitted		0.950				0.950				0.878			0.831	
Satd. Flow (perm)	0	1768	5080	0	0	1752	5001	0	0	1515	0	0	1491	0
Right Turn on Red				Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			1				8			25			65	
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			520				631			362			232	
Travel Time (s)			11.8				14.3			8.2			5.3	
Confl. Peds. (#/hr)		2		2		2		2	3					3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.92	0.92	0.92	0.92	0.38	0.38	0.38	0.82	0.82	0.82
Heavy Vehicles (%)	2%	2%	2%	2%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	112	2367	0	0	43	1337	0	0	65	0	0	73	0
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Perm	NA		Perm	NA	
Protected Phases	1	1	6		5	5	2			4			4	
Permitted Phases									4			4		4
Detector Phase	1	1	6		5	5	2		4	4		4	4	
Switch Phase														
Minimum Initial (s)	7.0	7.0	15.0		7.0	7.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.0	12.0	20.0		12.0	12.0	20.0		27.0	27.0		27.0	27.0	
Total Split (s)	25.0	25.0	65.0		25.0	25.0	65.0		27.0	27.0		27.0	27.0	
Total Split (%)	21.4%	21.4%	55.6%		21.4%	21.4%	55.6%		23.1%	23.1%		23.1%	23.1%	
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0	0.0			0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.0	5.0			5.0	5.0			6.0			6.0	
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?														
Recall Mode	None	None	Max		None	None	Max		None	None		None	None	
Act Effect Green (s)		10.6	70.3			7.8	60.9			9.7			9.7	
Actuated g/C Ratio		0.11	0.75			0.08	0.65			0.10			0.10	
v/c Ratio		0.56	0.62			0.30	0.41			0.37			0.34	
Control Delay		53.0	10.4			49.9	10.2			33.6			17.2	
Queue Delay		0.0	0.0			0.0	0.0			0.0			0.0	
Total Delay		53.0	10.4			49.9	10.2			33.6			17.2	
LOS		D	B			D	B			C			B	
Approach Delay			12.3				11.5			33.6			17.2	
Approach LOS			B				B			C			B	
Queue Length 50th (ft)		64	270			25	125			23			4	
Queue Length 95th (ft)		134	531			67	257			17			37	
Internal Link Dist (ft)			440				551			282			152	
Turn Bay Length (ft)		200				350								
Base Capacity (vph)		380	3789			377	3232			361			387	
Starvation Cap Reductn		0	0			0	0			0			0	
Spillback Cap Reductn		0	0			0	0			0			0	
Storage Cap Reductn		0	0			0	0			0			0	
Reduced v/c Ratio		0.29	0.62			0.11	0.41			0.18			0.19	

Intersection Summary

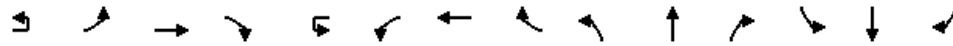
Area Type: Other  
 Cycle Length: 117  
 Actuated Cycle Length: 94.3  
 Natural Cycle: 80  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.62  
 Intersection Signal Delay: 12.5  
 Intersection Capacity Utilization 71.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service C

Splits and Phases: 1: Marine Boulevard/Shepard Street & Lynnway (Route 1A)

