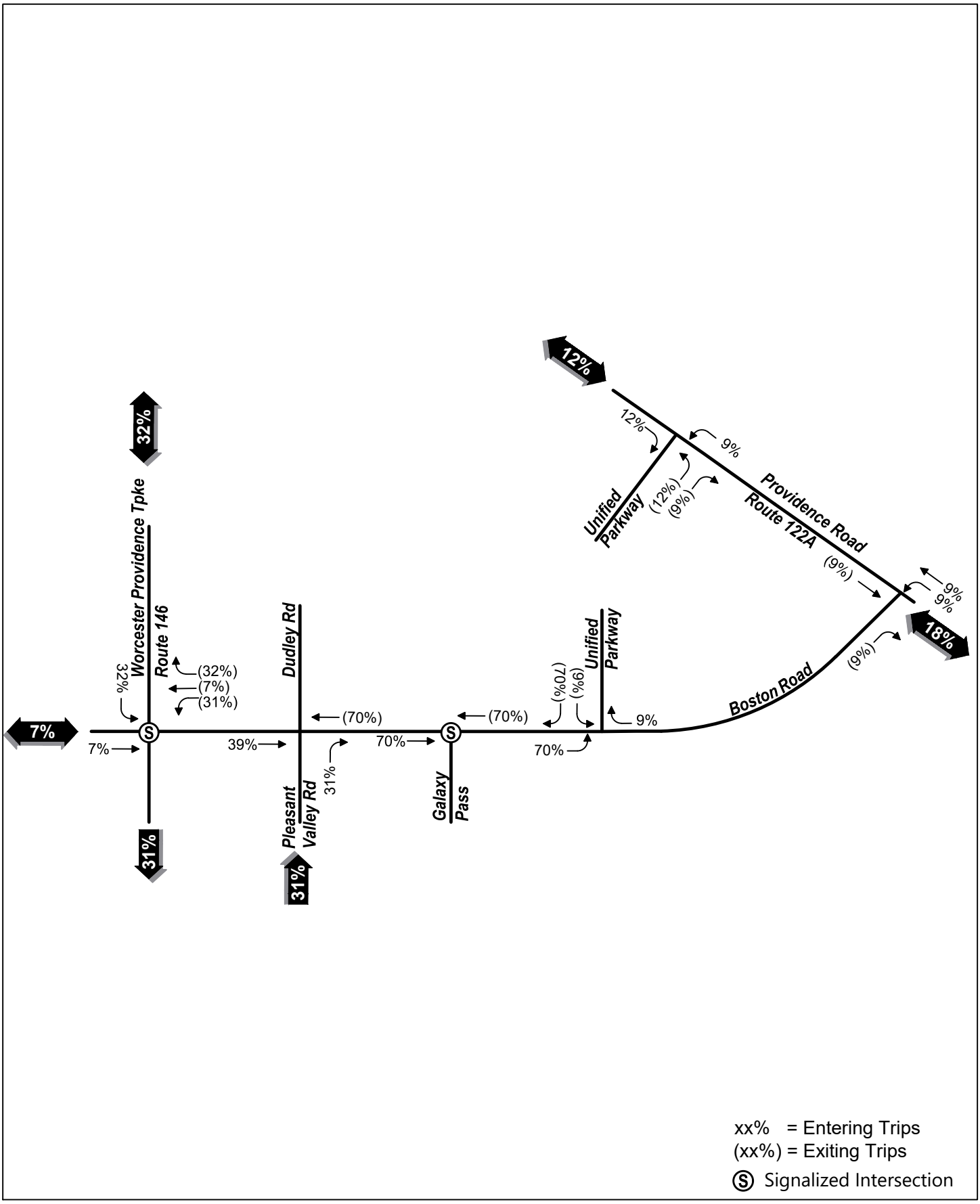
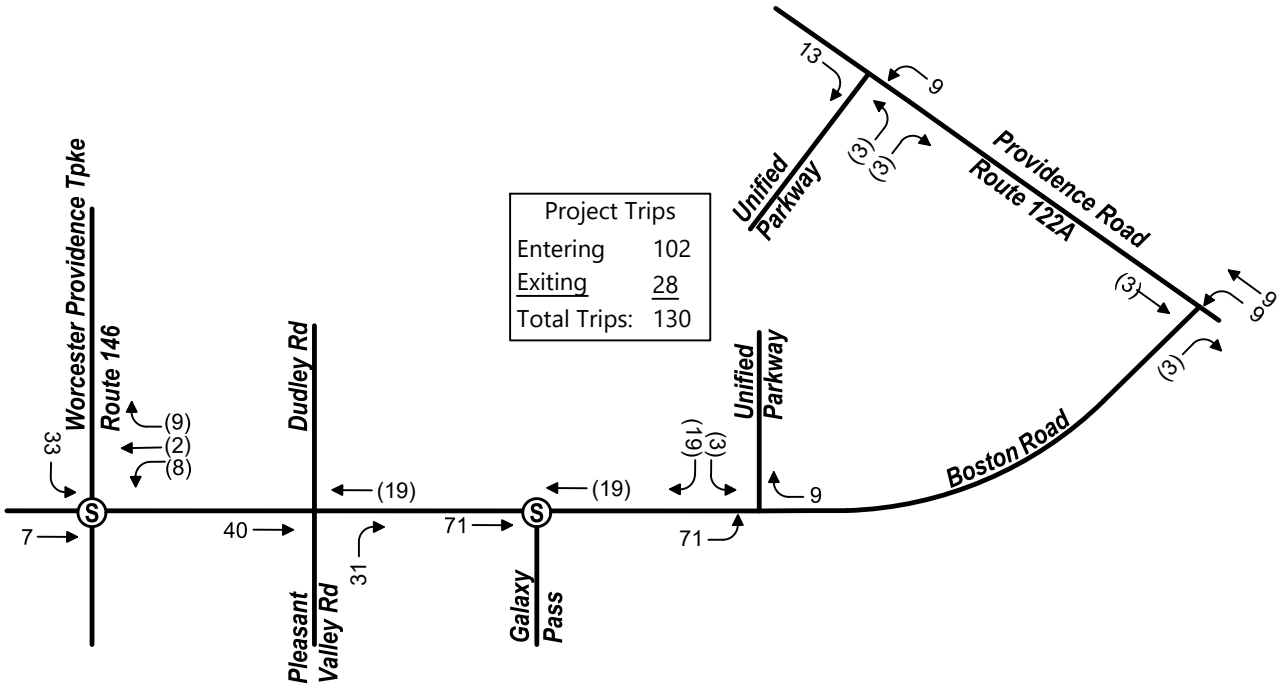


