APPENDIX A

Traffic Count Data

NE TRAFFIC COUNTS

New England Traffic Counts
(413) 579-8366
emayboroda@netrafficcounts.com
www.netrafficcounts.com

CLIENT	Bowman
CITY/TOWN	Douglas, MA
WEATHER	Sunny
INTERSECTION #	1

STREET 1	Rt 146 SB On/Off Ramp
STREET 2	Lackey Dam Rd
DATE	09/11/2024

Passenger Cars & Heavy Vehicles Combined

	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
Start Time	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
7:00 AM	0	0	149	50	0	14	38	0	0	1	0	31	0	0	0	0
7:15 AM	0	0	137	43	0	12	42	0	0	1	0	28	0	0	0	0
7:30 AM	0	0	93	44	0	17	53	0	0	2	0	28	0	0	0	0
7:45 AM	0	0	98	28	0	11	54	0	0	1	1	27	0	0	0	0
8:00 AM	0	0	95	40	0	14	54	0	0	3	0	26	0	0	0	0
8:15 AM	0	0	100	28	0	16	42	0	0	2	0	30	0	0	0	0
8:30 AM	0	0	105	19	0	9	49	0	0	1	0	31	0	0	0	0
8:45 AM	0	0	77	25	0	14	41	0	0	2	0	32	0	0	0	0
4:00 PM	0	0	80	35	0	15	76	0	0	2	0	72	0	0	0	0
4:15 PM	0	0	56	16	0	28	77	0	0	4	0	76	0	0	0	0
4:30 PM	0	0	81	32	0	12	67	0	0	6	1	72	0	0	0	0
4:45 PM	0	0	49	24	0	12	82	0	0	2	0	80	0	0	0	0
5:00 PM	0	0	66	26	0	23	85	0	0	5	0	63	0	0	0	0
5:15 PM	0	0	74	19	0	19	95	0	0	4	0	85	0	0	0	0
5:30 PM	0	0	68	21	0	20	80	0	0	4	0	75	0	0	0	0
5:45 PM	0	0	41	21	0	17	66	0	0	5	0	73	0	0	0	0

AM PEAK HOURS	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
7:00 AM	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
	0	0	477	165	0	54	187	0	0	5	1	114	0	0	0	0
PHF	0.81				0.86				0.94				0.00			
HV%	0.0%	0.0%	2.1%	9.7%	0.0%	7.4%	9.1%	0.0%	0.0%	20.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%

PM PEAK HOURS	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
4:30 PM	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
	0	0	270	101	0	66	329	0	0	17	1	300	0	0	0	0
PHF	0.82				0.87				0.89				0.00			
HV%	0.0%	0.0%	1.5%	2.0%	0.0%	3.0%	0.6%	0.0%	0.0%	0.0%	0.0%	1.7%	0.0%	0.0%	0.0%	0.0%

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CLIENT	Bowman
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WEATHER	Sunny
INTERSECTION #	1

STREET 1	Rt 146 SB On/Off Ramp
STREET 2	Lackey Dam Rd
DATE	09/11/2024

Heavy Vehicles

	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
Start Time	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
7:00 AM	0	0	4	4	0	2	3	0	0	1	0	0	0	0	0	0
7:15 AM	0	0	3	6	0	1	2	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	5	0	1	5	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	2	1	0	0	7	0	0	0	0	1	0	0	0	0
8:00 AM	0	0	3	6	0	2	7	0	0	1	0	3	0	0	0	0
8:15 AM	0	0	5	6	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	2	3	0	0	3	0	0	1	0	5	0	0	0	0
8:45 AM	0	0	1	3	0	0	1	0	0	0	0	1	0	0	0	0
4:00 PM	0	0	1	2	0	0	3	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	2	2	0	0	0	0	1	0	0	0	0
4:30 PM	0	0	2	0	0	1	0	0	0	0	0	2	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0
5:00 PM	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	2	0	0	0	2	0	0	0	0	1	0	0	0	0
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0

AM PEAK HOURS
7:00 AM

Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
U-Turn	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
0	0	10	16	0	4	17	0	0	1	0	1	0	0	0	0

PM PEAK HOURS
4:30 PM

Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
U-Turn	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
0	0	4	2	0	2	2	0	0	0	0	5	0	0	0	0

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CITY/TOWN	Douglas, MA
WEATHER	Sunny
INTERSECTION #	1

STREET 1	Rt 146 SB On/Off Ramp
STREET 2	Lackey Dam Rd
DATE	09/11/2024

Pedestrians and Bicycles

	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
Start Time	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

AM PEAK HOURS
7:00 AM

Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
Peds	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOURS
4:30 PM

Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 SB Off Ramp - Eastbound				Rt 146 SB On Ramp - Westbound			
Peds	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0



Bowman_041 **09/11/2024**

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CLIENT	Bowman
CITY/TOWN	Douglas, MA
WEATHER	Sunny
INTERSECTION #	2

STREET 1	Rt 146 NB On/Off Ramp
STREET 2	Lackey Dam Rd
DATE	09/11/2024

Passenger Cars & Heavy Vehicles Combined

	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
Start Time	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
7:00 AM	0	100	50	0	0	0	37	2	0	0	0	0	0	19	0	16
7:15 AM	0	84	54	0	0	0	19	3	0	0	0	0	0	32	0	24
7:30 AM	0	56	39	0	0	0	45	6	0	0	0	0	0	25	0	19
7:45 AM	0	63	38	0	0	0	39	1	0	0	0	0	0	25	0	15
8:00 AM	0	58	40	0	0	0	45	5	0	0	0	0	0	26	1	16
8:15 AM	0	58	43	0	0	0	29	4	0	0	0	0	0	27	0	15
8:30 AM	0	63	42	0	0	0	33	5	0	0	0	0	0	27	0	21
8:45 AM	0	47	27	0	0	0	30	3	0	0	0	0	0	24	0	16
4:00 PM	0	45	34	0	0	0	61	4	0	0	0	0	0	26	0	26
4:15 PM	0	36	27	0	0	0	82	1	0	0	0	0	0	25	0	21
4:30 PM	0	46	40	0	0	0	55	3	0	0	0	0	0	25	0	17
4:45 PM	0	28	21	0	0	0	58	2	0	0	0	0	0	33	0	23
5:00 PM	0	40	34	0	0	0	78	3	0	0	0	0	0	32	0	16
5:15 PM	0	42	34	0	0	0	73	4	0	0	0	0	0	39	0	17
5:30 PM	0	36	38	0	0	0	69	4	0	0	0	0	0	34	0	17
5:45 PM	0	30	16	0	0	0	53	3	0	0	0	0	0	27	0	12

AM PEAK HOURS	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
7:00 AM	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
	0	303	181	0	0	0	140	12	0	0	0	0	0	101	0	74
PHF	0.81				0.75				0.00				0.78			
HV%	0.0%	2.6%	1.7%	0.0%	0.0%	0.0%	7.9%	8.3%	0.0%	0.0%	0.0%	0.0%	0.0%	10.9%	0.0%	1.4%

PM PEAK HOURS	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
4:45 PM	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
	0	146	127	0	0	0	278	13	0	0	0	0	0	138	0	73
PHF	0.90				0.90				0.00				0.94			
HV%	0.0%	0.7%	1.6%	0.0%	0.0%	0.0%	0.7%	7.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	2.7%

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CLIENT	Bowman
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WEATHER	Sunny
INTERSECTION #	2

STREET 1	Rt 146 NB On/Off Ramp
STREET 2	Lackey Dam Rd
DATE	09/11/2024

Heavy Vehicles

	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
Start Time	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
7:00 AM	0	2	3	0	0	0	5	0	0	0	0	0	0	1	0	0
7:15 AM	0	3	0	0	0	0	0	1	0	0	0	0	0	3	0	0
7:30 AM	0	1	0	0	0	0	4	0	0	0	0	0	0	2	0	0
7:45 AM	0	2	0	0	0	0	2	0	0	0	0	0	0	5	0	1
8:00 AM	0	1	3	0	0	0	5	0	0	0	0	0	0	5	0	3
8:15 AM	0	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	3	0	0	0	0	2	0	0	0	0	0	0	1	0	1
8:45 AM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
4:00 PM	0	1	0	0	0	0	2	0	0	0	0	0	0	2	0	1
4:15 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	1
4:30 PM	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	1	1	0	0	0	1	1	0	0	0	0	0	1	0	1
5:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOURS
7:00 AM

Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
U-Turn	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
0	8	3	0	0	0	11	1	0	0	0	0	0	11	0	1

PM PEAK HOURS
4:45 PM

Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
U-Turn	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**	**U-Turn**	**Left**	**Thru**	**Right**
0	1	2	0	0	0	2	1	0	0	0	0	0	1	0	2

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INTERSECTION #	2

STREET 1	Rt 146 NB On/Off Ramp
STREET 2	Lackey Dam Rd
DATE	09/11/2024

Pedestrians and Bicycles

	Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
Start Time	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0

AM PEAK HOURS
7:00 AM

Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
Peds	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOURS
4:45 PM

Lackey Dam Rd - Northbound				Lackey Dam Rd - Southbound				Rt 146 NB On Ramp - Eastbound				Rt 146 NB Off Ramp - Westbound			
Peds	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**	**Peds**	**Left**	**Thru**	**Right**
0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0



Bowman_041 **09/11/2024**

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

9/9/2024	9/9/2024		9/10/2024		9/11/2024		9/12/2024		9/13/2024		Weekday Average		9/14/2024		9/15/2024	
Time	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB
12:00 AM	*	*	*	*	13	8	8	4	*	*	10	6	*	*	*	*
1:00	*	*	*	*	2	6	3	1	*	*	2	4	*	*	*	*
2:00	*	*	*	*	4	5	0	5	*	*	2	5	*	*	*	*
3:00	*	*	*	*	4	8	5	6	*	*	4	7	*	*	*	*
4:00	*	*	*	*	8	12	7	21	*	*	8	16	*	*	*	*
5:00	*	*	*	*	29	74	45	79	*	*	37	76	*	*	*	*
6:00	*	*	*	*	89	178	89	180	*	*	89	179	*	*	*	*
7:00	*	*	*	*	152	252	139	223	*	*	146	238	*	*	*	*
8:00	*	*	*	*	150	225	138	217	*	*	144	221	*	*	*	*
9:00	*	*	*	*	92	157	109	156	*	*	100	156	*	*	*	*
10:00	*	*	*	*	122	144	105	133	*	*	114	138	*	*	*	*
11:00	*	*	*	*	118	134	135	122	*	*	126	128	*	*	*	*
12:00 PM	*	*	*	*	152	110	154	169	*	*	153	140	*	*	*	*
1:00	*	*	*	*	137	146	152	151	*	*	144	148	*	*	*	*
2:00	*	*	*	*	191	178	224	165	*	*	208	172	*	*	*	*
3:00	*	*	*	*	243	219	202	194	*	*	222	206	*	*	*	*
4:00	*	*	*	*	261	203	231	211	*	*	246	207	*	*	*	*
5:00	*	*	*	*	287	175	268	180	*	*	278	178	*	*	*	*
6:00	*	*	*	*	161	144	166	125	*	*	164	134	*	*	*	*
7:00	*	*	*	*	123	106	129	93	*	*	126	100	*	*	*	*
8:00	*	*	*	*	81	62	101	75	*	*	91	68	*	*	*	*
9:00	*	*	*	*	43	56	43	48	*	*	43	52	*	*	*	*
10:00	*	*	*	*	29	24	24	25	*	*	26	24	*	*	*	*
11:00	*	*	*	*	17	16	23	22	*	*	20	19	*	*	*	*
Total	0	0	0	0	2508	2642	2500	2605	0	0	2503	2622	0	0	0	0
Day	0		0		5150		5105		0		5125		0		0	
AM Peak					7:00	7:00	7:00	7:00			7:00	7:00				
Volume					152	252	139	223			146	238				
PM Peak					5:00	3:00	5:00	4:00			5:00	4:00				
Volume					287	219	268	211			278	207				
Comb Total	0		0		5150		5105		0		5125		0		0	
ADT	ADT: 5,128		AADT: 5,128													

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: SB

9/11/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12:00 AM	0	9	3	0	1	0	0	0	0	0	0	0	0	13
1:00	0	2	0	0	0	0	0	0	0	0	0	0	0	2
2:00	0	3	1	0	0	0	0	0	0	0	0	0	0	4
3:00	0	2	1	0	1	0	0	0	0	0	0	0	0	4
4:00	0	3	3	0	0	1	0	0	1	0	0	0	0	8
5:00	0	20	8	0	1	0	0	0	0	0	0	0	0	29
6:00	0	56	22	1	7	2	0	0	1	0	0	0	0	89
7:00	0	95	35	2	12	2	1	1	4	0	0	0	0	152
8:00	1	99	34	2	10	1	0	1	1	1	0	0	0	150
9:00	0	53	23	2	8	2	0	2	2	0	0	0	0	92
10:00	1	74	29	1	13	1	0	0	2	1	0	0	0	122
11:00	1	69	36	1	9	1	0	0	1	0	0	0	0	118
12:00 PM	0	92	43	1	12	1	0	2	1	0	0	0	0	152
1:00	2	94	27	0	11	1	0	1	1	0	0	0	0	137
2:00	0	130	37	1	17	2	0	1	2	1	0	0	0	191
3:00	0	165	53	1	24	0	0	0	0	0	0	0	0	243
4:00	4	178	57	1	19	0	0	0	2	0	0	0	0	261
5:00	3	215	54	0	14	0	0	0	1	0	0	0	0	287
6:00	2	120	31	1	6	0	0	0	1	0	0	0	0	161
7:00	1	91	22	0	8	0	0	1	0	0	0	0	0	123
8:00	0	67	13	0	1	0	0	0	0	0	0	0	0	81
9:00	2	33	8	0	0	0	0	0	0	0	0	0	0	43
10:00	2	22	4	1	0	0	0	0	0	0	0	0	0	29
11:00	2	12	2	0	1	0	0	0	0	0	0	0	0	17
Total	21	1704	546	15	175	14	1	9	20	3	0	0	0	2508
Percent	0.8%	67.9%	21.8%	0.6%	7.0%	0.6%	0.0%	0.4%	0.8%	0.1%	0.0%	0.0%	0.0%	
AM Peak	8:00	8:00	11:00	7:00	10:00	6:00	7:00	9:00	7:00	8:00				7:00
	1	99	36	2	13	2	1	2	4	1	*	*	*	152
PM Peak	4:00	5:00	4:00	12:00 PM	3:00	2:00		12:00 PM	2:00	2:00				5:00
	4	215	57	1	24	2	*	2	2	1	*	*	*	287

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: SB

9/12/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12:00 AM	0	5	3	0	0	0	0	0	0	0	0	0	0	8
1:00	0	1	2	0	0	0	0	0	0	0	0	0	0	3
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
4:00	0	2	1	0	1	1	0	1	1	0	0	0	0	7
5:00	0	25	14	0	6	0	0	0	0	0	0	0	0	45
6:00	0	62	19	0	5	0	0	0	3	0	0	0	0	89
7:00	2	90	35	4	7	0	0	0	1	0	0	0	0	139
8:00	1	74	36	3	17	4	1	1	0	1	0	0	0	138
9:00	1	61	29	3	8	6	0	0	1	0	0	0	0	109
10:00	1	65	26	0	7	3	2	0	1	0	0	0	0	105
11:00	0	93	22	2	12	2	0	2	2	0	0	0	0	135
12:00 PM	2	99	36	1	9	4	1	1	1	0	0	0	0	154
1:00	1	100	28	4	10	3	0	3	3	0	0	0	0	152
2:00	3	152	48	1	12	3	0	4	1	0	0	0	0	224
3:00	2	129	53	0	14	1	0	1	2	0	0	0	0	202
4:00	1	158	54	1	15	0	0	1	1	0	0	0	0	231
5:00	1	216	40	0	11	0	0	0	0	0	0	0	0	268
6:00	2	118	37	0	9	0	0	0	0	0	0	0	0	166
7:00	0	100	21	0	7	0	0	1	0	0	0	0	0	129
8:00	2	82	16	0	1	0	0	0	0	0	0	0	0	101
9:00	0	37	5	0	1	0	0	0	0	0	0	0	0	43
10:00	3	17	4	0	0	0	0	0	0	0	0	0	0	24
11:00	1	16	6	0	0	0	0	0	0	0	0	0	0	23
Total	23	1706	536	19	152	27	4	15	17	1	0	0	0	2500
Percent	0.9%	68.2%	21.4%	0.8%	6.1%	1.1%	0.2%	0.6%	0.7%	0.0%	0.0%	0.0%	0.0%	
AM Peak	7:00	11:00	8:00	7:00	8:00	9:00	10:00	11:00	6:00	8:00				7:00
	2	93	36	4	17	6	2	2	3	1	*	*	*	139
PM Peak	2:00	5:00	4:00	1:00	4:00	12:00 PM	12:00 PM	2:00	1:00					5:00
	3	216	54	4	15	4	1	4	3	*	*	*	*	268
Grand Total	44	3410	1082	34	327	41	5	24	37	4	0	0	0	5008
Percent	0.9%	68.1%	21.6%	0.7%	6.5%	0.8%	0.1%	0.5%	0.7%	0.1%	0.0%	0.0%	0.0%	

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: NB

9/11/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12:00 AM	0	6	1	0	1	0	0	0	0	0	0	0	0	8
1:00	0	6	0	0	0	0	0	0	0	0	0	0	0	6
2:00	0	4	1	0	0	0	0	0	0	0	0	0	0	5
3:00	0	3	2	0	2	1	0	0	0	0	0	0	0	8
4:00	0	7	5	0	0	0	0	0	0	0	0	0	0	12
5:00	1	37	31	0	5	0	0	0	0	0	0	0	0	74
6:00	1	119	43	1	13	0	0	0	1	0	0	0	0	178
7:00	0	172	58	1	15	1	0	4	1	0	0	0	0	252
8:00	1	162	41	2	15	2	0	0	2	0	0	0	0	225
9:00	0	113	27	0	12	1	1	0	3	0	0	0	0	157
10:00	0	88	35	0	16	1	0	2	2	0	0	0	0	144
11:00	2	83	30	0	11	1	1	3	3	0	0	0	0	134
12:00 PM	1	67	22	0	9	2	0	4	4	1	0	0	0	110
1:00	3	93	32	1	11	1	0	4	1	0	0	0	0	146
2:00	3	120	32	1	17	3	0	1	1	0	0	0	0	178
3:00	2	134	50	1	26	2	0	4	0	0	0	0	0	219
4:00	3	135	49	1	15	0	0	0	0	0	0	0	0	203
5:00	3	128	34	0	8	1	0	0	1	0	0	0	0	175
6:00	3	105	28	1	7	0	0	0	0	0	0	0	0	144
7:00	0	75	24	0	7	0	0	0	0	0	0	0	0	106
8:00	0	48	12	0	2	0	0	0	0	0	0	0	0	62
9:00	0	43	9	0	3	0	0	1	0	0	0	0	0	56
10:00	0	19	4	0	1	0	0	0	0	0	0	0	0	24
11:00	0	10	4	0	2	0	0	0	0	0	0	0	0	16
Total	23	1777	574	9	198	16	2	23	19	1	0	0	0	2642
Percent	0.9%	67.3%	21.7%	0.3%	7.5%	0.6%	0.1%	0.9%	0.7%	0.0%	0.0%	0.0%	0.0%	
AM Peak	11:00	7:00	7:00	8:00	10:00	8:00	9:00	7:00	9:00					7:00
	2	172	58	2	16	2	1	4	3	*	*	*	*	252
PM Peak	1:00	4:00	3:00	1:00	3:00	2:00		12:00 PM	12:00 PM	12:00 PM				3:00
	3	135	50	1	26	3	*	4	4	1	*	*	*	219

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: NB

9/12/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12:00 AM	0	3	0	0	1	0	0	0	0	0	0	0	0	4
1:00	0	1	0	0	0	0	0	0	0	0	0	0	0	1
2:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
3:00	0	4	0	0	2	0	0	0	0	0	0	0	0	6
4:00	0	12	7	1	1	0	0	0	0	0	0	0	0	21
5:00	2	41	29	1	5	0	0	1	0	0	0	0	0	79
6:00	1	113	49	1	14	1	0	0	0	1	0	0	0	180
7:00	0	158	47	1	12	2	0	1	2	0	0	0	0	223
8:00	2	152	45	3	9	4	1	0	1	0	0	0	0	217
9:00	1	106	30	1	12	2	0	1	3	0	0	0	0	156
10:00	0	87	29	2	12	3	0	0	0	0	0	0	0	133
11:00	1	72	32	1	11	1	1	0	3	0	0	0	0	122
12:00 PM	2	123	27	1	15	0	0	0	1	0	0	0	0	169
1:00	3	90	30	5	14	3	1	2	3	0	0	0	0	151
2:00	2	107	35	0	13	1	0	4	3	0	0	0	0	165
3:00	1	120	41	0	26	1	0	4	1	0	0	0	0	194
4:00	1	134	53	0	21	0	0	2	0	0	0	0	0	211
5:00	2	126	45	0	7	0	0	0	0	0	0	0	0	180
6:00	2	93	25	0	4	0	0	1	0	0	0	0	0	125
7:00	0	69	19	0	4	0	0	1	0	0	0	0	0	93
8:00	4	56	10	0	4	0	0	0	1	0	0	0	0	75
9:00	0	36	9	0	2	0	0	1	0	0	0	0	0	48
10:00	1	18	3	0	3	0	0	0	0	0	0	0	0	25
11:00	0	19	2	0	1	0	0	0	0	0	0	0	0	22
Total	25	1743	569	17	193	18	3	18	18	1	0	0	0	2605
Percent	1.0%	66.9%	21.8%	0.7%	7.4%	0.7%	0.1%	0.7%	0.7%	0.0%	0.0%	0.0%	0.0%	
AM Peak	5:00	7:00	6:00	8:00	6:00	8:00	8:00	5:00	9:00	6:00				7:00
	2	158	49	3	14	4	1	1	3	1	*	*	*	223
PM Peak	8:00	4:00	4:00	1:00	3:00	1:00	1:00	2:00	1:00					4:00
	4	134	53	5	26	3	1	4	3	*	*	*	*	211
Grand Total	48	3520	1143	26	391	34	5	41	37	2	0	0	0	5247
Percent	0.9%	67.1%	21.8%	0.5%	7.5%	0.6%	0.1%	0.8%	0.7%	0.0%	0.0%	0.0%	0.0%	

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: Combined

9/11/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12:00 AM	0	15	4	0	2	0	0	0	0	0	0	0	0	21
1:00	0	8	0	0	0	0	0	0	0	0	0	0	0	8
2:00	0	7	2	0	0	0	0	0	0	0	0	0	0	9
3:00	0	5	3	0	3	1	0	0	0	0	0	0	0	12
4:00	0	10	8	0	0	1	0	0	1	0	0	0	0	20
5:00	1	57	39	0	6	0	0	0	0	0	0	0	0	103
6:00	1	175	65	2	20	2	0	0	2	0	0	0	0	267
7:00	0	267	93	3	27	3	1	5	5	0	0	0	0	404
8:00	2	261	75	4	25	3	0	1	3	1	0	0	0	375
9:00	0	166	50	2	20	3	1	2	5	0	0	0	0	249
10:00	1	162	64	1	29	2	0	2	4	1	0	0	0	266
11:00	3	152	66	1	20	2	1	3	4	0	0	0	0	252
12:00 PM	1	159	65	1	21	3	0	6	5	1	0	0	0	262
1:00	5	187	59	1	22	2	0	5	2	0	0	0	0	283
2:00	3	250	69	2	34	5	0	2	3	1	0	0	0	369
3:00	2	299	103	2	50	2	0	4	0	0	0	0	0	462
4:00	7	313	106	2	34	0	0	0	2	0	0	0	0	464
5:00	6	343	88	0	22	1	0	0	2	0	0	0	0	462
6:00	5	225	59	2	13	0	0	0	1	0	0	0	0	305
7:00	1	166	46	0	15	0	0	1	0	0	0	0	0	229
8:00	0	115	25	0	3	0	0	0	0	0	0	0	0	143
9:00	2	76	17	0	3	0	0	1	0	0	0	0	0	99
10:00	2	41	8	1	1	0	0	0	0	0	0	0	0	53
11:00	2	22	6	0	3	0	0	0	0	0	0	0	0	33
Total	44	3481	1120	24	373	30	3	32	39	4	0	0	0	5150
Percent	0.9%	67.6%	21.7%	0.5%	7.2%	0.6%	0.1%	0.6%	0.8%	0.1%	0.0%	0.0%	0.0%	
AM Peak	11:00	7:00	7:00	8:00	10:00	7:00	7:00	7:00	7:00	8:00				7:00
	3	267	93	4	29	3	1	5	5	1	*	*	*	404
PM Peak	4:00	5:00	4:00	2:00	3:00	2:00		12:00 PM	12:00 PM	12:00 PM				4:00
	7	343	106	2	50	5	*	6	5	1	*	*	*	464

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: Combined

9/12/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	Total
12:00 AM	0	8	3	0	1	0	0	0	0	0	0	0	0	12
1:00	0	2	2	0	0	0	0	0	0	0	0	0	0	4
2:00	0	3	2	0	0	0	0	0	0	0	0	0	0	5
3:00	0	8	1	0	2	0	0	0	0	0	0	0	0	11
4:00	0	14	8	1	2	1	0	1	1	0	0	0	0	28
5:00	2	66	43	1	11	0	0	1	0	0	0	0	0	124
6:00	1	175	68	1	19	1	0	0	3	1	0	0	0	269
7:00	2	248	82	5	19	2	0	1	3	0	0	0	0	362
8:00	3	226	81	6	26	8	2	1	1	1	0	0	0	355
9:00	2	167	59	4	20	8	0	1	4	0	0	0	0	265
10:00	1	152	55	2	19	6	2	0	1	0	0	0	0	238
11:00	1	165	54	3	23	3	1	2	5	0	0	0	0	257
12:00 PM	4	222	63	2	24	4	1	1	2	0	0	0	0	323
1:00	4	190	58	9	24	6	1	5	6	0	0	0	0	303
2:00	5	259	83	1	25	4	0	8	4	0	0	0	0	389
3:00	3	249	94	0	40	2	0	5	3	0	0	0	0	396
4:00	2	292	107	1	36	0	0	3	1	0	0	0	0	442
5:00	3	342	85	0	18	0	0	0	0	0	0	0	0	448
6:00	4	211	62	0	13	0	0	1	0	0	0	0	0	291
7:00	0	169	40	0	11	0	0	2	0	0	0	0	0	222
8:00	6	138	26	0	5	0	0	0	1	0	0	0	0	176
9:00	0	73	14	0	3	0	0	1	0	0	0	0	0	91
10:00	4	35	7	0	3	0	0	0	0	0	0	0	0	49
11:00	1	35	8	0	1	0	0	0	0	0	0	0	0	45
Total	48	3449	1105	36	345	45	7	33	35	2	0	0	0	5105
Percent	0.9%	67.6%	21.6%	0.7%	6.8%	0.9%	0.1%	0.6%	0.7%	0.0%	0.0%	0.0%	0.0%	
AM Peak	8:00	7:00	7:00	8:00	8:00	8:00	8:00	11:00	11:00	6:00				7:00
	3	248	82	6	26	8	2	2	5	1	*	*	*	362
PM Peak	8:00	5:00	4:00	1:00	3:00	1:00	12:00 PM	2:00	1:00					5:00
	6	342	107	9	40	6	1	8	6	*	*	*	*	448
Grand Total	92	6930	2225	60	718	75	10	65	74	6	0	0	0	10255
Percent	0.9%	67.6%	21.7%	0.6%	7.0%	0.7%	0.1%	0.6%	0.7%	0.1%	0.0%	0.0%	0.0%	

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: SB

9/11/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	0	2	6	3	1	1	0	0	0	13
1:00	0	0	0	0	1	0	0	1	0	0	0	0	0	2
2:00	0	0	0	0	0	2	1	0	1	0	0	0	0	4
3:00	0	0	0	0	0	1	2	1	0	0	0	0	0	4
4:00	0	0	0	0	0	1	3	2	1	1	0	0	0	8
5:00	0	0	0	0	2	5	14	5	2	1	0	0	0	29
6:00	0	0	0	2	6	17	39	19	5	0	0	0	1	89
7:00	2	0	2	2	15	23	59	40	8	1	0	0	0	152
8:00	0	0	0	1	10	25	64	39	9	2	0	0	0	150
9:00	0	0	1	1	3	16	42	25	2	2	0	0	0	92
10:00	0	0	0	3	13	18	52	31	5	0	0	0	0	122
11:00	0	0	5	1	12	19	48	32	1	0	0	0	0	118
12:00 PM	0	0	0	3	9	34	61	36	9	0	0	0	0	152
1:00	0	0	0	9	10	45	47	21	5	0	0	0	0	137
2:00	0	0	1	3	10	33	89	43	8	4	0	0	0	191
3:00	0	0	0	1	3	31	113	79	15	1	0	0	0	243
4:00	0	0	0	0	5	40	116	81	14	5	0	0	0	261
5:00	0	1	0	3	7	39	101	112	23	1	0	0	0	287
6:00	0	0	0	0	5	23	67	61	3	1	1	0	0	161
7:00	0	0	0	0	5	28	55	31	4	0	0	0	0	123
8:00	0	0	0	0	5	11	42	18	5	0	0	0	0	81
9:00	1	0	0	1	6	5	21	7	1	1	0	0	0	43
10:00	0	0	0	1	1	3	11	8	4	1	0	0	0	29
11:00	0	0	0	2	1	2	6	4	0	1	0	0	1	17
Total	3	1	9	33	129	423	1059	699	126	23	1	0	2	2508

New Line	Percentile	15th	50th	85th	95th
	Speed	37	42	47	49

Mean Speed (Average)	43.4
10 MPH Pace Speed	41-50
Number in Pace	1758
Percent in Pace	70.0%
Number > 45 MPH	851
Percent > 45 MPH	33.9%

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: SB

9/12/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	1	1	3	1	1	1	0	0	0	8
1:00	0	0	0	0	0	2	1	0	0	0	0	0	0	3
2:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3:00	0	0	0	0	0	2	1	1	1	0	0	0	0	5
4:00	0	0	0	0	0	1	3	2	0	1	0	0	0	7
5:00	0	0	1	0	4	11	17	9	1	1	1	0	0	45
6:00	0	0	0	4	4	13	37	24	4	3	0	0	0	89
7:00	0	0	2	0	6	28	60	36	5	1	1	0	0	139
8:00	0	0	1	2	7	25	48	47	8	0	0	0	0	138
9:00	0	0	0	1	8	29	42	21	6	1	1	0	0	109
10:00	0	0	0	3	12	28	46	12	2	2	0	0	0	105
11:00	0	0	1	4	8	36	46	34	5	1	0	0	0	135
12:00 PM	0	0	2	5	10	43	63	26	3	2	0	0	0	154
1:00	2	0	0	9	11	33	61	28	6	2	0	0	0	152
2:00	0	0	1	1	14	36	115	46	9	2	0	0	0	224
3:00	0	0	0	1	13	50	71	54	12	0	1	0	0	202
4:00	1	0	0	0	6	25	98	83	18	0	0	0	0	231
5:00	0	0	0	1	6	43	105	99	13	1	0	0	0	268
6:00	0	0	0	3	5	28	76	46	8	0	0	0	0	166
7:00	0	0	0	2	6	28	65	24	4	0	0	0	0	129
8:00	0	0	0	0	5	17	58	19	1	1	0	0	0	101
9:00	0	0	0	1	6	11	15	6	4	0	0	0	0	43
10:00	0	0	0	2	0	9	8	3	1	0	1	0	0	24
11:00	0	1	0	0	0	2	9	9	2	0	0	0	0	23
Total	3	1	8	39	132	501	1048	630	114	19	5	0	0	2500

New Line	Percentile	15th	50th	85th	95th
	Speed	37	42	46	49
	Mean Speed (Average)	43.0			
	10 MPH Pace Speed	41-50			
	Number in Pace	1649			
	Percent in Pace	67.0%			
	Number > 45 MPH	768			
	Percent > 45 MPH	30.7%			
Grand Total	Percentile	15th	50th	85th	95th
	Speed	37	42	47	49
	Mean Speed (Average)	43.2			
	10 MPH Pace Speed	41-50			
	Number in Pace	3418			
	Percent in Pace	69.0%			
	Number > 45 MPH	1619			
	Percent > 45 MPH	32.3%			

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: NB

9/11/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	3	3	1	0	1	0	0	0	0	8
1:00	0	0	0	1	1	2	1	0	1	0	0	0	0	6
2:00	1	0	0	0	1	3	0	0	0	0	0	0	0	5
3:00	0	0	0	1	0	4	1	2	0	0	0	0	0	8
4:00	0	0	0	0	0	2	3	4	2	1	0	0	0	12
5:00	0	0	0	0	3	20	34	15	2	0	0	0	0	74
6:00	0	0	0	6	17	51	73	26	5	0	0	0	0	178
7:00	0	0	0	4	25	65	107	45	4	2	0	0	0	252
8:00	1	0	0	8	25	50	100	35	4	2	0	0	0	225
9:00	0	0	0	6	10	46	58	31	6	0	0	0	0	157
10:00	0	1	0	8	11	38	55	28	3	0	0	0	0	144
11:00	0	1	0	7	26	32	46	17	3	2	0	0	0	134
12:00 PM	0	0	0	3	15	28	41	21	2	0	0	0	0	110
1:00	1	0	1	6	17	44	59	11	7	0	0	0	0	146
2:00	1	0	2	4	26	45	66	27	7	0	0	0	0	178
3:00	0	1	0	9	25	53	73	55	3	0	0	0	0	219
4:00	0	0	1	4	38	37	70	45	5	3	0	0	0	203
5:00	0	2	0	2	22	38	64	38	9	0	0	0	0	175
6:00	0	0	1	7	12	29	55	31	7	2	0	0	0	144
7:00	0	0	0	3	15	28	39	14	6	1	0	0	0	106
8:00	0	0	0	2	13	20	12	11	3	0	1	0	0	62
9:00	0	0	0	6	12	17	11	6	4	0	0	0	0	56
10:00	0	0	0	0	4	7	9	3	0	1	0	0	0	24
11:00	0	0	0	0	2	9	3	1	1	0	0	0	0	16
Total	4	5	5	87	323	671	981	466	85	14	1	0	0	2642

New Line		Percentile	15th	50th	85th	95th
		Speed	34	40	45	48
	Mean Speed (Average)		41.2			
	10 MPH Pace Speed		36-45			
	Number in Pace		1652			
	Percent in Pace		63.0%			
	Number > 45 MPH		566			
	Percent > 45 MPH		21.4%			

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: NB

9/12/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	1	0	0	3	0	0	0	0	0	0	4
1:00	0	0	0	0	0	1	0	0	0	0	0	0	0	1
2:00	0	0	0	0	0	1	3	1	0	0	0	0	0	5
3:00	0	0	0	0	1	1	3	1	0	0	0	0	0	6
4:00	0	0	0	1	1	2	10	4	1	2	0	0	0	21
5:00	1	0	0	1	6	20	31	15	4	1	0	0	0	79
6:00	0	0	0	2	12	46	87	27	4	1	0	1	0	180
7:00	1	1	1	3	23	68	86	33	5	1	0	1	0	223
8:00	0	0	0	7	23	65	96	23	2	1	0	0	0	217
9:00	0	0	1	8	24	44	46	28	5	0	0	0	0	156
10:00	0	0	0	5	16	33	54	22	3	0	0	0	0	133
11:00	1	0	2	2	16	33	47	20	1	0	0	0	0	122
12:00 PM	0	2	0	3	20	34	75	32	3	0	0	0	0	169
1:00	0	0	3	5	13	38	48	29	12	1	2	0	0	151
2:00	0	0	0	6	25	34	63	30	7	0	0	0	0	165
3:00	1	0	1	5	25	50	54	46	11	1	0	0	0	194
4:00	1	0	1	10	32	48	70	37	11	1	0	0	0	211
5:00	0	0	0	4	27	36	77	25	10	1	0	0	0	180
6:00	0	0	1	3	7	33	55	19	5	1	0	0	1	125
7:00	0	0	0	6	10	23	39	11	3	0	1	0	0	93
8:00	0	0	0	5	8	29	19	11	1	2	0	0	0	75
9:00	0	0	0	2	6	15	13	10	1	1	0	0	0	48
10:00	0	0	2	1	3	7	6	6	0	0	0	0	0	25
11:00	0	1	0	2	3	5	9	1	1	0	0	0	0	22
Total	5	4	12	82	301	666	994	431	90	14	3	2	1	2605

New Line	Percentile	15th	50th	85th	95th
	Speed	34	40	45	49
	Mean Speed (Average)	41.2			
	10 MPH Pace Speed	36-45			
	Number in Pace	1633			
	Percent in Pace	64.0%			
	Number > 45 MPH	541			
	Percent > 45 MPH	20.8%			
Grand Total	Percentile	15th	50th	85th	95th
	Speed	34	40	45	48
	Mean Speed (Average)	41.2			
	10 MPH Pace Speed	36-45			
	Number in Pace	3298			
	Percent in Pace	63.0%			
	Number > 45 MPH	1107			
	Percent > 45 MPH	21.1%			

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: Combined

9/11/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	0	3	5	7	3	2	1	0	0	0	21
1:00	0	0	0	1	2	2	1	1	1	0	0	0	0	8
2:00	1	0	0	0	1	5	1	0	1	0	0	0	0	9
3:00	0	0	0	1	0	5	3	3	0	0	0	0	0	12
4:00	0	0	0	0	0	3	6	6	3	2	0	0	0	20
5:00	0	0	0	0	5	25	48	20	4	1	0	0	0	103
6:00	0	0	0	8	23	68	112	45	10	0	0	0	1	267
7:00	2	0	2	6	40	88	166	85	12	3	0	0	0	404
8:00	1	0	0	9	35	75	164	74	13	4	0	0	0	375
9:00	0	0	1	7	13	62	100	56	8	2	0	0	0	249
10:00	0	1	0	11	24	56	107	59	8	0	0	0	0	266
11:00	0	1	5	8	38	51	94	49	4	2	0	0	0	252
12:00 PM	0	0	0	6	24	62	102	57	11	0	0	0	0	262
1:00	1	0	1	15	27	89	106	32	12	0	0	0	0	283
2:00	1	0	3	7	36	78	155	70	15	4	0	0	0	369
3:00	0	1	0	10	28	84	186	134	18	1	0	0	0	462
4:00	0	0	1	4	43	77	186	126	19	8	0	0	0	464
5:00	0	3	0	5	29	77	165	150	32	1	0	0	0	462
6:00	0	0	1	7	17	52	122	92	10	3	1	0	0	305
7:00	0	0	0	3	20	56	94	45	10	1	0	0	0	229
8:00	0	0	0	2	18	31	54	29	8	0	1	0	0	143
9:00	1	0	0	7	18	22	32	13	5	1	0	0	0	99
10:00	0	0	0	1	5	10	20	11	4	2	0	0	0	53
11:00	0	0	0	2	3	11	9	5	1	1	0	0	1	33
Total	7	6	14	120	452	1094	2040	1165	211	37	2	0	2	5150
New Line			Percentile	15th	50th	85th	95th							
			Speed	35	41	46	49							
		Mean Speed (Average)		42.2										
		10 MPH Pace Speed		39-48										
		Number in Pace		3218										
		Percent in Pace		62.0%										
		Number > 45 MPH		1417										
		Percent > 45 MPH		27.5%										

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: N/O Rte 146
Tech: YVM, KM
Latitude: 42.091495
Longitude: -71.694814

Direction: Combined

9/12/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	1	1	1	6	1	1	1	0	0	0	12
1:00	0	0	0	0	0	3	1	0	0	0	0	0	0	4
2:00	0	0	0	0	0	1	3	1	0	0	0	0	0	5
3:00	0	0	0	0	1	3	4	2	1	0	0	0	0	11
4:00	0	0	0	1	1	3	13	6	1	3	0	0	0	28
5:00	1	0	1	1	10	31	48	24	5	2	1	0	0	124
6:00	0	0	0	6	16	59	124	51	8	4	0	1	0	269
7:00	1	1	3	3	29	96	146	69	10	2	1	1	0	362
8:00	0	0	1	9	30	90	144	70	10	1	0	0	0	355
9:00	0	0	1	9	32	73	88	49	11	1	1	0	0	265
10:00	0	0	0	8	28	61	100	34	5	2	0	0	0	238
11:00	1	0	3	6	24	69	93	54	6	1	0	0	0	257
12:00 PM	0	2	2	8	30	77	138	58	6	2	0	0	0	323
1:00	2	0	3	14	24	71	109	57	18	3	2	0	0	303
2:00	0	0	1	7	39	70	178	76	16	2	0	0	0	389
3:00	1	0	1	6	38	100	125	100	23	1	1	0	0	396
4:00	2	0	1	10	38	73	168	120	29	1	0	0	0	442
5:00	0	0	0	5	33	79	182	124	23	2	0	0	0	448
6:00	0	0	1	6	12	61	131	65	13	1	0	0	1	291
7:00	0	0	0	8	16	51	104	35	7	0	1	0	0	222
8:00	0	0	0	5	13	46	77	30	2	3	0	0	0	176
9:00	0	0	0	3	12	26	28	16	5	1	0	0	0	91
10:00	0	0	2	3	3	16	14	9	1	0	1	0	0	49
11:00	0	2	0	2	3	7	18	10	3	0	0	0	0	45
Total	8	5	20	121	433	1167	2042	1061	204	33	8	2	1	5105