φ1 25 s	φ2 65 s	φ4 27 s
φ5 25 s	φ6 65 s	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑		↑	↑↑↑				↑			↑
Volume (veh/h)	0	2360	40	15	1345	165	0	0	115	0	0	40
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.91	0.91	0.83	0.83	0.83	0.66	0.66	0.66
Hourly flow rate (vph)	0	2384	40	16	1478	181	0	0	139	0	0	61
Pedestrians		1			1							9
Lane Width (ft)		12.0			12.0						12.0	
Walking Speed (ft/s)		4.0			4.0						4.0	
Percent Blockage		0			0						1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)		631			594							
pX, platoon unblocked	0.81			0.73			0.82	0.82	0.73	0.82	0.82	0.81
vC, conflicting volume	1668			2424			2991	4105	816	2544	4035	593
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1004			1648			1108	2462	0	565	2376	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.6	6.6	7.0
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 %	100			94			100	100	82	100	100	93
cM capacity (veh/h)	556			283			120	23	789	257	25	863
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>EB 3</b>	<b>WB 1</b>	<b>WB 2</b>	<b>WB 3</b>	<b>WB 4</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	954	954	517	16	591	591	477	139	61			
Volume Left	0	0	0	16	0	0	0	0	0			
Volume Right	0	0	40	0	0	0	181	139	61			
cSH	1700	1700	1700	283	1700	1700	1700	789	863			
Volume to Capacity	0.56	0.56	0.30	0.06	0.35	0.35	0.28	0.18	0.07			
Queue Length 95th (ft)	0	0	0	5	0	0	0	16	6			
Control Delay (s)	0.0	0.0	0.0	18.5	0.0	0.0	0.0	10.5	9.5			
Lane LOS				C				B	A			
Approach Delay (s)	0.0			0.2				10.5	9.5			
Approach LOS								B	A			
<b>Intersection Summary</b>												
Average Delay				0.5								
Intersection Capacity Utilization			60.6%							B		
Analysis Period (min)			15									

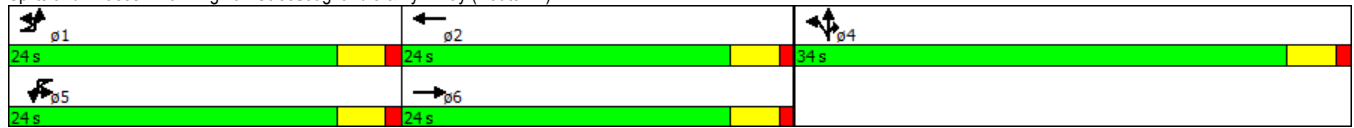


Lane Group	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔↔↔			↔	↔↔↔			↔	↔			
Volume (vph)	55	10	2370	20	15	55	1285	35	140	0	100	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)		250		0		275		0	0		50	0		0
Storage Lanes		1		0		1		0	0		1	0		0
Taper Length (ft)		25				25			25			25		
Satd. Flow (prot)	0	1787	5130	0	0	1752	5013	0	0	1736	1553	0	0	0
Fit Permitted		0.950				0.950				0.950				
Satd. Flow (perm)	0	1787	5130	0	0	1752	5013	0	0	1734	1553	0	0	0
Right Turn on Red				Yes				Yes			Yes			Yes
Satd. Flow (RTOR)			1				5				148			
Link Speed (mph)			30				30			30			30	
Link Distance (ft)			594				410			266			157	
Travel Time (s)			13.5				9.3			6.0			3.6	
Confl. Peds. (#/hr)		1		1		1		1	1		5	5		1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.94	0.94	0.94	0.94	0.57	0.57	0.57	0.92	0.92	0.92
Heavy Vehicles (%)	1%	1%	1%	1%	3%	3%	3%	3%	4%	4%	4%	2%	2%	2%
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	67	2490	0	0	75	1404	0	0	246	175	0	0	0
Turn Type	Prot	Prot	NA		Prot	Prot	NA		Split	NA	Prot			
Protected Phases	1	1	6		5	5	2		4	4	4			
Permitted Phases														
Detector Phase	1	1	6		5	5	2		4	4	4			
Switch Phase														
Minimum Initial (s)	7.0	7.0	7.0		7.0	7.0	7.0		7.0	7.0	7.0			
Minimum Split (s)	11.0	11.0	26.0		11.0	11.0	26.0		26.0	26.0	26.0			
Total Split (s)	24.0	24.0	24.0		24.0	24.0	24.0		34.0	34.0	34.0			
Total Split (%)	29.3%	29.3%	29.3%		29.3%	29.3%	29.3%		41.5%	41.5%	41.5%			
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0			
All-Red Time (s)	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0			
Lost Time Adjust (s)		0.0	0.0			0.0	0.0			0.0	0.0			
Total Lost Time (s)		4.0	4.0			4.0	4.0			4.0	4.0			
Lead/Lag	Lead	Lead	Lag		Lead	Lead	Lag							
Lead-Lag Optimize?														
Recall Mode	None	None	Max		None	None	Min		None	None	None			
Act Effect Green (s)		7.7	23.3			7.9	23.5			12.5	12.5			
Actuated g/C Ratio		0.15	0.46			0.16	0.47			0.25	0.25			
v/c Ratio		0.25	1.05			0.27	0.60			0.57	0.35			
Control Delay		25.1	54.3			25.2	14.1			23.2	7.2			
Queue Delay		0.0	0.0			0.0	0.0			0.0	0.0			
Total Delay		25.1	54.3			25.2	14.1			23.2	7.2			
LOS		C	D			C	B			C	A			
Approach Delay			53.5				14.7			16.6				
Approach LOS			D				B			B				
Queue Length 50th (ft)		19	~355			22	122			70	7			
Queue Length 95th (ft)		58	#619			62	238			77	12			
Internal Link Dist (ft)			514				330			186			77	
Turn Bay Length (ft)		250				275					50			
Base Capacity (vph)		738	2369			723	2331			1075	1018			
Starvation Cap Reductn		0	0			0	0			0	0			
Spillback Cap Reductn		0	0			0	0			0	0			
Storage Cap Reductn		0	0			0	0			0	0			
Reduced v/c Ratio		0.09	1.05			0.10	0.60			0.23	0.17			