Figure 1

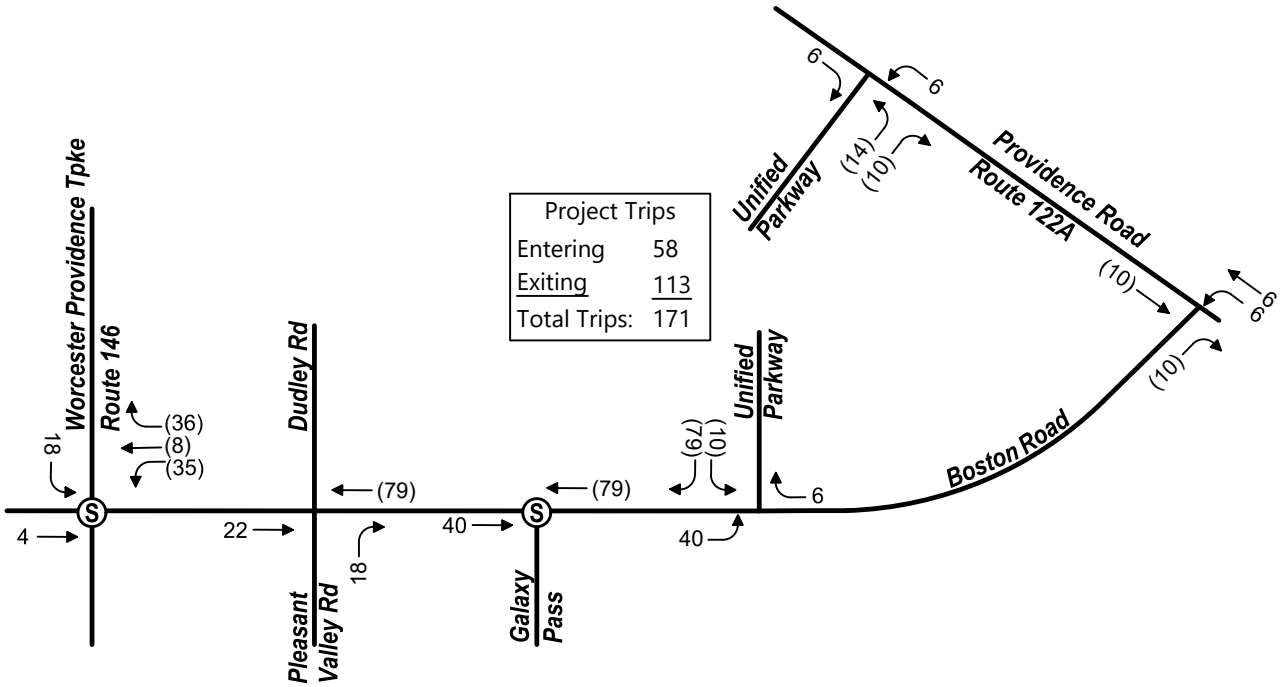
Trip Distribution
UN1F1ED Sutton
Sutton, Massachusetts