New Line	Percentile	15th	50th	85th	95th
	Speed	35	41	46	49
	Mean Speed (Average)	42.1			
	10 MPH Pace Speed	37-46			
	Number in Pace	3165			
	Percent in Pace	63.0%			
	Number > 45 MPH	1309			
	Percent > 45 MPH	25.6%			
Grand Total	Percentile	15th	50th	85th	95th
	Speed	35	41	46	49
	Mean Speed (Average)	42.1			
	10 MPH Pace Speed	38-47			
	Number in Pace	6394			
	Percent in Pace	63.0%			
	Number > 45 MPH	2726			
	Percent > 45 MPH	26.6%			

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

9/9/2024	9/9/2024		9/10/2024		9/11/2024		9/12/2024		9/13/2024		Weekday Average		9/14/2024		9/15/2024	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	*	*	*	*	16	34	14	37	*	*	15	36	*	*	*	*
1:00	*	*	*	*	9	21	7	17	*	*	8	19	*	*	*	*
2:00	*	*	*	*	15	17	14	16	*	*	14	16	*	*	*	*
3:00	*	*	*	*	38	21	31	24	*	*	34	22	*	*	*	*
4:00	*	*	*	*	118	32	115	30	*	*	116	31	*	*	*	*
5:00	*	*	*	*	261	92	279	90	*	*	270	91	*	*	*	*
6:00	*	*	*	*	586	236	548	227	*	*	567	232	*	*	*	*
7:00	*	*	*	*	612	289	592	308	*	*	602	298	*	*	*	*
8:00	*	*	*	*	483	293	499	305	*	*	491	299	*	*	*	*
9:00	*	*	*	*	354	246	346	259	*	*	350	252	*	*	*	*
10:00	*	*	*	*	300	240	326	243	*	*	313	242	*	*	*	*
11:00	*	*	*	*	315	283	299	305	*	*	307	294	*	*	*	*
12:00 PM	*	*	*	*	282	332	351	358	*	*	316	345	*	*	*	*
1:00	*	*	*	*	313	340	363	356	*	*	338	348	*	*	*	*
2:00	*	*	*	*	330	464	370	453	*	*	350	458	*	*	*	*
3:00	*	*	*	*	431	547	346	555	*	*	388	551	*	*	*	*
4:00	*	*	*	*	357	574	358	566	*	*	358	570	*	*	*	*
5:00	*	*	*	*	309	609	354	597	*	*	332	603	*	*	*	*
6:00	*	*	*	*	275	435	281	398	*	*	278	416	*	*	*	*
7:00	*	*	*	*	221	314	208	344	*	*	214	329	*	*	*	*
8:00	*	*	*	*	121	247	143	261	*	*	132	254	*	*	*	*
9:00	*	*	*	*	99	145	82	166	*	*	90	156	*	*	*	*
10:00	*	*	*	*	53	94	56	95	*	*	54	94	*	*	*	*
11:00	*	*	*	*	27	58	33	62	*	*	30	60	*	*	*	*
Total	0	0	0	0	5925	5963	6015	6072	0	0	5967	6016	0	0	0	0
Day	0		0		11888		12087		0		11983		0		0	
AM Peak					7:00	8:00	7:00	7:00			7:00	8:00				
Volume					612	293	592	308			602	299				
PM Peak					3:00	5:00	2:00	5:00			3:00	5:00				
Volume					431	609	370	597			388	603				
Comb Total	0		0		11888		12087		0		11983		0		0	
ADT	ADT: 11,988		AADT: 11,988													

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: NB

9/11/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class	Total
12:00 AM	0	12	2	1	1	0	0	0	0	0	0	0	0	0	16
1:00	0	7	1	0	1	0	0	0	0	0	0	0	0	0	9
2:00	0	8	4	1	1	0	0	0	1	0	0	0	0	0	15
3:00	0	24	6	0	4	0	0	0	4	0	0	0	0	0	38
4:00	0	61	33	4	17	1	0	0	2	0	0	0	0	0	118
5:00	1	149	78	1	26	2	0	1	2	0	0	0	0	1	261
6:00	1	355	135	6	54	14	2	5	7	0	0	0	0	7	586
7:00	2	399	123	3	52	8	0	12	3	0	0	0	0	10	612
8:00	1	310	98	10	39	10	1	7	3	0	0	0	0	4	483
9:00	3	211	77	6	35	5	1	4	10	1	0	0	0	1	354
10:00	1	171	71	4	35	5	2	5	3	1	0	0	0	2	300
11:00	2	185	68	7	27	9	1	2	11	1	0	0	0	2	315
12:00 PM	5	168	60	3	25	8	1	5	4	0	0	0	0	3	282
1:00	3	183	64	3	30	4	3	10	3	1	0	0	0	9	313
2:00	7	200	69	3	34	4	0	2	4	2	0	0	0	5	330
3:00	2	253	96	8	49	2	0	3	5	0	0	0	0	13	431
4:00	5	224	89	3	25	2	0	4	0	0	0	0	0	5	357
5:00	6	226	57	3	13	0	0	1	0	0	0	0	0	3	309
6:00	3	199	46	3	15	1	0	5	0	0	0	0	0	3	275
7:00	0	154	40	0	21	0	0	3	0	0	0	0	0	3	221
8:00	0	97	19	0	5	0	0	0	0	0	0	0	0	0	121
9:00	2	78	10	0	7	0	0	2	0	0	0	0	0	0	99
10:00	0	45	7	0	1	0	0	0	0	0	0	0	0	0	53
11:00	0	15	11	0	1	0	0	0	0	0	0	0	0	0	27
Total	44	3734	1264	69	518	75	11	71	62	6	0	0	0	71	5925
Percent	0.7%	63.0%	21.3%	1.2%	8.7%	1.3%	0.2%	1.2%	1.0%	0.1%	0.0%	0.0%	0.0%	1.2%	
AM Peak	9:00	7:00	6:00	8:00	6:00	6:00	6:00	7:00	11:00	9:00				7:00	7:00
	3	399	135	10	54	14	2	12	11	1	*	*	*	10	612
PM Peak	2:00	3:00	3:00	3:00	3:00	12:00 PM	1:00	1:00	3:00	2:00				3:00	3:00
	7	253	96	8	49	8	3	10	5	2	*	*	*	13	431

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: NB

9/12/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class	Total
12:00 AM	0	10	3	0	1	0	0	0	0	0	0	0	0	0	14
1:00	0	6	0	1	0	0	0	0	0	0	0	0	0	0	7
2:00	0	8	1	0	4	0	0	0	1	0	0	0	0	0	14
3:00	0	18	8	1	3	0	0	0	0	0	1	0	0	0	31
4:00	0	58	38	2	11	1	0	1	4	0	0	0	0	0	115
5:00	2	151	86	1	29	3	0	4	3	0	0	0	0	0	279
6:00	4	315	130	6	64	5	3	6	7	0	1	0	0	7	548
7:00	4	385	134	3	43	12	0	3	1	0	0	0	1	6	592
8:00	4	317	93	5	40	9	2	7	11	1	0	0	0	10	499
9:00	0	236	62	3	25	4	1	4	5	2	0	0	0	4	346
10:00	3	212	64	2	25	7	1	4	5	1	0	0	0	2	326
11:00	5	187	51	6	26	5	1	6	8	0	0	0	0	4	299
12:00 PM	4	223	63	6	32	6	3	3	5	2	0	0	0	4	351
1:00	5	198	79	9	43	6	0	7	6	2	0	0	0	8	363
2:00	5	225	71	7	36	4	0	6	7	2	0	0	0	7	370
3:00	3	188	87	7	49	3	1	3	1	0	0	0	0	4	346
4:00	3	223	88	3	32	0	0	3	1	0	0	0	0	5	358
5:00	3	234	81	1	27	0	0	2	0	0	0	0	0	6	354
6:00	1	211	43	3	15	1	0	3	1	0	0	0	0	3	281
7:00	0	152	39	0	14	0	0	2	0	0	0	0	0	1	208
8:00	6	105	25	0	7	0	0	0	0	0	0	0	0	0	143
9:00	1	65	11	0	4	0	0	1	0	0	0	0	0	0	82
10:00	1	43	7	0	4	0	0	1	0	0	0	0	0	0	56
11:00	0	29	4	0	0	0	0	0	0	0	0	0	0	0	33
Total	54	3799	1268	66	534	66	12	66	66	10	2	0	1	71	6015
Percent	0.9%	63.2%	21.1%	1.1%	8.9%	1.1%	0.2%	1.1%	1.1%	0.2%	0.0%	0.0%	0.0%	1.2%	
AM Peak	11:00	7:00	7:00	6:00	6:00	7:00	6:00	8:00	8:00	9:00	3:00		7:00	8:00	7:00
	5	385	134	6	64	12	3	7	11	2	1	*	1	10	592
PM Peak	8:00	5:00	4:00	1:00	3:00	12:00 PM	12:00 PM	1:00	2:00	12:00 PM				1:00	2:00
	6	234	88	9	49	6	3	7	7	2	*	*	*	8	370
Grand Total	98	7533	2532	135	1052	141	23	137	128	16	2	0	1	142	11940
Percent	0.8%	63.1%	21.2%	1.1%	8.8%	1.2%	0.2%	1.1%	1.1%	0.1%	0.0%	0.0%	0.0%	1.2%	

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: SB

9/11/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class	Total
12:00 AM	0	22	8	0	4	0	0	0	0	0	0	0	0	0	34
1:00	0	18	2	0	0	0	0	0	1	0	0	0	0	0	21
2:00	0	11	2	0	3	0	0	0	0	1	0	0	0	0	17
3:00	0	14	4	1	2	0	0	0	0	0	0	0	0	0	21
4:00	0	17	4	3	7	0	0	1	0	0	0	0	0	0	32
5:00	0	60	12	3	7	2	0	5	2	0	0	0	0	1	92
6:00	0	132	50	7	35	2	1	4	0	1	0	0	0	4	236
7:00	1	175	58	4	35	4	0	2	2	0	0	0	0	8	289
8:00	1	189	48	3	36	3	1	1	7	1	0	0	0	3	293
9:00	0	134	48	8	35	7	0	3	10	0	0	0	0	1	246
10:00	2	140	39	3	30	8	0	7	9	0	0	0	0	2	240
11:00	1	153	69	5	30	10	1	5	7	0	0	0	0	2	283
12:00 PM	6	187	63	10	37	9	0	8	7	0	0	0	0	5	332
1:00	4	196	70	2	34	13	0	5	9	0	1	0	0	6	340
2:00	5	283	93	7	39	16	0	5	6	1	0	0	0	9	464
3:00	4	357	97	4	64	2	0	4	6	0	0	0	0	9	547
4:00	4	378	112	2	54	4	0	7	1	1	0	0	0	11	574
5:00	4	443	101	3	50	1	0	0	0	0	0	0	0	7	609
6:00	4	321	61	3	40	1	0	0	0	0	0	0	0	5	435
7:00	2	232	48	0	29	0	0	2	0	0	0	0	0	1	314
8:00	1	183	38	0	24	0	0	1	0	0	0	0	0	0	247
9:00	1	114	22	0	8	0	0	0	0	0	0	0	0	0	145
10:00	2	67	16	1	8	0	0	0	0	0	0	0	0	0	94
11:00	2	43	9	0	3	0	0	1	0	0	0	0	0	0	58
Total	44	3869	1074	69	614	82	3	61	67	5	1	0	0	74	5963
Percent	0.7%	64.9%	18.0%	1.2%	10.3%	1.4%	0.1%	1.0%	1.1%	0.1%	0.0%	0.0%	0.0%	1.2%	
AM Peak	10:00	8:00	11:00	9:00	8:00	11:00	6:00	10:00	9:00	2:00				7:00	8:00
	2	189	69	8	36	10	1	7	10	1	*	*	*	8	293
PM Peak	12:00 PM	5:00	4:00	12:00 PM	3:00	2:00		12:00 PM	1:00	2:00	1:00			4:00	5:00
	6	443	112	10	64	16	*	8	9	1	1	*	*	11	609

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: SB

9/12/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class	Total
12:00 AM	1	29	3	0	3	0	0	1	0	0	0	0	0	0	37
1:00	0	12	1	1	2	0	0	0	1	0	0	0	0	0	17
2:00	0	14	2	0	0	0	0	0	0	0	0	0	0	0	16
3:00	0	17	2	1	2	1	0	0	1	0	0	0	0	0	24
4:00	0	15	5	1	7	1	0	0	0	0	0	0	0	1	30
5:00	0	52	20	2	11	1	0	3	1	0	0	0	0	0	90
6:00	0	127	52	7	28	2	0	3	4	0	0	0	0	4	227
7:00	1	178	68	9	33	5	0	1	4	1	0	0	0	8	308
8:00	4	164	69	11	35	7	1	3	5	0	0	0	0	6	305
9:00	4	146	48	2	29	10	0	5	9	0	0	0	0	6	259
10:00	2	143	36	5	38	9	1	4	4	0	0	0	0	1	243
11:00	0	208	48	3	30	4	0	4	7	0	0	0	0	1	305
12:00 PM	2	213	71	5	36	11	1	2	8	0	0	0	0	9	358
1:00	4	192	74	3	43	12	0	9	9	0	0	0	0	10	356
2:00	6	283	89	5	41	14	0	6	5	1	0	0	0	3	453
3:00	4	325	127	10	55	7	1	3	10	0	0	0	0	13	555
4:00	5	363	114	4	63	3	0	3	1	0	0	0	0	10	566
5:00	4	426	110	4	43	2	0	1	2	0	0	0	0	5	597
6:00	2	266	81	2	40	0	0	1	0	0	0	0	0	6	398
7:00	2	259	53	2	23	0	0	2	1	0	0	0	0	2	344
8:00	3	194	47	0	16	0	0	0	0	0	0	0	0	1	261
9:00	2	130	23	0	11	0	0	0	0	0	0	0	0	0	166
10:00	3	64	20	0	7	0	0	1	0	0	0	0	0	0	95
11:00	1	42	11	0	8	0	0	0	0	0	0	0	0	0	62
Total	50	3862	1174	77	604	89	4	52	72	2	0	0	0	86	6072
Percent	0.8%	63.6%	19.3%	1.3%	9.9%	1.5%	0.1%	0.9%	1.2%	0.0%	0.0%	0.0%	0.0%	1.4%	
AM Peak	8:00	11:00	8:00	8:00	10:00	9:00	8:00	9:00	9:00	7:00				7:00	7:00
	4	208	69	11	38	10	1	5	9	1	*	*	*	8	308
PM Peak	2:00	5:00	3:00	3:00	4:00	2:00	12:00 PM	1:00	3:00	2:00				3:00	5:00
	6	426	127	10	63	14	1	9	10	1	*	*	*	13	597
Grand Total	94	7731	2248	146	1218	171	7	113	139	7	1	0	0	160	12035
Percent	0.8%	64.2%	18.7%	1.2%	10.1%	1.4%	0.1%	0.9%	1.2%	0.1%	0.0%	0.0%	0.0%	1.3%	

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: Combined

9/11/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class	Total
12:00 AM	0	34	10	1	5	0	0	0	0	0	0	0	0	0	50
1:00	0	25	3	0	1	0	0	0	1	0	0	0	0	0	30
2:00	0	19	6	1	4	0	0	0	1	1	0	0	0	0	32
3:00	0	38	10	1	6	0	0	0	4	0	0	0	0	0	59
4:00	0	78	37	7	24	1	0	1	2	0	0	0	0	0	150
5:00	1	209	90	4	33	4	0	6	4	0	0	0	0	2	353
6:00	1	487	185	13	89	16	3	9	7	1	0	0	0	11	822
7:00	3	574	181	7	87	12	0	14	5	0	0	0	0	18	901
8:00	2	499	146	13	75	13	2	8	10	1	0	0	0	7	776
9:00	3	345	125	14	70	12	1	7	20	1	0	0	0	2	600
10:00	3	311	110	7	65	13	2	12	12	1	0	0	0	4	540
11:00	3	338	137	12	57	19	2	7	18	1	0	0	0	4	598
12:00 PM	11	355	123	13	62	17	1	13	11	0	0	0	0	8	614
1:00	7	379	134	5	64	17	3	15	12	1	1	0	0	15	653
2:00	12	483	162	10	73	20	0	7	10	3	0	0	0	14	794
3:00	6	610	193	12	113	4	0	7	11	0	0	0	0	22	978
4:00	9	602	201	5	79	6	0	11	1	1	0	0	0	16	931
5:00	10	669	158	6	63	1	0	1	0	0	0	0	0	10	918
6:00	7	520	107	6	55	2	0	5	0	0	0	0	0	8	710
7:00	2	386	88	0	50	0	0	5	0	0	0	0	0	4	535
8:00	1	280	57	0	29	0	0	1	0	0	0	0	0	0	368
9:00	3	192	32	0	15	0	0	2	0	0	0	0	0	0	244
10:00	2	112	23	1	9	0	0	0	0	0	0	0	0	0	147
11:00	2	58	20	0	4	0	0	1	0	0	0	0	0	0	85
Total	88	7603	2338	138	1132	157	14	132	129	11	1	0	0	145	11888
Percent	0.7%	64.0%	19.7%	1.2%	9.5%	1.3%	0.1%	1.1%	1.1%	0.1%	0.0%	0.0%	0.0%	1.2%	
AM Peak	7:00	7:00	6:00	9:00	6:00	11:00	6:00	7:00	9:00	2:00				7:00	7:00
	3	574	185	14	89	19	3	14	20	1	*	*	*	18	901
PM Peak	2:00	5:00	4:00	12:00 PM	3:00	2:00	1:00	1:00	1:00	2:00	1:00			3:00	3:00
	12	669	201	13	113	20	3	15	12	3	1	*	*	22	978

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
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Direction: Combined

9/12/2024 Time	Motor Cycles	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axl Double	5 Axle Double	>6 Axl Double	<6 Axl Multi	6 Axle Multi	>6 Axl Multi	No Class	Total
12:00 AM	1	39	6	0	4	0	0	1	0	0	0	0	0	0	51
1:00	0	18	1	2	2	0	0	0	1	0	0	0	0	0	24
2:00	0	22	3	0	4	0	0	0	1	0	0	0	0	0	30
3:00	0	35	10	2	5	1	0	0	1	0	1	0	0	0	55
4:00	0	73	43	3	18	2	0	1	4	0	0	0	0	1	145
5:00	2	203	106	3	40	4	0	7	4	0	0	0	0	0	369
6:00	4	442	182	13	92	7	3	9	11	0	1	0	0	11	775
7:00	5	563	202	12	76	17	0	4	5	1	0	0	1	14	900
8:00	8	481	162	16	75	16	3	10	16	1	0	0	0	16	804
9:00	4	382	110	5	54	14	1	9	14	2	0	0	0	10	605
10:00	5	355	100	7	63	16	2	8	9	1	0	0	0	3	569
11:00	5	395	99	9	56	9	1	10	15	0	0	0	0	5	604
12:00 PM	6	436	134	11	68	17	4	5	13	2	0	0	0	13	709
1:00	9	390	153	12	86	18	0	16	15	2	0	0	0	18	719
2:00	11	508	160	12	77	18	0	12	12	3	0	0	0	10	823
3:00	7	513	214	17	104	10	2	6	11	0	0	0	0	17	901
4:00	8	586	202	7	95	3	0	6	2	0	0	0	0	15	924
5:00	7	660	191	5	70	2	0	3	2	0	0	0	0	11	951
6:00	3	477	124	5	55	1	0	4	1	0	0	0	0	9	679
7:00	2	411	92	2	37	0	0	4	1	0	0	0	0	3	552
8:00	9	299	72	0	23	0	0	0	0	0	0	0	0	1	404
9:00	3	195	34	0	15	0	0	1	0	0	0	0	0	0	248
10:00	4	107	27	0	11	0	0	2	0	0	0	0	0	0	151
11:00	1	71	15	0	8	0	0	0	0	0	0	0	0	0	95
Total	104	7661	2442	143	1138	155	16	118	138	12	2	0	1	157	12087
Percent	0.9%	63.4%	20.2%	1.2%	9.4%	1.3%	0.1%	1.0%	1.1%	0.1%	0.0%	0.0%	0.0%	1.3%	
AM Peak	8:00	7:00	7:00	8:00	6:00	7:00	6:00	8:00	8:00	9:00	3:00		7:00	8:00	7:00
	8	563	202	16	92	17	3	10	16	2	1	*	1	16	900
PM Peak	2:00	5:00	3:00	3:00	3:00	1:00	12:00 PM	1:00	1:00	2:00				1:00	5:00
	11	660	214	17	104	18	4	16	15	3	*	*	*	18	951
Grand Total	192	15264	4780	281	2270	312	30	250	267	23	3	0	1	302	23975
Percent	0.8%	63.7%	19.9%	1.2%	9.5%	1.3%	0.1%	1.0%	1.1%	0.1%	0.0%	0.0%	0.0%	1.3%	

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: NB

9/11/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	2	3	2	7	1	1	0	0	0	0	16
1:00	0	0	0	1	1	3	3	1	0	0	0	0	0	9
2:00	0	0	1	2	2	6	4	0	0	0	0	0	0	15
3:00	0	0	4	2	5	11	11	4	1	0	0	0	0	38
4:00	1	0	4	16	16	21	37	21	2	0	0	0	0	118
5:00	0	0	1	21	46	68	90	32	2	1	0	0	0	261
6:00	4	18	22	53	121	224	130	12	1	1	0	0	0	586
7:00	4	4	19	74	138	182	143	47	1	0	0	0	0	612
8:00	4	10	21	46	97	133	131	41	0	0	0	0	0	483
9:00	4	9	15	48	67	72	95	38	6	0	0	0	0	354
10:00	0	6	11	48	42	80	83	27	1	2	0	0	0	300
11:00	2	13	13	21	53	79	97	32	5	0	0	0	0	315
12:00 PM	5	7	11	22	40	67	88	34	8	0	0	0	0	282
1:00	3	10	15	20	57	92	84	30	2	0	0	0	0	313
2:00	6	13	2	38	77	88	77	20	8	1	0	0	0	330
3:00	8	3	14	39	70	101	130	55	10	1	0	0	0	431
4:00	3	1	3	38	49	99	111	42	8	3	0	0	0	357
5:00	0	1	2	20	37	73	111	56	9	0	0	0	0	309
6:00	1	0	2	15	44	77	100	30	4	1	1	0	0	275
7:00	0	0	5	26	33	66	77	11	3	0	0	0	0	221
8:00	0	0	2	4	24	37	35	19	0	0	0	0	0	121
9:00	0	0	4	11	10	31	26	14	3	0	0	0	0	99
10:00	0	0	2	5	6	10	18	8	2	2	0	0	0	53
11:00	0	0	0	6	5	6	6	4	0	0	0	0	0	27
Total	45	95	173	578	1043	1628	1694	579	77	12	1	0	0	5925

New Line		Percentile	15th	50th	85th	95th
		Speed	29	37	43	46
	Mean Speed (Average)		37.8			
	10 MPH Pace Speed		36-45			
	Number in Pace		3322			
	Percent in Pace		56.0%			
	Number > 45 MPH		669			
	Percent > 45 MPH		11.3%			

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: NB

9/12/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	1	4	2	4	2	1	0	0	0	0	0	14
1:00	0	0	0	0	2	2	3	0	0	0	0	0	0	7
2:00	0	0	1	1	1	4	7	0	0	0	0	0	0	14
3:00	0	0	1	2	5	4	14	4	1	0	0	0	0	31
4:00	0	3	2	13	19	24	37	15	1	1	0	0	0	115
5:00	0	2	6	38	43	67	86	35	2	0	0	0	0	279
6:00	6	12	13	61	113	174	141	27	1	0	0	0	0	548
7:00	2	10	24	67	134	176	143	30	5	1	0	0	0	592
8:00	9	24	26	70	105	139	104	22	0	0	0	0	0	499
9:00	4	8	20	57	79	94	65	17	1	1	0	0	0	346
10:00	4	6	13	36	63	81	90	25	6	0	1	0	1	326
11:00	1	8	9	24	56	88	79	32	2	0	0	0	0	299
12:00 PM	5	9	18	25	52	108	93	41	0	0	0	0	0	351
1:00	11	5	8	36	62	103	100	32	6	0	0	0	0	363
2:00	5	11	11	37	51	99	112	40	4	0	0	0	0	370
3:00	1	2	17	30	64	96	93	37	4	1	1	0	0	346
4:00	1	0	7	36	54	88	107	50	13	2	0	0	0	358
5:00	3	0	7	28	37	103	123	47	5	1	0	0	0	354
6:00	3	1	1	21	39	72	97	38	9	0	0	0	0	281
7:00	1	0	6	13	29	65	74	20	0	0	0	0	0	208
8:00	0	0	4	7	31	40	41	17	2	1	0	0	0	143
9:00	0	0	1	10	12	21	26	10	2	0	0	0	0	82
10:00	0	0	1	15	7	13	10	9	1	0	0	0	0	56
11:00	0	0	1	5	5	11	8	2	0	1	0	0	0	33
Total	56	101	198	636	1065	1676	1655	551	65	9	2	0	1	6015

New Line	Percentile	15th	50th	85th	95th
	Speed	29	37	43	46
	Mean Speed (Average)	37.5			
	10 MPH Pace Speed	36-45			
	Number in Pace	3289			
	Percent in Pace	56.0%			
	Number > 45 MPH	628			
	Percent > 45 MPH	10.4%			
Grand Total	Percentile	15th	50th	85th	95th
	Speed	29	37	43	46
	Mean Speed (Average)	37.7			
	10 MPH Pace Speed	36-45			
	Number in Pace	6634			
	Percent in Pace	56.0%			
	Number > 45 MPH	1297			
	Percent > 45 MPH	10.9%			

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: SB

9/11/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	2	3	13	11	5	0	0	0	0	0	34
1:00	0	1	1	0	3	8	5	3	0	0	0	0	0	21
2:00	0	0	0	2	3	7	3	2	0	0	0	0	0	17
3:00	0	0	0	3	3	6	7	2	0	0	0	0	0	21
4:00	0	1	2	4	3	9	9	3	1	0	0	0	0	32
5:00	0	1	7	13	25	22	14	6	4	0	0	0	0	92
6:00	2	0	15	27	61	86	34	9	1	0	0	0	1	236
7:00	11	8	8	27	67	86	65	14	3	0	0	0	0	289
8:00	4	11	10	21	72	110	45	19	0	1	0	0	0	293
9:00	4	18	16	25	43	76	49	12	3	0	0	0	0	246
10:00	8	19	13	18	60	68	40	12	2	0	0	0	0	240
11:00	6	13	13	23	62	90	57	17	2	0	0	0	0	283
12:00 PM	14	14	24	26	77	103	57	14	3	0	0	0	0	332
1:00	11	15	11	41	108	85	58	10	1	0	0	0	0	340
2:00	6	21	26	48	124	130	81	20	8	0	0	0	0	464
3:00	14	16	13	31	128	190	126	28	1	0	0	0	0	547
4:00	9	2	9	54	137	197	128	33	2	3	0	0	0	574
5:00	6	2	5	50	117	228	162	32	7	0	0	0	0	609
6:00	4	1	6	22	83	157	109	43	8	2	0	0	0	435
7:00	0	0	1	35	71	100	91	13	3	0	0	0	0	314
8:00	0	0	0	7	61	106	58	12	3	0	0	0	0	247
9:00	0	0	0	10	35	53	35	10	2	0	0	0	0	145
10:00	0	0	2	5	16	30	29	8	4	0	0	0	0	94
11:00	0	0	1	4	11	17	21	2	2	0	0	0	0	58
Total	99	143	183	498	1373	1977	1294	329	60	6	0	0	1	5963

New Line	Percentile	15th	50th	85th	95th
	Speed	29	36	42	45

Mean Speed (Average)	36.4
10 MPH Pace Speed	32-41
Number in Pace	3352
Percent in Pace	56.0%
Number > 45 MPH	396
Percent > 45 MPH	6.6%

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: SB

9/12/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	1	8	16	5	6	1	0	0	0	0	37
1:00	0	0	0	2	2	9	3	1	0	0	0	0	0	17
2:00	0	0	0	1	5	7	2	0	0	0	0	1	0	16
3:00	0	0	1	4	10	1	6	1	1	0	0	0	0	24
4:00	0	0	1	3	7	6	9	3	1	0	0	0	0	30
5:00	0	0	4	13	26	23	19	4	0	0	1	0	0	90
6:00	7	1	11	34	62	63	37	10	2	0	0	0	0	227
7:00	9	11	16	30	79	91	51	17	3	0	1	0	0	308
8:00	16	16	28	57	76	81	28	3	0	0	0	0	0	305
9:00	12	21	30	52	68	53	21	2	0	0	0	0	0	259
10:00	8	10	3	19	75	87	33	7	0	1	0	0	0	243
11:00	2	7	11	28	78	99	65	14	1	0	0	0	0	305
12:00 PM	12	16	15	26	101	131	46	9	2	0	0	0	0	358
1:00	29	16	22	40	78	101	55	12	3	0	0	0	0	356
2:00	9	17	17	37	118	139	93	18	4	1	0	0	0	453
3:00	24	26	33	50	158	151	88	23	2	0	0	0	0	555
4:00	4	5	19	37	127	223	124	24	3	0	0	0	0	566
5:00	5	0	7	30	173	191	146	40	4	1	0	0	0	597
6:00	3	1	2	17	79	143	117	33	2	1	0	0	0	398
7:00	1	1	0	16	74	135	95	19	3	0	0	0	0	344
8:00	1	0	0	10	61	93	81	13	2	0	0	0	0	261
9:00	0	0	1	6	38	56	49	14	2	0	0	0	0	166
10:00	0	0	2	11	13	41	20	6	1	1	0	0	0	95
11:00	0	0	0	2	9	20	19	12	0	0	0	0	0	62
Total	142	148	223	526	1525	1960	1212	291	37	5	2	1	0	6072

New Line	Percentile	15th	50th	85th	95th
	Speed	28	35	41	44
	Mean Speed (Average)	35.8			
	10 MPH Pace Speed	31-40			
	Number in Pace	3402			
	Percent in Pace	58.0%			
	Number > 45 MPH	336			
	Percent > 45 MPH	5.5%			
Grand Total	Percentile	15th	50th	85th	95th
	Speed	29	35	41	45
	Mean Speed (Average)	36.1			
	10 MPH Pace Speed	31-40			
	Number in Pace	6806			
	Percent in Pace	57.0%			
	Number > 45 MPH	732			
	Percent > 45 MPH	6.1%			

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

Direction: Combined

9/11/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	0	4	6	15	18	6	1	0	0	0	0	50
1:00	0	1	1	1	4	11	8	4	0	0	0	0	0	30
2:00	0	0	1	4	5	13	7	2	0	0	0	0	0	32
3:00	0	0	4	5	8	17	18	6	1	0	0	0	0	59
4:00	1	1	6	20	19	30	46	24	3	0	0	0	0	150
5:00	0	1	8	34	71	90	104	38	6	1	0	0	0	353
6:00	6	18	37	80	182	310	164	21	2	1	0	0	1	822
7:00	15	12	27	101	205	268	208	61	4	0	0	0	0	901
8:00	8	21	31	67	169	243	176	60	0	1	0	0	0	776
9:00	8	27	31	73	110	148	144	50	9	0	0	0	0	600
10:00	8	25	24	66	102	148	123	39	3	2	0	0	0	540
11:00	8	26	26	44	115	169	154	49	7	0	0	0	0	598
12:00 PM	19	21	35	48	117	170	145	48	11	0	0	0	0	614
1:00	14	25	26	61	165	177	142	40	3	0	0	0	0	653
2:00	12	34	28	86	201	218	158	40	16	1	0	0	0	794
3:00	22	19	27	70	198	291	256	83	11	1	0	0	0	978
4:00	12	3	12	92	186	296	239	75	10	6	0	0	0	931
5:00	6	3	7	70	154	301	273	88	16	0	0	0	0	918
6:00	5	1	8	37	127	234	209	73	12	3	1	0	0	710
7:00	0	0	6	61	104	166	168	24	6	0	0	0	0	535
8:00	0	0	2	11	85	143	93	31	3	0	0	0	0	368
9:00	0	0	4	21	45	84	61	24	5	0	0	0	0	244
10:00	0	0	4	10	22	40	47	16	6	2	0	0	0	147
11:00	0	0	1	10	16	23	27	6	2	0	0	0	0	85
Total	144	238	356	1076	2416	3605	2988	908	137	18	1	0	1	11888
New Line			Percentile	15th	50th	85th	95th							
			Speed	29	37	42	46							
		Mean Speed (Average)		37.1										
		10 MPH Pace Speed		36-45										
		Number in Pace		6593										
		Percent in Pace		55.0%										
		Number > 45 MPH		1065										
		Percent > 45 MPH		9.0%										

NE TRAFFIC COUNTS

City: Douglas, MA
Location 1: Lackey Dam Rd
Location 2: S/O Rte 146
Tech: YVM, KM
Latitude: 42.086813
Longitude: -71.695768

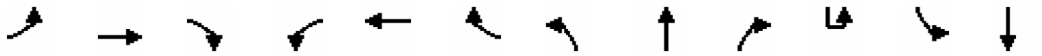
Direction: Combined

9/12/2024 Time	0 - 15 MPH	> 15 - 20 MPH	> 20 - 25 MPH	> 25 - 30 MPH	> 30 - 35 MPH	> 35 - 40 MPH	> 40 - 45 MPH	> 45 - 50 MPH	> 50 - 55 MPH	> 55 - 60 MPH	> 60 - 65 MPH	> 65 - 70 MPH	> 70 MPH	Total
12:00 AM	0	0	1	5	10	20	7	7	1	0	0	0	0	51
1:00	0	0	0	2	4	11	6	1	0	0	0	0	0	24
2:00	0	0	1	2	6	11	9	0	0	0	0	1	0	30
3:00	0	0	2	6	15	5	20	5	2	0	0	0	0	55
4:00	0	3	3	16	26	30	46	18	2	1	0	0	0	145
5:00	0	2	10	51	69	90	105	39	2	0	1	0	0	369
6:00	13	13	24	95	175	237	178	37	3	0	0	0	0	775
7:00	11	21	40	97	213	267	194	47	8	1	1	0	0	900
8:00	25	40	54	127	181	220	132	25	0	0	0	0	0	804
9:00	16	29	50	109	147	147	86	19	1	1	0	0	0	605
10:00	12	16	16	55	138	168	123	32	6	1	1	0	1	569
11:00	3	15	20	52	134	187	144	46	3	0	0	0	0	604
12:00 PM	17	25	33	51	153	239	139	50	2	0	0	0	0	709
1:00	40	21	30	76	140	204	155	44	9	0	0	0	0	719
2:00	14	28	28	74	169	238	205	58	8	1	0	0	0	823
3:00	25	28	50	80	222	247	181	60	6	1	1	0	0	901
4:00	5	5	26	73	181	311	231	74	16	2	0	0	0	924
5:00	8	0	14	58	210	294	269	87	9	2	0	0	0	951
6:00	6	2	3	38	118	215	214	71	11	1	0	0	0	679
7:00	2	1	6	29	103	200	169	39	3	0	0	0	0	552
8:00	1	0	4	17	92	133	122	30	4	1	0	0	0	404
9:00	0	0	2	16	50	77	75	24	4	0	0	0	0	248
10:00	0	0	3	26	20	54	30	15	2	1	0	0	0	151
11:00	0	0	1	7	14	31	27	14	0	1	0	0	0	95
Total	198	249	421	1162	2590	3636	2867	842	102	14	4	1	1	12087

New Line	Percentile	15th	50th	85th	95th
	Speed	28	36	42	45
	Mean Speed (Average)	36.6			
	10 MPH Pace Speed	36-45			
	Number in Pace	6361			
	Percent in Pace	54.0%			
	Number > 45 MPH	964			
	Percent > 45 MPH	8.0%			
Grand Total	Percentile	15th	50th	85th	95th
	Speed	29	36	42	45
	Mean Speed (Average)	36.9			
	10 MPH Pace Speed	36-45			
	Number in Pace	13038			
	Percent in Pace	55.0%			
	Number > 45 MPH	2029			
	Percent > 45 MPH	8.5%			

APPENDIX B

Route 146 and Boston Road Synchro Reports



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	59	104	49	165	121	236	0	2143	10	58	110	1272
Future Volume (vph)	59	104	49	165	121	236	0	2143	10	58	110	1272
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	10	12
Grade (%)		-5%			5%			5%				-5%
Storage Length (ft)	450		275	300		300	0		0		525	
Storage Lanes	1		1	1		1	0		0		2	
Taper Length (ft)	25			25			25				25	
Satd. Flow (prot)	1788	1776	1510	3000	1705	1478	0	4635	0	0	3162	4747
Flt Permitted	0.950			0.950							0.950	
Satd. Flow (perm)	1788	1776	1510	3000	1705	1478	0	4635	0	0	3162	4747
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)			177			220						
Link Speed (mph)		30			30			30				30
Link Distance (ft)		599			738			882				743
Travel Time (s)		13.6			16.8			20.0				16.9
Peak Hour Factor	0.65	0.65	0.65	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87
Heavy Vehicles (%)	0%	6%	6%	10%	5%	3%	0%	9%	10%	4%	7%	12%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	91	160	75	177	130	254	0	2340	0	0	193	1462
Turn Type	Prot	NA	Free	Prot	NA	Prot		NA		Prot	Prot	NA
Protected Phases	3	8		7	4	4		6		5	5	2
Permitted Phases			Free									
Detector Phase	3	8		7	4	4		6		5	5	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0		20.0		7.0	7.0	20.0
Minimum Split (s)	14.5	14.8		13.8	14.8	14.8		26.3		13.4	13.4	26.3
Total Split (s)	27.5	36.3		27.0	35.8	35.8		59.9		26.4	26.4	86.3
Total Split (%)	18.4%	24.3%		18.0%	23.9%	23.9%		40.0%		17.6%	17.6%	57.7%
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)	4.5	4.8		3.8	4.8	4.8		3.3		3.4	3.4	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.5	7.8		6.8	7.8	7.8		6.3			6.4	6.3
Lead/Lag	Lead	Lag		Lead	Lag	Lag		Lag		Lead	Lead	
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min	Min		Min		None	None	None
Act Effct Green (s)	11.0	15.6	121.0	11.8	15.7	15.7		54.0			12.1	72.5
Actuated g/C Ratio	0.09	0.13	1.00	0.10	0.13	0.13		0.45			0.10	0.60
v/c Ratio	0.56	0.70	0.05	0.60	0.59	0.66		1.13			0.61	0.51
Control Delay (s/veh)	68.0	68.1	0.1	62.5	61.7	19.1		98.1			62.1	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	68.0	68.1	0.1	62.5	61.7	19.1		98.1			62.1	15.6
LOS	E	E	A	E	E	B		F			E	B
Approach Delay (s/veh)		52.4			42.7			98.1				20.6
Approach LOS		D			D			F				C
Queue Length 50th (ft)	69	121	0	69	96	24		~772			75	227
Queue Length 95th (ft)	95	145	0	117	174	115		#1064			121	320
Internal Link Dist (ft)		519			658			802				663



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	29
Future Volume (vph)	29
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Grade (%)	
Storage Length (ft)	225
Storage Lanes	1
Taper Length (ft)	
Satd. Flow (prot)	1486
Flt Permitted	
Satd. Flow (perm)	1486
Right Turn on Red	Yes
Satd. Flow (RTOR)	85
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.87
Heavy Vehicles (%)	4%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	33
Turn Type	Perm
Protected Phases	
Permitted Phases	2
Detector Phase	2
Switch Phase	
Minimum Initial (s)	20.0
Minimum Split (s)	26.3
Total Split (s)	86.3
Total Split (%)	57.7%
Yellow Time (s)	3.0
All-Red Time (s)	3.3
Lost Time Adjust (s)	0.0
Total Lost Time (s)	6.3
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	72.5
Actuated g/C Ratio	0.60
v/c Ratio	0.04
Control Delay (s/veh)	0.1
Queue Delay	0.0
Total Delay (s/veh)	0.1
LOS	A
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	0
Internal Link Dist (ft)	

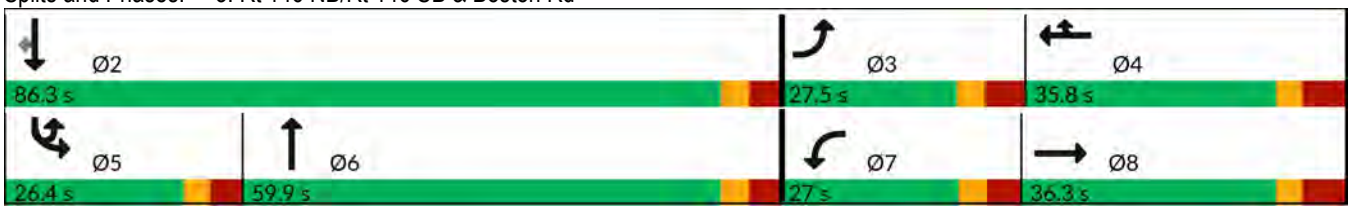
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Turn Bay Length (ft)	450		275	300		300					525	
Base Capacity (vph)	298	421	1510	505	397	513		2069			527	3163
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.31	0.38	0.05	0.35	0.33	0.50		1.13			0.37	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 149.6			
Actuated Cycle Length: 121			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay (s/veh): 62.1		Intersection LOS: E	
Intersection Capacity Utilization 91.2%		ICU Level of Service F	
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: Rt 146 NB/Rt 146 SB & Boston Rd