**Intersection Summary**

Area Type: Other  
 Cycle Length: 82  
 Actuated Cycle Length: 50.5  
 Natural Cycle: 80  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 1.05  
 Intersection Signal Delay: 37.1  
 Intersection Capacity Utilization 77.1%  
 Analysis Period (min) 15  
 ~ Volume exceeds capacity, queue is theoretically infinite.  
 Queue shown is maximum after two cycles.  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Kingman Street/Jughandle & Lynnway (Route 1A)



## Preliminary Cost Estimates





*Vanasse Hangen Brustlin, Inc.*

**Transportation  
Land Development  
Environmental  
Services**

101 Walnut Street  
Post Office Box 9151  
Watertown  
Massachusetts 02471  
617 924 1770

**LYNN - LYNNWAY AT BLOSSOM ST  
CONCEPTUAL CONSTRUCTION COST ESTIMATE  
SUMMARY**

**Construction Items**

<u>Description</u>	<u>Unit Price</u>	<u>Quantity</u>	<u>Total Cost</u>
Full Depth Pavement	\$86.00 /SY	210 SY	\$18,060.00
Full Depth Pavement - Less than 4.0'	\$117.00 /SY	10 SY	\$1,170.00
Cement Concrete Median	\$73.00 /SY	510 SY	\$37,230.00
Granite Curb	\$39.00 /FT	920 FT	\$35,880.00
Signing & Striping	\$2,800.00 /LS	1 LS	\$2,800.00
Drainage	\$11,500.00 /LS	1 LS	\$11,500.00
		<b>SUBTOTAL:</b>	<b>\$106,640.00</b>
		Police Detail (10%)	\$10,664
		Mobilization (3%)	\$3,199
		Construction Traffic Management (5%)	\$5,332
		<b>TOTAL:</b>	<b>\$125,835</b>
		Contingencies (15%):	\$18,875
		<b>Construction TOTAL:</b>	<b>\$144,710</b>

**NOTE:**

1. Prices were determined from the MassDOT Weighted Average Bid Prices web site.



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LYNN - LYNNWAY AT BLOSSOM ST  
CONCEPTUAL CONSTRUCTION COST ESTIMATE  
SUMMARY - FLASHING WARNING BEACON ALTERNATIVE

**Construction Items**

<u>Description</u>	<u>Unit Price</u>	<u>Quantity</u>	<u>Total Cost</u>
Full Depth Pavement	\$86.00 /SY	210 SY	\$18,060.00
Full Depth Pavement - Less than 4.0'	\$117.00 /SY	10 SY	\$1,170.00
Cement Concrete Median	\$73.00 /SY	510 SY	\$37,230.00
Granite Curb	\$39.00 /FT	920 FT	\$35,880.00
Signing & Striping	\$2,800.00 /LS	1 LS	\$2,800.00
Drainage	\$11,500.00 /LS	1 LS	\$11,500.00
Flashing Warning Beacon	\$44,000.00 /LS	1 LS	\$44,000.00
		SUBTOTAL:	\$150,640.00
		Police Detail (10%)	\$15,064
		Mobilization (3%)	\$4,519
		Construction Traffic Management (5%)	\$7,532
		TOTAL:	\$177,755
		Contingencies (15%):	\$26,663
		Construction TOTAL:	\$204,418

**NOTE:**

1. Prices were determined from the MassDOT Weighted Average Bid Prices web site.



*Vanasse Hangen Brustlin, Inc.*

**Transportation  
Land Development  
Environmental  
Services**

101 Walnut Street  
Post Office Box 9151  
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Massachusetts 02471  
617 924 1770

**LYNN - LYNNWAY AT BLOSSOM ST  
CONCEPTUAL CONSTRUCTION COST ESTIMATE  
SUMMARY - TRAFFIC SIGNAL ALTERNATIVE**

**Construction Items**

<u>Description</u>	<u>Unit Price</u>	<u>Quantity</u>	<u>Total Cost</u>
Full Depth Pavement	\$86.00 /SY	210 SY	\$18,060.00
Full Depth Pavement - Less than 4.0'	\$117.00 /SY	10 SY	\$1,170.00
Cement Concrete Median	\$73.00 /SY	510 SY	\$37,230.00
Granite Curb	\$39.00 /FT	920 FT	\$35,880.00
Signing & Striping	\$2,800.00 /LS	1 LS	\$2,800.00
Drainage	\$11,500.00 /LS	1 LS	\$11,500.00
Traffic Signal	\$86,500.00 /LS	1 LS	\$86,500.00
		<b>SUBTOTAL:</b>	<b>\$193,140.00</b>
		Police Detail (10%)	\$19,314
		Mobilization (3%)	\$5,794
		Construction Traffic Management (5%)	\$9,657
		<b>TOTAL:</b>	<b>\$227,905</b>
		Contingencies (15%):	\$34,186
		<b>Construction TOTAL:</b>	<b>\$262,091</b>

**NOTE:**

1. Prices were determined from the MassDOT Weighted Average Bid Prices web site.

## Signal Warrant Worksheet

# 2009 MUTCD

## TRAFFIC SIGNAL WARRANT ANALYSIS (VOLUME BASED)

Intersection: **Lynnway (Route 1A) at Blossom Street**

Major Street Direction: Eastbound-Westbound ▼

Year: **2014** Condition: **Existing with Ferry Traffic (WBL assumed to be minor street approach)**

Operating speed on major roadway: **35 mph**  
 Number of approaches: **4**

**Required approach volumes**

Warrant 1	EIGHT-HOUR VEHICULAR VOLUME	Minimum*	Adjusted Minimum**
Warrant 1A	MINIMUM VEHICULAR VOLUME (8 hours of day)		
	Major Street : 3 Lane(s) on each approach	600	600
	Minor Street : 1 Lane(s) on each approach	150	150
Warrant 1B	INTERRUPTION OF CONTINUOUS TRAFFIC (8 hours of day)		
	Major Street : 3 Lane(s) on each approach	900	900
	Minor Street : 1 Lane(s) on each approach	75	75
80 PERCENT SATISFACTION OF WARRANT 1A AND WARRANT 1B		Warrant 1A	Warrant 1B
	Major Street : 3 Lane(s) on each approach	480	720
	Minor Street : 1 Lane(s) on each approach	120	60

Warrant 2	FOUR HOUR VEHICULAR VOLUME	
	Major Street : 3 Lane(s) on each approach	If "verify" indicated, see Figure 4C-1 or 4C-2. 25 = accuracy of regression equations
	Minor Street : 1 Lane(s) on each approach	

Warrant 3	PEAK HOUR VOLUME	
	Major Street : 3 Lane(s) on each approach	If "verify" indicated, see Figure 4C-3 or 4C-4. 25 = accuracy of regression equations
	Minor Street : 1 Lane(s) on each approach	