Lane Group	SBR
Turn Bay Length (ft)	225
Base Capacity (vph)	1018
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.03

Intersection Summary

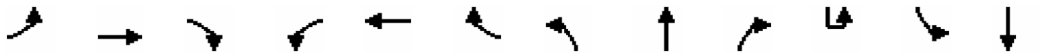
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	214	1	2	450	23	43	8	102	9	0	30
Future Vol, veh/h	10	214	1	2	450	23	43	8	102	9	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	5	-	-	-5	-
Peak Hour Factor	83	83	83	94	94	94	87	87	87	73	73	73
Heavy Vehicles, %	0	6	0	0	4	4	19	0	4	0	0	17
Mvmt Flow	12	258	1	2	479	24	49	9	117	12	0	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	479	0	0	259	0	0	527	766	130	653	778	252
Stage 1	-	-	-	-	-	-	283	283	-	495	495	-
Stage 2	-	-	-	-	-	-	244	483	-	158	283	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.88	7.5	7.48	6.5	5.5	6.74
Critical Hdwy Stg 1	-	-	-	-	-	-	7.88	6.5	-	5.5	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.88	6.5	-	5.5	4.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.69	4	3.34	3.5	4	3.47
Pot Cap-1 Maneuver	1094	-	-	1317	-	-	344	271	873	427	410	729
Stage 1	-	-	-	-	-	-	605	629	-	608	630	-
Stage 2	-	-	-	-	-	-	646	486	-	872	736	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1094	-	-	1317	-	-	321	267	873	356	404	729
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	267	-	356	404	-
Stage 1	-	-	-	-	-	-	597	621	-	600	629	-
Stage 2	-	-	-	-	-	-	608	485	-	734	726	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.4	0	14.7	11.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	545	1094	-	-	1317	-	-	587
HCM Lane V/C Ratio	0.323	0.011	-	-	0.002	-	-	0.091
HCM Ctrl Dly (s/v)	14.7	8.3	0	-	7.7	0	-	11.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q (veh)	1.4	0	-	-	0	-	-	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	61	82	38	304	161	177	0	1398	15	49	237	1950
Future Volume (vph)	61	82	38	304	161	177	0	1398	15	49	237	1950
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	10	12
Grade (%)		-5%			5%			5%				-5%
Storage Length (ft)	450		275	300		300	0		0		525	
Storage Lanes	1		1	1		1	0		0		2	
Taper Length (ft)	25			25			25				25	
Satd. Flow (prot)	1753	1846	1600	3236	1773	1478	0	4761	0	0	3272	5064
Flt Permitted	0.950			0.950							0.950	
Satd. Flow (perm)	1753	1846	1600	3236	1773	1478	0	4761	0	0	3272	5064
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)			177			203		1				
Link Speed (mph)		25			25			40				40
Link Distance (ft)		599			738			882				743
Travel Time (s)		16.3			20.1			15.0				12.7
Peak Hour Factor	0.89	0.89	0.89	0.87	0.87	0.87	0.95	0.95	0.95	0.96	0.96	0.96
Heavy Vehicles (%)	2%	2%	0%	2%	1%	3%	0%	6%	7%	9%	1%	5%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	69	92	43	349	185	203	0	1488	0	0	298	2031
Turn Type	Prot	NA	Free	Prot	NA	Prot		NA		Prot	Prot	NA
Protected Phases	3	8		7	4	4		6		5	5	2
Permitted Phases			Free									
Detector Phase	3	8		7	4	4		6		5	5	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0		20.0		7.0	7.0	20.0
Minimum Split (s)	14.5	14.8		13.8	14.8	14.8		26.3		13.4	13.4	26.3
Total Split (s)	27.5	36.3		27.0	35.8	35.8		59.9		26.4	26.4	86.3
Total Split (%)	18.4%	24.3%		18.0%	23.9%	23.9%		40.0%		17.6%	17.6%	57.7%
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)	4.5	4.8		3.8	4.8	4.8		3.3		3.4	3.4	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.5	7.8		6.8	7.8	7.8		6.3			6.4	6.3
Lead/Lag	Lead	Lag		Lead	Lag	Lag		Lag		Lead	Lead	
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min	Min		Min		None	None	None
Act Effct Green (s)	9.8	11.6	113.2	17.1	18.2	18.2		40.7			15.6	62.9
Actuated g/C Ratio	0.09	0.10	1.00	0.15	0.16	0.16		0.36			0.14	0.56
v/c Ratio	0.46	0.49	0.03	0.72	0.65	0.50		0.87			0.66	0.72
Control Delay (s/veh)	64.6	60.6	0.0	57.2	58.7	11.0		40.7			56.5	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	64.6	60.6	0.0	57.2	58.7	11.0		40.7			56.5	20.7
LOS	E	E	A	E	E	B		D			E	C
Approach Delay (s/veh)		49.2			44.8			40.7				24.6
Approach LOS		D			D			D				C
Queue Length 50th (ft)	49	65	0	125	128	0		364			107	379
Queue Length 95th (ft)	112	133	0	209	232	61		516			187	536
Internal Link Dist (ft)		519			658			802				663

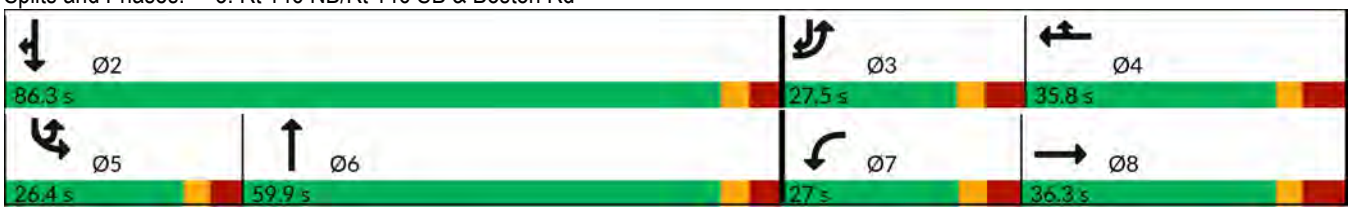


Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	59
Future Volume (vph)	59
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Grade (%)	
Storage Length (ft)	225
Storage Lanes	1
Taper Length (ft)	
Satd. Flow (prot)	1545
Flt Permitted	
Satd. Flow (perm)	1545
Right Turn on Red	Yes
Satd. Flow (RTOR)	61
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.96
Heavy Vehicles (%)	0%
Shared Lane Traffic (%)	
Lane Group Flow (vph)	61
Turn Type	pt+ov
Protected Phases	2 3
Permitted Phases	
Detector Phase	2 3
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	80.5
Actuated g/C Ratio	0.71
v/c Ratio	0.05
Control Delay (s/veh)	1.5
Queue Delay	0.0
Total Delay (s/veh)	1.5
LOS	A
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	13
Internal Link Dist (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Turn Bay Length (ft)	450		275	300		300					525	
Base Capacity (vph)	320	480	1600	596	453	528		2330			597	3698
Starvation Cap Reductn	0	0	0	0	0	0		0			0	0
Spillback Cap Reductn	0	0	0	0	0	0		0			0	0
Storage Cap Reductn	0	0	0	0	0	0		0			0	0
Reduced v/c Ratio	0.22	0.19	0.03	0.59	0.41	0.38		0.64			0.50	0.55

Intersection Summary			
Area Type:	Other		
Cycle Length: 149.6			
Actuated Cycle Length: 113.2			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay (s/veh): 33.7		Intersection LOS: C	
Intersection Capacity Utilization 75.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Rt 146 NB/Rt 146 SB & Boston Rd





Lane Group	SBR
Turn Bay Length (ft)	225
Base Capacity (vph)	1286
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.05

Intersection Summary

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	322	6	6	534	26	66	7	68	21	0	42
Future Vol, veh/h	7	322	6	6	534	26	66	7	68	21	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	5	-	-	-5	-
Peak Hour Factor	87	87	87	89	89	89	87	87	87	66	66	66
Heavy Vehicles, %	0	1	0	0	2	0	5	0	3	0	0	0
Mvmt Flow	8	370	7	7	600	29	76	8	78	32	0	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	600	0	0	377	0	0	704	1004	189	834	1022	315
Stage 1	-	-	-	-	-	-	390	390	-	629	629	-
Stage 2	-	-	-	-	-	-	314	614	-	205	393	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.6	7.5	7.46	6.5	5.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	7.6	6.5	-	5.5	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.6	6.5	-	5.5	4.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.55	4	3.33	3.5	4	3.3
Pot Cap-1 Maneuver	987	-	-	1193	-	-	262	184	796	333	316	717
Stage 1	-	-	-	-	-	-	536	548	-	526	570	-
Stage 2	-	-	-	-	-	-	608	410	-	829	680	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	987	-	-	1193	-	-	235	181	796	286	310	717
Mov Cap-2 Maneuver	-	-	-	-	-	-	235	181	-	286	310	-
Stage 1	-	-	-	-	-	-	531	543	-	521	565	-
Stage 2	-	-	-	-	-	-	549	406	-	729	673	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.2	0.1	24	14.4
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	348	987	-	-	1193	-	-	477
HCM Lane V/C Ratio	0.466	0.008	-	-	0.006	-	-	0.2
HCM Ctrl Dly (s/v)	24	8.7	0	-	8	0	-	14.4
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q (veh)	2.4	0	-	-	0	-	-	0.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	64	157	49	222	137	325	0	2639	10	61	388	1467
Future Volume (vph)	64	157	49	222	137	325	0	2639	10	61	388	1467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	10	12
Grade (%)		-5%			5%			5%				-5%
Storage Length (ft)	450		275	300		300	0		0		525	
Storage Lanes	1		0	1		2	0		0		2	
Taper Length (ft)	25			25			25				25	
Satd. Flow (prot)	1788	3256	0	3000	1705	2601	0	4635	0	0	3143	4747
Flt Permitted	0.950			0.950							0.950	
Satd. Flow (perm)	1788	3256	0	3000	1705	2601	0	4635	0	0	3143	4747
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		22				142		1				
Link Speed (mph)		30			30			30				30
Link Distance (ft)		599			738			882				743
Travel Time (s)		13.6			16.8			20.0				16.9
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.65	0.65	0.65	0.93	0.93	0.93	0.92	0.92	0.92	0.87	0.87	0.87
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	6%	6%	10%	5%	3%	0%	9%	10%	4%	7%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	317	0	239	147	349	0	2879	0	0	516	1686
Turn Type	Prot	NA		Prot	NA	Prot		NA		Prot	Prot	NA
Protected Phases	3	8		7	4	4		6		5	5	2
Permitted Phases												
Detector Phase	3	8		7	4	4		6		5	5	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0		20.0		7.0	7.0	20.0
Minimum Split (s)	14.5	14.8		13.8	14.8	14.8		26.3		13.4	13.4	26.3
Total Split (s)	19.0	23.6		19.0	23.6	23.6		86.2		20.8	20.8	107.0
Total Split (%)	12.7%	15.8%		12.7%	15.8%	15.8%		57.6%		13.9%	13.9%	71.5%
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)	4.5	4.8		3.8	4.8	4.8		3.3		3.4	3.4	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.5	7.8		6.8	7.8	7.8		6.3			6.4	6.3
Lead/Lag	Lead	Lag		Lead	Lag	Lag		Lag		Lead	Lead	
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min	Min		Min		None	None	None
Act Effct Green (s)	10.8	15.4		12.2	16.2	16.2		79.9			14.4	100.7
Actuated g/C Ratio	0.07	0.10		0.08	0.11	0.11		0.54			0.10	0.67
v/c Ratio	0.77	0.89		0.98	0.80	0.86		1.16			1.70	0.53
Control Delay (s/veh)	101.9	87.9		119.1	94.1	58.5		109.9			368.4	13.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	101.9	87.9		119.1	94.1	58.5		109.9			368.4	13.0



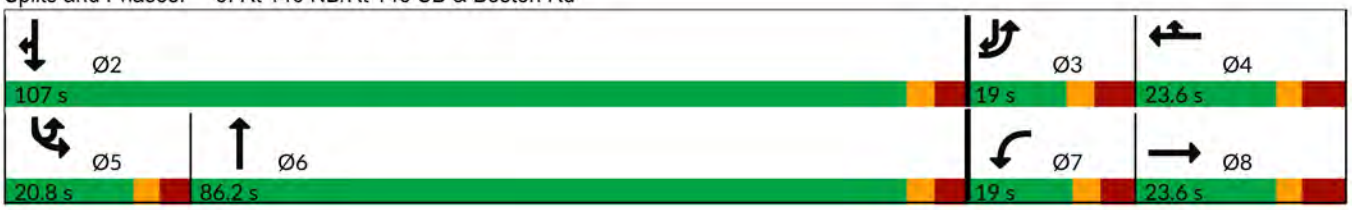
Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	31
Future Volume (vph)	31
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Grade (%)	
Storage Length (ft)	225
Storage Lanes	1
Taper Length (ft)	
Satd. Flow (prot)	1486
Flt Permitted	
Satd. Flow (perm)	1486
Right Turn on Red	Yes
Satd. Flow (RTOR)	36
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	0.87
Growth Factor	100%
Heavy Vehicles (%)	4%
Bus Blockages (#/hr)	0
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	36
Turn Type	pt+ov
Protected Phases	2 3
Permitted Phases	
Detector Phase	2 3
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	118.9
Actuated g/C Ratio	0.80
v/c Ratio	0.03
Control Delay (s/veh)	0.9
Queue Delay	0.0
Total Delay (s/veh)	0.9

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
LOS	F	F		F	F	E		F			F	B
Approach Delay (s/veh)		91.2			85.3			109.9				94.7
Approach LOS		F			F			F				F
Queue Length 50th (ft)	95	152		122	143	116		~1219			~380	285
Queue Length 95th (ft)	114	142		#214	#265	#211		#1296			#476	303
Internal Link Dist (ft)		519			658			802				663
Turn Bay Length (ft)	450			300		300					525	
Base Capacity (vph)	137	364		245	184	408		2481			303	3203
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.72	0.87		0.98	0.80	0.86		1.16			1.70	0.53

Intersection Summary

Area Type: Other
Cycle Length: 149.6
Actuated Cycle Length: 149.2
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.70
Intersection Signal Delay (s/veh): 100.4 Intersection LOS: F
Intersection Capacity Utilization 104.6% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Rt 146 NB/Rt 146 SB & Boston Rd





Lane Group	SBR
LOS	A
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	6
Internal Link Dist (ft)	
Turn Bay Length (ft)	225
Base Capacity (vph)	1199
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.03

Intersection Summary

Intersection	
Int Delay, s/veh	25.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	544	1	2	612	25	43	8	326	9	0	30
Future Vol, veh/h	10	544	1	2	612	25	43	8	326	9	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	95	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	5	-	-	-5	-
Peak Hour Factor	83	83	83	94	94	94	87	87	87	73	73	73
Heavy Vehicles, %	0	6	0	0	4	4	19	0	4	0	0	17
Mvmt Flow	12	655	1	2	651	27	49	9	375	12	0	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	651	0	0	656	0	0	1010	1335	328	1011	1335	326
Stage 1	-	-	-	-	-	-	680	680	-	655	655	-
Stage 2	-	-	-	-	-	-	330	655	-	356	680	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.88	7.5	7.48	6.5	5.5	6.74
Critical Hdwy Stg 1	-	-	-	-	-	-	7.88	6.5	-	5.5	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.88	6.5	-	5.5	4.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.69	4	3.34	3.5	4	3.47
Pot Cap-1 Maneuver	945	-	-	941	-	0	130	107	632	260	225	657
Stage 1	-	-	-	-	-	0	306	376	-	511	559	-
Stage 2	-	-	-	-	-	0	558	388	-	706	548	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	945	-	-	941	-	-	120	105	632	97	220	657
Mov Cap-2 Maneuver	-	-	-	-	-	-	120	105	-	97	220	-
Stage 1	-	-	-	-	-	-	300	368	-	501	557	-
Stage 2	-	-	-	-	-	-	522	387	-	275	537	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.3	0	104.5	20.7
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	397	945	-	-	941	-	282
HCM Lane V/C Ratio	1.092	0.013	-	-	0.002	-	0.189
HCM Ctrl Dly (s/v)	104.5	8.9	0.1	-	8.8	0	20.7
HCM Lane LOS	F	A	A	-	A	A	C
HCM 95th %tile Q (veh)	15.2	0	-	-	0	-	0.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	65	128	38	577	227	537	0	1893	15	54	484	1950
Future Volume (vph)	65	128	38	577	227	537	0	1893	15	54	484	1950
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	12	12	12	12	10	12
Grade (%)		-5%			5%			5%				-5%
Storage Length (ft)	450		275	300		300	0		0		525	
Storage Lanes	1		0	1		2	0		0		2	
Taper Length (ft)	25			25			25				25	
Satd. Flow (prot)	1753	3403	0	3236	1773	2601	0	4766	0	0	3291	5064
Flt Permitted	0.950			0.950							0.950	
Satd. Flow (perm)	1753	3403	0	3236	1773	2601	0	4766	0	0	3291	5064
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)		5				445		1				
Link Speed (mph)		25			25			40				40
Link Distance (ft)		599			738			882				743
Travel Time (s)		16.3			20.1			15.0				12.7
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.89	0.89	0.89	0.87	0.87	0.87	0.95	0.95	0.95	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	0%	2%	1%	3%	0%	6%	7%	9%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%				0%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	73	187	0	663	261	617	0	2009	0	0	560	2031
Turn Type	Prot	NA		Prot	NA	Prot		NA		Prot	Prot	NA
Protected Phases	3	8		7	4	4		6		5	5	2
Permitted Phases												
Detector Phase	3	8		7	4	4		6		5	5	2
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0		20.0		7.0	7.0	20.0
Minimum Split (s)	14.5	14.8		13.8	14.8	14.8		26.3		13.4	13.4	26.3
Total Split (s)	27.5	36.3		27.0	35.8	35.8		59.9		26.4	26.4	86.3
Total Split (%)	18.4%	24.3%		18.0%	23.9%	23.9%		40.0%		17.6%	17.6%	57.7%
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)	4.5	4.8		3.8	4.8	4.8		3.3		3.4	3.4	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	7.5	7.8		6.8	7.8	7.8		6.3			6.4	6.3
Lead/Lag	Lead	Lag		Lead	Lag	Lag		Lag		Lead	Lead	
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min	Min		Min		None	None	None
Act Effct Green (s)	10.4	15.8		20.2	24.9	24.9		53.7			20.0	80.1
Actuated g/C Ratio	0.08	0.12		0.15	0.18	0.18		0.39			0.15	0.58
v/c Ratio	0.55	0.47		1.39	0.81	0.74		1.08			1.17	0.69
Control Delay (s/veh)	77.3	58.6		230.3	74.1	20.2		84.7			145.6	22.0
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay (s/veh)	77.3	58.6		230.3	74.1	20.2		84.7			145.6	22.0



Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	63
Future Volume (vph)	63
Ideal Flow (vphpl)	1900
Lane Width (ft)	10
Grade (%)	
Storage Length (ft)	225
Storage Lanes	1
Taper Length (ft)	
Satd. Flow (prot)	1545
Flt Permitted	
Satd. Flow (perm)	1545
Right Turn on Red	Yes
Satd. Flow (RTOR)	66
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	0.96
Growth Factor	100%
Heavy Vehicles (%)	0%
Bus Blockages (#/hr)	0
Parking (#/hr)	
Mid-Block Traffic (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	66
Turn Type	pt+ov
Protected Phases	2 3
Permitted Phases	
Detector Phase	2 3
Switch Phase	
Minimum Initial (s)	
Minimum Split (s)	
Total Split (s)	
Total Split (%)	
Yellow Time (s)	
All-Red Time (s)	
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	
Act Effct Green (s)	98.1
Actuated g/C Ratio	0.72
v/c Ratio	0.06
Control Delay (s/veh)	1.5
Queue Delay	0.0
Total Delay (s/veh)	1.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
LOS	E	E		F	E	C		F			F	C
Approach Delay (s/veh)		63.8			119.7			84.7				47.5
Approach LOS		E			F			F				D
Queue Length 50th (ft)	64	81		~408	225	80		~739			~308	448
Queue Length 95th (ft)	118	118		#537	326	147		#900			#454	561
Internal Link Dist (ft)		519			658			802				663
Turn Bay Length (ft)	450			300		300					525	
Base Capacity (vph)	256	712		477	362	886		1866			480	2959
Starvation Cap Reductn	0	0		0	0	0		0			0	0
Spillback Cap Reductn	0	0		0	0	0		0			0	0
Storage Cap Reductn	0	0		0	0	0		0			0	0
Reduced v/c Ratio	0.29	0.26		1.39	0.72	0.70		1.08			1.17	0.69

Intersection Summary

Area Type: Other
Cycle Length: 149.6
Actuated Cycle Length: 137.1
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.39
Intersection Signal Delay (s/veh): 76.9 Intersection LOS: E
Intersection Capacity Utilization 100.2% ICU Level of Service G
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Rt 146 NB/Rt 146 SB & Boston Rd





Lane Group	SBR
LOS	A
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	0
Queue Length 95th (ft)	14
Internal Link Dist (ft)	
Turn Bay Length (ft)	225
Base Capacity (vph)	1227
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.05

Intersection Summary

Intersection	
Int Delay, s/veh	90.9

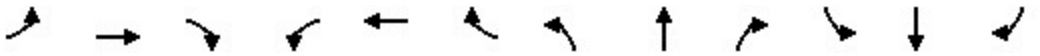
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	614	6	6	1232	27	66	7	220	22	0	42
Future Vol, veh/h	7	614	6	6	1232	27	66	7	220	22	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	95	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	5	-	-	-5	-
Peak Hour Factor	87	87	87	89	89	89	87	87	87	66	66	66
Heavy Vehicles, %	0	1	0	0	2	0	5	0	3	0	0	0
Mvmt Flow	8	706	7	7	1384	30	76	8	253	33	0	64

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1384	0	0	713	0	0	1432	2124	357	1771	2127	692
Stage 1	-	-	-	-	-	-	726	726	-	1398	1398	-
Stage 2	-	-	-	-	-	-	706	1398	-	373	729	-
Critical Hdwy	4.1	-	-	4.1	-	-	8.6	7.5	7.46	6.5	5.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	7.6	6.5	-	5.5	4.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.6	6.5	-	5.5	4.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.55	4	3.33	3.5	4	3.3
Pot Cap-1 Maneuver	501	-	-	896	-	0	~ 62	28	606	88	91	431
Stage 1	-	-	-	-	-	0	307	354	-	222	309	-
Stage 2	-	-	-	-	-	0	317	142	-	694	528	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	501	-	-	896	-	-	~ 50	26	606	37	86	431
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 50	26	-	37	86	-
Stage 1	-	-	-	-	-	-	299	345	-	216	298	-
Stage 2	-	-	-	-	-	-	261	137	-	385	514	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.3	0.2	$ 629.7	193.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	150	501	-	-	896	-	92
HCM Lane V/C Ratio	2.245	0.016	-	-	0.008	-	1.054
HCM Ctrl Dly (s/v)	$ 629.7	12.3	0.2	-	9	0.2	193.1
HCM Lane LOS	F	B	A	-	A	A	F
HCM 95th %tile Q (veh)	27.9	0	-	-	0	-	6.3

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



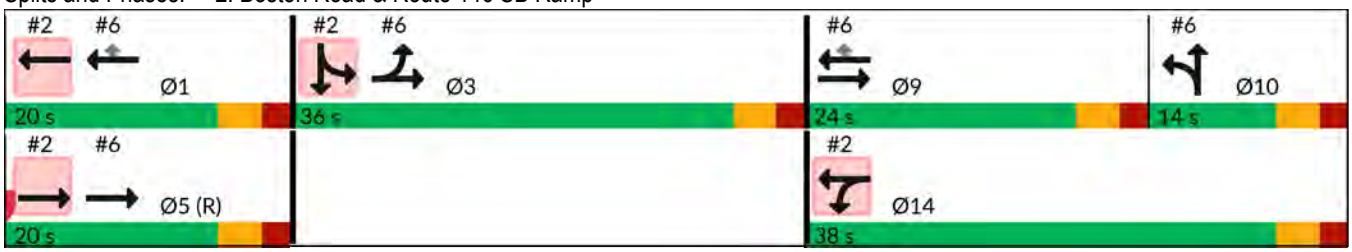
Lane Configurations												
Traffic Volume (vph)	0	221	49	222	137	0	0	0	0	449	0	31
Future Volume (vph)	0	221	49	222	137	0	0	0	0	449	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	250		0
Storage Lanes	0		0	2		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3444	0	3433	1863	0	0	0	0	1681	1661	0
Flt Permitted				0.950						0.950	0.958	
Satd. Flow (perm)	0	3444	0	3433	1863	0	0	0	0	1681	1661	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24									139	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		211			129			254			619	
Travel Time (s)		4.8			2.9			5.8			14.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)										46%		
Lane Group Flow (vph)	0	293	0	241	149	0	0	0	0	264	258	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		5		14	1 14					3	3	
Permitted Phases												
Detector Phase		5		14	1 14					3	3	
Switch Phase												
Minimum Initial (s)		5.0		5.0						5.0	5.0	
Minimum Split (s)		10.0		23.0						10.0	10.0	
Total Split (s)		20.0		38.0						36.0	36.0	
Total Split (%)		21.3%		40.4%						38.3%	38.3%	
Yellow Time (s)		3.0		3.0						3.0	3.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		0.0		0.0						0.0	0.0	
Total Lost Time (s)		5.0		5.0						5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max		None						None	None	
Act Effct Green (s)		29.8		24.3	59.1					24.9	24.9	
Actuated g/C Ratio		0.32		0.26	0.63					0.26	0.26	
v/c Ratio		0.26		0.27	0.13					0.59	0.48	
Control Delay (s/veh)		26.5		23.8	2.2					34.7	14.9	
Queue Delay		0.1		1.2	0.9					0.0	0.0	
Total Delay (s/veh)		26.6		25.0	3.1					34.7	14.9	
LOS		C		C	A					C	B	
Approach Delay (s/veh)		26.6			16.6						24.9	
Approach LOS		C			B						C	
Queue Length 50th (ft)		67		36	7					141	57	
Queue Length 95th (ft)		114		47	12					208	122	
Internal Link Dist (ft)		131			49			174			539	
Turn Bay Length (ft)										250		
Base Capacity (vph)		1107		1205	1158					554	640	
Starvation Cap Reductn		0		749	789					0	0	

Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	9	10
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	3.0
Minimum Split (s)	10.0	10.0	10.0
Total Split (s)	20.0	24.0	14.0
Total Split (%)	21%	26%	15%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lead	Lag
Lead-Lag Optimize?		Yes	Yes
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay (s/veh)			
Queue Delay			
Total Delay (s/veh)			
LOS			
Approach Delay (s/veh)			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		228		0	0					0	10	
Storage Cap Reductn		0		0	0					0	0	
Reduced v/c Ratio		0.33		0.53	0.40					0.48	0.41	

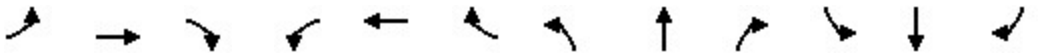
Intersection Summary			
Area Type:	Other		
Cycle Length: 94			
Actuated Cycle Length: 94			
Offset: 0 (0%), Referenced to phase 5:EBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay (s/veh): 22.6		Intersection LOS: C	
Intersection Capacity Utilization 56.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Boston Road & Route 146 SB Ramp



Lane Group	Ø1	Ø9	Ø10
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary

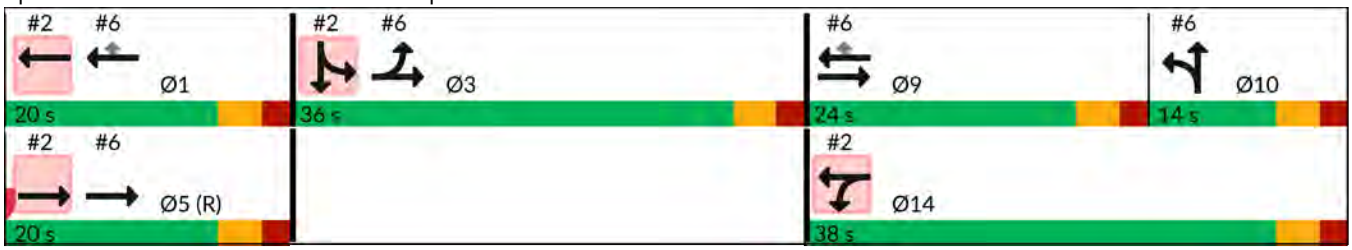


Lane Configurations												
Traffic Volume (vph)	126	544	0	0	317	327	43	0	10	0	0	0
Future Volume (vph)	126	544	0	0	317	327	43	0	10	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1744	0	0	0	0
Flt Permitted	0.950							0.961				
Satd. Flow (perm)	1770	3539	0	0	3539	1583	0	1744	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						355		139				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		129			254			839			531	
Travel Time (s)		2.9			5.8			19.1			12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	137	591	0	0	345	355	0	58	0	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	3	3 5 9			1 9		10	10				
Permitted Phases						1 9						
Detector Phase	3	3 5 9			1 9	1 9	10	10				
Switch Phase												
Minimum Initial (s)	5.0						3.0	3.0				
Minimum Split (s)	10.0						10.0	10.0				
Total Split (s)	36.0						14.0	14.0				
Total Split (%)	38.3%						14.9%	14.9%				
Yellow Time (s)	3.0						3.0	3.0				
All-Red Time (s)	2.0						2.0	2.0				
Lost Time Adjust (s)	0.0							0.0				
Total Lost Time (s)	5.0							5.0				
Lead/Lag							Lag	Lag				
Lead-Lag Optimize?							Yes	Yes				
Recall Mode	None						None	None				
Act Effct Green (s)	24.9	81.6			46.7	46.7		5.5				
Actuated g/C Ratio	0.26	0.87			0.50	0.50		0.06				
v/c Ratio	0.29	0.19			0.20	0.37		0.25				
Control Delay (s/veh)	13.9	0.3			9.8	2.4		2.6				
Queue Delay	2.4	0.3			0.0	0.0		0.2				
Total Delay (s/veh)	16.4	0.6			9.8	2.4		2.8				
LOS	B	A			A	A		A				
Approach Delay (s/veh)		3.6			6.1			2.8				
Approach LOS		A			A			A				
Queue Length 50th (ft)	40	4			42	0		0				
Queue Length 95th (ft)	62	3			71	36		0				
Internal Link Dist (ft)		49			174			759			451	
Turn Bay Length (ft)												
Base Capacity (vph)	583	3116			1804	981		292				
Starvation Cap Reductn	337	1785			0	0		0				
Spillback Cap Reductn	0	0			261	0		46				
Storage Cap Reductn	0	0			0	0		0				
Reduced v/c Ratio	0.56	0.44			0.22	0.36		0.24				

Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	1	5	9	14
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	23.0
Total Split (s)	20.0	20.0	24.0	38.0
Total Split (%)	21%	21%	26%	40%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag			Lead	
Lead-Lag Optimize?			Yes	
Recall Mode	Max	C-Max	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay (s/veh)				
Queue Delay				
Total Delay (s/veh)				
LOS				
Approach Delay (s/veh)				
Approach LOS				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary	
Area Type:	Other
Cycle Length: 94	
Actuated Cycle Length: 94	
Offset: 0 (0%), Referenced to phase 5:EBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay (s/veh): 4.7	Intersection LOS: A
Intersection Capacity Utilization 56.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Route 146 NB Ramp & Boston Road



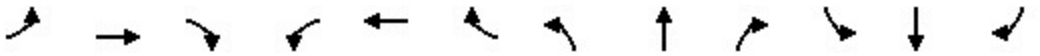
Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	544	0	0	614	25	0	8	326	9	0	30
Future Vol, veh/h	10	544	0	0	614	25	0	8	326	9	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	591	0	0	667	27	0	9	354	10	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	667	0	-	-	-	0	-	1280	296	1003	1294	347
Stage 1	-	-	-	-	-	-	-	613	-	681	681	-
Stage 2	-	-	-	-	-	-	-	667	-	322	613	-
Critical Hdwy	4.14	-	-	-	-	-	-	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	-	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	918	-	0	0	-	-	0	164	701	196	161	649
Stage 1	-	-	0	0	-	-	0	481	-	407	448	-
Stage 2	-	-	0	0	-	-	0	455	-	664	481	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	918	-	-	-	-	-	-	162	701	91	159	649
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	162	-	91	159	-
Stage 1	-	-	-	-	-	-	-	475	-	407	448	-
Stage 2	-	-	-	-	-	-	-	455	-	318	475	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.28	0	17.36	20.94
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	649	65	-	-	-	268
HCM Lane V/C Ratio	0.559	0.012	-	-	-	0.158
HCM Ctrl Dly (s/v)	17.4	9	0.1	-	-	20.9
HCM Lane LOS	C	A	A	-	-	C
HCM 95th %tile Q(veh)	3.5	0	-	-	-	0.6



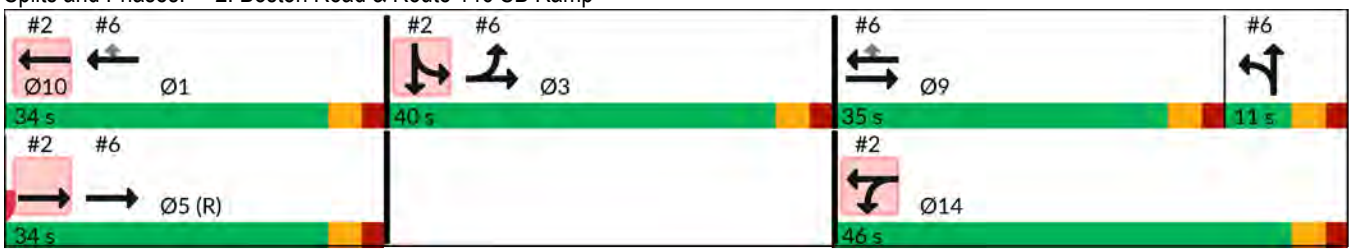
Lane Configurations												
Traffic Volume (vph)	0	192	38	577	227	0	0	0	0	538	0	63
Future Volume (vph)	0	192	38	577	227	0	0	0	0	538	0	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	250		0
Storage Lanes	0		0	2		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	3451	0	3433	1863	0	0	0	0	1681	1648	0
Flt Permitted				0.950						0.950	0.962	
Satd. Flow (perm)	0	3451	0	3433	1863	0	0	0	0	1681	1648	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18									109	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		211			129			254			619	
Travel Time (s)		4.8			2.9			5.8			14.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)										43%		
Lane Group Flow (vph)	0	250	0	627	247	0	0	0	0	333	320	0
Turn Type		NA		Prot	NA					Split	NA	
Protected Phases		5		14	1 14					3	3	
Permitted Phases												
Detector Phase		5		14	1 14					3	3	
Switch Phase												
Minimum Initial (s)		5.0		5.0						5.0	5.0	
Minimum Split (s)		10.0		23.0						10.0	10.0	
Total Split (s)		34.0		46.0						40.0	40.0	
Total Split (%)		28.3%		38.3%						33.3%	33.3%	
Yellow Time (s)		3.0		3.0						3.0	3.0	
All-Red Time (s)		2.0		2.0						2.0	2.0	
Lost Time Adjust (s)		0.0		0.0						0.0	0.0	
Total Lost Time (s)		5.0		5.0						5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Max		None						None	None	
Act Effct Green (s)		32.8		40.3	78.1					31.9	31.9	
Actuated g/C Ratio		0.27		0.34	0.65					0.27	0.27	
v/c Ratio		0.26		0.54	0.20					0.74	0.62	
Control Delay (s/veh)		33.9		29.6	1.9					50.9	30.0	
Queue Delay		0.2		4.5	0.8					0.0	0.1	
Total Delay (s/veh)		34.1		34.1	2.6					50.9	30.0	
LOS		C		C	A					D	C	
Approach Delay (s/veh)		34.1			25.2						40.7	
Approach LOS		C			C						D	
Queue Length 50th (ft)		76		108	10					240	145	
Queue Length 95th (ft)		115		178	12					351	247	
Internal Link Dist (ft)		131			49			174			539	
Turn Bay Length (ft)										250		
Base Capacity (vph)		955		1192	1183					490	557	
Starvation Cap Reductn		0		479	651					0	0	

Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (mph)			
Link Distance (ft)			
Travel Time (s)			
Peak Hour Factor			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	9	10
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	3.0
Minimum Split (s)	10.0	10.0	10.0
Total Split (s)	34.0	35.0	11.0
Total Split (%)	28%	29%	9%
Yellow Time (s)	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lead	Lag
Lead-Lag Optimize?		Yes	Yes
Recall Mode	Max	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay (s/veh)			
Queue Delay			
Total Delay (s/veh)			
LOS			
Approach Delay (s/veh)			
Approach LOS			
Queue Length 50th (ft)			
Queue Length 95th (ft)			
Internal Link Dist (ft)			
Turn Bay Length (ft)			
Base Capacity (vph)			
Starvation Cap Reductn			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		238		0	0					0	8	
Storage Cap Reductn		0		0	0					0	0	
Reduced v/c Ratio		0.35		0.88	0.46					0.68	0.58	

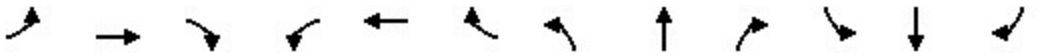
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 5:EBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay (s/veh): 32.2		Intersection LOS: C	
Intersection Capacity Utilization 73.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Boston Road & Route 146 SB Ramp



Lane Group	Ø1	Ø9	Ø10
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			

Intersection Summary



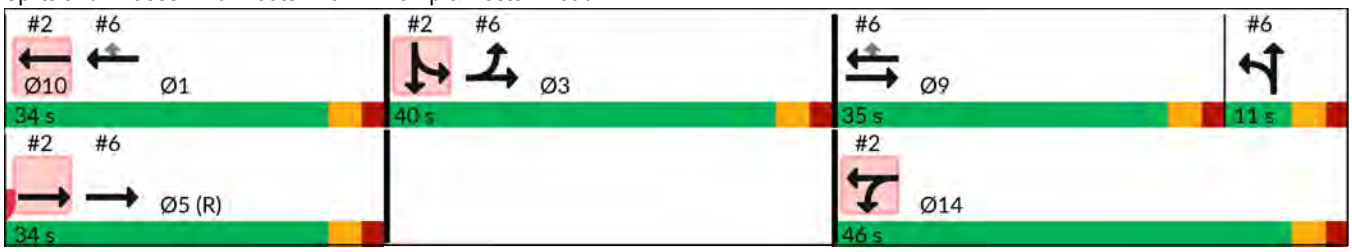
Lane Configurations												
Traffic Volume (vph)	125	606	0	0	738	543	66	0	15	0	0	0
Future Volume (vph)	125	606	0	0	738	543	66	0	15	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1745	0	0	0	0
Flt Permitted	0.950							0.961				
Satd. Flow (perm)	1770	3539	0	0	3539	1583	0	1745	0	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						590		109				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		129			254			839			531	
Travel Time (s)		2.9			5.8			19.1			12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	136	659	0	0	802	590	0	88	0	0	0	0
Turn Type	Prot	NA			NA	Perm	Split	NA				
Protected Phases	3	3 5 9			1 9		10	10				
Permitted Phases						1 9						
Detector Phase	3	3 5 9			1 9	1 9	10	10				
Switch Phase												
Minimum Initial (s)	5.0						3.0	3.0				
Minimum Split (s)	10.0						10.0	10.0				
Total Split (s)	40.0						11.0	11.0				
Total Split (%)	33.3%						9.2%	9.2%				
Yellow Time (s)	3.0						3.0	3.0				
All-Red Time (s)	2.0						2.0	2.0				
Lost Time Adjust (s)	0.0							0.0				
Total Lost Time (s)	5.0							5.0				
Lead/Lag							Lag	Lag				
Lead-Lag Optimize?							Yes	Yes				
Recall Mode	None						None	None				
Act Effct Green (s)	31.9	104.3			62.4	62.4		5.7				
Actuated g/C Ratio	0.27	0.87			0.52	0.52		0.05				
v/c Ratio	0.29	0.21			0.44	0.53		0.47				
Control Delay (s/veh)	13.6	0.3			12.1	2.8		14.9				
Queue Delay	10.0	0.6			0.4	0.0		2.9				
Total Delay (s/veh)	23.6	0.8			12.5	2.8		17.8				
LOS	C	A			B	A		B				
Approach Delay (s/veh)		4.7			8.4			17.8				
Approach LOS		A			A			B				
Queue Length 50th (ft)	40	3			147	0		0				
Queue Length 95th (ft)	m58	2			185	41		36				
Internal Link Dist (ft)		49			174			759			451	
Turn Bay Length (ft)												
Base Capacity (vph)	516	3104			1874	1116		190				
Starvation Cap Reductn	343	1946			0	0		0				
Spillback Cap Reductn	0	0			525	0		43				
Storage Cap Reductn	0	0			0	0		0				
Reduced v/c Ratio	0.79	0.57			0.59	0.53		0.60				

Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Ideal Flow (vphpl)				
Satd. Flow (prot)				
Flt Permitted				
Satd. Flow (perm)				
Right Turn on Red				
Satd. Flow (RTOR)				
Link Speed (mph)				
Link Distance (ft)				
Travel Time (s)				
Peak Hour Factor				
Shared Lane Traffic (%)				
Lane Group Flow (vph)				
Turn Type				
Protected Phases	1	5	9	14
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	23.0
Total Split (s)	34.0	34.0	35.0	46.0
Total Split (%)	28%	28%	29%	38%
Yellow Time (s)	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag			Lead	
Lead-Lag Optimize?			Yes	
Recall Mode	Max	C-Max	None	None
Act Effct Green (s)				
Actuated g/C Ratio				
v/c Ratio				
Control Delay (s/veh)				
Queue Delay				
Total Delay (s/veh)				
LOS				
Approach Delay (s/veh)				
Approach LOS				
Queue Length 50th (ft)				
Queue Length 95th (ft)				
Internal Link Dist (ft)				
Turn Bay Length (ft)				
Base Capacity (vph)				
Starvation Cap Reductn				
Spillback Cap Reductn				
Storage Cap Reductn				
Reduced v/c Ratio				

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 5:EBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay (s/veh): 7.5	Intersection LOS: A
Intersection Capacity Utilization 73.4%	ICU Level of Service D
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Route 146 NB Ramp & Boston Road



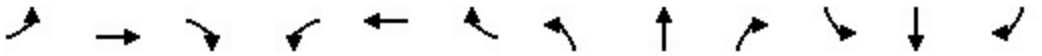
Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	614	0	0	1238	27	0	7	220	22	0	42
Future Vol, veh/h	7	614	0	0	1238	27	0	7	220	22	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	667	0	0	1346	29	0	8	239	24	0	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1346	0	-	-	-	0	-	2028	334	1713	2043	688
Stage 1	-	-	-	-	-	-	-	683	-	1360	1360	-
Stage 2	-	-	-	-	-	-	-	1346	-	353	683	-
Critical Hdwy	4.14	-	-	-	-	-	-	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	-	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	508	-	0	0	-	-	0	57	662	58	56	389
Stage 1	-	-	0	0	-	-	0	448	-	156	215	-
Stage 2	-	-	0	0	-	-	0	218	-	637	448	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	508	-	-	-	-	-	-	56	662	32	55	389
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	56	-	32	55	-
Stage 1	-	-	-	-	-	-	-	439	-	156	215	-
Stage 2	-	-	-	-	-	-	-	218	-	393	439	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.35	0	19.24	157.83
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	496	41	-	-	-	80
HCM Lane V/C Ratio	0.498	0.015	-	-	-	0.873
HCM Ctrl Dly (s/v)	19.2	12.2	0.2	-	-	157.8
HCM Lane LOS	C	B	A	-	-	F
HCM 95th %tile Q(veh)	2.7	0	-	-	-	4.5

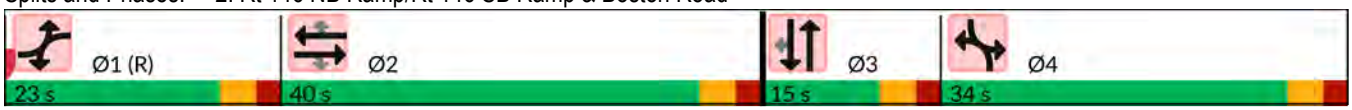


Lane Configurations												
Traffic Volume (vph)	65	156	49	198	119	388	43	50	10	449	50	31
Future Volume (vph)	65	156	49	198	119	388	43	50	10	449	50	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	175		0	250		0
Storage Lanes	1		1	2		1	1		0	2		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1770	3539	1583	3433	1863	1583	1770	1816	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	3433	1863	1583	1770	1816	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117			422		7				117
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			299			309			398	
Travel Time (s)		6.5			6.8			7.0			9.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	170	53	215	129	422	47	65	0	488	54	34
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	1	2		1	2		4	3		4	3	
Permitted Phases			2			2						3
Detector Phase	1	2	2	1	2	2	4	3		4	3	3
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Total Split (s)	23.0	40.0	40.0	23.0	40.0	40.0	34.0	15.0		34.0	15.0	15.0
Total Split (%)	20.5%	35.7%	35.7%	20.5%	35.7%	35.7%	30.4%	13.4%		30.4%	13.4%	13.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	Max	Max	C-Max	Max	Max	None	None		None	None	None
Act Effct Green (s)	29.4	35.0	35.0	29.4	35.0	35.0	21.3	8.4		21.3	8.4	8.4
Actuated g/C Ratio	0.26	0.31	0.31	0.26	0.31	0.31	0.19	0.08		0.19	0.08	0.08
v/c Ratio	0.15	0.15	0.09	0.24	0.22	0.54	0.14	0.46		0.75	0.39	0.15
Control Delay (s/veh)	37.1	28.3	0.3	36.1	29.7	5.6	36.9	54.4		50.0	57.0	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	37.1	28.3	0.3	36.1	29.7	5.6	36.9	54.4		50.0	57.0	1.4
LOS	D	C	A	D	C	A	D	D		D	E	A
Approach Delay (s/veh)		25.4			18.2			47.1			47.8	
Approach LOS		C			B			D			D	
Queue Length 50th (ft)	41	46	0	64	68	0	28	40		172	37	0
Queue Length 95th (ft)	87	73	0	107	118	72	58	85		215	79	0
Internal Link Dist (ft)		207			219			229			318	
Turn Bay Length (ft)	100		100				175			250		
Base Capacity (vph)	464	1105	575	901	582	784	458	168		888	166	247
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.15	0.15	0.09	0.24	0.22	0.54	0.10	0.39		0.55	0.33	0.14

Intersection Summary			
Area Type:	Other		
Cycle Length: 112			
Actuated Cycle Length: 112			
Offset: 0 (0%), Referenced to phase 1:EBWBL, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay (s/veh): 31.0		Intersection LOS: C	
Intersection Capacity Utilization 44.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Rt 146 NB Ramp/Rt 146 SB Ramp & Boston Road



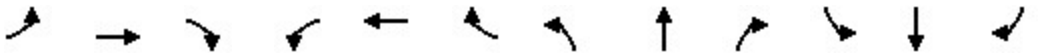
Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	605	0	0	675	25	0	8	326	9	0	30
Future Vol, veh/h	10	605	0	0	675	25	0	8	326	9	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	658	0	0	734	27	0	9	354	10	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	734	0	-	-	-	0	-	1413	329	1102	1427	380
Stage 1	-	-	-	-	-	-	-	679	-	747	747	-
Stage 2	-	-	-	-	-	-	-	734	-	355	679	-
Critical Hdwy	4.14	-	-	-	-	-	-	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	-	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	867	-	0	0	-	-	0	137	667	166	134	617
Stage 1	-	-	0	0	-	-	0	449	-	371	418	-
Stage 2	-	-	0	0	-	-	0	424	-	635	449	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	867	-	-	-	-	-	-	135	667	72	132	617
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	135	-	72	132	-
Stage 1	-	-	-	-	-	-	-	442	-	371	418	-
Stage 2	-	-	-	-	-	-	-	424	-	287	442	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.28	0	19.24	24.77
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	609	59	-	-	-	224
HCM Lane V/C Ratio	0.596	0.013	-	-	-	0.189
HCM Ctrl Dly (s/v)	19.2	9.2	0.1	-	-	24.8
HCM Lane LOS	C	A	A	-	-	C
HCM 95th %tile Q(veh)	3.9	0	-	-	-	0.7



Lane Configurations												
Traffic Volume (vph)	71	122	38	534	204	597	66	50	15	538	50	63
Future Volume (vph)	71	122	38	534	204	597	66	50	15	538	50	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	100		100	0		0	175		0	250		0
Storage Lanes	1		1	2		1	1		0	2		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1770	3539	1583	3433	1863	1583	1770	1799	0	3433	1863	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3539	1583	3433	1863	1583	1770	1799	0	3433	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			117			649		10				117
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		287			299			309			398	
Travel Time (s)		6.5			6.8			7.0			9.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	133	41	580	222	649	72	70	0	585	54	68
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	1	2		1	2		4	3		4	3	
Permitted Phases			2			2						3
Detector Phase	1	2	2	1	2	2	4	3		4	3	3
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	10.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	30.0	37.0	15.0		37.0	15.0	15.0
Total Split (%)	26.8%	26.8%	26.8%	26.8%	26.8%	26.8%	33.0%	13.4%		33.0%	13.4%	13.4%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	C-Max	Max	Max	C-Max	Max	Max	None	None		None	None	None
Act Effct Green (s)	36.0	25.0	25.0	36.0	25.0	25.0	24.6	8.4		24.6	8.4	8.4
Actuated g/C Ratio	0.32	0.22	0.22	0.32	0.22	0.22	0.22	0.08		0.22	0.08	0.08
v/c Ratio	0.14	0.17	0.09	0.53	0.53	0.76	0.19	0.49		0.78	0.39	0.30
Control Delay (s/veh)	31.7	35.8	0.4	35.3	43.9	9.5	35.2	53.6		48.3	56.8	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay (s/veh)	31.7	35.8	0.4	35.3	43.9	9.5	35.2	53.6		48.3	56.8	4.9
LOS	C	D	A	D	D	A	D	D		D	E	A
Approach Delay (s/veh)		28.8			25.0			44.3			44.8	
Approach LOS		C			C			D			D	
Queue Length 50th (ft)	41	41	0	180	142	0	43	42		206	37	0
Queue Length 95th (ft)	86	68	0	261	221	115	77	88		250	79	9
Internal Link Dist (ft)		207			219			229			318	
Turn Bay Length (ft)	100		100				175			250		
Base Capacity (vph)	569	789	444	1104	415	857	505	169		980	166	247
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.14	0.17	0.09	0.53	0.53	0.76	0.14	0.41		0.60	0.33	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 112			
Actuated Cycle Length: 112			
Offset: 0 (0%), Referenced to phase 1:EBWBL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 31.9		Intersection LOS: C	
Intersection Capacity Utilization 57.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Rt 146 NB Ramp/Rt 146 SB Ramp & Boston Road



Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	668	0	0	1292	27	0	7	220	22	0	42
Future Vol, veh/h	7	668	0	0	1292	27	0	7	220	22	0	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	726	0	0	1404	29	0	8	239	24	0	46

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1404	0	-	-	-	0	-	2146	363	1801	2160	717
Stage 1	-	-	-	-	-	-	-	741	-	1419	1419	-
Stage 2	-	-	-	-	-	-	-	1404	-	382	741	-
Critical Hdwy	4.14	-	-	-	-	-	-	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	-	-	-	-	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	482	-	0	0	-	-	0	48	634	50	47	372
Stage 1	-	-	0	0	-	-	0	421	-	144	201	-
Stage 2	-	-	0	0	-	-	0	204	-	612	421	-
Platoon blocked, %		-			-	-						
Mov Cap-1 Maneuver	482	-	-	-	-	-	-	47	634	26	46	372
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	47	-	26	46	-
Stage 1	-	-	-	-	-	-	-	412	-	144	201	-
Stage 2	-	-	-	-	-	-	-	204	-	367	412	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.37	0	21.71	233.21
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	457	37	-	-	-	66
HCM Lane V/C Ratio	0.539	0.016	-	-	-	1.054
HCM Ctrl Dly (s/v)	21.7	12.6	0.2	-	-	233.2
HCM Lane LOS	C	B	A	-	-	F
HCM 95th %tile Q(veh)	3.1	0	-	-	-	5.3

APPENDIX C

Route 146 and Lackey Dam Road Synchro Reports

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑			↑				↱			↱
Traffic Vol, veh/h	0	165	0	0	129	0	0	0	0	0	0	67
Future Vol, veh/h	0	165	0	0	129	0	0	0	0	0	0	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	0	-	-	-2	-
Peak Hour Factor	92	81	81	75	75	92	92	92	92	78	92	78
Heavy Vehicles, %	2	2	0	0	8	2	2	2	2	0	2	1
Mvmt Flow	0	204	0	0	172	0	0	0	0	0	0	86

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	-	0	-	-	-	0	-	-	172	-	-	204
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.22	-	-	6.01
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.318	-	-	3.309
Pot Cap-1 Maneuver	0	-	0	0	-	0	0	0	872	0	0	849
Stage 1	0	-	0	0	-	0	0	0	-	0	0	-
Stage 2	0	-	0	0	-	0	0	0	-	0	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	872	-	-	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Control Delay, s	0	0	0	9.7
HCM LOS			A	A

Minor Lane/Major Mvmt	NWLn1	EBT	WBT	SELn1
Capacity (veh/h)	849	-	-	-
HCM Lane V/C Ratio	0.101	-	-	-
HCM Control Delay (s)	9.7	-	-	0
HCM Lane LOS	A	-	-	A
HCM 95th %tile Q(veh)	0.3	-	-	-

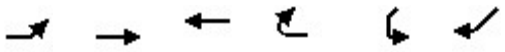
Intersection	
Int Delay, s/veh	2.9

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑			↑	↰	
Traffic Vol, veh/h	165	0	0	129	92	0
Future Vol, veh/h	165	0	0	129	92	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-2	-
Peak Hour Factor	81	81	75	75	78	78
Heavy Vehicles, %	2	0	0	8	11	0
Mvmt Flow	204	0	0	172	118	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	376	-
Stage 1	-	-	-	-	204	-
Stage 2	-	-	-	-	172	-
Critical Hdwy	-	-	-	-	6.11	-
Critical Hdwy Stg 1	-	-	-	-	5.11	-
Critical Hdwy Stg 2	-	-	-	-	5.11	-
Follow-up Hdwy	-	-	-	-	3.599	-
Pot Cap-1 Maneuver	-	0	0	-	634	0
Stage 1	-	0	0	-	828	0
Stage 2	-	0	0	-	853	0
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	634	-
Mov Cap-2 Maneuver	-	-	-	-	634	-
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	853	-

Approach	EB	WB	NW
HCM Control Delay, s	0	0	12
HCM LOS			B

Minor Lane/Major Mvmt	NWLn1	EBT	WBT
Capacity (veh/h)	634	-	-
HCM Lane V/C Ratio	0.186	-	-
HCM Control Delay (s)	12	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.7	-	-



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	232	129	11	0	0
Future Volume (Veh/h)	0	232	129	11	0	0
Sign Control		Free	Free		Stop	
Grade		-1%	-1%		0%	
Peak Hour Factor	0.81	0.81	0.75	0.75	0.92	0.92
Hourly flow rate (vph)	0	286	172	15	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	187				466	180
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	187				466	180
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1399				559	869

Direction, Lane #	EB 1	WB 1
Volume Total	286	187
Volume Left	0	0
Volume Right	0	15
cSH	1700	1700
Volume to Capacity	0.17	0.11
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.5%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	276	165	0	0	221	0	0	0	0	0
Future Vol, veh/h	276	165	0	0	221	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-1	-	-	1	-	0	-	0	-
Peak Hour Factor	81	81	92	92	75	75	92	92	92	92
Heavy Vehicles, %	3	2	2	2	8	0	2	0	2	2
Mvmt Flow	341	204	0	0	295	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1	
Conflicting Flow All	295	0	-	-	-	0	-	204
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.227	-	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	1261	-	0	0	-	0	0	837
Stage 1	-	-	0	0	-	0	0	-
Stage 2	-	-	0	0	-	0	0	-
Platoon blocked, %		-			-			
Mov Cap-1 Maneuver	1261	-	-	-	-	-	-	837
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NW
HCM Control Delay, s	5.6	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	WBT
Capacity (veh/h)	-	1261	-	-
HCM Lane V/C Ratio	-	0.27	-	-
HCM Control Delay (s)	0	8.9	0	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	-	1.1	-	-

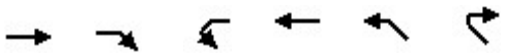
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↱					↰		
Traffic Vol, veh/h	0	436	0	49	172	0	0	0	0	5	0	0
Future Vol, veh/h	0	436	0	49	172	0	0	0	0	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	-1	-
Peak Hour Factor	81	81	81	86	86	86	92	92	92	94	94	94
Heavy Vehicles, %	0	2	0	7	9	0	0	0	0	20	0	0
Mvmt Flow	0	538	0	57	200	0	0	0	0	5	0	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	538	0	0	852	-	-
Stage 1	-	-	-	-	-	-	314	-	-
Stage 2	-	-	-	-	-	-	538	-	-
Critical Hdwy	-	-	-	4.17	-	-	6.4	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.4	-	-
Follow-up Hdwy	-	-	-	2.263	-	-	3.68	-	-
Pot Cap-1 Maneuver	0	-	0	1005	-	0	322	0	0
Stage 1	0	-	0	-	-	0	714	0	0
Stage 2	0	-	0	-	-	0	567	0	0
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	1005	-	-	301	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	301	0	-
Stage 1	-	-	-	-	-	-	714	0	-
Stage 2	-	-	-	-	-	-	531	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1
Capacity (veh/h)	-	1005	-	301
HCM Lane V/C Ratio	-	0.057	-	0.018
HCM Control Delay (s)	-	8.8	0	17.2
HCM Lane LOS	-	A	A	C
HCM 95th %tile Q(veh)	-	0.2	-	0.1



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	436	150	0	172	0	0
Future Volume (Veh/h)	436	150	0	172	0	0
Sign Control	Free			Free	Stop	
Grade	-3%			3%	0%	
Peak Hour Factor	0.81	0.81	0.86	0.86	0.92	0.92
Hourly flow rate (vph)	538	185	0	200	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			723		830	630
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			723		830	630
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			889		342	485

Direction, Lane #	EB 1	WB 1
Volume Total	723	200
Volume Left	0	0
Volume Right	185	0
cSH	1700	1700
Volume to Capacity	0.43	0.12
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	35.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑			↑			↗	↰	
Traffic Vol, veh/h	0	586	0	0	172	0	0	104	0	0
Future Vol, veh/h	0	586	0	0	172	0	0	104	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	Stop	-	-
Storage Length	-	-	-	-	-	-	-	0	0	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-3	-	-	3	-	-1	-	0	-
Peak Hour Factor	81	81	92	92	86	86	92	94	92	92
Heavy Vehicles, %	0	2	2	2	9	0	2	1	2	2
Mvmt Flow	0	723	0	0	200	0	0	111	0	0

Major/Minor	Major1			Major2			Minor2		Minor1	
Conflicting Flow All	-	0	-	-	-	0	-	200	923	-
Stage 1	-	-	-	-	-	-	-	-	723	-
Stage 2	-	-	-	-	-	-	-	-	200	-
Critical Hdwy	-	-	-	-	-	-	-	6.11	7.12	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	-	-	-	-	-	-	-	3.309	3.518	-
Pot Cap-1 Maneuver	0	-	0	0	-	0	0	848	250	0
Stage 1	0	-	0	0	-	0	0	-	417	0
Stage 2	0	-	0	0	-	0	0	-	802	0
Platoon blocked, %		-			-					
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	848	218	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	218	-
Stage 1	-	-	-	-	-	-	-	-	417	-
Stage 2	-	-	-	-	-	-	-	-	697	-

Approach	EB	WB	SB	NW
HCM Control Delay, s	0	0	9.9	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NWLn1	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	-	848
HCM Lane V/C Ratio	-	-	-	0.13
HCM Control Delay (s)	0	-	-	9.9
HCM Lane LOS	A	-	-	A
HCM 95th %tile Q(veh)	-	-	-	0.4

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑			↑				↱			↱
Traffic Vol, veh/h	0	116	0	0	252	0	0	0	0	0	0	66
Future Vol, veh/h	0	116	0	0	252	0	0	0	0	0	0	66
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	0	-	-	-2	-
Peak Hour Factor	92	90	90	90	90	92	92	92	92	94	92	94
Heavy Vehicles, %	2	2	0	0	1	2	2	2	2	0	2	3
Mvmt Flow	0	129	0	0	280	0	0	0	0	0	0	70

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	-	-	0	-	-	280
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0	0	0	759
Stage 1	0	-	0	0	-	0	0	0	-
Stage 2	0	-	0	0	-	0	0	0	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	759
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SE
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	SELn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q(veh)	-	-	-

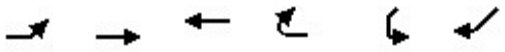
Intersection	
Int Delay, s/veh	3

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑			↑	↰	
Traffic Vol, veh/h	116	0	0	252	126	0
Future Vol, veh/h	116	0	0	252	126	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-2	-
Peak Hour Factor	90	90	90	90	94	94
Heavy Vehicles, %	2	0	0	1	1	0
Mvmt Flow	129	0	0	280	134	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	409	-
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	280	-
Critical Hdwy	-	-	-	-	6.01	-
Critical Hdwy Stg 1	-	-	-	-	5.01	-
Critical Hdwy Stg 2	-	-	-	-	5.01	-
Follow-up Hdwy	-	-	-	-	3.509	-
Pot Cap-1 Maneuver	-	0	0	-	628	0
Stage 1	-	0	0	-	912	0
Stage 2	-	0	0	-	794	0
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	628	-
Mov Cap-2 Maneuver	-	-	-	-	628	-
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	794	-

Approach	EB	WB	NW
HCM Control Delay, s	0	0	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NWLn1	EBT	WBT
Capacity (veh/h)	628	-	-
HCM Lane V/C Ratio	0.213	-	-
HCM Control Delay (s)	12.3	-	-
HCM Lane LOS	B	-	-
HCM 95th %tile Q(veh)	0.8	-	-



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	182	252	12	0	0
Future Volume (Veh/h)	0	182	252	12	0	0
Sign Control		Free	Free		Stop	
Grade		-1%	-1%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.25	0.25
Hourly flow rate (vph)	0	202	280	13	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	293				488	286
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	293				488	286
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1280				542	757

Direction, Lane #	EB 1	WB 1
Volume Total	202	293
Volume Left	0	0
Volume Right	0	13
cSH	1700	1700
Volume to Capacity	0.12	0.17
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	17.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	133	116	0	0	378	0	0	0	0	0
Future Vol, veh/h	133	116	0	0	378	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-1	-	-	1	-	0	-	0	-
Peak Hour Factor	90	90	92	92	90	90	92	25	92	92
Heavy Vehicles, %	1	2	2	2	1	0	2	0	2	2
Mvmt Flow	148	129	0	0	420	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1	
Conflicting Flow All	420	0	-	-	-	0	-	129
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	4.11	-	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.209	-	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	1145	-	0	0	-	0	0	921
Stage 1	-	-	0	0	-	0	0	-
Stage 2	-	-	0	0	-	0	0	-
Platoon blocked, %		-			-			
Mov Cap-1 Maneuver	1145	-	-	-	-	-	-	921
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NW
HCM Control Delay, s	4.6	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	WBT
Capacity (veh/h)	-	1145	-	-
HCM Lane V/C Ratio	-	0.129	-	-
HCM Control Delay (s)	0	8.6	0	-
HCM Lane LOS	A	A	A	-
HCM 95th %tile Q(veh)	-	0.4	-	-

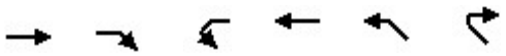
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↱					↰		
Traffic Vol, veh/h	0	235	0	67	311	0	0	0	0	14	0	0
Future Vol, veh/h	0	235	0	67	311	0	0	0	0	14	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	-1	-
Peak Hour Factor	93	93	93	91	91	91	92	92	92	89	89	89
Heavy Vehicles, %	0	1	0	1	1	0	0	0	0	0	0	0
Mvmt Flow	0	253	0	74	342	0	0	0	0	16	0	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	253	0	0			743	-	-
Stage 1	-	-	-	-	-	-			490	-	-
Stage 2	-	-	-	-	-	-			253	-	-
Critical Hdwy	-	-	-	4.11	-	-			6.2	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-			5.2	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.2	-	-
Follow-up Hdwy	-	-	-	2.209	-	-			3.5	-	-
Pot Cap-1 Maneuver	0	-	0	1318	-	0			402	0	0
Stage 1	0	-	0	-	-	0			637	0	0
Stage 2	0	-	0	-	-	0			805	0	0
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1318	-	-			374	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-			374	0	-
Stage 1	-	-	-	-	-	-			637	0	-
Stage 2	-	-	-	-	-	-			749	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.4	15
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1
Capacity (veh/h)	-	1318	-	374
HCM Lane V/C Ratio	-	0.056	-	0.042
HCM Control Delay (s)	-	7.9	0	15
HCM Lane LOS	-	A	A	C
HCM 95th %tile Q(veh)	-	0.2	-	0.1



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	235	82	0	311	0	0
Future Volume (Veh/h)	235	82	0	311	0	0
Sign Control	Free			Free	Stop	
Grade	-3%			3%	0%	
Peak Hour Factor	0.93	0.93	0.91	0.91	0.25	0.25
Hourly flow rate (vph)	253	88	0	342	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			341		639	297
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			341		639	297
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1229		443	747

Direction, Lane #	EB 1	WB 1
Volume Total	341	342
Volume Left	0	0
Volume Right	88	0
cSH	1700	1700
Volume to Capacity	0.20	0.20
Queue Length 95th (ft)	0	0
Control Delay (s)	0.0	0.0
Lane LOS		
Approach Delay (s)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	20.7%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑			↑			↱	↰	
Traffic Vol, veh/h	0	317	0	0	311	0	0	276	0	0
Future Vol, veh/h	0	317	0	0	311	0	0	276	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Yield	Yield	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	Stop	-	-
Storage Length	-	-	-	-	-	-	-	0	0	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-3	-	-	3	-	-1	-	0	-
Peak Hour Factor	93	93	92	92	91	91	92	89	92	92
Heavy Vehicles, %	0	1	2	2	1	0	2	1	2	2
Mvmt Flow	0	341	0	0	342	0	0	310	0	0

Major/Minor	Major1		Major2				Minor1	
Conflicting Flow All	-	0	-	-	-	0	683	-
Stage 1	-	-	-	-	-	-	341	-
Stage 2	-	-	-	-	-	-	342	-
Critical Hdwy	-	-	-	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	-	-	3.518	-
Pot Cap-1 Maneuver	0	-	0	0	-	0	415	0
Stage 1	0	-	0	0	-	0	720	0
Stage 2	0	-	0	0	-	0	719	0
Platoon blocked, %		-			-			
Mov Cap-1 Maneuver	-	-	-	-	-	-	415	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	415	-
Stage 1	-	-	-	-	-	-	720	-
Stage 2	-	-	-	-	-	-	719	-

Approach	EB	WB	NW
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NWLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Control Delay (s)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑			↑				↱			↱
Traffic Vol, veh/h	0	255	0	0	201	0	0	0	0	0	0	115
Future Vol, veh/h	0	255	0	0	201	0	0	0	0	0	0	115
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	0	-	-	-2	-
Peak Hour Factor	92	81	81	75	75	92	92	92	92	78	92	78
Heavy Vehicles, %	2	2	0	0	8	2	2	2	2	0	2	1
Mvmt Flow	0	315	0	0	268	0	0	0	0	0	0	147

Major/Minor	Major1			Major2			Minor2			Minor1		
Conflicting Flow All	-	0	-	-	-	0	-	-	268	-	-	315
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.22	-	-	6.01
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.318	-	-	3.309
Pot Cap-1 Maneuver	0	-	0	0	-	0	0	0	771	0	0	741
Stage 1	0	-	0	0	-	0	0	0	-	0	0	-
Stage 2	0	-	0	0	-	0	0	0	-	0	0	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	771	-	-	741
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	SE	NW
HCM Ctrl Dly, s/v	0	0	0	11.1
HCM LOS			A	B

Minor Lane/Major Mvmt	NWLn1	EBT	WBT	SELn1
Capacity (veh/h)	741	-	-	-
HCM Lane V/C Ratio	0.199	-	-	-
HCM Ctrl Dly (s/v)	11.1	-	-	0
HCM Lane LOS	B	-	-	A
HCM 95th %tile Q (veh)	0.7	-	-	-

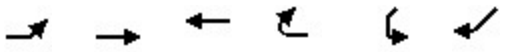
Intersection	
Int Delay, s/veh	7.1

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑			↑	↰	
Traffic Vol, veh/h	255	0	0	201	220	0
Future Vol, veh/h	255	0	0	201	220	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-2	-
Peak Hour Factor	81	81	75	75	78	78
Heavy Vehicles, %	2	0	0	8	11	0
Mvmt Flow	315	0	0	268	282	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	583	-
Stage 1	-	-	-	-	315	-
Stage 2	-	-	-	-	268	-
Critical Hdwy	-	-	-	-	6.11	-
Critical Hdwy Stg 1	-	-	-	-	5.11	-
Critical Hdwy Stg 2	-	-	-	-	5.11	-
Follow-up Hdwy	-	-	-	-	3.599	-
Pot Cap-1 Maneuver	-	0	0	-	491	0
Stage 1	-	0	0	-	746	0
Stage 2	-	0	0	-	779	0
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	491	-
Mov Cap-2 Maneuver	-	-	-	-	491	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	779	-

Approach	EB	WB	NW
HCM Ctrl Dly, s/v	0	0	21.8
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBT	WBT
Capacity (veh/h)	491	-	-
HCM Lane V/C Ratio	0.574	-	-
HCM Ctrl Dly (s/v)	21.8	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q (veh)	3.6	-	-



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	370	201	28	0	0
Future Volume (Veh/h)	0	370	201	28	0	0
Sign Control		Free	Free		Stop	
Grade		-1%	-1%		0%	
Peak Hour Factor	0.81	0.81	0.75	0.75	0.92	0.92
Hourly flow rate (vph)	0	457	268	37	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	305				744	287
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	305				744	287
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1267				385	757

Direction, Lane #	EB 1	WB 1
Volume Total	457	305
Volume Left	0	0
Volume Right	0	37
cSH	1700	1700
Volume to Capacity	0.27	0.18
Queue Length 95th (ft)	0	0
Control Delay (s/veh)	0.0	0.0
Lane LOS		
Approach Delay (s/veh)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	349	255	0	0	421	0	0	0	0	0
Future Vol, veh/h	349	255	0	0	421	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-1	-	-	1	-	0	-	0	-
Peak Hour Factor	81	81	92	92	75	75	92	92	92	92
Heavy Vehicles, %	3	2	2	2	8	0	2	0	2	2
Mvmt Flow	431	315	0	0	561	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1	
Conflicting Flow All	561	0	-	-	-	0	-	315
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.227	-	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	1005	-	0	0	-	0	0	725
Stage 1	-	-	0	0	-	0	0	-
Stage 2	-	-	0	0	-	0	0	-
Platoon blocked, %		-			-			
Mov Cap-1 Maneuver	1005	-	-	-	-	-	-	725
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NW
HCM Ctrl Dly, s/v	6.5	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	WBT
Capacity (veh/h)	-	1005	-	-
HCM Lane V/C Ratio	-	0.429	-	-
HCM Ctrl Dly (s/v)	0	11.2	0	-
HCM Lane LOS	A	B	A	-
HCM 95th %tile Q (veh)	-	2.2	-	-

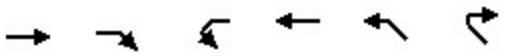
Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↱					↰		
Traffic Vol, veh/h	0	550	0	60	361	0	0	0	0	54	0	0
Future Vol, veh/h	0	550	0	60	361	0	0	0	0	54	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	-1	-
Peak Hour Factor	81	81	81	86	86	86	92	92	92	94	94	94
Heavy Vehicles, %	0	2	0	7	9	0	0	0	0	20	0	0
Mvmt Flow	0	679	0	70	420	0	0	0	0	57	0	0

Major/Minor	Major1			Major2				Minor2		
Conflicting Flow All	-	0	-	679	0	0		1239	-	-
Stage 1	-	-	-	-	-	-		560	-	-
Stage 2	-	-	-	-	-	-		679	-	-
Critical Hdwy	-	-	-	4.17	-	-		6.4	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-		5.4	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.4	-	-
Follow-up Hdwy	-	-	-	2.263	-	-		3.68	-	-
Pot Cap-1 Maneuver	0	-	0	890	-	0		191	0	0
Stage 1	0	-	0	-	-	0		555	0	0
Stage 2	0	-	0	-	-	0		490	0	0
Platoon blocked, %		-			-					
Mov Cap-1 Maneuver	-	-	-	890	-	-		171	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-		171	0	-
Stage 1	-	-	-	-	-	-		555	0	-
Stage 2	-	-	-	-	-	-		440	0	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	1.3	36.3
HCM LOS			E

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1
Capacity (veh/h)	-	890	-	171
HCM Lane V/C Ratio	-	0.078	-	0.336
HCM Ctrl Dly (s/v)	-	9.4	0	36.3
HCM Lane LOS	-	A	A	E
HCM 95th %tile Q (veh)	-	0.3	-	1.4



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	550	180	0	361	0	0
Future Volume (Veh/h)	550	180	0	361	0	0
Sign Control	Free			Free	Stop	
Grade	-3%			3%	0%	
Peak Hour Factor	0.81	0.81	0.86	0.86	0.92	0.92
Hourly flow rate (vph)	679	222	0	420	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			901		1210	790
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			901		1210	790
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			763		204	393

Direction, Lane #	EB 1	WB 1
Volume Total	901	420
Volume Left	0	0
Volume Right	222	0
cSH	1700	1700
Volume to Capacity	0.53	0.25
Queue Length 95th (ft)	0	0
Control Delay (s/veh)	0.0	0.0
Lane LOS		
Approach Delay (s/veh)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑			↑			↗	↖	
Traffic Vol, veh/h	0	730	0	0	361	0	0	405	0	0
Future Vol, veh/h	0	730	0	0	361	0	0	405	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	Stop	-	-
Storage Length	-	-	-	-	-	-	-	0	0	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-3	-	-	3	-	-1	-	0	-
Peak Hour Factor	81	81	92	92	86	86	92	94	92	92
Heavy Vehicles, %	0	2	2	2	9	0	2	1	2	2
Mvmt Flow	0	901	0	0	420	0	0	431	0	0

Major/Minor	Major1			Major2			Minor2		Minor1	
Conflicting Flow All	-	0	-	-	-	0	-	420	1321	-
Stage 1	-	-	-	-	-	-	-	-	901	-
Stage 2	-	-	-	-	-	-	-	-	420	-
Critical Hdwy	-	-	-	-	-	-	-	6.11	7.12	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	6.12	-
Follow-up Hdwy	-	-	-	-	-	-	-	3.309	3.518	-
Pot Cap-1 Maneuver	0	-	0	0	-	0	0	643	134	0
Stage 1	0	-	0	0	-	0	0	-	333	0
Stage 2	0	-	0	0	-	0	0	-	611	0
Platoon blocked, %		-			-					
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	643	44	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	44	-
Stage 1	-	-	-	-	-	-	-	-	333	-
Stage 2	-	-	-	-	-	-	-	-	202	-

Approach	EB	WB	SB	NW
HCM Ctrl Dly, s/v	0	0	21.2	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NWLn1	EBT	WBT	SBLn1
Capacity (veh/h)	-	-	-	643
HCM Lane V/C Ratio	-	-	-	0.67
HCM Ctrl Dly (s/v)	0	-	-	21.2
HCM Lane LOS	A	-	-	C
HCM 95th %tile Q (veh)	-	-	-	5.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		↑			↑				↱			↱
Traffic Vol, veh/h	0	208	0	0	328	0	0	0	0	0	0	94
Future Vol, veh/h	0	208	0	0	328	0	0	0	0	0	0	94
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Yield	Yield	Yield
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-1	-	-	-1	-	-	0	-	-	-2	-
Peak Hour Factor	92	90	90	90	90	92	92	92	92	94	92	94
Heavy Vehicles, %	2	2	0	0	1	2	2	2	2	0	2	3
Mvmt Flow	0	231	0	0	364	0	0	0	0	0	0	100

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	-	-	0	-	-	364
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	0	-	0	0	-	0	0	0	681
Stage 1	0	-	0	0	-	0	0	0	-
Stage 2	0	-	0	0	-	0	0	0	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	0	681
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	0	-
Stage 1	-	-	-	-	-	-	-	0	-
Stage 2	-	-	-	-	-	-	-	0	-

Approach	EB	WB	SE
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBT	SELn1
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Ctrl Dly (s/v)	-	-	0
HCM Lane LOS	-	-	A
HCM 95th %tile Q (veh)	-	-	-

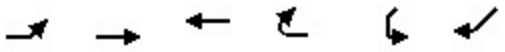
Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations	↑			↑	↰	
Traffic Vol, veh/h	208	0	0	328	195	0
Future Vol, veh/h	208	0	0	328	195	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	-1	-	-	1	-2	-
Peak Hour Factor	90	90	90	90	94	94
Heavy Vehicles, %	2	0	0	1	1	0
Mvmt Flow	231	0	0	364	207	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	-	-	-	595	-
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	364	-
Critical Hdwy	-	-	-	-	6.01	-
Critical Hdwy Stg 1	-	-	-	-	5.01	-
Critical Hdwy Stg 2	-	-	-	-	5.01	-
Follow-up Hdwy	-	-	-	-	3.509	-
Pot Cap-1 Maneuver	-	0	0	-	501	0
Stage 1	-	0	0	-	831	0
Stage 2	-	0	0	-	734	0
Platoon blocked, %	-			-		
Mov Cap-1 Maneuver	-	-	-	-	501	-
Mov Cap-2 Maneuver	-	-	-	-	501	-
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	734	-

Approach	EB	WB	NW
HCM Ctrl Dly, s/v	0	0	17.2
HCM LOS			C

Minor Lane/Major Mvmt	NWLn1	EBT	WBT
Capacity (veh/h)	501	-	-
HCM Lane V/C Ratio	0.414	-	-
HCM Ctrl Dly (s/v)	17.2	-	-
HCM Lane LOS	C	-	-
HCM 95th %tile Q (veh)	2	-	-



Movement	EBL	EBT	WBT	WBR	SWL	SWR
Lane Configurations						
Traffic Volume (veh/h)	0	302	328	63	0	0
Future Volume (Veh/h)	0	302	328	63	0	0
Sign Control		Free	Free		Stop	
Grade		-1%	-1%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.25	0.25
Hourly flow rate (vph)	0	336	364	70	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	434				735	399
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	434				735	399
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1136				390	655

Direction, Lane #	EB 1	WB 1
Volume Total	336	434
Volume Left	0	0
Volume Right	0	70
cSH	1700	1700
Volume to Capacity	0.20	0.26
Queue Length 95th (ft)	0	0
Control Delay (s/veh)	0.0	0.0
Lane LOS		
Approach Delay (s/veh)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	24.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations										
Traffic Vol, veh/h	376	208	0	0	523	0	0	0	0	0
Future Vol, veh/h	376	208	0	0	523	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	None	-	-
Storage Length	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-1	-	-	1	-	0	-	0	-
Peak Hour Factor	90	90	92	92	90	90	92	25	92	92
Heavy Vehicles, %	1	2	2	2	1	0	2	0	2	2
Mvmt Flow	418	231	0	0	581	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1	
Conflicting Flow All	581	0	-	-	-	0	-	231
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-
Critical Hdwy	4.11	-	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.209	-	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	998	-	0	0	-	0	0	808
Stage 1	-	-	0	0	-	0	0	-
Stage 2	-	-	0	0	-	0	0	-
Platoon blocked, %		-			-			
Mov Cap-1 Maneuver	998	-	-	-	-	-	-	808
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-

Approach	EB	WB	NW
HCM Ctrl Dly, s/v	7.2	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NWLn1	EBL	EBT	WBT
Capacity (veh/h)	-	998	-	-
HCM Lane V/C Ratio	-	0.419	-	-
HCM Ctrl Dly (s/v)	0	11.2	0	-
HCM Lane LOS	A	B	A	-
HCM 95th %tile Q (veh)	-	2.1	-	-

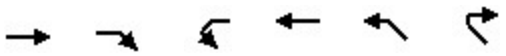
Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑			↱					↰		
Traffic Vol, veh/h	0	547	0	98	425	0	0	0	0	37	0	0
Future Vol, veh/h	0	547	0	98	425	0	0	0	0	37	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-3	-	-	3	-	-	0	-	-	-1	-
Peak Hour Factor	93	93	93	91	91	91	92	92	92	89	89	89
Heavy Vehicles, %	0	1	0	1	1	0	0	0	0	0	0	0
Mvmt Flow	0	588	0	108	467	0	0	0	0	42	0	0

Major/Minor	Major1			Major2				Minor2		
Conflicting Flow All	-	0	-	588	0	0		1271	-	-
Stage 1	-	-	-	-	-	-		683	-	-
Stage 2	-	-	-	-	-	-		588	-	-
Critical Hdwy	-	-	-	4.11	-	-		6.2	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-		5.2	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.2	-	-
Follow-up Hdwy	-	-	-	2.209	-	-		3.5	-	-
Pot Cap-1 Maneuver	0	-	0	992	-	0		201	0	0
Stage 1	0	-	0	-	-	0		525	0	0
Stage 2	0	-	0	-	-	0		578	0	0
Platoon blocked, %		-			-					
Mov Cap-1 Maneuver	-	-	-	992	-	-		171	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-		171	0	-
Stage 1	-	-	-	-	-	-		525	0	-
Stage 2	-	-	-	-	-	-		493	0	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	0	1.7	32.7
HCM LOS			D

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1
Capacity (veh/h)	-	992	-	171
HCM Lane V/C Ratio	-	0.109	-	0.243
HCM Ctrl Dly (s/v)	-	9.1	0	32.7
HCM Lane LOS	-	A	A	D
HCM 95th %tile Q (veh)	-	0.4	-	0.9



Movement	EBT	EBR	WBL	WBT	NWL	NWR
Lane Configurations						
Traffic Volume (veh/h)	547	183	0	425	0	0
Future Volume (Veh/h)	547	183	0	425	0	0
Sign Control	Free			Free	Stop	
Grade	-3%			3%	0%	
Peak Hour Factor	0.93	0.93	0.91	0.91	0.25	0.25
Hourly flow rate (vph)	588	197	0	467	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			785		1154	687
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			785		1154	687
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			843		220	451

Direction, Lane #	EB 1	WB 1
Volume Total	785	467
Volume Left	0	0
Volume Right	197	0
cSH	1700	1700
Volume to Capacity	0.46	0.27
Queue Length 95th (ft)	0	0
Control Delay (s/veh)	0.0	0.0
Lane LOS		
Approach Delay (s/veh)	0.0	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	43.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBR	NWL	NWR
Lane Configurations		↑			↑			↗	↖	
Traffic Vol, veh/h	0	730	0	0	425	0	0	441	0	0
Future Vol, veh/h	0	730	0	0	425	0	0	441	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Yield	Yield	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	Stop	-	-
Storage Length	-	-	-	-	-	-	-	0	0	-
Veh in Median Storage, #	-	0	-	-	0	-	0	-	0	-
Grade, %	-	-3	-	-	3	-	-1	-	0	-
Peak Hour Factor	93	93	92	92	91	91	92	89	92	92
Heavy Vehicles, %	0	1	2	2	1	0	2	1	2	2
Mvmt Flow	0	785	0	0	467	0	0	496	0	0

Major/Minor	Major1			Major2			Minor1	
Conflicting Flow All	-	0	-	-	-	0	1252	-
Stage 1	-	-	-	-	-	-	785	-
Stage 2	-	-	-	-	-	-	467	-
Critical Hdwy	-	-	-	-	-	-	6.42	-
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	-	-	-	-	3.518	-
Pot Cap-1 Maneuver	0	-	0	0	-	0	190	0
Stage 1	0	-	0	0	-	0	449	0
Stage 2	0	-	0	0	-	0	631	0
Platoon blocked, %		-			-			
Mov Cap-1 Maneuver	-	-	-	-	-	-	190	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	190	-
Stage 1	-	-	-	-	-	-	449	-
Stage 2	-	-	-	-	-	-	631	-

Approach	EB	WB	NW
HCM Ctrl Dly, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	NWLn1	EBT	WBT
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Ctrl Dly (s/v)	0	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q (veh)	-	-	-

APPENDIX D

Stakeholder Interview Questionnaires

Route 146 Corridor Vision Study - CMRPC

Stakeholder Interview Questions

Study Area: State Highway Route 146 corridor between State Route 122A in Millbury and the Rhode Island State Line in Millville and Uxbridge.