Hour	Entering Vol. Minor Road+	Entering Vol. on Major Road		Tot. Ent. Vol. On Major Rd	Meets the following volume-based warrants?					
		Eastbound	Westbound		1A	1B	80%(1A&1B)	2	3	
6:00 - 7:00 AM	0	0	0	0	No	No	No	0	0	
7:00 - 8:00 AM	50	1100	0	1100	No	No	No	0	0	
8:00 - 9:00 AM	0	0	0	0	No	No	No	0	0	
9:00 - 10:00 AM	0	0	0	0	No	No	No	0	0	
10:00 - 11:00 AM	0	0	0	0	No	No	No	0	0	
11:00 - 12:00 AM	0	0	0	0	No	No	No	0	0	
12:00 - 1:00 PM	0	0	0	0	No	No	No	0	0	
1:00 - 2:00 PM	0	0	0	0	No	No	No	0	0	
2:00 - 3:00 PM	0	0	0	0	No	No	No	0	0	
3:00 - 4:00 PM	0	0	0	0	No	No	No	0	0	
4:00 - 5:00 PM	0	0	0	0	No	No	No	0	0	
5:00 - 6:00 PM	15	2400	0	2400	No	No	No	0	0	
6:00 - 7:00 PM	0	0	0	0	No	No	No	0	0	
					<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	
					<b>Warrants Met?</b>	<b>1</b>	<b>2</b>	<b>3</b>		
						<b>NO</b>	<b>No</b>	<b>No</b>	<b>No</b>	

\*From the criteria described for the warrant in the MUTCD.

\*\*If the operating speed is higher than 40mph then the volumes can be adjusted to 70%. (If no adjusted minimum, the minimum from the previous column is shown)

+If more than one approach, report the approach that has the higher volume.

### NON-VOLUME-BASED WARRANTS

**Warrant 4, Minimum Pedestrian Volume:** No  
 Peak Four Hour Pedestrian Volumes: 0  
 (non-concurrent) 0  
0  
0

**Warrant 5, School Crossing:**  
 See MUTCD for details.

**Warrant 6, Coordinated Signal System:**  
 See MUTCD for details.

**Warrant 7, Crash Experience:** No  
 # of accidents "correctable by signalization" occurring in the last 12 months: 0

**Warrant 8, Roadway Network:**  
 See MUTCD for details.

AGREEMENT  
BETWEEN  
THE DEPARTMENT OF THE ARMY  
AND  
THE CITY OF LYNN, MASSACHUSETTS  
FOR THE  
LYNN HARBOR NAVIGATION IMPROVEMENT FEASIBILITY STUDY

THIS AGREEMENT is entered into this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, by and between the Department of the Army (hereinafter the “Government”), represented by the U.S. Army Engineer, New England District (hereinafter the “District Engineer”) and the Town of Lynn, Massachusetts (hereinafter the “Non-Federal Sponsor”), represented by the Mayor.

WITNESSETH, THAT:

WHEREAS, Section 107 of the River and Harbor Act of 1960 authorizes the Corps of Engineers to improve navigation including dredging of channels, anchorage areas, and turning basins and construction of breakwaters, jetties and groins, through a partnership with non-Federal government sponsor such as cities, counties, special chartered authorities, or units of state government. The maximum Federal cost for project development and construction of any one project is \$10 million and each project must be economically justified, environmentally sound, and technically feasible;

WHEREAS, Section 105(a) of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2215(a)), specifies the cost-sharing requirements; and

WHEREAS, the Government and the Non-Federal Sponsor have the full authority and capability to perform in accordance with the terms of this Agreement.

NOW, THEREFORE, the parties agree as follows:

ARTICLE I - DEFINITIONS

A. The term “Study” means the activities and tasks required to identify and evaluate alternatives and the preparation of a decision document that, as appropriate, recommends a coordinated and implementable solution for Navigation Improvements at Lynn Harbor, Lynn, Massachusetts.

B. The term “shared study costs” means all costs incurred by the Government and Non-Federal Sponsor after the effective date of this Agreement that are directly related to performance of the Study and cost shared in accordance with the terms of this Agreement. The term includes, but is not necessarily limited to, the Government’s costs for preparing the PMP; for plan formulation and evaluation, including costs for economic, engineering,

real estate, and environmental analyses; for preparation of a floodplain management plan if undertaken as part of the Study; for preparing and processing the decision document; for supervision and administration; for Agency Technical Review and other review processes required by the Government; and for response to any required Independent External Peer Review; and the Non-Federal Sponsor's creditable costs for in-kind contributions. The term does not include any costs for dispute resolution; for participation in the Study Coordination Team; for audits; for an Independent External Peer Review panel, if required; or for negotiating this Agreement. The term also does not include the first \$100,000 of costs for the Study incurred by the Government, whether before or after execution of this Agreement.

C. The term "PMP" means the project management plan, and any modifications thereto, developed in consultation with the Non-Federal Sponsor, that specifies the scope, cost, and schedule for Study activities and tasks, including the Non-Federal Sponsor's in-kind contributions, and that guides the performance of the Study.

D. The term "in-kind contributions" means those planning activities (including data collection and other services) that are integral to the Study and would otherwise have been undertaken by the Government for the Study and that are identified in the PMP and performed or provided by the Non-Federal Sponsor after the effective date of this Agreement and in accordance with the PMP.

E. The term "maximum Federal study cost" means the \$1,500,000 Federal cost limit for the Study, unless the Government has approved a higher amount, and includes the first \$100,000 of costs for the Study incurred by the Government.

F. The term "fiscal year" means one year beginning on October 1<sup>st</sup> and ending on September 30th of the following year.

## ARTICLE II - OBLIGATIONS OF THE PARTIES

A. In accordance with Federal laws, regulations, and policies, the Government shall conduct the Study using funds appropriated by the Congress and funds provided by the Non-Federal Sponsor. The Non-Federal Sponsor shall perform or provide any in-kind contributions in accordance with applicable Federal laws, regulations, and policies.

B. The Non-Federal Sponsor shall contribute 50 percent of the shared study costs in accordance with the provisions of this paragraph and provide required funds in accordance with Article III.

1. After considering the estimated amount of credit for in-kind contributions, if any, that will be afforded in accordance with paragraph C. of this Article and the first \$100,000 of the costs incurred by the Government that are excluded from shared costs, the Government shall provide the Non-Federal Sponsor with a written estimate of the amount of funds required from the Non-Federal Sponsor for the remainder

of the initial fiscal year of the Study. No later than 15 calendar days after such notification, the Non-Federal Sponsor shall provide the full amount of such funds to the Government.

2. No later than August 1<sup>st</sup> prior to each subsequent fiscal year of the Study, the Government shall provide the Non-Federal Sponsor with a written estimate of the amount of funds required from the Non-Federal Sponsor during that fiscal year. No later than September 1<sup>st</sup> prior to that fiscal year, the Non-Federal Sponsor shall provide the full amount of such required funds to the Government.

C. The Government shall include in the shared study costs and credit towards the Non-Federal Sponsor's share of such costs, the costs, documented to the satisfaction of the Government, that the Non-Federal Sponsor incurs in providing or performing in-kind contributions, including associated supervision and administration, after the effective date of this Agreement. Such costs shall be subject to audit in accordance with Article VI to determine reasonableness, allocability, and allowability, and crediting shall be in accordance with the following procedures, requirements, and limitations:

1. As in-kind contributions are completed and no later than 60 calendar day after such completion, the Non-Federal Sponsor shall provide the Government appropriate documentation, including invoices and certification of specific payments to contractors, suppliers, and the Non-Federal Sponsor's employees. Failure to provide such documentation in a timely manner may result in denial of credit. The amount of credit afforded for in-kind contributions shall not exceed the Non-Federal Sponsor's share of the shared study costs.

2. No credit shall be afforded for interest charges, or any adjustment to reflect changes in price levels between the time the in-kind contributions are completed and credit is afforded; for the value of in-kind contributions obtained at no cost to the Non-Federal Sponsor; for any items provided or performed prior to completion of the PMP; or for costs that exceed the Government's estimate of the cost for such item if it had been performed by the Government.

D. To the extent practicable and in accordance with Federal laws, regulations, and policies, the Government shall afford the Non-Federal Sponsor the opportunity to review and comment on solicitations for contracts prior to the Government's issuance of such solicitations; proposed contract modifications, including change orders; and contract claims prior to resolution thereof. Ultimately, the contents of solicitations, award of contracts, execution of contract modifications, and resolution of contract claims shall be exclusively within the control of the Government.

E. The Non-Federal Sponsor shall not use Federal Program funds to meet any of its obligations under this Agreement unless the Federal agency providing the funds verifies in writing that the funds are authorized to be used for the Study. Federal program funds are those funds provided by a Federal agency, plus any non-Federal contribution required as a matching share therefor.