1. Development in the study area:
    i. We have assembled a list of potential development projects in the area. Can you please review this list, and provide an overview of any additional current or proposed development projects within your community that could impact Route 146?

    The intersection on Rt-146 is definitely the priority. The ease of access that Rt-146 provides for a larger distribution makes it a feasible location for warehouses and distribution centers.

    ii. Are there areas of your community that are targeted for development or redevelopment (such as a local comprehensive plan, economic development plan or housing production plan) that we should consider for assessing future access needs?

2. Any other development potential along Route 146 that we should be aware of? Are there any specific locations within the corridor that you consider particularly problematic or in need of improvement? If so, why?

    Boston Road and the last signalized intersection.

    It will be great for the project team to touch base with the Rhode Island DOT as well in order to gather more insights.

    West main street interchange needs improvement.

    South of west main Milbury street, driveways on 146

    South on Uxbridge, there are some rest areas for which issues were raised in the past.

3. What opportunities do you see for improving transportation infrastructure within the study area? Are there any particular projects or initiatives you believe could be beneficial?

    Sutton Avenue as the volume of traffic is growing.

4. What opportunities do you see for improving active transportation (i.e., walking and bicycling) in the study area? How does active transportation rank among other transportation-related priorities?

   There is a lot of interest in completing the Black stone valley trail. People will not ride on 146 with their bicycles for sure as the area is predominantly industrial. Same is the case with pedestrians. Pedestrians will not feel safe either.

   Any grade separation could be helpful.

   Very recently, people started to walk on the last intersection on 146. That's too dangerous. People are walking mainly because of the land use changes and trying to cross the streets.

5. Have you received any feedback from local businesses or residents regarding transportation needs and priorities in the study area?

   The interchange come again and again in the discussion.

6. Are there any safety considerations within the study area that the project team should be aware of as we develop potential interventions?

   There are major developments along the EW direction. May be for future, with the increase in trucks and distribution centers, predictions are necessary considering safety in mind.

7. Are there any environmental considerations within the study area that the project team should be aware of as we develop potential interventions?

   There has to be considerations for Black Stone River. We are happy to connect you with the lady who takes care of the environmental consideration in regard to Black Stone River.

8. Are there any equity considerations within the study area that the project team should be aware of as we develop potential interventions?

   Our region is ageing. One thing to keep in mind is there are some communities that don't belong to any agency's area thus they don't have transit access. That issue might come up in future.

9. What is the best way to ensure effective communication and collaboration with your municipality throughout the duration of this project?

   Sujatha Krishnan

10. Can you share any themes in resident/public comments/concerns that you regularly receive about the study area?

11. What section of the study area would you like to see prioritized for improvement in the future?

12. Are there any other matters that you'd like to share with the project team that may impact Route 146 and the work being done for this project?

13. Can you suggest any good locations for the second public meeting, which will be an in-person event?

    Pleasant Valley Country Club

Other Notes:

Blackstone Chambers group is very active.

Route 146 Corridor Vision Study - Douglas

Stakeholder Interview Questions

Study Area: State Highway Route 146 corridor between State Route 122A in Millbury and the Rhode Island State Line in Millville and Uxbridge.

1. Development in the study area:
    i. We have assembled a list of potential development projects in the area. Can you please review this list, and provide an overview of any additional current or proposed development projects within your community that could impact Route 146?
    ii. Are there areas of your community that are targeted for development or redevelopment (such as a local comprehensive plan, economic development plan or housing production plan) that we should consider for assessing future access needs?

    In Douglas, the next thing is the industrial park, Amazon just built another warehouse and also opened up a last mile facility. MassDOT built two round abouts near that exit as well.

2. Any other development potential along Route 146 that we should be aware of? Are there any specific locations within the corridor that you consider particularly problematic or in need of improvement? If so, why?

    Concerning things for Douglas is the traffic coming. Despite the fact that the warehouses are not open yet, we have noticed an increase in truck traffic. Route 146 interchange is a big issue. Tight turns, no direct links are also problematic.

3. What opportunities do you see for improving transportation infrastructure within the study area? Are there any particular projects or initiatives you believe could be beneficial?

    Douglas is limited to what we can develop. Third of our land is forest. We are developing a couple of properties along 146. Relocating route 16 out of the center of the town. Probably as by-pass would be good. The section between exit 8 and 9. Probably third lane would help that is separated with a median. This way, we can get rid of the bridge.

4. What opportunities do you see for improving active transportation (i.e., walking and bicycling) in the study area? How does active transportation rank among other transportation-related priorities?

Active transportation is not allowed along 146. I don't think there are any dedicated bike lanes currently. There is not more of residential traffic on this corridor anyway. It's industrial. We don't have the width of the road available to have a dedicated bike lane.

5. Have you received any feedback from local businesses or residents regarding transportation needs and priorities in the study area?

   Only when the discussion is related to truck traffic. The Master planning committee takes the same into consideration.

6. Are there any safety considerations within the study area that the project team should be aware of as we develop potential interventions?

   Truck drivers drive too fast. Drivers don't stop for people to cross at the crosswalks which is a traffic violation. We have a lot of crosswalks.

7. Are there any environmental considerations within the study area that the project team should be aware of as we develop potential interventions?

   There are no challenges to the wetlands. We have no flooding issues perse. Even with the heavy rains, the river never overflows its banks.

8. Are there any equity considerations within the study area that the project team should be aware of as we develop potential interventions?

   We don't have public transit options in Douglas.

9. What is the best way to ensure effective communication and collaboration with your municipality throughout the duration of this project?

   Point person: Mathew and Robert through emails.

10. Can you share any themes in resident/public comments/concerns that you regularly receive about the study area?

11. What section of the study area would you like to see prioritized for improvement in the future?

12. Are there any other matters that you'd like to share with the project team that may impact Route 146 and the work being done for this project?

13. Can you suggest any good locations for the second public meeting, which will be an in-person event?

    Resource room in Douglas for 50 or more people.

Route 146 Corridor Vision Study - Millbury

Stakeholder Interview Questions

Study Area: State Highway Route 146 corridor between State Route 122A in Millbury and the Rhode Island State Line in Millville and Uxbridge.

1. Development in the study area:
    i. We have assembled a list of potential development projects in the area. Can you please review this list, and provide an overview of any additional current or proposed development projects within your community that could impact Route 146?

    Some Milbury projects were directly added in the spreadsheet by the stakeholder. Another project is coming up at 17 Rice Road, which is a significant one.

    ii. Are there areas of your community that are targeted for development or redevelopment (such as a local comprehensive plan, economic development plan or housing production plan) that we should consider for assessing future access needs?

    There are a number of parcels around 146 that are actively marketed by the town for specific development along the highway. It would be good to go about those parcels. Probably, 6 parcels along the stretch of 146 that are under-developed. The reason being lack of water and sewer. We received some grants for the completion of the sewer design. So, we anticipate the developments to happen sometime soon in the future (medium term).

    Additionally, at the off ramp where the black stone shops are on the other side of 146, there is a significant collection of parcels of around 5 acres, that are being marketed for residential or hotel type of usage.

2. Any other development potential along Route 146 that we should be aware of? Are there any specific locations within the corridor that you consider particularly problematic or in need of improvement? If so, why?

    Boston road crossing at Sutton, we have a number of on and off roads there. They are dangerous. Sycamore Street and Herricks lane are local roads, and you can enter and exit 146 from those locations and there are no on and off ramps which make them dangerous.

3. What opportunities do you see for improving transportation infrastructure within the study area? Are there any particular projects or initiatives you believe could be beneficial?

   North Main Street exit and exit-16 has a lot of work going on in regard to on and off ramps.

   A lot of cross traffic (east west), creates congestion on local roads and is compounded by truck traffic.

4. What opportunities do you see for improving active transportation (i.e., walking and bicycling) in the study area? How does active transportation rank among other transportation-related priorities?

   The bike path currently terminates at the exit. The project has been envisioned for several decades now. We are working on projects related to bike paths for N Main Street to connect the same to downtown. It would be good to see these projects move forward.

5. Have you received any feedback from local businesses or residents regarding transportation needs and priorities in the study area?

   Not really with 146 itself. It's more for the local roads from where traffic leads to 146. There is a lot of E-W traffic crossing the 146. The residential traffic is increasing. A lot of warehouses and truck traffic is increasing too which adds on to the safety considerations.

6. Are there any safety considerations within the study area that the project team should be aware of as we develop potential interventions?

   Speeding of trucks where cars are already going on at 65 mph.

7. Are there any environmental considerations within the study area that the project team should be aware of as we develop potential interventions?

   We have some places where 146 passes through the residential area. So mitigating noise pollution would be one opportunity to improve.

8. Are there any equity considerations within the study area that the project team should be aware of as we develop potential interventions?

9. What is the best way to ensure effective communication and collaboration with your municipality throughout the duration of this project?

10. Can you share any themes in resident/public comments/concerns that you regularly receive about the study area?

    We recently did a digital equity effort. We got to know from the parents of the school kids that they would like us to publish information in 6 languages. Portuguese and Arabic were also asked for.

11. What section of the study area would you like to see prioritized for improvement in the future?

    Blackstone River Bypass currently terminates at the North main street exit parking lot. Town feels strongly that this bike path should be connected. Working on a project to add bike lanes on N Main Street so that it connects well with the downtown. Would love to see this project move forward and actually reach Worcester.

12. Are there any other matters that you'd like to share with the project team that may impact Route 146 and the work being done for this project?

13. Can you suggest any good locations for the second public meeting, which will be an in-person event?

    Senior centers, libraries, fire stations would be good for community engagement. Parents of school kids can also be connected through our contacts.

Route 146 Corridor Vision Study - Millville

Stakeholder Interview Questions

Study Area: State Highway Route 146 corridor between State Route 122A in Millbury and the Rhode Island State Line in Millville and Uxbridge.

1. Development in the study area:
    i. We have assembled a list of potential development projects in the area. Can you please review this list, and provide an overview of any additional current or proposed development projects within your community that could impact Route 146?

    The list looks exhaustive.

    ii. Are there areas of your community that are targeted for development or redevelopment (such as a local comprehensive plan, economic development plan or housing production plan) that we should consider for assessing future access needs?

2. Any other development potential along Route 146 that we should be aware of? Are there any specific locations within the corridor that you consider particularly problematic or in need of improvement? If so, why?

    Participant didn't mention anything specific and mentioned that she can ask around a little bit. No complaints or negative feedback received about the area.

3. What opportunities do you see for improving transportation infrastructure within the study area? Are there any particular projects or initiatives you believe could be beneficial?

    We did some road improvements near the upcoming Amazon warehouse. I don't see anything coming in the near future.

4. What opportunities do you see for improving active transportation (i.e., walking and bicycling) in the study area? How does active transportation rank among other transportation-related priorities?

    In the study area, no. I haven't heard any issue. Somebody who drives might know better. That area is mostly industrial, so we don't see that area to be active with pedestrians.

5. Have you received any feedback from local businesses or residents regarding transportation needs and priorities in the study area?

6. Are there any safety considerations within the study area that the project team should be aware of as we develop potential interventions?

   Nothing participant knows of.

7. Are there any environmental considerations within the study area that the project team should be aware of as we develop potential interventions?

8. Are there any equity considerations within the study area that the project team should be aware of as we develop potential interventions?

   Not sure.

9. What is the best way to ensure effective communication and collaboration with your municipality throughout the duration of this project?

   The participant will be the point of contact.

10. Can you share any themes in resident/public comments/concerns that you regularly receive about the study area?

11. What section of the study area would you like to see prioritized for improvement in the future?

12. Are there any other matters that you'd like to share with the project team that may impact Route 146 and the work being done for this project?

13. Can you suggest any good locations for the second public meeting, which will be an in-person event?

    Uxbridge might have some places. School buildings. Millville not really much.

Route 146 Corridor Vision Study - Northbridge

Stakeholder Interview Questions

Study Area: State Highway Route 146 corridor between State Route 122A in Millbury and the Rhode Island State Line in Millville and Uxbridge.

1. Development in the study area:
    i. We have assembled a list of potential development projects in the area. Can you please review this list, and provide an overview of any additional current or proposed development projects within your community that could impact Route 146?

    Senior living development

    ii. Are there areas of your community that are targeted for development or redevelopment (such as a local comprehensive plan, economic development plan or housing production plan) that we should consider for assessing future access needs?

    Nothing specifically. We have limited access to the subject route. All our access points to the route are flyovers. I don't anticipate any specific improvement.

2. Any other development potential along Route 146 that we should be aware of? Are there any specific locations within the corridor that you consider particularly problematic or in need of improvement? If so, why?

    Some tight roundabouts were added which were not needed. In the master plan, we may end up recommending some land use changes. We have some residential neighborhoods along the corridor that have limited access to the corridor too. We have some predevelopment plans that show proposed developments that can also impact on the corridor.

3. What opportunities do you see for improving transportation infrastructure within the study area? Are there any particular projects or initiatives you believe could be beneficial?

    Boston road improvements are working well. The improvements were made recently. We already have flyovers. I don't see any need for adding signals to go on the main roads as of now.

4. What opportunities do you see for improving active transportation (i.e., walking and bicycling) in the study area? How does active transportation rank among other transportation-related priorities?

   The way 146 is aligned, it's kind of a westerly terminus. Pedestrian activities are not a concern as of now for us. There are no connectivity issues for the pedestrians.

5. Have you received any feedback from local businesses or residents regarding transportation needs and priorities in the study area?

   Feedback are received for 122 more as it is more local. I did not receive much for 146.

6. Are there any safety considerations within the study area that the project team should be aware of as we develop potential interventions?

   There is one really sharp turn that should be improved. Probably additional signage would help in addressing the problem. There have been many accidents, especially during winters.

7. Are there any environmental considerations within the study area that the project team should be aware of as we develop potential interventions?

   The main street exit, we need to protect wildlife. There is a swan pond with a lot of algae blooming, which is another area that needs protection.

8. Are there any equity considerations within the study area that the project team should be aware of as we develop potential interventions?

   We have a local commuter shuttle service; we have some park and ride as well.

9. What is the best way to ensure effective communication and collaboration with your municipality throughout the duration of this project?

   Gary is happy to be the point of contact.

10. Can you share any themes in resident/public comments/concerns that you regularly receive about the study area?

11. What section of the study area would you like to see prioritized for improvement in the future?

    Boston Road would be one.

12. Are there any other matters that you'd like to share with the project team that may impact Route 146 and the work being done for this project?

13. Can you suggest any good locations for the second public meeting, which will be an in-person event?

    Town hall is always available with rooms of different sizes.

Other Notes:

Bikeway rejuvenation is one of the things that a Danis (open sky) in the organization is taking care of.

Route 146 Corridor Vision Study - Sutton

Stakeholder Interview Questions

Study Area: State Highway Route 146 corridor between State Route 122A in Millbury and the Rhode Island State Line in Millville and Uxbridge.

1. Development in the study area:
    i. We have assembled a list of potential development projects in the area. Can you please review this list, and provide an overview of any additional current or proposed development projects within your community that could impact Route 146?

    Unified Parkway would be the most significant of all the projects. There is currently a built and occupied first building. Second and third buildings are coming soon as well.

    MBTA housing

    ii. Are there areas of your community that are targeted for development or redevelopment (such as a local comprehensive plan, economic development plan or housing production plan) that we should consider for assessing future access needs?

2. Any other development potential along Route 146 that we should be aware of? Are there any specific locations within the corridor that you consider particularly problematic or in need of improvement? If so, why?

    MassDOT has worked recently with our department to fix some of the issues. The functionality of the intersections has improved. But we still have some accident numbers. The near term functionality of the intersection on Rt-146 still needs improvement. We have got a great interchange plan as well.

    Boston roads' functionality has improved but still needs some improvements because of many accidents.

3. What opportunities do you see for improving transportation infrastructure within the study area? Are there any particular projects or initiatives you believe could be beneficial?

    Rt-146 is tricky. Some projects definitely needs focus. Encouraging the use of rail infrastructure (for freight specifically). We need to pull the truck traffic off the roadway. What we are lacking in general are bicycle and pedestrian infrastructure which would alleviate some of the concerns off the long roads.

Encourage usage of rail roads so that some freight traffic is taken off the roads.

4. What opportunities do you see for improving active transportation (i.e., walking and bicycling) in the study area? How does active transportation rank among other transportation-related priorities?

   Blackstone River Bikeway has been pending for long and in need of support funding.

5. Have you received any feedback from local businesses or residents regarding transportation needs and priorities in the study area?

   Rt-146 has a lot of base concerns. Why there is one lane left? Can we have that for a free flow? There are no sidewalks, so pedestrians are not connected in that sense. We have no more than a few hundred feet of sidewalks. No bike lanes are another issue.

   We must have multi-modal transportation options.

6. Are there any safety considerations within the study area that the project team should be aware of as we develop potential interventions?

   We are trying to work with the trucking flow. Snow sliding off the top of the trucks and causing accidents.

   Signage is needed. We want to make sure that signage is effective and not in excess so that people don't start to ignore it.

7. Are there any environmental considerations within the study area that the project team should be aware of as we develop potential interventions?

   The state is already sensitive to that. There are not a ton of stuff that needs attention.

8. Are there any equity considerations within the study area that the project team should be aware of as we develop potential interventions?

   We are doing some equity considerations. Lack of public transportation is one such thing. There are a lot of businesses in the city that have hired workers from outside the city. In the absence of public transportation, congestion increases. We work hard to be transparent and make sure that people from all communities talk to us.

9. What is the best way to ensure effective communication and collaboration with your municipality throughout the duration of this project?

10. Can you share any themes in resident/public comments/concerns that you regularly receive about the study area?

11. What section of the study area would you like to see prioritized for improvement in the future?

    Are there any other matters that you'd like to share with the project team that may impact Route 146 and the work being done for this project?

12. Can you suggest any good locations for the second public meeting, which will be an in-person event?

    Town Hall

    Senior Centers

Other Notes:

We have a really aggressive communication team working with us and a senior resource team.

Church communities

School communities

Route 146 Corridor Vision Study - Uxbridge

Stakeholder Interview Questions

Study Area: State Highway Route 146 corridor between State Route 122A in Millbury and the Rhode Island State Line in Millville and Uxbridge.

1. Development in the study area:
    i. We have assembled a list of potential development projects in the area. Can you please review this list, and provide an overview of any additional current or proposed development projects within your community that could impact Route 146?

    Amazon warehouse that just opened last week. Traffic improvements are needed in the interchange. The two traffic roundabouts. Truck traffic is increasing.

    Big office facility in the med-line. However, the facility is not operational.

    A 1.1 million square foot warehouse in Douglas is under construction.

    ii. Are there areas of your community that are targeted for development or redevelopment (such as a local comprehensive plan, economic development plan or housing production plan) that we should consider for assessing future access needs?

    BJ wholesale in Uxbridge.

    There are some other parcels as well that are available and open to development.

    Land on Douglas Street is also what people are looking at to develop.

    We are planning for some truck stops to be developed.

    CVS has a big distribution center as well.

    The biggest issue we face is if the truck doesn't go back on highway and come to Rt-122 or any other local road, then that will add on to the congestion.

    Another end of South Main St has a supermarket there. So, we have a quite going on in the town.

2. Any other development potential along Route 146 that we should be aware of? Are there any specific locations within the corridor that you consider particularly problematic or in need of improvement? If so, why?

3. What opportunities do you see for improving transportation infrastructure within the study area? Are there any particular projects or initiatives you believe could be beneficial?

4. What opportunities do you see for improving active transportation (i.e., walking and bicycling) in the study area? How does active transportation rank among other transportation-related priorities?

   Improvements have been made to Douglas Street where the roundabouts are.

5. Have you received any feedback from local businesses or residents regarding transportation needs and priorities in the study area?

6. Are there any safety considerations within the study area that the project team should be aware of as we develop potential interventions?

   Speed is always an issue. Safety improvements are needed for the second exit to the Uxbridge.

   Feedback has been received from the fire department regarding the safety on Rt-146.

7. Are there any environmental considerations within the study area that the project team should be aware of as we develop potential interventions?

   We don't have any wetlands or anything like that. So, no major concerns.

8. Are there any equity considerations within the study area that the project team should be aware of as we develop potential interventions?

9. What is the best way to ensure effective communication and collaboration with your municipality throughout the duration of this project?

   Steven would like to be the contact person.

10. Can you share any themes in resident/public comments/concerns that you regularly receive about the study area?

11. What section of the study area would you like to see prioritized for improvement in the future?

12. Are there any other matters that you'd like to share with the project team that may impact Route 146 and the work being done for this project?

13. Can you suggest any good locations for the second public meeting, which will be an in-person event?

    High Schools would be good locations.

    Regional vaccination clinics.

    K-9 training groups.

Other Notes:

Some rest areas were planned a couple of years ago. If they can be restored, then that would be great. With the amount of truck traffic coming in, we should have some truck pull off areas.

We have bike groups. We have been working with them. They would be a good resource for the meetings.

Conservation commission is another such resource.

Chiefs of fire department.

APPENDIX E

Known Developments Summary

Known Developments Location and Land Use Summary

Development Name	Town	LUC	Land Use
Lackey Dam Logistics	Sutton/ Uxbridge	150	Warehousing
Blackstone Logistics Center	Sutton/ Uxbridge/ Douglas	150	Warehousing
Cubes at Gilboa	Douglas	150	Warehousing
Cubes at Pyne	Sutton/ Douglas	150	Warehousing
139 Campanelli Drive	Uxbridge	150	Warehousing
Amazon	Uxbridge	155	High Cube Fullfillment Center Warehouse
Unified Parkway	Sutton/ Millbury	130	Industrial Park
		154	High Cube Warehouse and Short-Term Storage Warehouse
Cresco Lab (Cultivate)	Uxbridge	190	Marijuana Cultivation and Processing Facility
Zipp Industrial Park	Uxbridge	190	Marijuana Cultivation and Processing Facility
The Woodlands at Village of the Americas	Uxbridge	210	Single Family Detached Housing
North Village Condominiums 40B Project	Douglas	215	Single Family Attached Housing
Fisherville Terrace	Grafton	215	Single Family Attached Housing
Rice Pond Village 40B	Millbury	220	Multifamily Housing (Low-Rise)
40B Armsby Rd	Sutton	220	Multifamily Housing (Low-Rise)
Route 146S 40B	Sutton	220	Multifamily Housing (Low-Rise)
19 Canal	Millbury	221	Multifamily Housing (Mid-Rise)
Residence at Pleasant Valley Crossing	Sutton	221	Multifamily Housing (Mid-Rise)
Stone Hill Condominiums	Northbridge	251	Senior Adult Housing - Single Family
Clearview	Millbury	252	Senior Adult Housing - Multifmaily
Pleasant Valley Crossing Phase 2	Sutton	820	Shopping Center (>150k)
Northeast Great Dane - Trailer Repair Facility	Sutton	942	Automobile Care Center
Xtra Mart Expansion	Sutton	945	Gasoline/Service Station and Convenience Market
Singletary Arms	Millbury	140	Manufacturing
		221	Multifamily Housing (Mid-Rise)
		710	General Office Buildings
		932	High Turnover (Sit-Down) Resturant
Big Y Supermarket	Uxbridge	850	Supermarket
		937	Coffee/Donut Shop with Drive-Through Window

APPENDIX F

Land Use and Zoning Analysis Report

Route 146 Land Use and Zoning Analysis

Introduction

This land use and zoning analysis for the Route 146 corridor provides a comprehensive examination of land use patterns and zoning regulations, focusing on the towns of Uxbridge, Sutton, Millbury, Douglas, Northbridge, and Millville. This analysis highlights existing land uses and the location of zoning districts along the corridor, describes dimensional and use regulations for each community, identifies potential redevelopment sites, and shows locations of potential pipeline development projects that could influence future growth. By evaluating existing land uses, land-to-building value ratios, distribution of vacant land, and zoning restrictions, this breakdown highlights key opportunities for development and revitalization across the corridor.

General Use

The land use analysis of the Route 146 corridor study area shows the geographic distribution of existing land use classifications across the study area and where future development may be more likely based on what surrounds it. Across the study area, residential land uses comprise the largest percentage of land area at 53.3% of the total acreage. If past development patterns are an indicator of future change, this may indicate that residential development could play a major role in shaping the future of the corridor.

Industrial land currently accounts for 11.2% of acres in the study area. Industrial land here benefits from connections to Route 146 bringing materials and finished products north to I-90 and south to the rest of the Blackstone Valley. Commercial land uses represent 8.0% of the acreage within the study area supporting a variety of operations such as retail, office, and service-oriented businesses.

Mixed-use areas, accounting for 7.8% of acres in the study area, consist of parcels that feature multiple uses. These uses may be integrated vertically within the same building (such as residential over first floor commercial) or horizontally across a parcel in multiple buildings (such as a residential complex with a commercial outlot building). This category encompasses a wide range of property types, including, but is not limited to, parcels that are primarily open space with a single-family home, farm properties combining residential, agricultural, and commercial uses, or any property with multiple distinct uses.

Exempt land, which comprises 15.0% of the acreage in the corridor, includes uses like parks, schools, and government-owned properties. Finally, the remaining 4.7% of acreage in the corridor is categorized as "Other," which includes, but is not limited to, Rights of Way, utility infrastructure, private access roads, or rail access.

General Use	Percent of Land in Study Area (% of acres)
Commercial	8.0%
Exempt	15.0%
Industrial	11.2%
Mixed Use	7.8%
Residential	53.3%
Other	4.7%

Table 1. General Land Uses, Route 146 Corridor (MassGIS, RKG Associates).

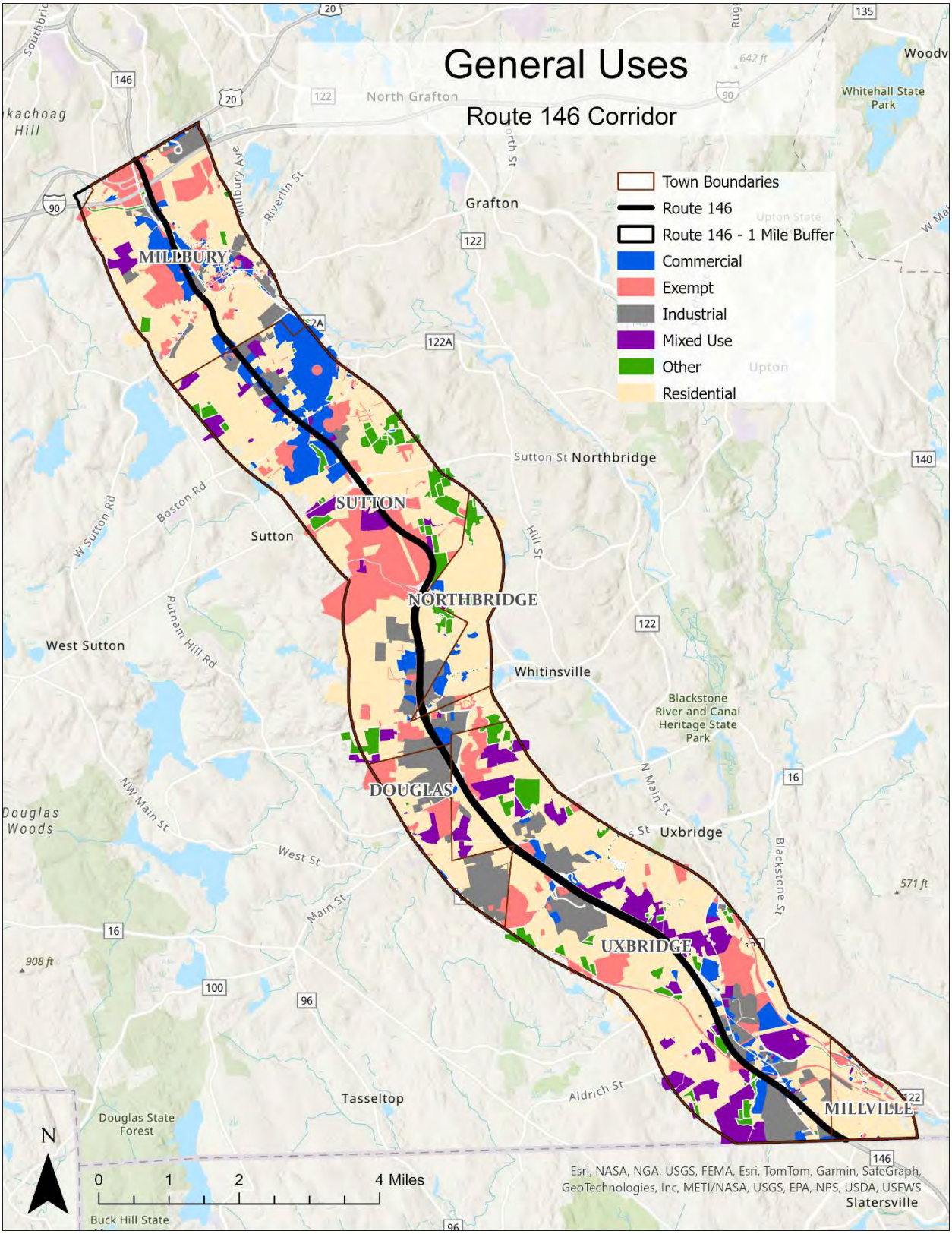


Figure 1. General Land Uses Along Route 146 Corridor (MassGIS, RKG Associates).

Land Value Per Acre

There are several metrics we can evaluate to help understand the future potential for development/redevelopment in the study area absent specific development plans for the entirety of the corridor. One of those metrics is to map the current assessed value of the land to see where land prices may be lower than other locations within the study area. This could potentially indicate areas of future opportunity where land could be purchased at a reasonable price, and if zoning were in place, allow for new investment. Figure 2 illustrates the land value per acre for each parcel of land within the study area. By dividing the land value of each parcel by the number of acres, we can compare different parcels more effectively across each town.

The median land value per acre along the Route 146 corridor is $111,176, though it varies across the six towns which may indicate distinct opportunities for new investment in each area. Millbury and Northbridge have the highest median land values at $168,985 and $178,117 per acre, respectively. These elevated land values reflect a significant concentration of residential, industrial, and commercial uses in this part of the study area. With its strong transportation connectivity, the corridor is ideally positioned for many different types of uses that could include industrial and commercial areas as well as residential and mixed-use development.

On the other hand, Douglas ($82,188), Millville ($102,621), and Sutton ($91,576) fall into the mid-range for land values per acre, reflecting the larger parcel sizes and less concentrated development patterns compared to some of the areas in Millbury and Northbridge. This is also likely reflecting distance from I-90 and the broader Worcester market as the corridor transitions to a more rural development pattern. The larger parcel sizes and lower land values per acre in Douglas, Millville, and Sutton may provide opportunities for larger-scale development in the study area if zoning is in place and infrastructure is available.

The majority of land in the study area across Douglas, Millville, and Sutton is classified as residential, highlighting the area's potential to accommodate future housing. New residential development could also spur interest in additional commercial growth in retail, services, and food/beverage businesses to support new households.

Uxbridge has the lowest median land value of $70,641 per acre. The town's lower land values reflect its more rural character being less developed compared to other towns in the study area. The town’s abundant agricultural land limits the available space for development; however, there are opportunities for development/redevelopment in industrial zones along the corridor.

Overall, the variation in land values along the Route 146 corridor highlights areas within each town where new investment could be targeted. The higher land values per acre in Millbury and Northbridge may suggest a slightly more intensive development pattern to justify higher land costs while towns to the south may present opportunities for a mix of commercial, industrial, and residential developments.

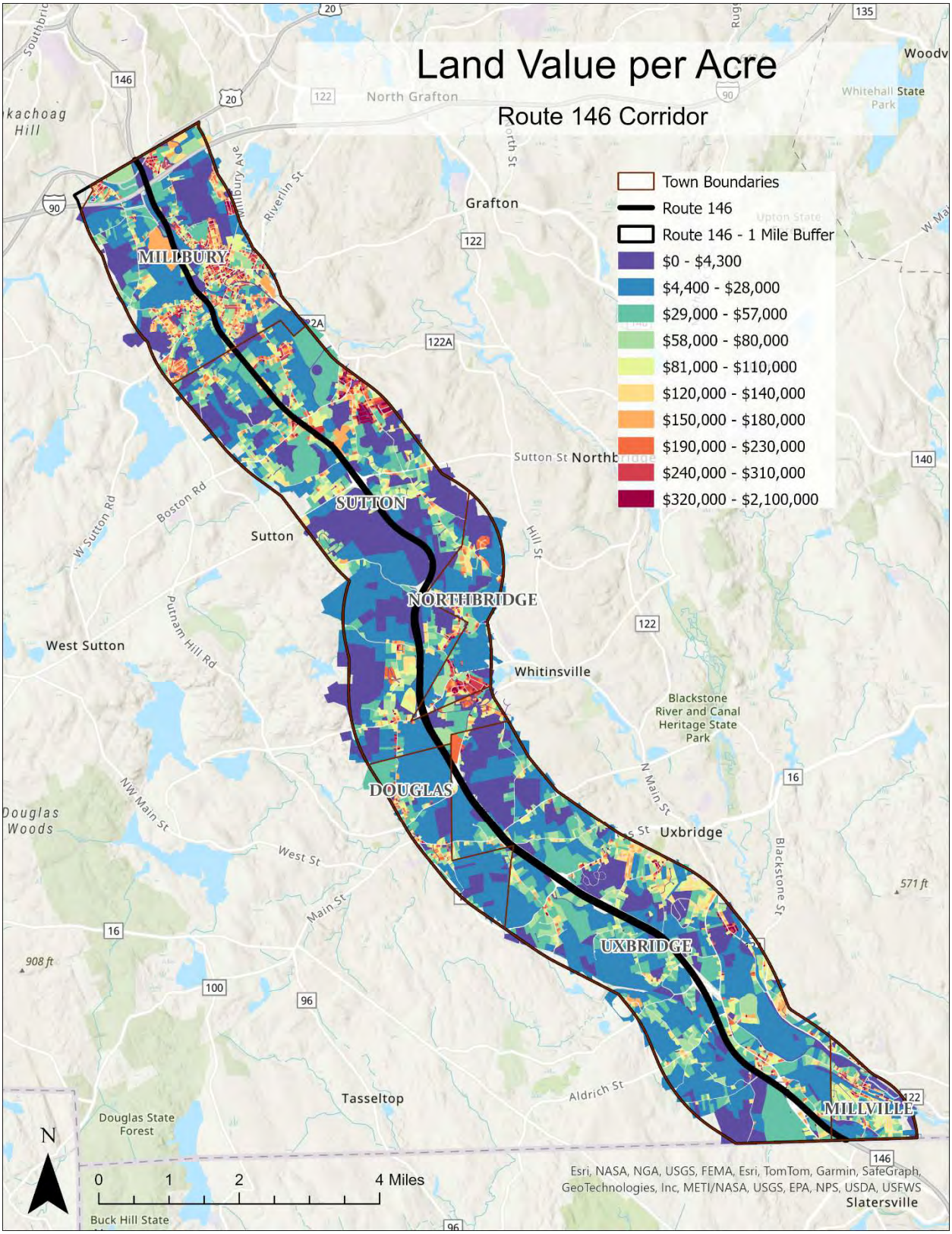


Figure 2. Land Value per Acre Across the Route 146 Corridor (MassGIS, RKG Associates).

Zoning

This section provides an overview of the zoning regulations for each town along the Route 146 corridor, including a summary of key land use categories and dimensional requirements. For each town— Douglas, Millbury, Millville, Northbridge, Sutton, and Uxbridge—there is a summary of the general uses that are allowed in zoning districts overlapping with the study area, as well as the dimensional standards that guide the size and scale of new development. Zoning regulations help guide new development to align with each town's development objectives and planning priorities - balancing residential, commercial, and industrial development that is in line with their vision for the overall community. The following provides a summary of the uses and dimensions for each district in the corridor by town. A full set of use tables can be found in the Appendix to this report.

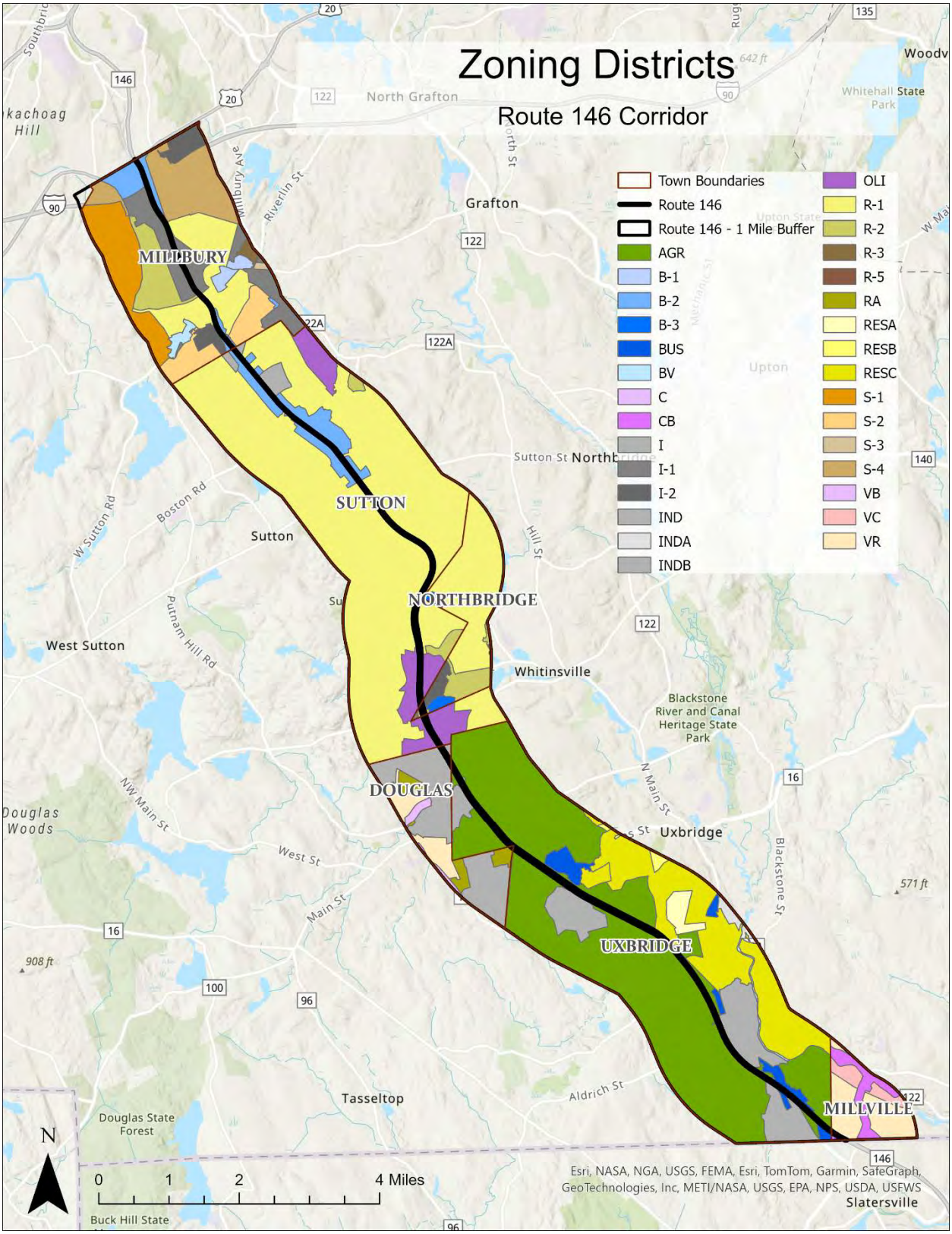


Figure 3. Zoning Districts Along Route 146 Corridor (Bowman, CMRPC, RKG Associates).

Douglas

Commercial District

The Commercial (Comm) zone supports businesses, such as retail stores, restaurants, and financial institutions. This zone permits a wide range of commercial activities, including motor vehicle sales, professional services, and funeral homes. It is designed to encourage diverse commercial and service-oriented establishments, making it one of the more flexible districts in terms of business operations.

Industry District

The Industrial (IND) zone is dedicated to industrial activities like manufacturing, processing, and warehousing. This district allows more intensive operations compared to others, such as light manufacturing, fabrication, and storage facilities. Recycling, motor vehicle services, and contracting businesses are also permitted. It caters to industrial uses that require larger facilities or processes, offering greater flexibility than commercial zones.

Rural Agricultural District

The Rural Agricultural (R-A) zone is focused on agricultural and rural activities, such as farming, horticulture, and forestry. It allows for larger-scale agricultural operations, while residential uses, such as single-family homes, are permitted in limited quantities. Commercial development is primarily restricted to agricultural or nature-based activities, fostering rural preservation with limited development.

Village Business District

The Village Business (VB) district allows a mix of commercial and residential uses on a smaller scale, ideal for businesses serving the local community. It allows for small-scale retail stores, restaurants, and offices while offering more residential flexibility than the commercial zone, including two-family dwellings. This zone balances village-style businesses with moderate residential development.

Village Residential District

The Village Residential zone is predominantly residential, aiming to preserve the village character. Single-family and two-family dwellings are allowed, while commercial and industrial activities are restricted. Limited commercial uses, such as small offices or restaurants, may be approved with special permits. This zone focuses on residential growth while accommodating a small number of compatible mixed uses.

Zoning District Name	Zoning District	Primary Uses	Minimum Lot Size	Frontage	Setbacks	Maximum Height
Commercial	Comm	Retail establishment for public sale, funeral home, veterinary hospital and kennels, motor vehicle repair shop, restaurant, office building, commercial indoor amusement or recreational facility	30,000 sf	100 ft	50F, 15S, 15R	35 ft/2.5 stories
		Commercial outdoor amusement or recreational facility, contracting business, warehouse or wholesale facility, exempt religious or educational use	35,000 sf	150 ft	50F, 15S, 15R	35 ft/2.5 stories
Industry	IND	Retail establishment for public sale, motor vehicle repair shop, contracting business, recycling business, manufacturing plant, warehouse or wholesale facility, exempt religious or educational use, municipal use, sawmill	35,000 sf	150 ft	50F, 15S, 15R	60 ft
Rural Agriculture	RA	Single-family dwelling	90,000 sf	200 ft	50F, 25S, 25R	35 ft/2.5 stories
		Exempt religious or educational use	4 acres	300 ft	100F, 25S, 25R	35 ft/2.5 stories
		Any municipal use	4 acres	300 ft	75F, 25S, 25R	35 ft/2.5 stories
		Private, non-profit club or fraternal organization	4 acres	300 ft	75F, 25S, 25R	35 ft/2.5 stories
		Public or private outdoor recreation use	3acres	300 ft	75F, 25S, 25R	35 ft/2.5 stories
		Campground	15 acres	250 ft	SPR	35 ft/2.5 stories
Village Business	VB	Single-family dwelling	20,000 sf	100 ft	50F, 15S, 20R	35 ft/2.5 stories
		Multi-family dwelling	No min.	No min.	No min.	35 ft/2.5 stories

		Two-family dwelling	20,000 sf	100 ft	50F, 15S, 20R	35 ft/2.5 stories
		Retail establishment for public sale	No min.	No min.	No min. F, no min. S, 15R	35 ft/2.5 stories
		Funeral home	20,000 sf	100 ft	15F, 15S, 25R	35 ft/2.5 stories
		Motor vehicle repair shop	20,000 sf	100 ft	25F, 15S, 15R	25 ft/2.5 stories
		Restaurant, office building, commercial indoor amusement or recreational facility, commercial outdoor amusement or recreational facility	20,000 sf	100 ft	No min. F, 15S, 25R	35 ft/2.5 stories
Village Residential	VR	Single-family dwelling	20,000 sf	100 ft	50F, 15S, 20R	35 ft/2.5 stories
		Exempt religious or educational use	90,000 sf	100 ft	50F, 15S, 20R	35 ft/2.5 stories
		Any municipal use	90,000 sf	100 ft	50F, 15S, 20R	35 ft/2.5 stories
		Multi-family dwelling	5,000 sf per bedroom	150 ft	50F, 15S, 20R	35 ft/2.5 stories
		Duplex dwelling	20,000 sf	100 ft	50F, 15S, 20R	35 ft/2.5 stories

Table 2. Table of Dimensional Requirements, Town of Douglas (Town of Douglas Zoning By-law, Appendix B).

Millbury

Business I District

The Business I (B-1) district is a mixed-use zone that permits residential, business, and community-related uses. It supports one- and two-family dwellings, boarding homes, and a range of businesses such as retail sales, professional offices, and restaurants. Community services like schools and nursing homes are allowed. Agricultural uses are limited, and heavy industrial activities are prohibited, making it more flexible than purely residential zones.

Business II District

The Business II (B-2) district is similar to B-1 but offers a broader range of commercial activities. It supports a variety of business types, making it more permissive than the Business I zone in terms of business operations.

Bramanville Village District

The Bramanville Village (BV) district is designed for a mix of residential and small-scale business activities, including retail, restaurants, and personal services. While residential uses are more restricted, the district permits community services like schools and nursing homes. Agricultural uses are allowed, and industrial activities are limited. This zone promotes a balanced village environment with both residential and business elements.

Industrial I District

The Industrial I (I-1) district supports light industrial activities such as manufacturing, warehousing, and research. Community services, including schools and religious buildings, are allowed, but residential and commercial activities are generally restricted. It caters to businesses requiring industrial facilities but limits non-industrial uses.

Industrial II District

The Industrial II (I-2) district is focused on heavier industrial activities, such as large-scale manufacturing and warehousing. Residential uses are prohibited, and commercial activities are severely restricted. Community services are allowed but limited. This zone is ideal for businesses requiring more intensive industrial operations.

Residential I District

The Residential I (R-1) district is designed for low-density residential development, permitting single-family and two-family homes. Commercial and industrial activities are limited, with some allowances for agricultural uses. This zone primarily supports residential living with minimal non-residential uses.

Residential II District

The Residential II (R-2) district allows for low-to-medium-density residential development, including one- and two-family homes. It permits some non-residential uses, such as home occupations and community services. Commercial and industrial activities are restricted, but agricultural uses are allowed, balancing residential and community uses.

Residential III District

The Residential III (R-3) district supports higher-density residential development, including multifamily dwellings and residential care facilities. It allows some commercial activities like home occupations, but industrial uses are limited. This zone accommodates higher population density while offering space for residential, community, and small-scale commercial uses.

Suburban I, II, II, IV Districts

The Suburban (S-1, S-2, S-3, S-4) districts offer flexibility for a mix of residential, business, and community uses. They support a variety of residential types, from single-family homes to multifamily dwellings. Business activities like retail sales and professional offices are permitted, and community services like schools and public utilities are allowed. Industrial activities are more limited compared to commercial zones, with some allowances for agricultural uses.

Zoning District Name	Zoning District Abbreviation	Minimum Lot Size	Minimum Lot Frontage	Setbacks	Maximum Lot Coverage	Maximum Building Height
Business I	B-1	12,500 sf*	100 ft	20F, 10S, 10R	30%	30 ft
Business II	B-2	12,500 sf*	100 ft	20F, 10S, 10R	30%	30 ft
Bramanville Village	BV	5,000 sf	60 ft	*, 10S, 10R	50%	40 ft/3 stories
Industrial I	I-1	80,000 sf	150 ft	30F, 20S, 20R	40%	50 ft
Industrial II	I-2	80,000 sf	200 ft	30F, 20S, 20R	35%	55 ft
Residential I	R-1	40,000 sf*	100 ft	25F, 10S, 10R	30%	30 ft
Residential II	R-2	40,000 sf*	100 ft	25F, 10S, 10R	30%	30 ft
Residential III	R-3	40,000 sf, or increased by 10,000 sf per additional unit plus 5,000 sf per additional bedroom	100 ft	25F, 10S, 10R	30%	30 ft
Suburban I	S-1	60,000 sf	150 ft	25F, 10S, 10R	30%	30 ft
Suburban II	S-2	40,000 sf[1]	150 ft	25F, 10S, 10R	30%	30 ft
Suburban III	S-3	40,000 sf[2]	150ft	25F, 10S, 10R	30%	30 ft
Suburban IV	S-4	40,000 sf[1]	150 ft	25F, 10S, 10R	30%	30 ft

Table 3. Table of Dimensional Requirements, Town of Millbury (Town of Millbury Zoning Bylaws, Article 2).

[1] The minimum lot area requirement may be reduced to 32,000 sf if the lot will be serviced by public water. The minimum lot area requirement may be reduced to 20,000 sf if the lot will be serviced by public sewerage. The minimum lot area requirement may be reduced to l2,500 sf if the lot will be serviced by public water and public sewerage.

[2] In the Residential III District for dwelling units in excess of one, increase the minimum lot area by l0,000 square feet per additional unit plus 5,000 per additional bedroom.

Millville

Commercial Business District

The Commercial Business (CB) district allows a broad range of agricultural, residential, and commercial uses. Agricultural activities like seasonal sales and backyard chickens are permitted, along with single-family homes. A wide array of commercial businesses, from retail stores to larger-scale establishments, can operate with minimal restrictions, making it the least restrictive zone for business operations.

Village Center District

The Village Center (VC) district is similar to the CB district but with more restrictions on larger-scale developments. While agricultural and residential uses are broadly permitted, commercial activities such as funeral homes and contracting businesses require special permits. Mixed-use developments and larger retail operations also require approval, offering flexibility but maintaining a more controlled development pattern.

Village Residential District

The Village Residential (VR) district is suited for small-scale residential development. Single-family homes are permitted, along with some agricultural uses, but other residential types, such as multifamily homes, require special permits. Commercial uses like retail stores and restaurants are allowed with approval, and marijuana-related businesses are prohibited. This zone is primarily residential, offering limited commercial opportunities.

Zoning District Name	Zoning District Abbreviation	Minimum Lot Size	Minimum Frontage	Setbacks	Maximum Height
Commercial Business	CB	20,000 SF	150 ft	30F, 20S, 20R	3 stories
Village Center	VC	20,000 SF	150 ft	30F, 20S, 20R	3 to 4 stories
Village Residential	VR	40,000 SF	200 ft	40F, 30S, 30R	2.5 stories

Table 4. Schedule of Dimensional Requirements, Town of Millville (Millville Zoning Code § 100-402: Schedule of Dimensional Requirements).

Northbridge

Business Three District

The Business Three (B-3) district supports a variety of retail and service businesses, such as stores, restaurants, and personal services. It permits agricultural uses like greenhouses and allows community facilities like schools and churches. Larger commercial activities, including motion picture establishments, are also permitted. This zone offers a broader mix of commercial and community services than purely residential areas.

Industrial One District

The Industrial One (I-1) district is designed for light industrial uses, including manufacturing, warehousing, and research and development. It also permits certain retail services and agricultural activities under specified conditions. While community services are allowed, residential and large-scale commercial operations are restricted, making it a less restrictive industrial zone.

Industrial Two District

The Industrial Two (I-2) district is the most permissive industrial zone, allowing heavy industrial activities such as large-scale manufacturing, mining, and quarrying. It also supports transportation services and some commercial and agricultural uses. This district is designed for large-scale industrial operations, making it ideal for more intensive industrial and commercial activities.

Residential One District

The Residential One (R-1) district focuses on single-family residential development with allowances for agricultural activities. It does not support larger-scale commercial or industrial activities, emphasizing low-density residential living with limited non-residential uses.

Residential Two District

The Residential Two (R-2) district allows for medium-density residential development, including single-family homes and two-family dwellings. Agricultural activities and small-scale commercial uses are allowed with special permits. This zone maintains a residential character while providing some flexibility for additional housing types and non-residential uses.

Residential Five District

The Residential Five (R-5) district focuses on single-family homes with limited allowances for agricultural activities. Multifamily housing and larger-scale commercial operations are prohibited, making this a low-density residential zone with allowances for small-scale community uses.

Zoning District Name	Zoning District Abbreviation	Use	Minimum Lot Size	Width	Setbacks
Business Three	B-3	Hotel or Motel Any permitted structure or principal use	40,000 SF, plus 1,000 SF per room 15,000 SF	100 feet 100 feet	30F, 15s, 15R 30F, 15S, 15R
Industrial One	I-1	Any permitted structure or principal use	40,000 SF	100 feet	20F, 20S, 20R
Industrial Two	I-2	Limited Industrial District	40,000 SF	150 feet	50F, 20S, 50R
Residential One	R-1	Any permitted structure or principal use	40,000 SF	200 feet	40F, 25S, 50R
Residential Two	R-2	On-family detached dwelling, two-family dwelling	40,000 SF	150 feet	40F, 15S, 40R
Residential Five	R-5	One-family detached dwelling Two-family dwelling Multifamily dwelling	5,000sf 5,000sf 2,000sf, plus 2,000 per unit	60 60 50	15F, 8S, 20R 15F, 10S, 20R 10F, 10S, 15R

Tabe 5. Table of Area Regulations, Town of Northbridge (Town of Northbridge Code of Bylaws, Division 2, Zoning and Subdivision Regulations, Zoning § 173 Attachment 1: Table of Area Regulations).

Sutton

Business-Highway District

The Business-Highway (B-2) district supports commercial activities, such as retail stores, restaurants, and professional offices. It also accommodates some industrial activities like manufacturing and research. Residential uses are generally restricted, though some accessory buildings and home-based businesses are permitted.

Industrial District

The Industrial District supports a wide range of industrial and commercial activities, including manufacturing, research, and vehicle services. It permits some residential uses with special permits and accommodates both light and heavy industrial operations.

Office and Light Industrial District

The Office and Light Industrial district supports office spaces and light industrial uses, with allowances for business and professional offices, as well as small-scale manufacturing. Residential uses are largely restricted, with only home occupations allowed. This district also supports renewable energy systems and light industrial activities.

Residential-Rural District

The Residential-Rural district is designed for low-density residential living in rural areas. It allows agricultural activities, including farming and livestock, and permits home-based businesses. This zone supports single-family dwellings but limits multifamily housing and intensive residential projects.

Residential-Suburban District

The Residential-Suburban district offers a suburban environment with allowances for single-family homes, multifamily dwellings, and some commercial activities. Agricultural uses are permitted, along with some community services and small-scale retail operations. This zone maintains a residential focus while allowing limited commercial development.

Zoning District Name	Zoning District Abbreviation	Use	Minimum Lot Size	Width and Frontage	Setbacks
Business-Highway	B-2	Hotel or motel - per room	40,000 sf +2,000 sf	200 ft	50F, 20S, 40R
		Any other permitted structure or principal use	40,000 sf	200 ft	50F, 20S, 50R
Industrial	I		40,000 sf	200 ft	50F, 20S, 50R
Office and Light Industrial	OLI		80,000 sf	200 ft	50F, 20S, 50R
Residential-Rural	R-1	Any permitted structure or principal use	80,000 sf	250 ft	40F, 15S, 40R
Residential-Suburban	R-2	One family detached dwelling or other principal use:			
Residential-Suburban	R-2	Not serviced by water and sewer	60,000 sf	175 ft	40F, 15S, 40R
		Serviced by water or sewer	40,000 sf	175 ft	40F, 15S, 40R
		Serviced by water and sewer	20,000	135 ft	40F, 15S, 40R
		Multi-family dwelling serviced by municipal sewer Per additional unit (up to 3)	40,000 SF +3,000 SF	150 ft	40F, 15S, 40R

Table 6. Table of Dimensional Requirements, Town of Sutton (Sutton Zoning Bylaw, Table 2: Table of Area Regulations).

Uxbridge

Agricultural District

The Agricultural district supports farming and rural activities, allowing single-family homes, agricultural operations, and the sale of farm products. It restricts more intensive commercial and industrial uses but permits small-scale commercial recreation and some medical facilities with special permits.

Business District

The Business district is focused on commercial uses like retail stores, banks, and business offices. It supports larger commercial operations like hotels and shopping centers while allowing agricultural activities and essential services. This zone accommodates some industrial uses under special permits, providing a balance between residential and commercial activity.

Industrial A District

The Industrial A (I-A) district is designated for light industrial activities, including manufacturing, warehousing, and distribution. Agricultural uses are permitted, and community services are allowed, though large-scale commercial activities are restricted. This district provides flexibility for light industrial operations and small-scale commercial activities.

Industrial B District

The Industrial B (I-B) district allows for heavier industrial activities compared to I-A, including larger-scale manufacturing, junkyards, and hazardous material operations. It also permits some commercial uses, including restaurants and medical facilities, with special permits. This zone is ideal for large-scale industrial and commercial operations.

Residence A District

The Residence A district supports low-density residential development with allowances for single-family and two-family homes. Agricultural activities are permitted, but commercial and industrial operations are heavily restricted. This zone prioritizes residential living with minimal non-residential uses.

Residence B District

The Residence B district allows for single-family and two-family homes, along with some townhouse developments. It permits agricultural activities and allows some non-residential uses, such as childcare centers and municipal facilities. Retail and restaurant businesses are allowed with special permits, offering more flexibility than the Residence A zone.

Residence C District

The Residence C district focuses primarily on single-family homes. It allows agricultural operations but restricts commercial and industrial activities. Non-residential uses are limited, with only essential services and religious facilities permitted. This district maintains a strong residential character with limited allowances for non-residential development.

Zoning District Name	Zoning District Abbreviation	Minimum Lot Size	Setbacks Principal Use	Frontage (interior lot/corner lot)	Maximum Height
Agricultural	A	87,120 sf (2-Acres)	40F, 30S, Lesser of 40 ft. or 25% of lot depth, if at least 30 ft.	300 ft/300 ft	35 ft/3.5 stories
Business	B	15,000 sf	30F, 25S, 30R	125 ft/140 ft	45 ft/3 stories
Industrial A	I-A	30,000 sf	30F, 30S, 20R	175 ft/ 200 ft	45 ft/3 stories
Industrial B	I-B	30,000 sf	30F, 30S, 20R	175 ft/ 200 ft	45 ft/3 stories
Residence A	R-A	20,000 sf	65F, 5S, 5R	125ft/140 ft	35 ft/3.5 stories
Residence B	R-B	43,560 sf (1-Acre)	30F, 25S, 30R	185 ft/200 ft	35 ft/3.5 stories
Residence C	R-C	43,560 sf (1-Acre)	30F, 25S, 30R	200ft/200 ft	35 ft/3.5 stories

Table 7. Table of Dimensional Requirements, Town of Uxbridge (Uxbridge Zoning Bylaw, Appendix B: Table of Dimensional Requirements).

Investment Potential

When considering new investment opportunities along the corridor, Douglas' zoning stands out as the most permissive overall, where each zone supports a wide range of uses, including residential, agricultural, and commercial development.

In comparison, Sutton and Uxbridge offer some flexibility, particularly for agricultural and residential developments. Sutton is slightly more restrictive on commercial growth, while Uxbridge limits larger-scale developments. Millbury and Northbridge are more geared toward industrial and commercial investments, especially for manufacturing and distribution, though they provide fewer options for residential or agricultural development. Millville, on the other hand, has limited investment potential, primarily supporting agricultural and residential uses, with minimal opportunities for commercial or industrial ventures. Therefore, from a zoning perspective it appears Douglas presents the greatest potential for investment across a variety of sectors, while Sutton, Uxbridge, Millbury, and Northbridge cater more to specific types of development, and Millville offers the least flexibility.

Development Opportunity Analysis

To help guide future decisions around infrastructure improvements along the Route 146 corridor, this report utilizes several analyses to identify locations where known developments are slated to occur as well as areas along the corridor that may be more apt to see development over time. The following sections describe known developments that may be forthcoming in the study area, as well as some metrics MassDOT and the towns can use to identify other future opportunity areas along the corridor.

Development Pipeline

The Route 146 corridor has seen an increase in the number of development projects in recent years. Notable developments, such as Clearview in Millbury and the Amazon facility in Uxbridge represent some of the new investment along the corridor. Stakeholder interviews conducted by the project team identified additional town-specific projects in Millbury, Sutton, Uxbridge, and surrounding areas. Ongoing and recently completed developments—ranging from residential to industrial—include the Unified Parkway Industrial Development, Blackstone Logistics Center, and Rice Pond Village 40B. Stakeholders noted these developments, concentrated in Uxbridge, Millbury, and Sutton, are expected to increase traffic volume and place additional strain on local roads, underscoring the need for updated traffic data and proactive infrastructure planning to support the growing demand for space along the corridor.

The analysis highlights a variety of proposed and ongoing residential, commercial, and industrial projects, with a focus on Millbury, Sutton, Uxbridge, and Douglas. Key residential developments in Millbury include Clearview (140 units), Cobblestone Village (72 units), and Singletary Arms (197 units), signaling potential for residential growth and suburban expansion. On the industrial front, large-scale projects like Unified Parkway (2.22 million sq ft warehouse) and Blackstone Logistics Center (605,000 sq ft warehouse) in Sutton demonstrate the area's growing role as a logistics and warehousing hub. Smaller commercial and industrial projects are also proposed, contributing to the region's diverse development landscape.

Town	Development Name/Location	Type of Development	Timeframe for Completion	Housing Units	Square Feet
Douglas	North Village Condominiums 40 B	Residential (40B)		124 units	N/A
Douglas	Cubes at Gilboa, 123 Gilboa Street	Industrial, warehouse	Completed, Fall 2023	N/A	1.1 million sq ft
Millbury	Clearview, 66 Park Hill Avenue	Residential	Partially under development, October 2024	140 units	N/A
Millbury	Shoppes in Millbury	Commercial	Completed	N/A	

Millbury	Cobblestone Village	Residential	Completed, 2022	72 units	N/A
Millbury	9 West Street	Residential	Completed, between September 2021 and June 2022	12 Units	N/A
Millbury	19 Canal Street	Residential	Completed, 2024	59 Units	N/A
Millbury	Rice Pond Village 40B, 17 Rice Road	Residential (40B)	Approved	52 Units	N/A
Millbury	Singletary Arms, 115 West Main Street	Residential	Approved, August 2024	197 Units	N/A
Northbridge	Stone Hill Condominium, 508-510 Church Street	Residential	Partially Completed?	104 Units	N/A
Sutton/Millbury	40 Unified Parkway	Industrial, warehouse	One building completed fall 2024, all land is planned	N/A	2.22 million sq ft
Sutton	40B Armsby Road	Residential, 40B	Unknown	225 Units	N/A
Sutton	SS Commerce Park, Gilmore Drive	Industrial, manufacturing	Completed, 2022	N/A	620,000 sq ft
Sutton	Route 146S 40B	Residential, 40B	Unknown	260 Units	N/A
Sutton	Pleasant Valley Crossing with Market	Commercial	Completed, 2015	N/A	102,400 sq ft
Sutton	Unified HQ, 223 WP Turnpike	Industrial, manufacturing	Completed, 2010	N/A	450,000 sq ft
Sutton/Douglas	Cubes at Pyne, 150 Gilboa Street	Industrial, warehouse		N/A	2.8 million sq ft
Sutton/Uxbridge	Lackey Dam Logistics, 3 Lackey Dam	Industrial, warehouse		N/A	180,000 sq ft
Sutton/Uxbridge/Douglas	Blackstone Logistics	Industrial, warehouse	Completed, 2023-2024	N/A	605,000 sq ft

	Center, Lackey Dam				
Uxbridge	Campanelli – Amazon, 515 Douglas Street	Industrial, warehouse	Completed	N/A	518,336 sq ft
Uxbridge	Taft Hill Lane	Residential	Completed, 2016	128 Units	N/A
Uxbridge	Cultivate, 100 Campanelli Drive	Industrial		N/A	74,164 sq ft
Uxbridge	139 Campanelli Drive	Industrial	Completed, 2022-2023	N/A	485,800 sq ft
Uxbridge	Medline , 81 Campanelli Drive	Industrial	Completed, 2020	N/A	818,165 sq ft
Uxbridge	Lenze Americas Corp, 630 Douglas Street	Industrial	Competed, 2006/07	N/A	84,000 sq ft
Uxbridge	The Woodlands at Village of the Americas	Residential	Completed, 2024	20 Units	N/A
Uxbridge	Commercial and Industrial Drive	Industrial		N/A	?
Uxbridge	Zipp Industrial Park, 290 Millville Road	Industrial	Completed, 2021	N/A	180,000 sq ft
Grafton	Fisherville Terrace	Residential	Approved	100 Units	N/A
Sutton	Residence at Pleasant Valley Crossing, Boston Road	Residential	Approved	100 Units	N/A
Sutton	Pleasant Valley Crossing Phase 2	Commercial	Approved	N/A	130,000 sq ft
Sutton	Northeast Great Dane Trailer Repair Facility, 100 Worcester-Providence Turnpike	Commercial?	Completed	N/A	28,800 sq ft

Sutton	Xtra Mart Expansion, 27 Worcester-Providence Turnpike	Commercial		N/A	Unsure of size
Uxbridge	Big Y Supermarket, 204 South Main Street	Commercial	Approved	N/A	57,250 sq ft

Table 8. Developments Pipeline (Bowman, Nelson\Nygaard, RKG Associates)

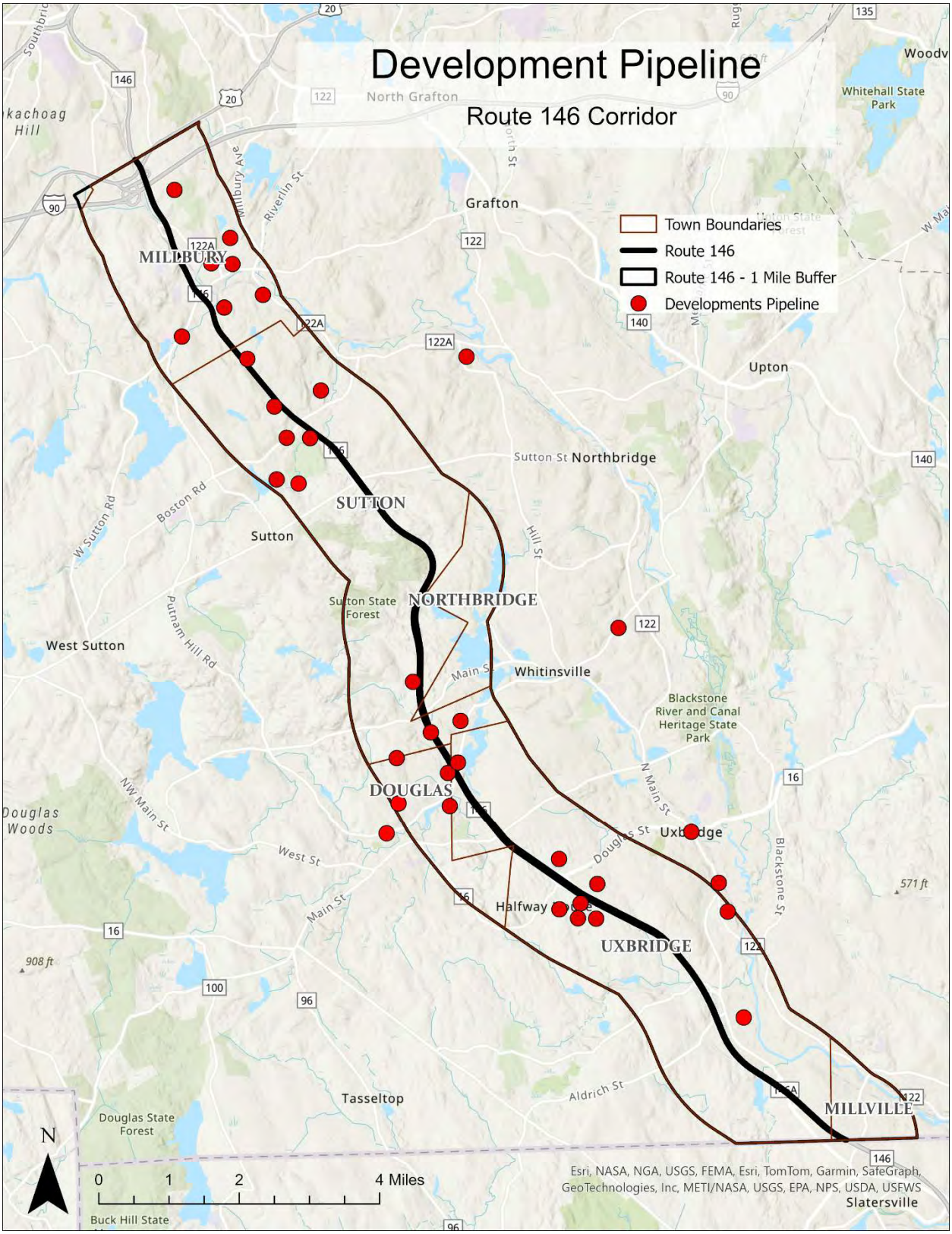


Figure 4. Development Pipeline, Route 146 Corridor (Bowman, Nelson/Nygaard, RKG Associates).

Stakeholder Input on Potential Development

Stakeholder interviews were conducted by the project team to identify development potential in the towns along the Route 146 corridor. The following points summarize the development opportunities and constraints noted during those conversations:

- Douglas is experiencing industrial growth, particularly with Amazon warehouses, but land for further development is constrained due to extensive forested areas. The focus in Douglas is improving transportation infrastructure, particularly addressing truck traffic and the problematic Route 146 interchange, which hampers development potential.

- In Millbury, there is promise for future development, with the development at 17 Rice Road and six underdeveloped parcels along the highway, contingent on sewer infrastructure upgrades. Additionally, the town is eyeing residential or hotel development near the Blackstone Shops, signaling potential growth once the necessary infrastructure is in place.

- Sutton is seeing development activity, especially with the Unified Parkway and MBTA housing projects. The town is focused on improving transportation infrastructure, addressing safety concerns, and enhancing multimodal options, particularly with the long-awaited Blackstone River Bikeway. Sutton's growth potential is closely tied to ongoing development and the need for better transportation and active infrastructure.

- Uxbridge is experiencing industrial growth, driven by projects like the Amazon warehouse, office facilities, and the CVS distribution center. The town also plans future commercial developments, including BJ Wholesale. Uxbridge faces challenges related to increasing truck traffic and congestion, with improvements needed at interchanges and roundabouts. Despite these concerns, the town is focused on accommodating commercial growth and improving transportation safety.

Overall, the stakeholder interviews point to opportunities in Millbury and Sutton as the towns likely to see future development, with Millbury benefiting from planned sewer infrastructure and Sutton's ongoing projects. Douglas and Uxbridge also present opportunities but require improvements in transportation infrastructure to fully unlock their development potential.

Land-to-Building Ratio

In addition to known pipeline projects, a land-to-building ratio was developed for the study area to represent the relationship between the value of the land and the value of the building or structure on that land. A simple way to understand the ratio is if the land value is higher than the building value, the ratio will be greater than 1. This may suggest an opportunity for redevelopment where the building may be older and outdated or small compared to the value of a larger parcel. If the building value is higher than the land value (ratio less than 1), it may suggest that the value of the property is already high, and redevelopment potential could be limited unless a zoning change were to occur creating more potential value for the property.

By applying this analysis to parcels within a one-mile radius of the Route 146 corridor, we can pinpoint parcels with greater potential for redevelopment. Sutton stands out with the highest

proportion of parcels, 3.7% of the study area, having a land-to-building ratio greater than 1, highlighting an elevated potential for development/redevelopment over time.

Other towns also exhibit varying levels of redevelopment potential. Northbridge follows closely with 3.5% of its study area showing a land-to-building ratio above 1, while Millville has 2.6%. Uxbridge accounts for 2.0%, and Douglas shows 1.2%. Millbury has the smallest proportion, with only 0.9% of its study area meeting the threshold. These findings suggest that while Sutton and Northbridge offer the greatest opportunities for redevelopment, towns like Millville and Uxbridge also present notable potential for growth and transformation.

Town	Parcels with a Land-to-Building Ratio over 1	Percent of Study Area Parcels with a Land-to-Building Ratio over 1
Douglas	4	1.2%
Millbury	21	0.9%
Millville	12	2.6%
Northbridge	12	3.5%
Sutton	59	3.7%
Uxbridge	31	2.0%

Table 9. Land Value-to-Building Value Ratio, Route 146 Corridor (MassGIS, RKG Associates).

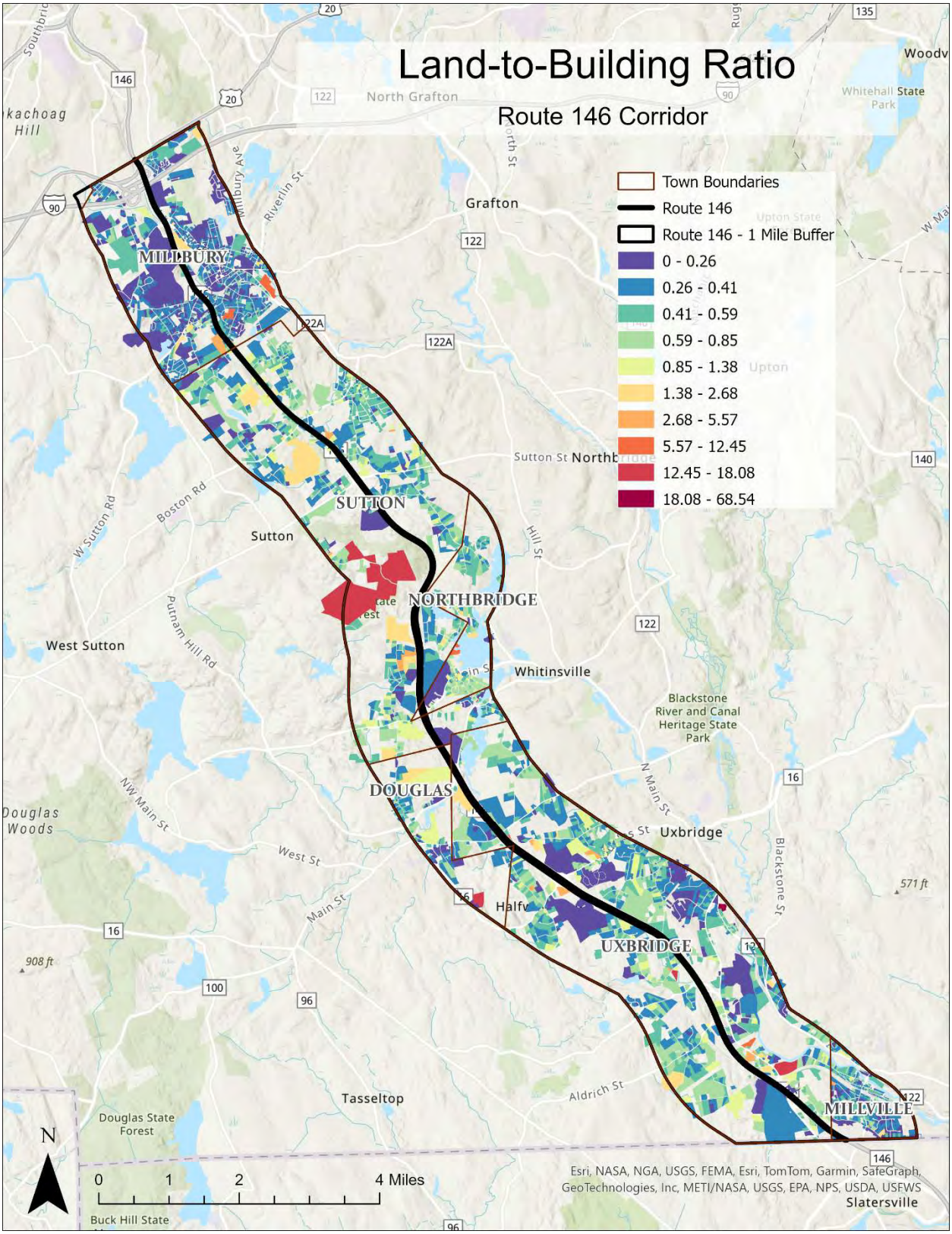


Figure 5. Land-to-Building Ratio Alog Route 146 Corridor (MassGIS, RKG Associates).

Vacant Parcels

The distribution of developable and potentially developable vacant land along the Route 146 corridor reveals important insights into the future potential for development in the study area. Uxbridge stands out with the largest amount of vacant land, encompassing 1,509 acres, which accounts for 5.1% of the total study area. This amount of vacant land could position Uxbridge for some future growth.

Douglas, Sutton, and Millbury also have a notable amount of developable or potentially developable vacant land, with 330 acres (1.6%), 156 acres (0.7%) and 98 acres (0.5%) respectively. These towns are similarly well-positioned for suburban growth, with sufficient vacant land to support a range of development options. The large number of acres available in Douglas, Sutton, and Millbury could lead to a mix of residential, commercial, and even industrial developments.

In contrast, Millville has a much smaller percentage of vacant land. Millville has 38 vacant acres, representing just 0.2% of the study area. Millville, in particular, may already be largely developed, making future expansion by building on undeveloped land more unlikely.

Northbridge is the only town with zero acres of developable or potentially developable vacant land in the study area, indicating that the town may need to focus on redevelopment or infill projects to accommodate future growth if desired.

The varying amounts of developable or potentially developable vacant land across these towns may influence future development strategies along the Route 146 corridor. Towns with more vacant land, like Uxbridge, Douglas, Sutton, and Millbury, could focus on zoning and infrastructure planning to accommodate growth and attract new development. On the other hand, towns like Millville and Northbridge, with less vacant land, may choose to focus on redevelopment, increasing density in already developed areas, and optimizing existing infrastructure.

Town	Number of Developable or Potentially Developable Vacant Lots	Acres of Developable or Potentially Developable Vacant Land	Percent of Developable or Potentially Developable Vacant Land in Study Area
Douglas	49	331 Acres	1.6%
Millbury	27	98 Acres	0.5%
Millville	13	38 Acres	0.2%
Northbridge	0	0 Acres	0%
Sutton	35	156 Acres	0.7%
Uxbridge	137	1,509 Acres	5.1%

Table 10. Developable or Potentially Developable Vacant Parcels, Route 146 Corridor (MassGIS, RKG Associates)

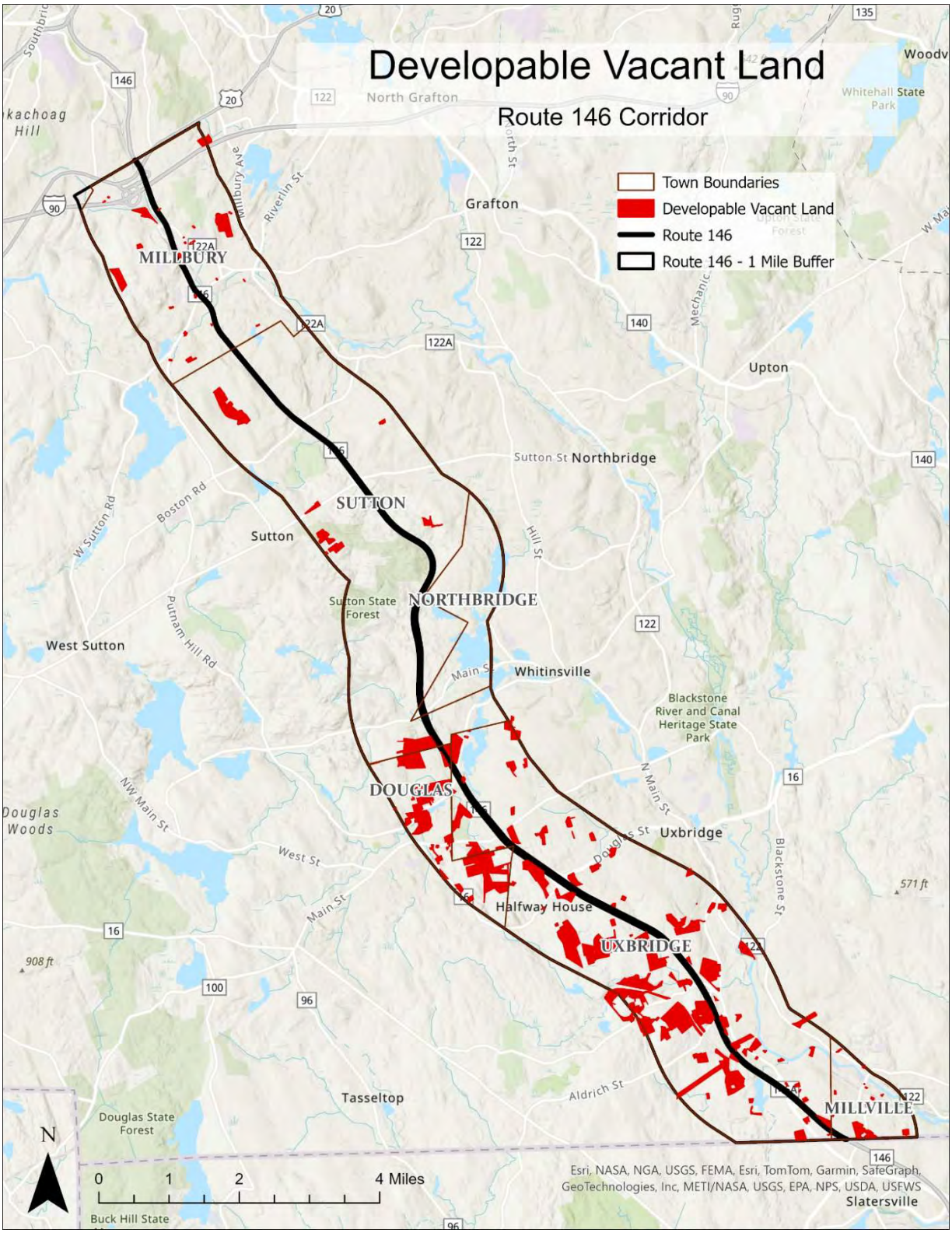


Figure 6. Developable or Potentially Developable Vacant Land Parcels, Route 146 Corridor (MassGIS, RKGAssociates).