F. Except as provided in paragraph C. of this Article, the Non-Federal Sponsor shall not be entitled to any credit or reimbursement for costs it incurs in performing its responsibilities under this Agreement.

G. In carrying out its obligations under this Agreement, the Non-Federal Sponsor shall comply with all the requirements of applicable Federal laws and implementing regulations, including, but not limited to: Title VI of the Civil Rights Act of 1964 (P.L. 88-352), as amended (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto; the Age Discrimination Act of 1975 (42 U.S.C. 6102); and the Rehabilitation Act of 1973, as amended (29 U.S.C. 794), and Army Regulation 600-7 issued pursuant thereto.

H. If Independent External Peer Review (IEPR) is required for the Study, the Government shall conduct such review in accordance with Federal laws, regulations, and policies. The Government's costs for an IEPR panel shall not be included in the shared study costs or the maximum Federal study cost.

I. In addition to the ongoing, regular discussions of the parties in the delivery of the Study, the Government and the Non-Federal Sponsor may establish a Study Coordination Team to discuss significant issues or actions. The Government's costs for participation on the Study Coordination Team shall not be included in the shared study costs, but shall be included in calculating the maximum Federal study cost. The Non-Federal Sponsor's costs for participation on the Study Coordination Team shall not be included in the shared study costs and shall be paid solely by the Non-Federal Sponsor without reimbursement or credit by the Government.

### ARTICLE III - PAYMENT OF FUNDS

A. As of the effective date of this Agreement, the shared study costs are projected to be \$570,000, with the Government's share of such costs projected to be \$285,000 and the Non-Federal Sponsor's share of such costs projected to be \$285,000. These amounts are estimates only that are subject to adjustment by the Government and are not to be construed as the total financial responsibilities of the Government and the Non-Federal Sponsor.

B. The Government shall provide the Non-Federal Sponsor with quarterly reports setting forth the estimated shared study costs and the Government's and Non-Federal Sponsor's estimated shares of such costs; costs incurred by the Government, using both Federal and Non-Federal Sponsor funds, to date; the amount of funds provided by the Non-Federal Sponsor to date; the estimated amount of any creditable in-kind contributions; and the estimated remaining cost of the Study.

C. The Non-Federal Sponsor shall provide to the Government required funds by delivering a check payable to "FAO, USAED, NEW ENGLAND (E6)" to the District

Engineer, or verifying to the satisfaction of the Government that the Non-Federal Sponsor has deposited such required funds in an escrow or other account acceptable to the Government, with interest accruing to the Non-Federal Sponsor, or by providing an Electronic Funds Transfer of such required funds in accordance with procedures established by the Government.

D. The Government shall draw from the funds provided by the Non-Federal Sponsor to cover the non-Federal share of the shared study costs as those costs are incurred. If the Government determines at any time that additional funds are needed from the Non-Federal Sponsor to cover the Non-Federal Sponsor's required share of the shared study costs, the Government shall provide the Non-Federal Sponsor with written notice of the amount of additional funds required. Within 60 calendar days of such notice, the Non-Federal Sponsor shall provide the Government with the full amount of such additional funds.

E. Upon conclusion of the Study and resolution of all relevant claims and appeals, the Government shall conduct a final accounting and furnish the Non-Federal Sponsor with the written results of such final accounting. Should the final accounting determine that additional funds are required from the Non-Federal Sponsor, the Non-Federal Sponsor, within 60 calendar days of written notice from the Government, shall provide the Government with the full amount of such additional funds. Should the final accounting determine that the Non-Federal Sponsor has provided funds in excess of its required amount, the Government shall refund the excess amount, subject to the availability of funds. Such final accounting does not limit the Non-Federal Sponsor's responsibility to pay its share of shared study costs, including contract claims or any other liability that may become known after the final accounting.

#### ARTICLE IV - TERMINATION OR SUSPENSION

A. Upon 30 calendar days written notice to the other party, either party may elect at any time, without penalty, to suspend or terminate future performance of the Study. Furthermore, unless an extension is approved by the Assistant Secretary of the Army (Civil Works), the Study will be terminated if a Detailed Project Report is not completed for the Study within 3 years after the effective date of this Agreement.