Identification of Top Redevelopment Parcels

To identify parcels with the greatest potential for redevelopment within the study area, the project team conducted an analysis that ranks parcels based on several categories including zoning, land value-to-building value ratios, completed and proposed developments, and developable vacant parcels. Parcels located in zoning districts with permissive uses or those that allow mixed-use or higher-density developments are more likely to be more suitable for redevelopment, ensuring that future projects are both feasible and desirable. A high land value relative to the existing building value suggests underutilized land, making it a stronger candidate for redevelopment. By analyzing completed and proposed developments, we can identify areas with active growth, indicating readiness for further investment. Additionally, vacant parcels suitable for development present immediate opportunities for new projects. By cross-referencing and scoring parcels based on these criteria, we can highlight the most promising sites for future growth along the corridor. The scoring criteria that was used to rank parcels is listed below:

Criteria	Category	Score
Zoning	Permissive districts	2
	Somewhat permissive districts	1
	Restrictive districts	0
Land-to-Building Value	Ratio greater than 3	2
	Ratio between 1 and 3	1
	Ratio less than 1	0
Development Pipeline	Identified developments or projects	1
Vacant land	Developable or potentially developable vacant land	1

Table 11. Redevelopment Parcel Scoring Criteria (RKG Associates)

Uxbridge and Douglas stand out as areas with more potential for investment in the near term, with many industrial and commercial parcels showing high land-to-building value ratios, signaling underutilization and redevelopment potential, particularly for industrial or mixed-use projects.

Millbury and Millville show moderate potential, particularly for smaller-scale commercial or industrial projects. Sutton offers the least amount of opportunities for redevelopment.

Overall, the towns along the Route 146 corridor offer a range of redevelopment potential, with Uxbridge and Douglas emerging as the most promising. Their flexible zoning, high land value-to-building value ratios, ongoing developments, and available vacant land highlight prime locations for redevelopment, particularly for industrial and commercial parcels.

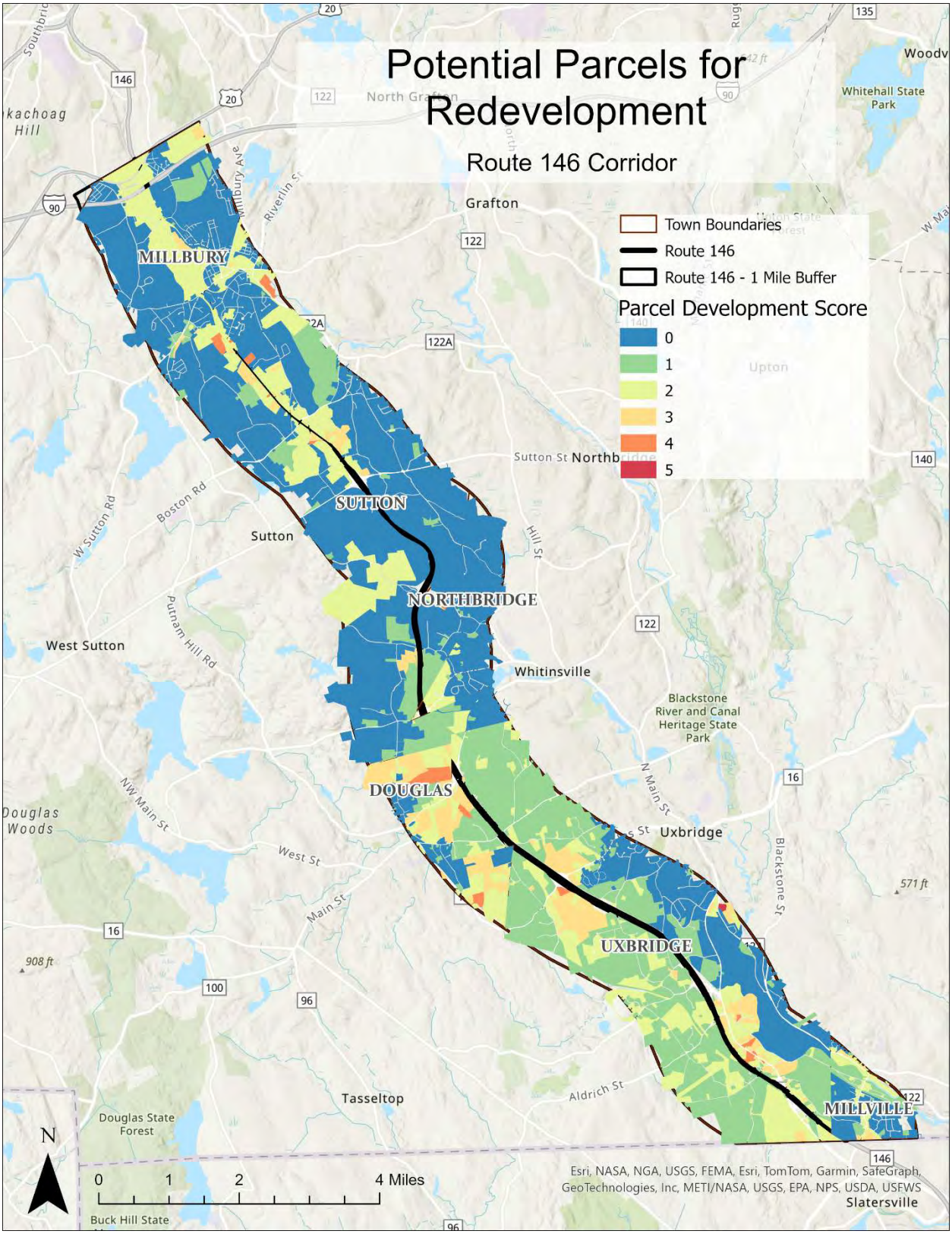


Figure 7. Potential Parcels for Redevelopment, Route 146 Corridor (RKG Associates).

Conclusion

The Route 146 Land Use and Zoning Analysis examines the land use patterns, zoning regulations, and development potential along the Route 146 corridor, focusing on the towns of Uxbridge, Sutton, Millbury, Douglas, Northbridge, and Millville. This analysis identifies current land uses, zoning restrictions, and developable or potentially developable vacant land distribution, while also considering upcoming developments that may influence future growth. Residential areas dominate the corridor, followed by industrial, commercial, and mixed-use zones.

In terms of land values, Millbury and Northbridge have the highest median values, indicating potential for residential, commercial, and industrial growth. Conversely, towns like Douglas, Millville, and Sutton offer more affordable land, presenting opportunities for suburban expansion, affordable housing, and smaller-scale commercial projects. Uxbridge, with the lowest land value per acre, offers substantial opportunities for large-scale development, particularly in affordable housing and industrial sectors, driven by existing projects such as the Amazon warehouse and potential future commercial developments.

The distribution of developable or potentially developable vacant land across the corridor shows Uxbridge, Sutton, and Millbury as having the most significant opportunities for growth. Uxbridge stands out with the highest number of vacant, underutilized parcels with high land value-to-building value ratios, especially in industrial and commercial zones, making it an ideal area for redevelopment and future industrial expansion. Sutton benefits from ongoing developments like Unified Parkway and potential MBTA housing, while Millbury has notable development potential along Route 146, contingent on infrastructure improvements like sewer extensions.

Douglas, although experiencing industrial growth, faces limitations due to its forested land and transportation infrastructure challenges, including insufficient interchange connections, which could hinder further development. On the other hand, the town's permissive zoning offers potential for future investment and growth, creating opportunities for development despite these constraints. Millville has fewer immediate development opportunities, although its proximity to industrial growth positions it for potential future expansion, particularly in the industrial sector.
Northbridge and Millville may focus more on redevelopment due to limited available land for new projects.

Overall, the Route 146 Land Use and Zoning Analysis highlights the strong development potential in Uxbridge, and Millbury, which possess ample land for development/redevelopment and ongoing projects to support growth in residential, industrial, and commercial sectors.

Appendix

In the tables, the following terms are used to describe zoning allowances and requirements:

Yes: Use allowed by right – indicates that the use is permitted without any additional approval in the specified zoning district.

SP: Use allowed upon issuance of a special permit by the Planning Board – indicates that the use is allowed only with approval from the Planning Board.

P: Use allowed upon issuance of a site plan review by the Planning Board – indicates that the use is allowed following a review and approval of a site plan by the Planning Board.

N/A: Use prohibited – indicates that the use is not allowed in the specified zoning district.

PB: Permitted by Special Permit – indicates that the use is allowed only with approval from the Planning Board.

ZBA: Permitted by Special Permit – indicates that the use is allowed only with approval from the Zoning Board of Appeals.

BI: Permitted following approval by the Building Inspector – indicates that the use is allowed with prior approval from the Building Inspector.

Douglas Uses Table

Uses	Commercial (Comm)	Industry (Ind)	Rural Agriculture (R-A)	Village Business (VB)	Village Residential (VR)
Agriculture Uses:					
Use of land for the primary purpose of agriculture, horticulture, floriculture or viticulture on a parcel of more than five acres in area	Yes	Yes	Yes	Yes	Yes
Facilities for the sale of produce, and wine and dairy products, provided that during the months of June, July, August and	Yes	Yes	Yes	Yes	Yes

September of every year, or during the harvest season of the primary crop, the majority of such products for sale, based on either gross sales dollars or volume, have been produced by the owner of the land containing more than five acres in area on which the facility is located					
	Commercial (Comm)	Industry (Ind)	Rural Agriculture (R-A)	Village Business (VB)	Village Residential (VR)
Nonexempt farm on less than five acres	ZBA	ZBA	ZBA	ZBA	ZBA
Nonexempt farm stand	ZBA	ZBA	ZBA	ZBA	ZBA
Residential Uses:					
Single family detached dwelling	N/A	N/A	Yes	Yes	Yes
Two-family dwelling	N/A	N/A	N/A	PB	PB
Temporary use of a trailer or mobile home because of loss of dwelling by fire or some other catastrophe for not more than one year	Yes	Yes	Yes	Yes	Yes
Conversion of a structure	PB	N/A	N/A	PB	PB

existing at the enactment of these Bylaws into a two-family or multi family dwelling, subject to Section 7.1					
Flexible Development	N/A	N/A	PB	N/A	PB
Residential Compound	N/A	N/A	PB	N/A	PB
Group residence or home	ZBA	ZBA	ZBA	ZBA	ZBA
Assisted Living Facility	PB	PB	PB	PB	PB
Nursing home	N/A	N/A	PB	PB	PB
Commercial Uses:					
Retail establishment for the sale of merchandise to the general public, not otherwise set forth herein	Yes	ZBA	N/A	Yes	ZBA
	Commercial (Comm)	Industry (Ind)	Rural Agriculture (R-A)	Village Business (VB)	Village Residential (VR)
Sales and service of motor vehicles, marine, farm or recreational vehicles or equipment	Yes	ZBA	N/A	Yes	N/A
Craft, consumer, professional or commercial service establishment	Yes	ZBA	N/A	Yes	ZBA
Funeral home	Yes	N/A	N/A	Yes	ZBA
Veterinary hospital	N/A	N/A	N/A	N/A	N/A

Boarding or breeding kennel for small domestic animals	N/A	N/A	N/A	N/A	N/A
Motor vehicle light service or repair establishment	Yes	ZBA	N/A	Yes	N/A
Restaurant	Yes	Yes	N/A	Yes	N/A
Restaurant, fast food	ZBA	Yes	N/A	ZBA	N/A
Business or professional office	Yes	Yes	N/A	Yes	ZBA
Medical or dental office or clinic	Yes	Yes	N/A	Yes	ZBA
Bank or other financial institution	Yes	Yes	N/A	Yes	ZBA
	Commercial (Comm)	Industry (Ind)	Rural Agriculture (R-A)	Village Business (VB)	Village Residential (VR)
Insurance, real estate office	Yes	Yes	ZBA	Yes	ZBA
Commercial indoor amusement or recreational facility	ZBA	ZBA	N/A	ZBA	N/A
Commercial outdoor amusement or recreational facility, not including drive-in movie theater	ZBA	ZBA	N/A	ZBA	N/A
Contracting business and equipment storage yard	Yes	Yes	N/A	N/A	N/A
Recycling of glass and metal materials	N/A	ZBA	N/A	N/A	N/A

Bed and Breakfast	ZBA	N/A	ZBA	ZBA	ZBA
Private, non-profit club or fraternal organizatonal use	Yes	N/A	N/A	Yes	N/A
Public or private outdoor recreation use	N/A	N/A	ZBA	N/A	N/A
Family campground	N/A	N/A	ZBA	N/A	N/A
Hotel, motel	ZBA	N/A	N/A	Yes	N/A
Golf course	N/A	N/A	ZBA	N/A	ZBA
Function Hall	N/A	N/A	N/A	PB	N/A
Car Wash	PB	Yes	N/A	PB	N/A
Industrial Uses:					
Any manufacturing use, including processing, fabrication and assembly conducted inside a building	ZBA	Yes	N/A	N/A	N/A
	Commercial (Comm)	Industry (Ind)	Rural Agriculture (R-A)	Village Business (VB)	Village Residential (VR)
Any manufacturing use, including processing, fabrication and assembly conducted outside a building	N/A	PB	N/A	N/A	N/A
Wholesale, warehouse, distribution or storage facility, including mini-storage warehouse	ZBA	Yes	N/A	N/A	N/A
Saw mill or lumber	N/A	ZBA	ZBA	N/A	N/A

producing facility, including incidental sales of wood products produced at the site					
Commercial timber harvest with temporary sawmill for not more than 60 days	N/A	Yes	ZBA	N/A	N/A
Junkyard or salvage yard	N/A	N/A	N/A	N/A	N/A
Storage, disposal, or transport of medical or biological waste	N/A	N/A	N/A	N/A	N/A
	Commercial (Comm)	Industry (Ind)	Rural Agriculture (R-A)	Village Business (VB)	Village Residential (VR)
Exempt/Public/Institutional					
Use of land or structures for religious purposes	Yes	Yes	Yes	Yes	Yes
Use of land or structures for educational purposes on land owned or leased by the commonwealth or any of its agencies, subdivisions or bodies politic or by a religious sect or denomination, or by a nonprofit	Yes	Yes	Yes	Yes	Yes

educational corporation					
Family day care home, small	Yes	Yes	Yes	Yes	Yes
Family day care home, large	ZBA	ZBA	ZBA	ZBA	ZBA
Adult day care facility, small	Yes	Yes	Yes	Yes	Yes
Adult day care facility, large	ZBA	ZBA	ZBA	ZBA	ZBA
Child care facility in existing building	Yes	Yes	Yes	Yes	Yes
Child care facility in new building	ZBA	ZBA	ZBA	ZBA	ZBA
Municipal facilities	Yes	Yes	Yes	Yes	Yes
Municipal waste disposal area operated by the town or under contract to the town handling waste produced within the town	ZBA	ZBA	ZBA	ZBA	ZBA
	Commercial (Comm)	Industry (Ind)	Rural Agriculture (R-A)	Village Business (VB)	Village Residential (VR)
Cemetery	ZBA	ZBA	ZBA	ZBA	ZBA
Forestry and conservation	Yes	Yes	Yes	Yes	Yes
Other Uses					
Drive-through or drive-up window or facility at otherwise authorized use or as free-standing structure or kiosk	PB	PB	PB	PB	PB

Residentially-Scaled Solar Array	Yes	Yes	Yes	Yes	Yes
Commercially-Scaled, Land-Based Solar Array	PB	PB	PB	PB	PB

Table 12. Zoning Use Regulations, Town of Douglas (Douglas Zoning By-law, Zoning Use Regulations – Appendix A).

Millbury Uses Table

Use	B-1	B-2	BV	I-1	I-2	R-1	R-2	R-3	S-1	S-2	S-3	S-4
Residential Uses:												
One-family dwelling other than a mobile home	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
One or two family dwelling other than a mobile home	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Boarding, lodging, or tourist homes	N/A	N/A	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Residential use in accordance with Section 47	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Multifamily dwelling (not associated with mixed use)	SP	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Multifamily dwelling: provided that it is serviced by public sewerage and public water	N/A	N/A	N/A	N/A	N/A	SP	SP	N/A	N/A	N/A	N/A	N/A
Multifamily dwelling, provided that it is serviced by public sewerage and public water, and provided	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SP	SP	SP	SP

that access from a major street as herein defined does not require use of a minor street substantially developed for single-family homes. In a Suburban Zone for dwelling units in excess of one, increase the minimum lot area requirement by 10,000 s.f. per additional dwelling unit, plus 5,000 sf per additional bedroom.												
Multifamily addition or renovation to an existing structure, under Section 14.11 (a) special permit from Planning Board.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	SP	N/A	N/A	N/A	N/A
Residential social service facility, provided that all building code, health and zoning by-law requirements are met, and that the specific premises are	SP	SP	N/A	N/A	N/A	SP	SP	SP	SP	SP	SP	SP

not unsuitable in relation to the needs of the persons being cared for, and in consideration of avoidance of undue concentration of such facilities in any neighborhood.												
Assisted Living Facility in accordance with Section 42	SP	SP	SP	SP	N/A	SP	SP	SP	SP	SP	SP	SP
Business Uses:												
Business or professional office	Yes	Yes	Yes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bank or other financial institution without drive-thru	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail sales and services, provided that not more than 5,000 square feet of total floor area is devoted to office, sales and storage purposes	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail sales and services, except used motor vehicle sales not in conjunction with new motor vehicle sales; building materials or	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

construction equipment; and motor vehicle service station												
Any of the following personal service establishments dealing directly with the consumer: dry cleaner, hand or self service laundry, tailor, shoe repair, barber or beauty salon, florist, small appliance repair shop, interior decorating studio, medical or dental laboratory, printing, photocopying or photography shop	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Personal Services	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Shop of plumber, carpenter, electrician, upholsterer or similar workshop or repair establishment, provided that there is no exterior storage or activity, and only on-site repair work	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Restaurant	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Restaurant without drive-thru	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bakery or café	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tavern or bar	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Florist shop	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Funeral home or mortuary	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Commercial amusements and recreation	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Standard Golf Course	Yes	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Par 3 golf course	Yes	Yes	N/A	Yes	Yes	SP	SP	SP	Yes	Yes	Yes	Yes
Building tradesmen and contractors	Yes	Yes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Motel or hotel	Yes	Yes	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Printing and publishing	Yes	Yes	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Radio Station	Yes	Yes	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Milk processing plant	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Liquor store	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Health or exercise club	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indoor recreational uses including skateboard park, arcade, bowling alley	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Retail sales and service of new motor vehicles and light trucks, and retail sales and service of used motor vehicles and light trucks in conjunction with new motor vehicle and light truck sales	N/A	N/A	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Registered Marijuana Dispensary in accordance with Section 52	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Marijuana Cultivator in accordance with Section 52	N/A	N/A	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Marijuana Product Manufacturer in accordance with Section 52	N/A	N/A	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Other Type of Licensed Marijuana-Related Business in accordance with Section 52	N/A	N/A	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Community Service Uses:												
School or college	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Religious, sectarian or denominational buildings or uses	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nursing, convalescent or rest home, or hospital	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cemetery	Yes	Yes	N/A	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day care center	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Municipal use not elsewhere more specifically cited	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Philanthropic institutions	Yes	Yes	Yes	Yes	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Nonprofit club or lodge	Yes	Yes	Yes	Yes	N/A	SP	SP	SP	SP	SP	SP	SP
Public Utility	Yes	Yes	N/A	Yes	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Public utility without service yards	N/A	N/A	N/A	N/A	SP	SP	N/A	N/A	SP	SP	SP	SP
Airfield or heliport	Yes	Yes	N/A	Yes	N/A	N/A	N/A	N/A	SP	SP	SP	SP
Heliport	N/A	N/A	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Agricultural and Industrial Uses:												
Agricultural, horticultural or floricultural uses	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Earth Removal	Yes	Yes	N/A	Yes	Yes	N/A	N/A	N/A	Yes	Yes	Yes	Yes
Manufacturing or processing, other than asphalt plants, including alternative and/or renewable energy systems	N/A	N/A	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Warehousing, wholesale distribution not involving bulk storage	N/A	N/A	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Research and development	N/A	N/A	N/A	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Stone and monument works	N/A	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Building materials or construction equipment sales	N/A	SP	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Freight or transportation terminal, if not within eight hundred feet (800') of more than two (2) dwellings	N/A	N/A	N/A	SP	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Independent Testing Laboratory in	N/A	N/A	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A

accordance with Section 52												
Accessory Uses:												
Bed and breakfast	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Home occupation, in accordance with section 4l	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Roadside stand for goods principally produced on the premises	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parking to service a permitted use, but not including more than one (1) commercial vehicle or any construction equipment or any truck over one and one-half (1 1/2) tons	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Parking to service a permitted use	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Temporary structures to be used only as temporary construction offices in relation to and in conjunction with a current construction project and to be removed in the case of building construction upon the final issuance of all	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

occupancy permits or in the case of other types of construction projects upon the completion of all construction work, in either case the temporary structure shall not remain on the property for more than twenty-four (24) months.												
Other customary accessory uses	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Accessory parking	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Accessory dwelling in accordance with Section 46.2	N/A	N/A	SP	N/A	N/A	SP	SP	SP	SP	SP	SP	SP
Building containing multi-family dwelling units in combination with stores or other permitted business uses	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
In a residential office overlay district only, offices for legal, educational, accounting, engineering, medical, real estate, insurance or	N/A	N/A	N/A	N/A	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A

architectural uses, or other activities having similar externally observable characteristics, or for a funeral home or mortuary; if not allowed outright under Section 22.13.												
In residential office overlay districts only, conversion of an existing structure for offices for legal, educational, accounting, engineering, medical, real estate, insurance or architectural uses, or other activities having similar externally observable characteristics, or for a funeral home or mortuary; but only if not involving extensions subsequent to July 1, 1977, totaling more than one thousand (1,000) square feet gross floor area.	N/A	N/A	N/A	N/A	N/A	Yes	Yes	Yes	N/A	N/A	N/A	N/A

Accessory scientific use in accordance with Section 46	SP	N/A	N/A	SP	SP	SP	SP	SP	SP	SP	SP	SP
Other Uses:												
Kennels	N/A	N/A	N/A	N/A	N/A	SP	SP	SP	N/A	N/A	N/A	N/A
Veterinary, animal hospital, or kennel	SP	Yes	N/A	SP	N/A	N/A	N/A	N/A	SP	SP	SP	SP
Motor vehicle service station in accordance with Section 43	SP	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Used motor vehicle (other than truck) sales not in conjunction with new motor vehicle sales, subject to the location and egress requirements of Sections 43.11 and 43.12.	N/A	SP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Temporary structure or uses not conforming to this by-law	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP

Table 13. Zoning Use Regulations, Town of Millbury (Town of Millbury Zoning Bylaws, Article 2).

Millville Uses Table

Uses	Commercial Business (CB)	Village Center (VC)	Village Residential (VR)
Agricultural Uses:			
Farm-agricultural, orchard, plant or tree nursery, including one single-family dwelling, for the resident proprietor	SP	SP	Yes

Farm-livestock and poultry, including one single-family dwelling for the resident proprietor	SP	SP	Yes
Sales room or stand for the display or sales of agricultural or horticultural products on a seasonal basis	Yes	Yes	Yes
Backyard chickens	Yes	Yes	Yes
Residential Uses:			
Single-family detached dwelling	Yes	Yes	Yes
Conversion of a single-family dwelling existing prior to the adoption of this bylaw to accommodate not more than two families	No	No	No
Cellar hole or basement area used as a dwelling	Yes	Yes	SP
Accessory apartment	SP	SP	SP
Two-family dwelling	SP	SP	SP
Multifamily, apartment, or condominium	SP	SP	SP
Trailer, coach, or mobile home	No	No	No
Trailer, coach, or mobile home to be occupied (a) for a period not exceeding six months upon a lot defined in Article I, §§ 100-104 and 100-105, during the construction of a permanent residence on such lot; or (b) by one or more persons on temporary visits to Millville not exceeding 30 days in any successive 12 months	Yes	Yes	Yes
Trailer, coach, or mobile home park	No	No	No
Renting of one or two rooms and the furnishing of board by a resident family to not more than three persons taking lodging for more than 30 consecutive days at a time	Yes	Yes	Yes
Customary home occupation in conformance with Article V, § 100-503A	Yes	Yes	Yes

Customary home occupation in conformance with Article V, § 100-503B	SP	SP	SP
Open space residential development (OSRD) as defined in Article VII	SP	SP	SP
Commercial Uses:			
Retail store, distributing merchandise to the general public	P	P	SP
Craft, consumer, professional or commercial service establishment dealing directly with the general public	P	P	SP
Restaurant or other establishment serving food and beverage to be consumed on the premises	P	P	SP
Undertaking establishment or funeral home	SP	SP	SP
Hotel, motel	SP	SP	No
Professional office or agency	P	P	SP
Bank or other financial institution	P	P	SP
Insurance or real estate office	P	P	SP
Commercial indoor amusement or recreation place, or place of assembly	SP	SP	SP
Contracting business and equipment storage yard	SP	SP	SP
Bed-and-breakfast inn	SP	SP	SP
Marijuana cultivator	SP	No	No
Medical marijuana dispensary	SP	No	No
Marijuana product manufacturer	SP	No	No
Recreational marijuana retailer (RMR)	SP	No	No
Marijuana testing facility	SP	No	No
Marijuana transportation or distribution facility	SP	No	No

Any other type of licensed marijuana-related business	SP	No	No
Large-scale, ground-mounted solar photovoltaic installation as defined in § 100-1103 and located outside the Renewable Energy Overlay District	SP	SP	SP
Any business and/or retail use permitted above by right in excess of 10,000 square feet of building area	SP/P	SP/P	N/A
Automotive Sales and Services Uses:			
Automotive "filling" or service station	SP	SP	SP
Repair garage for motor vehicles, not including auto body, welding or soldering shop	SP	SP	SP
Auto body, welding or soldering shop	SP	SP	SP
Sale of new or used motor vehicles (Class I or Class II)	SP	SP	SP
Public, semipublic and institutional uses:			
Church or other place of worship, parish house, rectory, convent, and other religious institution	Yes	Yes	Yes
School, public, religious, sectarian, or denominational	Yes	Yes	Yes
Public building and premises for government use	P	SP	SP
Public utility building and structure	SP	SP	SP
Public recreational and water supply use	Yes	Yes	Yes
Nursing home	SP	SP	SP
Mixed Use	P	SP	No

Table 14. Schedule of Use Regulation, Town of Millville (Millville Zoning Bylaw, § 100-302: Schedule of Use Regulations).

Northbridge Uses Table

Use	Business Three (B-3)	Industrial One (I-1)	Industrial Two (I-2)	Residential One (R-1)	Residential Two (R-2)	Residential Five (R-5)
Residential Uses:						
One-Family Detached Dwelling	N/A	N/A	N/A	Yes	Yes	SP
Two-Family Dwelling	N/A	N/A	N/A	N/A	SP	Yes
Multifamily Dwelling	N/A	N/A	N/A	N/A	N/A	Yes
Accessory residential building such as toolshed, boathouse, playhouse, shelter for domestic pets, private greenhouse, private swimming pool and private detached garage for noncommercial vehicles	N/A	N/A	N/A	Yes	Yes	Yes
Planned townhouse development	N/A	N/A	N/A	N/A	N/A	N/A
Community Facilities Uses:						
Church or other religious purpose	Yes	Yes	Yes	Yes	Yes	Yes
Educational purpose which is religious, sectarian, denominational or public	Yes	Yes	Yes	Yes	Yes	Yes
	Business Three (B-3)	Industrial One (I-1)	Industrial Two (I-2)	Residential One (R-1)	Residential Two (R-2)	Residential Five (R-5)
Nonprofit recreational facility, not including a membership club	SP	Yes	Yes	Yes	N/A	N/A
Nonprofit country, hunting, fishing, tennis or golf club	N/A	N/A	N/A	Yes	Yes	SP
Nonprofit day camp or other nonprofit camp	N/A	Yes	Yes	Yes	Yes	SP

Town building, except equipment garage	Yes	SP	SP	Yes	Yes	Yes
Town cemetery, including any crematory therein	SP	N/A	N/A	SP	SP	SP
Historical association or society	Yes	N/A	N/A	SP	SP	SP
Nonprofit hospital or sanitorium	N/A	N/A	N/A	SP	SP	SP
Street, bridge, tunnel	Yes	Yes	Yes	Yes	Yes	Yes
Town equipment garage	N/A	Yes	Yes	N/A	N/A	N/A
Public utility, water filter plant, except power plant, sewage treatment plant and refuse facility	Yes	Yes	Yes	Yes	Yes	Yes
Power plant, sewage treatment plant and refuse facility	N/A	Yes	N/A	N/A	N/A	N/A
Large-scale solar photovoltaic facilities, see Article XX	Yes	Yes	Yes	N/A	N/A	N/A
Agriculture, horticulture and floriculture, except a greenhouse or stand for retail sale	Yes	Yes	Yes	Yes	Yes	Yes
	Business Three (B-3)	Industrial One (I-1)	Industrial Two (I-2)	Residential One (R-1)	Residential Two (R-2)	Residential Five (R-5)
Year-round greenhouse or stand for wholesale and retail sale of agricultural or farm products	Yes	SP	SP	SP	SP	SP
Temporary (not to exceed erection or use for a period exceeding 3 months in any 1 year)	Yes	SP	SP	Yes	Yes	SP

greenhouse or stand for retail sale of agricultural or farm products raised primarily on the same premises						
Raising and keeping livestock, horses and poultry, including dairy farming, not including the raising of swine or fur animals for commercial use	N/A	N/A	N/A	Yes	Yes	N/A
Commercial stables, kennels or veterinary hospital in which all animals, fowl or other forms of life are completely enclosed in pens or other structures	N/A	N/A	N/A	SP	SP	N/A
Noncommercial forestry and growing of all vegetation	Yes	Yes	Yes	Yes	Yes	Yes
Retail and Service Uses:						
Stores usually selling a combination of 2 or more of the following: dry goods, apparel and accessories, furniture and home furnishings, small wares, hardware and food	Yes	SP	SP	N/A	N/A	N/A
	Business Three (B-3)	Industrial One (I-1)	Industrial Two (I-2)	Residential One (R-1)	Residential Two (R-2)	Residential Five (R-5)
Establishment primarily selling food and drink for home preparation and consumption or on its premises	Yes	SP	SP	N/A	N/A	N/A

Sales by dispenser type vending machines	Yes	Yes	Yes	N/A	N/A	N/A
Establishments selling new automobiles or new and used automobiles and trucks, new automobile tires and other accessories, aircraft, boats, motorcycles and household trailers	SP	SP	SP	N/A	N/A	N/A
Hotels and motels	Yes	SP	SP	N/A	N/A	SP
Lodging house	N/A	N/A	N/A	N/A	SP	SP
Bed-and-breakfast inn	N/A	N/A	N/A	SP	SP	N/A
Personal service establishments	Yes	SP	SP	N/A	N/A	N/A
Funeral home or mortuary establishment	N/A	N/A	N/A	N/A	N/A	Yes
Convalescent or nursing home	N/A	N/A	N/A	SP	SP	SP
Membership club	SP	N/A	N/A	SP	SP	SP
Miscellaneous business offices and services	Yes	SP	SP	N/A	N/A	N/A
Home occupation (subject to § 173 13)	Yes	Yes	Yes	Yes	Yes	Yes
Automotive repair, automobile services and garages (not including a junkyard or open storage of abandoned automobiles or other vehicles)	N/A	SP	SP	N/A	N/A	N/A
	Business Three (B-3)	Industrial One (I-1)	Industrial Two (I-2)	Residential One (R-1)	Residential Two (R-2)	Residential Five (R-5)
Automotive or other junkyard or open storage of abandoned	N/A	SP	N/A	N/A	N/A	N/A

automobiles or other vehicles						
Miscellaneous repair service	N/A	N/A	N/A	N/A	N/A	N/A
Motion-picture establishment	Yes	SP	SP	N/A	N/A	N/A
Amusement and recreation services	SP	SP	SP	N/A	N/A	N/A
Commercial recreation, exercise and athletic facilities	SP	SP	SP	N/A	N/A	N/A
Horse racing facility and all accessory uses incidental to a horse track, on a site containing at least 50 acres, provided that no accessory uses will be permitted on the site until a track is constructed for live horse racing	N/A	N/A	Yes	N/A	N/A	N/A
Taxi and bus terminals	SP	N/A	N/A	N/A	N/A	N/A
Communications and television towers	N/A	SP	SP	SP	SP	N/A
Airport and landing strip	N/A	SP	SP	SP	N/A	N/A
Commercial parking lot or structure	Yes	SP	SP	N/A	N/A	SP
Planned business development	Yes	SP	SP	N/A	N/A	N/A
	Business Three (B-3)	Industrial One (I-1)	Industrial Two (I-2)	Residential One (R-1)	Residential Two (R-2)	Residential Five (R-5)
Accessory use	SP	Yes	Yes	SP	SP	SP
Use accessory to activities permitted as a matter of right, which activities are necessary in connection with scientific research or scientific development or	SP	SP	SP	SP	SP	SP

related production. The accessory use does not have to be located on the same parcel as the principal use. In issuance of the special permit, the Board of Appeals must find that the proposed accessory use does not substantially derogate from the public good						
Retail use accessory to a wholesale trade when that retail use occupies 10% or less of the total square footage of the building housing that wholesale trade	N/A	Yes	Yes	N/A	N/A	N/A
Office for administrative, executive, professional, sales and other similar uses	Yes	SP	Yes	N/A	N/A	N/A
Research & Development (laboratory for scientific, agricultural, or industrial research)	N/A	SP	Yes	N/A	N/A	N/A
	Business Three (B-3)	Industrial One (I-1)	Industrial Two (I-2)	Residential One (R-1)	Residential Two (R-2)	Residential Five (R-5)
Tattoo parlor/ body piercing studio	SP	N/A	N/A	N/A	N/A	N/A
Historic inns	N/A	N/A	N/A	N/A	N/A	N/A
Marijuana Establishments:						
Marijuana cultivator	N/A	SP	SP	N/A	N/A	N/A
Marijuana product manufacturer	N/A	SP	SP	N/A	N/A	N/A
Marijuana research facility	N/A	SP	SP	N/A	N/A	N/A

Independent testing laboratory	N/A	SP	SP	N/A	N/A	N/A
Marijuana retailer	SP	SP	SP	N/A	N/A	N/A
Any other type of licensed marijuana related business for the non medical use of marijuana, as set forth in MGL c. 94G	N/A	SP	SP	N/A	N/A	N/A
Agri-Tourism Farm	Yes	N/A	N/A	Yes	Yes	Yes
Wholesale and Manufacturing Uses:						
Mining and quarrying	N/A	SP	SP	N/A	N/A	N/A
Construction activities or suppliers	N/A	SP	SP	N/A	N/A	N/A
Manufacturing and light industries	N/A	Yes	Yes	N/A	N/A	N/A
Railroads and railway express service	N/A	Yes	Yes	N/A	N/A	N/A
Trucking service and warehousing	N/A	Yes	Yes	N/A	N/A	N/A
Other transportation services (taxicabs)	N/A	Yes	Yes	N/A	N/A	N/A
Wholesale trade	SP	Yes	Yes	N/A	N/A	N/A
Registered marijuana dispensary	N/A	N/A	Yes	SP	N/A	N/A
Contractor's Yard	SP	SP	SP	N/A	N/A	N/A
Adult Uses:						
Adult bookstore	N/A	N/A	SP	N/A	N/A	N/A
	Business Three (B-3)	Industrial One (I-1)	Industrial Two (I-2)	Residential One (R-1)	Residential Two (R-2)	Residential Five (R-5)
Adult motion picture theater	N/A	N/A	SP	N/A	N/A	N/A
Adult paraphernalia store	N/A	N/A	SP	N/A	N/A	N/A
Adult video store	N/A	N/A	SP	N/A	N/A	N/A
Adult live entertainment establishment	N/A	N/A	SP	N/A	N/A	N/A
Processing & Transfer Facilities Uses:						
Infectious Waste Transfer Station	N/A	SP	SP	N/A	N/A	N/A

Infectious Waste Processing Facility	N/A	N/A	N/A	N/A	N/A	N/A

Table 15. Table of Use Regulations, Town of Northbridge (Town of Northbridge, Zoning and Subdivision Regulations, Article V: Use Regulations).

Sutton Uses Table

Uses	Business-Highway (B-2)	Industrial (I)	Office and Light Industrial (OLI)	Residential-Rural (R-1)	Residential-Suburban (R-2)
Residential Uses:					
One-family detached year-round or seasonal dwelling	N/A	N/A	N/A	Yes	Yes
Multifamily dwelling	N/A	N/A	N/A	N/A	SP
Accessory residential building such as tool shed, boat house, barn, playhouse, stables, private swimming pool and private detached garage for non-commercial vehicles	N/A	N/A	N/A	Yes	Yes
Family day care	N/A	N/A	N/A	Yes	Yes
Home occupation	N/A	N/A	N/A	Yes	Yes
Home business	N/A	N/A	N/A	SP	SP
Bed and breakfast facility	N/A	N/A	N/A	SP	SP
Open Space Residential Development	N/A	N/A	N/A	Yes	Yes
Traditional Neighborhood Development	N/A	N/A	N/A	N/A	SP
Condominium Development	N/A	N/A	N/A	SP	SP
Continued Care Retirement Communities	SP	SP	SP	SP	SP
	Business-Highway (B-2)	Industrial (I)	Office and Light	Residential-Rural (R-1)	Residential-Suburban (R-2)

			Industrial (OLI)		
Accessory Apartment	N/A	N/A	N/A	SP	SP
Community Facilities and Institutional Uses:					
Church or other religious purpose, nonprofit educational facility, Town building except equipment garage	Yes	Yes	Yes	Yes	Yes
Country, hunting, fishing, tennis, or health clubs, golf courses, day camps or other camps or outdoor athletic fields. Structures used for, or in relation to these uses shall not exceed a 10,000 s.f. footprint	SP	SP	SP	SP	SP
Cemetery	SP	SP	N/A	SP	SP
Town equipment garage	SP	Yes	N/A	SP	N/A
Public utility except power plant or refuse facility	SP	SP	Yes	SP	SP
Power plant and refuse facility	N/A	SP	N/A	N/A	N/A
Agricultural and Open Land Uses:					
Agriculture, horticulture, floriculture, or viticulture, provided at least five acres are so used. A farm stand may be maintained provided that the majority of products for sale, measured based on either gross sales dollars or volume,	Yes	Yes	Yes	Yes	Yes

have been produced on the land.					
	Business-Highway (B-2)	Industrial (I)	Office and Light Industrial (OLI)	Residential-Rural (R-1)	Residential-Suburban (R-2)
When less than five acres are used for agriculture, horticulture, floriculture, or viticulture:					
a. Agriculture, horticulture, and floriculture, or viticulture	SP	SP	N/A	Yes	SP
b. Temporary stand maintained during the harvest season of the primary crop for retail sale of agriculture or farm products produced primarily on the same premises	SP	SP	N/A	Yes	Yes
c. Year round stand for retail sale of agriculture or farm products produced primarily on the same premises	SP	SP	N/A	SP	SP

	Business-Highway (B-2)	Industrial (I)	Office and Light Industrial (OLI)	Residential-Rural (R-1)	Residential-Suburban (R-2)
d. Raising and for keeping of livestock, horses and poultry, not including the raising of fur animals for commercial use	SP	SP	N/A	Yes	SP
e. Raising of fur animals	N/A	SP	N/A	SP	N/A
f. Commercial stables, provided all animals are enclosed within pens or other enclosures	N/A	SP	N/A	SP	N/A
Year round or temporary stands for retail sale of agriculture or farm products not produced primarily on the same premises.	SP	SP	N/A	SP	SP
Veterinary office in which all animals are completely enclosed in pens or other structures	N/A	N/A	N/A	SP	SP
Office Uses:					
Business and professional offices, including banks and monetary institutions	Yes	Yes	Yes	N/A	N/A
Drive-through windows at banks	SP	SP	SP	N/A	N/A

and monetary institutions and other offices					
	Business-Highway (B-2)	Industrial (I)	Office and Light Industrial (OLI)	Residential-Rural (R-1)	Residential-Suburban (R-2)
Planned Business Development (PBD)	SP	SP	SP	N/A	N/A
Research Offices or establishments devoted to research and development activities	SP	Yes	Yes	N/A	N/A
Retail, Trade and Service Uses:					
Stores selling goods to the public	SP	N/A	SP	N/A	N/A
Drive-through window for a pharmacy whether located in a free-standing pharmacy building or as part of a multi-use retail building	SP	N/A	SP	N/A	N/A
Sales by vending machines located outside of a building or structure	SP	SP	N/A	N/A	N/A
Restaurants	SP	N/A	Yes	N/A	N/A
Restaurant, cafeteria, tea room or catering accessory to permitted or allowed main use	Yes	Yes	Yes	SP	SP
Drive-through window for a restaurant, but only when a minimum of 1,000 s.f. is dedicated to the restaurant use	SP	N/A	N/A	N/A	N/A
Hotels	Yes	SP	SP	N/A	N/A
Personal service establishments	Yes	N/A	N/A	N/A	N/A

	Business-Highway (B-2)	Industrial (I)	Office and Light Industrial (OLI)	Residential-Rural (R-1)	Residential-Suburban (R-2)
Funeral home or mortuary establishment	N/A	N/A	N/A	SP	SP
Hospital or medical clinic	SP	SP	SP	N/A	N/A
Convalescent or nursing home	SP	N/A	N/A	SP	SP
Repair services for appliances, furniture, and other goods, except for vehicular and automotive repairs	SP	N/A	N/A	N/A	N/A
Motion picture establishment, amusement facilities, or sports complexes	SP	N/A	N/A	N/A	N/A
For profit educational establishments	SP	SP	SP	N/A	N/A
Communications and television towers (does NOT include wireless communication facilities)	N/A	SP	SP	SP	N/A
Wireless communications facility (refer to Section V.C. of this Bylaw)	SP	SP	SP	N/A	N/A
Antique Shop (retail sale of antique furniture, artwork, collectible merchandise to the general public in a premises occupying less than 1,000 square feet)	N/A	N/A	N/A	SP	N/A
Commercial Kennels	SP	SP	N/A	SP	N/A

	Business-Highway (B-2)	Industrial (I)	Office and Light Industrial (OLI)	Residential-Rural (R-1)	Residential-Suburban (R-2)
Rental of goods, not including vehicles or construction equipment	Yes	Yes	Yes	N/A	N/A
Wholesale Trade	SP	Yes	SP	N/A	N/A
Brewery, Distillery, Winery	SP	SP	SP	N/A	N/A
Service Companies	SP	Yes	SP	N/A	N/A
Special Event Facility	SP	N/A	SP	SP	N/A
Vehicular and Automotive Uses:					
Establishments selling new and/or used automobiles, trucks, motorcycles, trailers, construction equipment, or boats	N/A	N/A	N/A	N/A	N/A
Establishments selling new and/or used automobiles at or over 26,000 gvw, including but not limited to trucks, construction equipment, municipal equipment.	N/A	SP	N/A	N/A	N/A
Automotive repair, automobile services (not including a junk yard or open storage of abandoned automobiles and other vehicles)	SP	Yes	N/A	N/A	N/A
Railroad and railway express service	Yes	Yes	Yes	N/A	N/A

	Business-Highway (B-2)	Industrial (I)	Office and Light Industrial (OLI)	Residential-Rural (R-1)	Residential-Suburban (R-2)
Commercial Gas Station primarily for passenger vehicles	SP	SP	N/A	N/A	N/A
Warehouse with Distribution	N/A	SP	SP	N/A	N/A
Package and/or Freight Delivery Company	N/A	SP	SP	N/A	N/A
Manufacturing, Processing, and Earth Removal Uses:					
Processing	N/A	Yes	SP	N/A	N/A
Manufacturing	SP	Yes	SP	N/A	N/A
Landscape contractors, arborists, and building contractors	SP	Yes	SP	N/A	N/A
Research and development facilities	SP	Yes	Yes	N/A	N/A
Accessory (whether or not on the same parcel) scientific research and development	SP	SP	SP	N/A	N/A
Earth disturbance and removal – Class I, in accordance with Bylaw 5 of the Sutton General Bylaws	SP	SP	SP	N/A	N/A
Earth disturbance and removal – Class 2 & 3, in accordance with Bylaw 5 of the Sutton General Bylaws.	Yes	Yes	Yes	Yes	Yes
Other contractors, not including paving	N/A	Yes	SP	N/A	N/A
Renewable Energy Resources:					
Small Hydropower Installations	SP	SP	SP	SP	SP

	Business-Highway (B-2)	Industrial (I)	Office and Light Industrial (OLI)	Residential-Rural (R-1)	Residential-Suburban (R-2)
Small Wind Turbines	SP	SP	SP	SP	SP
Small Solar Photovoltaic Installations (less than 250 kW)	Yes	Yes	Yes	Yes	Yes
Large Ground-Mounted Solar Photovoltaic Installations (250 kW+)	N/A	Yes	N/A	N/A	N/A
Registered Marijuana Businesses					
Registered Marijuana Dispensaries (RMD) – Medical	N/A	N/A	Yes	N/A	N/A
Marijuana Cultivators – Non-medicinal	N/A	N/A	SP	N/A	N/A
Marijuana Product Manufacturers Non-medicinal	N/A	N/A	SP	N/A	N/A
Marijuana Testing Facilities Non-medicinal	N/A	N/A	SP	N/A	N/A
Marijuana Retailer Non-medicinal	N/A	N/A	N/A	N/A	N/A
Other					
Use, Accessory	Yes	Yes	Yes	Yes	Yes

Table 16. Table of Use Regulations, Town of Sutton, (Sutton Zoning Bylaw, Table 1: Table of Use Regulations).

Uxbridge Uses Table

Use	Agricultural (A)	Business (B)	Industrial A (I-A)	Industrial B (I-B)	Residence A (R-A)	Residence B (R-B)	Residence C (R-C)
Residential Uses							
Apartment house	N/A	N/A	N/A	N/A	Yes	N/A	N/A
Conservation Design Development	PB	N/A	N/A	N/A	N/A	N/A	N/A

Open Space Development	N/A	N/A	N/A	N/A	PB	PB	N/A
Single family dwelling	Yes	N/A	N/A	N/A	Yes	Yes	Yes
Townhouse development	N/A	N/A	N/A	N/A	PB	N/A	N/A
Two-family/duplex dwelling	N/A	N/A	N/A	N/A	Yes	Yes	N/A
Exempt and Industrial Uses							
Childcare facility	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Educational use, non-exempt	N/A	N/A	N/A	N/A	ZBA	ZBA	ZBA
Essential services	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Facility for the sale of produce, wine, and dairy products, provided that during the months of June, July, August and September of every year, or during the harvest season of the primary crop, the majority of such products for sale, based on either gross sales dollars or volume, have been produced by the owner of the land containing more than five acres in area on which the	Yes	Yes	Yes	Yes	Yes	Yes	Yes

facility is located.							
Hospital or other medical institution	N/A	PB	PB	PB	ZBA	ZBA	ZBA
Municipal facility	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Use of land for the primary purpose of agriculture, horticulture, floriculture, or viticulture on a parcel that is more than five (5) acres in area.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Use of land for educational purposes on land owned or leased by the Commonweal th or any of its agencies, subdivisions, or bodies politic or by a religious sect or denomination, or by a nonprofit educational corporation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Use of land or structures for religious purposes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Agricultural Uses							
Farm, truck garden, nursery, or greenhouse with less than five (5) acres	Yes	PB	PB	PB	ZBA	ZBA	ZBA

Farm, truck garden, nursery, greenhouse or other agricultural or horticultural use	Yes	PB	PB	PB	N/A	N/A	N/A
Non-exempt agricultural use	ZBA	N/A	N/A	N/A	ZBA	ZBA	N/A
Commercial Uses							
Adult entertainment establishment	N/A	N/A	PB	PB	N/A	N/A	N/A
Airport or landing field, commercial	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Animal clinic or hospital	Yes	PB	PB	PB	N/A	N/A	N/A
Bank, financial agency	N/A	Yes	Yes	Yes	N/A	N/A	N/A
Bed and breakfast establishment	N/A	N/A	N/A	N/A			
Billboards, including any sign of more than forty (40) square feet	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Boarding house	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Business or professional office, including medical	N/A	Yes	Yes	Yes	N/A	N/A	N/A
Commercial recreation, indoor	N/A	Yes	Yes	Yes	N/A	N/A	N/A
Commercial recreation, outdoor	Yes	PB	PB	PB	N/A	N/A	N/A
Funeral home	N/A	PB	N/A	N/A	ZBA	ZBA	ZBA
Garaging and maintaining more than	N/A	ZBA	ZBA	ZBA	ZBA	N/A	ZBA

three (3) automobiles of the passenger type							
Gasoline or filling station	N/A	ZBA	ZBA	ZBA	N/A	N/A	N/A
Hotel or motel located on a tract of land at least two (2) acres in area and at least one hundred-fifty (150) feet from any permanent residential building	Yes	Yes	Yes	Yes	N/A	N/A	N/A
Laundry or laundromat; dry cleaning establishment	N/A	ZBA	ZBA	ZBA	N/A	N/A	N/A
Life Science and/or Life Science Technology	N/A	Yes	Yes	Yes	N/A	N/A	N/A
Marijuana establishment (retail)	N/A	N/A	N/A	Yes	N/A	N/A	N/A
Marijuana establishment (cultivation, production)	N/A	N/A	Yes	Yes	N/A	N/A	N/A
Medical marijuana treatment center	N/A	N/A	N/A	Yes	N/A	N/A	N/A
Nursing or convalescent home; home for the aged	N/A	N/A	N/A	N/A	ZBA	ZBA	ZBA
Personal service establishment Shopping center	N/A	Yes	Yes	Yes	N/A	N/A	N/A

Private club, nonprofit	ZBA	N/A	N/A	N/A	ZBA	ZBA	N/A
Private stable, nonprofit	ZBA	N/A	N/A	N/A	ZBA	ZBA	ZBA
Racetrack	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Restaurant; diner	Yes	Yes	Yes	Yes	ZBA	N/A	N/A
Retail stores and/or services	N/A	Yes	Yes	Yes	ZBA	N/A	N/A
Shopping center	N/A	Yes	Yes	Yes	N/A	N/A	N/A
Industrial Uses							
Blacksmith shop; farrier	PB	PB	PB	PB	N/A	N/A	N/A
Contractor's yard	PB	PB	PB	PB	N/A	N/A	N/A
Earth Removal	BI	PB	PB	PB	ZBA	ZBA	ZBA
Electrical generating facilities with a capacity of three hundred-fifty (350) megawatts or less on a minimum site are of fifteen (15) acres using natural gas, renewable and ultra-low sulfur fuels, wind.	N/A	N/A	PB	PB	N/A	N/A	N/A
Electrical generating facility; cogeneration facility	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Junkyard or automobile graveyard	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lumber	N/A	PB	PB	PB	N/A	N/A	N/A
Fuel or ice establishment	N/A	PB	PB	PB	N/A	N/A	N/A

Manufacture, storage, transportation or disposal of hazardous material	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Manufacturing establishment	N/A	PB	PB	PB	N/A	N/A	N/A
Renewable or Alternative Energy research and development facilities	N/A	N/A	Yes	Yes	N/A	N/A	N/A
Renewable or Alternative Energy manufacturing facilities	N/A	N/A	Yes	Yes	PB	Yes	Yes
Solar Photoactive ground mounted solar farm	PB	PB	PB	PB	N/A	PB	PB
Stone mason yard	N/A	N/A	PB	PB	N/A	N/A	N/A
Warehouse and/or distribution	N/A	PB	Yes	Yes	N/A	N/A	N/A
Other Uses							
Airport or landing field, noncommercial	Yes	N/A	N/A	N/A	N/A	N/A	N/A
Cemetery or crematory, non-profit (not religious)	ZBA	N/A	N/A	N/A	ZBA	ZBA	ZBA
Cemetery or crematory (religious)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Penitentiary	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Accessory Uses							
Home occupation	Yes	N/A	N/A	N/A	Yes	Yes	Yes
Juice bar, as an accessory	ZBA	N/A	N/A	N/A	N/A	N/A	N/A

use to a private club, restaurant or country club							
Retail trade or shop for manufacturing articles incidental to and as an accessory use to a retail business	N/A	Yes	Yes	Yes	ZBA	N/A	N/A
Signs Requiring Special Permits	ZBA	PB	PB	PB	ZBA	ZBA	ZBA
Accessory Dwelling Unit	ZBA	N/A	N/A	N/A	ZBA	ZBA	ZBA

Table 17. Table of Use Regulations, Town of Uxbridge (Uxbridge Zoning Bylaw, Table A: Table of Use Regulations).

APPENDIX G

Summary of Prior Studies

Summary of Prior Studies

Development Name	Report Name	Report Author	Report Date
Unified Parkway	Unified Parkway Industrial Development - Project Commencement Notice	VHB	May 2023
Lackey Dam Logistics	Lackey Dam Logistics Center - Traffic Impact and Access Study	VHB	May 2022
Blackstone Logistics Center	Blackstone Logistics Center - Traffic Impact and Access Study	VHB	January 2021
Residence at Pleasant Valley Crossing	The Residence at Pleasant Valley Crossing Presentation - Local Initiative Program	Elite Home Builders	February 2023
Northeast Great Dane - Trailer Repair Facility	Northeast Great Dane - Traffic Memo	Greenman-Pedersen, Inc.	July 2023
Zipp Industrial Park	Zipp Industrial Park - Notice pf Project Change	Crossman Engineering	July 2023
Rice Pond Village 40B	Multifamily Residentail Development at 15-17 Rice Road - Traffic Impact Study	AK Associates	March 2021
19 Canal	Canal Street Residential Development - Traffic Impact Study	AK Associates	July 2021
Clearview	Clearview Country Club - Supplemental Traffic Analyses Memo	AK Associates	October 2019
Xtra Mart Expansion	Proposed High Speed Diesel Addition - Traffic Memo	Bohler	August 2023
Singletary Arms	115 West Main Street - Traffic Assessment Report	Nitsch Engineering	April 2020
Big Y Supermarket	Route 122 Intersection Improvements - Functional Design Report	Vanesse & Associates Inc.	May 2024

APPENDIX H

Meeting Notes – December 2024 Public Meeting

Route 146 Corridor Vision Study Public Information Meeting #1

Wednesday, December 11, 2024, 6:00 PM

Held Virtually via Zoom

Meeting Summary

On Wednesday, December 11, 2024, MassDOT conducted the first public meeting for the Route 146 Corridor Vision Study. At this meeting the Study team introduced the Route 146 Corridor Vision Study, reviewed existing conditions, and reviewed future growth scenarios that would affect the corridor. Since public input is valuable throughout projects, breakout room discussions occurred to hear more feedback about experiences and issues throughout the corridor. The meeting also included a public comment section allowing attendees to ask questions or provide more insight to how the corridor is currently functioning. Attendees were also provided with the project webpage and project email, allowing them to submit comments or questions that come up in the future.

Meeting Notes

Welcome and Agenda – Rachel Kelly, MassDOT Project Manager

The presentation began with a welcome to the meeting by Rachel Kelly, MassDOT project manager, and a brief overview of the Zoom Webinar controls. Attendees were made aware that the meeting was being recorded. Rachel explained that the purpose of the meeting was to introduce attendees to the project and provide findings of the work that has been done to date. The agenda for the meeting included a project overview, study area history, existing conditions summary, identified developments, growth scenarios, next steps, breakout group discussions, and a question-and-answer segment.

Study Purpose and Area – Rachel Kelly, MassDOT Project Manager

The study purpose was introduced by Rachel, explaining that the goal is to create a transportation master plan for the corridor while considering challenges related to safety and congestion. This master plan will analyze various growth scenarios and how they affect the corridor, and result in suggestions for capital improvements and when they would need to occur. The final deliverable for the project will be a report that includes findings and recommendations.

Rachel then introduced the study area and focus areas that are being analyzed. The study area is Route 146 from Route 122A to the Rhode Island State Line. The focus areas are Boston Road and Route 146 and Lackey Dam Road and Route 146. Rachel reiterated that the project focuses on the whole Route 146 corridor, not just the focus areas. Rachel provided an explanation of the difference between grade separated and at-grade since those terms would be used frequently throughout the presentation. Grade separated is when a local road crosses over or under the highway and ramps are used to access the highway, like at Lackey Dam Road and Route 146. At-grade is when the local roads and highway are at the same elevation, like the Boston Road intersection.

Rachel continued by reviewing the various studies that had the existing study area as the focus, beginning in 2005. All the previous studies had been completed and will be utilized throughout the current project to inform and guide the

process. Previous projects from 2005, 2006, and 2013 were briefly reviewed, including proposed improvements and if those were completed.

Existing Conditions – Gary McNaughton, Bowman Consulting and Michael Wulforst, Bowman Consulting

Gary McNaughton, a project manager with Bowman Consulting, introduced himself and continued with the next section of slides. He reiterated that there is a lot of useful data already available from previous studies and this project will use that information and build upon it.

Michael Wulforst, a transportation engineer with Bowman Consulting, continued with the presentation explaining that while most of the data was already available, there was some new data collection, like traffic counts at the Lackey Dam Road ramps. Michael also mentioned that MassDOT has many traffic count locations throughout the study area that were used in various capacities.

Michael continued with an overview of the multimodal accommodations, truck networks, truck exclusions and a safety review for the corridor. For multimodal accommodations in the study area there is one bus route, Route 4: The Shoppes at Blackstone Valley and Millbury Street, a couple of bicycle facilities, and minimal sidewalks. Michael explained that truck related activity is significant along this corridor and that it is likely to increase with new development. From the safety review, it was noted the intersection of Boston Road and Route 146 was identified as the only crash cluster along the corridor by the MassDOT Highway Safety Improvement Program. A figure of the distribution for all crash types is included in the presentation and is based on data from a MassDOT Road Safety Audit completed in 2022.

To assist with the understanding of the results of the existing conditions analyses and growth scenarios analysis, Michael briefly explained the Level of Service (LOS) measurement. LOS is a way to describe the state of operations of a facility and is based on the amount of delay that drivers experience when going through an intersection. LOS is assigned on a scale of A-F with each level describing different intersection experiences. When LOSA-C is assigned, the facility is stable, with minimal delays, congestion and queueing. LOS D has some noticeable congestion but can be acceptable. LOS E experiences significant delays, long queues, and is approaching failure. LOS F is a failing condition where there are excessive delays and queues, and more traffic than the roadway can handle.

Michael then introduced the results of existing conditions analyses at Boston Road and Route 146. LOS results found that during the morning peak hour the intersection operates at LOS E and the northbound approach is at LOS F. For the afternoon peak period, the overall LOS is C, and all other movements have LOS E or better. From the LOS figure, Michael explains that the morning peak period is the critical peak period since it is performing worse than the afternoon peak period. Average queues and maximum queues are another measure of how the intersection performs during the peak periods. Queue figures for both the morning and afternoon peak period were presented, showing that the queues in the morning peak period are significantly longer than the afternoon peak period.

Growth Scenarios – Michael Wulforst, Bowman Consulting Transportation Engineer

Michael presented the different growth scenarios being considered for the project, explaining that the focus of today's analysis is the scenario representing the known development growth. This scenario is based on research, information provided by surrounding towns, and known projects. Another scenario is the Future Growth Potential scenario which is still being developed and considers developments that aren't currently known but could happen based on existing zoning and land uses available.

For the known developments it was important to quantify how much traffic would be generated by the projects, and to do that their location and size was analyzed. Throughout the corridor there are 24 known developments, with about a 50/50 split between industrial and residential. For all the projects, it is projected that 1,196 trips will be added during the morning peak period, and 1,842 trips in the afternoon peak period at the Boston Road and Route 146 intersection.

To understand how those trips affect the intersection, Michael explained that a sensitivity test was completed to find at what point Boston Road and Route 146 is performing so poorly that grade separation is critical. To do this, a baseline condition was established which included the existing volumes. Then the thresholds were identified which included when LOSE and LOS F were reached. To complete the sensitivity test, the existing volumes were increased and modeled to understand the effects of increased traffic.

From the sensitivity test, it was found that if half of the known developments are completed the intersection will operate at LOS E during the morning peak period. The afternoon peak period was also analyzed but has more capacity, so the growth is not as impactful to the operations. The analyses were also completed for each of the approaches to the intersection, in addition to the overall intersection analysis. When half of the projects occur, the Boston Road eastbound approach is already failing. When 70% of developments occur, three of the four approaches are failing, effectively leading to overall intersection failure.

Summary – Michael Wulforst, Bowman Consulting Transportation Engineer

To conclude the presentation of the data, Michael reviewed findings for both focus areas. Michael discussed the existing conditions, the growth potential and operations with known developments.

At Boston Road and Route 146, the intersection is currently nearing capacity during the morning peak period and was identified as a crash cluster. From the known developments, trips added during the morning and afternoon peak periods were identified. If two thirds of known developments are completed, the intersection is past its failure point.

At the Lackey Dam Road ramps there is available capacity during both peak hours, and it is not a crash cluster. With the addition of known developments, the ramps are still within capacity limits; however, improvements could be beneficial in the future. Since the intersection is already grade separated, additional trips are not impacting the ramps as much.

Next Steps – Rachel Kelly, MassDOT Project Manager

Rachel gave an overview of the next steps for the project including the option for public comment at the current meeting. Next steps include a scenario analysis and alternatives development that will incorporate comments heard at the meeting. A second public meeting will be held to share that analysis and then the final report will be produced to include key findings and recommendations.

Breakout Room Discussion – Rachel Kelly, MassDOT Project Manager

Breakout rooms were utilized as a way for the attendees to provide information regarding their experiences with the corridor, such as challenges and overall feedback. Some overarching comments heard during the breakout rooms are below:

- Safety concerns due to the increase in vehicle and truck traffic that may result in distracted driving and dangerous movements to bypass truck traffic. Comments that drivers use the right turn lanes to pass trucks.

- Sight distance concerns related to various business driveways and a lack of space to enter Route 146 and reach speed safely.
- Concerns with the impacts at Route 146 and Central Turnpike with increased truck traffic, which starts early in the morning.
- Concerns over Central Turnpike being used for u-turns or becoming a cut-through to I-395
- Proposed Great Dane semi-trailer repair facility on the old drive-in site will have challenges with sight distance and lack of accel/decel lane
- Convenience MD on Pleasant Valley Road has tight radius entering
- Emergency pre-emption at the Boston Road and Route 146 intersection.
- Concerns of the impacts from developments further south on Route 146 and in Rhode Island.
- There are underutilized rest areas along the corridor. Should they be modified, closed, etc.?

Public Comment – Rachel Kelly, MassDOT Project Manager

Following the Breakout Room Discussion, the meeting transitioned to open public comment. Questions and comments from the public included:

Jonathan Anderson(Town of Sutton, Selectman):
Concerns about speed of traffic and being able to make the stop at the Boston Road intersection, especially if you're heading eastbound on Boston Road from Sutton Center. The first signal is to take a left-hand turn to head up north on Route 146. For myself, I often pause for a few minutes to check and see if there are any vehicles coming down very fast that might not be able to make that stop, because there is the most risk of being hit right there.

Also at Pleasant Valley Road, particularly during peak times coming northbound on Route 146 and exiting onto Pleasant Valley Road, taking the left to turn westbound on Boston Road can be challenging. Particularly during peak times, especially in the evening, and it is especially dark there and hard to see, and there are a lot of lanes. You have to be calculating and wondering about the person across from you. As you know, as the traffic starts to expand with more development in the area, particularly with Unified and potentially other housing projects that could happen in that area, it's going to become a bigger problem - that little intersection with Pleasant Valley Road and Boston Road.

At Central Turnpike during peak times, taking a left-hand turn, whether you're going southbound to take a left hand turn to go eastbound on Central Turnpike or coming northbound and taking a left to go Westbound on Central Turnpike can be very difficult. Particularly when the sun hits during the fall period and it's rush hour, it is really challenging to see. Those are just some comments I have in my experiences driving through that area and just also concern about the number of accidents.

Rachel Kelly, MassDOT: Definitely, thank you. Appreciate your feedback.

Wally Baker (Town of Sutton Planning Board and Delegate from Sutton for the Central Massachusetts Regional Planning Commission):
I'm going to talk primarily about trucks. In Sutton, Douglas, and Uxbridge I know of like 2.5 million square feet that have been built, and not yet occupied. That does not count the permits that have been given for other buildings to be done, which is another significant step.

We also briefly discussed the effects of Route 146 in Rhode Island. I understand the study doesn't really go there, but I'm sure you are well aware of the significant construction project in North Smithfield which might impact the growth and activity between Providence and Worcester once that gets completed. I think we always have to remember that

this will be the only traffic light between those two cities, because [that project] is going to be finished. Northbound already has one lane open. They'll have a couple of lanes open next year on the project in Rhode Island. Thank you for conducting this and I look forward to working with you in the future.

> *Rachel Kelly, MassDOT:* Great, thank you for that feedback. And that's important to note development over the line, so thank you.

Nadine Premo(from Q&A):
I am very worried about the noise level. It is incredibly loud now. We are also equally concerned about the impact on wildlife.

> *Rachel Kelly, MassDOT:* Great point. Thank you.

Christine Watkins:
I was just going to comment that I know there's a big housing development planned in Grafton on 122A. What we are seeing over in the northeast section of the residential area of Sutton is a lot of our back roads, that used to be very quiet, are becoming commuter pass throughs to avoid the Boston Road intersection. Leland Hill and Dodge Hill Road are seeing a large increase in traffic and high speeds.

> *Rachel Kelly, MassDOT:* Thank you Christine, is it more during commuting hours typically?
>
> *Chistine Watkins:* Definitely, definitely the commuting hours.
>
> *Rachel Kelly, MassDOT:* Thank you Christine.

Chistine Watkins:
I do have a question. This is the initial phase of reviewing. What is the timetable for this? If there needed to be some type of change in grade is this a projected 10-year project, 15-year project? Does it have to be reviewed and then presented, and it might not even be a project? So, what is the long term? How does this work out?

> *Rachel Kelly, MassDOT:* That's an excellent question. I can only speak for this initial study. Timelines are fluid because sometimes it depends on if we're waiting on data or anything else. We'll have another public meeting for this study in the winter, and then the final plan will be, ballpark, late spring or early summer of next year. My role with this project ends there, but the next steps could include the MassDOT district offices and the towns in the area that abut the corridor - it may be a group decision on where it goes next. From here, a study could be used to identify next steps, funding opportunities, design plans, construction engineering. It would be long-term and I can't accurately give a timeline on that. This is step one and then there'd be a lot of steps before shovels would go in the ground and make changes. At the next public meeting we might be able to give a little more feedback.
>
> *Gary McNaughton, Bowman Consulting:* Some of the things we hear may be shorter term. We may be able to do some lesser impact, less construction dependent treatments to potentially address some of that bypassing and right turns that we're hearing about. There may be some things that can happen that are a bit quicker. If we come out of this and suggest a grade separated interchange, there is a process that is multi-year to get through all the design, permitting, funding and such. Something large build would certainly take longer.

Jonathan Anderson(Sutton Selectman): Do we see many instances of people going northbound and trying to turn left onto Boston Road directly, versus taking Pleasant Valley Road? Have we had many instances of that? Maybe better

signage [would] prevent that. I know I've heard of a few cases over time, but I was wondering if that's something we're seeing in the accidents.

> *Gary McNaughton, Bowman Consulting:* It wasn't anything overly noticeable. I'm sure it happens on occasion. We can go back and double check the count data, because if they're doing that, the counts would capture that.
>
> *Jonathan Anderson:* The signage to get off on Pleasant Valley Road is kind of small, and if you weren't from the area, it might be kind of challenging. I don't know if there's some improvement that could be done there, so that people recognize this is the only way to go left, to go westbound [on Boston Road]. It's just a thought that I know I've heard a few cases of cars taking a left, but I was wondering what the data shows and maybe just improve the signage a bit.
>
> *Gary McNaughton, Bowman Consulting:* Yes.
>
> *Rachel Kelly, MassDOT:* Thank you. That's great.

Michael Lussier: I am going to say the same thing Jonathan said. I've only lived here a couple of years, but I have probably had five people to my house that have said they've had to go all the way back to Millbury to turn around and come back, because they missed the sign that said take this road, because it is so small. That is an issue for people - that they're having to go all the way down to Millbury to turn around and come all the way back, never realizing that they can't take a left there, or that there was an opportunity beforehand.

> *Gary McNaughton, Bowman Consulting:* That is the sort of short-term intervention that could come out of a study like this.

Q&A

Nadine Premo: Thank you for presenting this. Very helpful.

Cindy Hastings: My name is Cindy Hastings, I live at 138 Boston Road directly across from Bank of America. The traffic has definitely increased, the noise from the trucks and Route 146 is very loud. So many vehicles turning around in my driveway to take the left to [Route] 146 south.

Closings

Rachel Kelly ended the meeting reiterating that there will be another public meeting that will be advertised the same way and there is a study page available. Rachel mentioned that if any other questions or comments arise, one can reach out using the project email address:massdotroute146@dot.state.ma.us

Route 146 Corridor Vision Study Public Meeting #1 Attendees

MassDOT/Study Team

- Rachel Kelly – MassDOT
- Sarah Bradbury - MassDOT
- Gary McNaughton – Bowman Consulting
- Natalie Press – Bowman Consulting
- Michael Wulforst – Bowman Consulting
- Ben Breger – Bowman Consulting
- Annika Liston – Bowman Consulting

Stakeholder

- Daniel Racicot, MassDOT
- Jeff Howland
- Robert Minarik
- Matthew Benoit

State Legislators

- Kylie Gibbons

Public Attendees

- Michael Lussier
- Paul Routhier
- Cindy Hastings
- Christine Watkins
- Ron Moody
- Pamela Nichols
- Rich Rydant
- Wally Baker
- Nadine Premo
- Mark Dunleavy
- Jonathan Anderson
- Wesley Stanhope
- Yahaira Graxirena
- Virginia Bliss
- Ian Camerlin
- Rick Mendez
- Jerry Townsend
- Michael Mann
- Briab Stevenson
- John Virgilio
- Kieran Stone
- Lee Dillard Adams
- Jack Sheehan
- Andrew Leonard

APPENDIX I

Grade Separation Sensitivity Analysis

Tight Diamond Interchange Morning Peak Hour Level of Service

Morning Peak Period Vehicle Delay	Vehicle Level of Service							
Boston Road Eastbound	C	C	C	C	C	D	D	F
Boston Road Westbound	B	B	B	B	B	B	B	B
Route 146 Southbound	C	C	C	C	C	C	C	D
Boston Road Eastbound	A	A	A	A	A	A	B	B
Boston Road Westbound	A	A	A	A	A	A	A	B
Route 146 Northbound	A	A	A	A	A	A	A	B
Volume Increase	All Dev	10%	20%	30%	40%	50%	75%	100%

Tight Diamond Interchange Morning Peak Hour Capacity Utilization

Morning Peak Period Volume to Capacity		Percent of Capacity Utilized (%)							
Boston Road Eastbound	Thru/Right	26%	32%	37%	43%	48%	54%	68%	88%
Boston Road Westbound	Left	27%	29%	30%	32%	34%	36%	42%	44%
	Thru	11%	14%	16%	18%	19%	21%	25%	28%
Route 146 Southbound	Left	59%	62%	64%	67%	70%	75%	83%	95%
	Thru/Right	48%	50%	53%	56%	59%	63%	71%	80%
Boston Road Eastbound	Left	29%	31%	32%	33%	35%	37%	41%	47%
	Thru	19%	21%	23%	25%	27%	29%	34%	40%
Boston Road Westbound	Thru	20%	22%	25%	28%	30%	33%	40%	50%
	Right	37%	41%	44%	47%	51%	54%	62%	75%
Route 146 Northbound	LTR	25%	27%	30%	32%	34%	37%	42%	47%
Volume Increase		All Dev	10%	20%	30%	40%	50%	75%	100%

Tight Diamond Interchange Afternoon Peak Hour Level of Service

Afternoon Peak Period Vehicle Delay	Vehicle Level of Service								
Boston Road Eastbound	C	C	C	D	D	D	D	E	F
Boston Road Westbound	C	C	D	E	E	E	E	E	E
Route 146 Southbound	C	C	C	C	D	D	D	E	E
Boston Road Eastbound	A	A	A	A	A	B	B	B	B
Boston Road Westbound	A	B	B	C	D	D	E	E	F
Route 146 Northbound	A	A	A	B	B	B	B	B	B
Volume Increase	All Dev	10%	20%	30%	40%	50%	60%	70%	80%

Tight Diamond Interchange Afternoon Peak Hour Capacity Utilization

Afternoon Peak Period Volume to Capacity		Percent of Capacity Utilized (%)								
Boston Road Eastbound	Thru/Right	31%	36%	42%	52%	57%	63%	67%	74%	79%
Boston Road Westbound	Left	58%	63%	68%	69%	75%	80%	85%	89%	94%
	Thru	22%	25%	27%	30%	33%	35%	38%	40%	42%
Route 146 Southbound	Left	68%	72%	76%	80%	85%	90%	96%	102%	108%
	Thru/Right	55%	59%	63%	67%	71%	75%	81%	86%	90%
Boston Road Eastbound	Left	26%	28%	29%	31%	33%	35%	37%	40%	42%
	Thru	22%	24%	26%	30%	32%	35%	37%	40%	42%
Boston Road Westbound	Thru	49%	56%	63%	76%	84%	92%	98%	106%	113%
	Right	56%	61%	66%	75%	83%	90%	98%	106%	114%
Route 146 Northbound	LTR	36%	39%	41%	44%	46%	48%	50%	52%	54%
Volume Increase		All Dev	10%	20%	30%	40%	50%	60%	70%	80%

Single Point Diamond Interchange Morning Peak Hour Level of Service

Morning Peak Period Vehicle Delay	Vehicle Level of Service										
Boston Road Eastbound	C	C	C	C	C	C	C	C	C	C	C
Boston Road Westbound	B	B	B	C	C	C	C	C	C	C	C
Route 146 Northbound	D	D	D	D	D	D	D	D	E	E	E
Route 146 Southbound	D	D	D	D	D	D	D	E	E	E	F
Volume Increase	All Dev	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Single Point Diamond Interchange Morning Peak Hour Capacity Utilization

Morning Peak Period Volume to Capacity		Percent of Capacity Utilized (%)										
Boston Road Eastbound	Left	15%	18%	21%	26%	29%	33%	37%	41%	45%	48%	50%
	Thru	15%	17%	18%	20%	21%	23%	25%	26%	28%	29%	31%
	Right	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%
Boston Road Westbound	Left	24%	28%	32%	40%	46%	51%	58%	63%	70%	74%	78%
	Thru	22%	24%	27%	29%	31%	34%	36%	38%	40%	42%	45%
	Right	54%	57%	60%	63%	66%	68%	70%	73%	76%	81%	86%
Route 146 Northbound	Left	14%	14%	15%	15%	16%	16%	17%	17%	18%	19%	20%
	Thru/Right	46%	50%	53%	56%	59%	64%	66%	69%	73%	77%	80%
Route 146 Southbound	Left	75%	77%	79%	82%	84%	88%	90%	95%	97%	103%	109%
	Thru	39%	42%	45%	48%	51%	54%	56%	59%	62%	64%	67%
	Right	15%	16%	17%	18%	20%	22%	23%	24%	25%	26%	27%
Volume Increase		Existing	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

Single Point Diamond Interchange Afternoon Peak Hour Level of Service

Afternoon Peak Period Vehicle Delay	Vehicle Level of Service					
Boston Road Eastbound	C	C	C	C	C	C
Boston Road Westbound	C	C	D	E	F	F
Route 146 Northbound	D	D	D	D	D	D
Route 146 Southbound	D	D	D	D	D	E
Volume Increase	All Dev	10%	20%	30%	40%	50%

Single Point Diamond Interchange Afternoon Peak Hour Level of Service

Afternoon Peak Period Volume to Capacity		Percent of Capacity Utilized (%)					
Boston Road Eastbound	Left	18%	24%	27%	31%	36%	41%
	Thru	12%	13%	14%	16%	17%	18%
	Right	7%	8%	9%	9%	10%	11%
Boston Road Westbound	Left	72%	92%	107%	122%	138%	158%
	Thru	38%	42%	46%	49%	53%	57%
	Right	69%	72%	76%	82%	89%	97%
Route 146 Northbound	Left	19%	19%	20%	21%	22%	23%
	Thru/Right	49%	53%	56%	60%	64%	67%
Route 146 Southbound	Left	79%	81%	86%	89%	93%	96%
	Thru	39%	42%	44%	48%	50%	53%
	Right	30%	33%	36%	38%	41%	43%
Volume Increase		Existing	10%	20%	30%	40%	50%

APPENDIX J

Preliminary Construction Cost Estimate

Order of Magnitude
Opinion of Probable Construction Cost

Project: TIGHT DIAMOND INTERCHANGE
Location: ROUTE 146 @ BOSTON ROAD
SUTTON, MA
Date: 6/13/2025
Calculated By: SB
Checked By: GM

Item		Quantity	Unit	Unit Cost	Cost
Roadway Pavement					
	Pavement Micromilling and Overlay	8,000	SY	$ 55.00	$ 440,000
		468 24,550	SY	$ 235.00	$ 5,770,000
Driveways					
	HMA Driveways	800	SY	$ 230.00	$ 184,000
Sidewalks					
	Cement Concrete Curb Ramp	21	EA	$ 9,200.00	$ 193,200
	Cement Concrete Sidewalk	2,900	SY	$ 210.00	$ 609,000
Landscaping					
	Loam and Seed	5,700	FT	$ 56.00	$ 319,200
Curbing					
	VGC Straight	4,150	FT	$ 150.00	$ 622,500
	VGC Curved	1,200	FT	$ 140.00	$ 168,000
Pavement Markings					
	Linear Markings	31,000	FT	$ 4.00	$ 124,000
	Arrow/Legend Markings	500	SF	$ 12.00	$ 6,000
Utilities					
	Utility Adjustments	1	LS	$ 26,000.00	$ 26,000
	Utility Pole Relocations	6	EA	$ 30,000.00	$ 180,000
	Drainage Improvements	4,000	LF	$ 180.00	$ 720,000
	Stormwater Improvements	1	LS	$ 50,000.00	$ 50,000
Traffic Signals					
	New Traffic Signal System	1	LS	$ 450,000.00	$ 450,000
Overpass					
	Overpass	16,500	SF	$ 2,310.00	$ 38,115,000
	MSE Walls	1,000	SY	$ 2,925.00	$ 2,925,000
				Subtotal =	**$ 50,901,900**
Mobilization			3%		$ 1,527,057
Earthwork			5%		$ 2,545,095
Utility Relocation Contingency			1%		$ 509,019
Police Details			2%		$ 1,018,038
Temporary Traffic Control			2%		$ 1,018,038
Contingency			10%		$ 5,090,190
			2025	**Total**	**$ 62,609,337**
			2025	**Rounded Total**	**$ 62,700,000**

Notes:

1 Unit Prices based on MassDOT Weighted Bid Prices (06/2024 - 06/2025)
2 Estimate does not include engineering costs.
3 Estimate does not include costs associated with right-of-way.
4 Estimates are preliminary and may change based upon design.
5 Contingency accounts for currently unquantified pay items as well as expected costs associated with utilities, traffic control, additional landscaping, etc.

Order of Magnitude
Opinion of Probable Construction Cost

Bowman

Project:	SINGLE POINT DIAMOND INTERCHANGE			**Calculated By:**	SB
Location:	ROUTE 146 @ BOSTON ROAD SUTTON, MA	**Date:**	6/13/2025	**Checked By:**	GM

Item		Quantity	Unit	Unit Cost	Cost
Roadway Pavement					
	Pavement Micromilling and Overlay	6,000	SY	$ 55.00	$ 330,000
	Full Depth Reconstruction	20,800	SY	$ 235.00	$ 4,888,000
Driveways					
	HMA Driveways	800	SY	$ 230.00	$ 184,000
Sidewalks					
	Cement Concrete Curb Ramp	21	EA	$ 9,200.00	$ 193,200
	Cement Concrete Sidewalk	3,000	SY	$ 210.00	$ 630,000
Landscaping					
	Loam and Seed	5,700	FT	$ 56.00	$ 319,200
Curbing					
	VGC Straight	4,450	FT	$ 150.00	$ 667,500
	VGC Curved	1,800	FT	$ 140.00	$ 252,000
Pavement Markings					
	Linear Markings	28,000	FT	$ 4.00	$ 112,000
	Arrow/Legend Markings	750	SF	$ 12.00	$ 9,000
Utilities					
	Utility Adjustments	1	LS	$ 26,000.00	$ 26,000
	Utility Pole Relocations	6	EA	$ 30,000.00	$ 180,000
	Drainage Improvements	4,000	LF	$ 180.00	$ 720,000
	Stormwater Improvements	1	LS	$ 50,000.00	$ 50,000
Traffic Signals					
	New Traffic Signal System	1	LS	$ 450,000.00	$ 450,000
Overpass					
	Overpass	26,800	SF	$ 2,310.00	$ 61,908,000
	MSE Walls	900	SY	$ 2,925.00	$ 2,632,500
				Subtotal =	**$ 73,551,400**
Mobilization			3%		$ 2,206,542
Earthwork			5%		$ 3,677,570
Utility Relocation Contingency			1%		$ 735,514
Police Details			2%		$ 1,471,028
Temporary Traffic Control			2%		$ 1,471,028
Contingency			10%		$ 7,355,140
			2025	**Total**	**$ 90,468,222**
			2025	**Rounded Total**	**$ 90,500,000**

Notes:

1 Unit Prices based on MassDOT Weighted Bid Prices (06/2024 - 06/2025)
2 Estimate does not include engineering costs.
3 Estimate does not include costs associated with right-of-way.
4 Estimates are preliminary and may change based upon design.
5 Contingency accounts for currently unquantified pay items as well as expected costs associated with utilities, traffic control, additional landscaping, etc.