B. In the event of termination, the parties shall conclude their activities relating to the Study. To provide for this eventuality, the Government may reserve a percentage of available funds as a contingency to pay the costs of termination, including any costs of resolution of contract claims, and resolution of contract modifications.

C. Any suspension or termination shall not relieve the parties of liability for any obligation previously incurred. Any delinquent payment owed by the Non-Federal Sponsor pursuant to this Agreement shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 per centum of the average bond equivalent rate of the 13 week Treasury bills auctioned immediately prior to the date on which such

payment became delinquent, or auctioned immediately prior to the beginning of each additional 3 month period if the period of delinquency exceeds 3 months.

#### ARTICLE V - DISPUTE RESOLUTION

As a condition precedent to a party bringing any suit for breach of this Agreement, that party must first notify the other party in writing of the nature of the purported breach and seek in good faith to resolve the dispute through negotiation. If the parties cannot resolve the dispute through negotiation, they may agree to a mutually acceptable method of non-binding alternative dispute resolution with a qualified third party acceptable to the parties. Each party shall pay an equal share of any costs for the services provided by such a third party as such costs are incurred. The existence of a dispute shall not excuse the parties from performance pursuant to this Agreement.

#### ARTICLE VI - MAINTENANCE OF RECORDS AND AUDIT

A. The parties shall develop procedures for the maintenance by the Non-Federal Sponsor of books, records, documents, or other evidence pertaining to costs and expenses for a minimum of three years after the final accounting. The Non-Federal Sponsor shall assure that such materials are reasonably available for examination, audit, or reproduction by the Government.

B. The Government may conduct, or arrange for the conduct of, audits of the Study. Government audits shall be conducted in accordance with applicable Government cost principles and regulations. The Government's costs of audits for the Study shall not be included in shared study costs, but shall be included in calculating the maximum Federal study cost.

C. To the extent permitted under applicable Federal laws and regulations, the Government shall allow the Non-Federal Sponsor to inspect books, records, documents, or other evidence pertaining to costs and expenses maintained by the Government, or at the request of the Non-Federal Sponsor, provide to the Non-Federal Sponsor or independent auditors any such information necessary to enable an audit of the Non-Federal Sponsor's activities under this Agreement. The costs of non-Federal audits shall be paid solely by the Non-Federal Sponsor without reimbursement or credit by the Government.

#### ARTICLE VII - RELATIONSHIP OF PARTIES

In the exercise of their respective rights and obligations under this Agreement, the Government and the Non-Federal Sponsor each act in an independent capacity, and neither is to be considered the officer, agent, or employee of the other. Neither party shall provide, without the consent of the other party, any contractor with a release that

waives or purports to waive any rights a party may have to seek relief or redress against that contractor.

#### ARTICLE VIII - NOTICES

A. Any notice, request, demand, or other communication required or permitted to be given under this Agreement shall be deemed to have been duly given if in writing and delivered personally or mailed by certified mail, with return receipt, as follows:

If to the Non-Federal Sponsor:

Lynn City Hall and Memorial Auditorium  
Office of the Mayor  
Room 306  
3 City Hall Square  
Lynn, Massachusetts 01901

If to the Government:

District Engineer  
US Army Corps of Engineers  
New England District  
696 Virginia Road  
Concord, Massachusetts 01742

B. A party may change the recipient or address for such communications by giving written notice to the other party in the manner provided in this Article.

#### ARTICLE IX - CONFIDENTIALITY

To the extent permitted by the laws governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party.

#### ARTICLE X - THIRD PARTY RIGHTS, BENEFITS, OR LIABILITIES

Nothing in this Agreement is intended, nor may be construed, to create any rights, confer any benefits, or relieve any liability, of any kind whatsoever in any third person not a party to this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, which shall become effective upon the date it is signed by the District Engineer.

DEPARTMENT OF THE ARMY

TOWN OF LYNN, MASSACHUSETTS

BY: \_\_\_\_\_

Christopher J. Barron  
Colonel, U.S. Army  
District Engineer

BY: \_\_\_\_\_

Judith F. Kennedy  
Mayor

DATE: \_\_\_\_\_

DATE: \_\_\_\_\_