xx = Entering Trips
(xx) = Exiting Trips
Ⓢ Signalized Intersection

Weekday Morning Peak Hour
Project Generated Trips
UN1F1ED Sutton
Sutton, Massachusetts

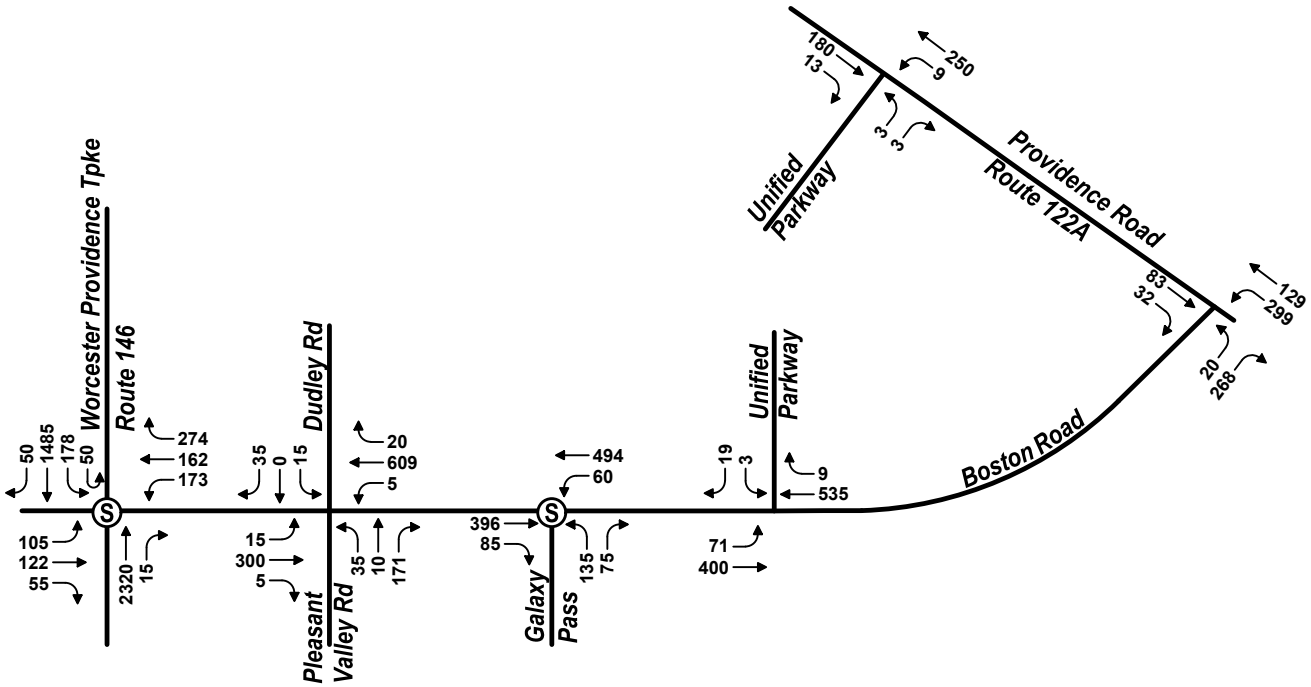
Figure 2



xx = Entering Trips
(xx) = Exiting Trips
Ⓢ Signalized Intersection

Weekday Evening Peak Hour
Project Generated Trips
UN1F1ED Sutton
Sutton, Massachusetts

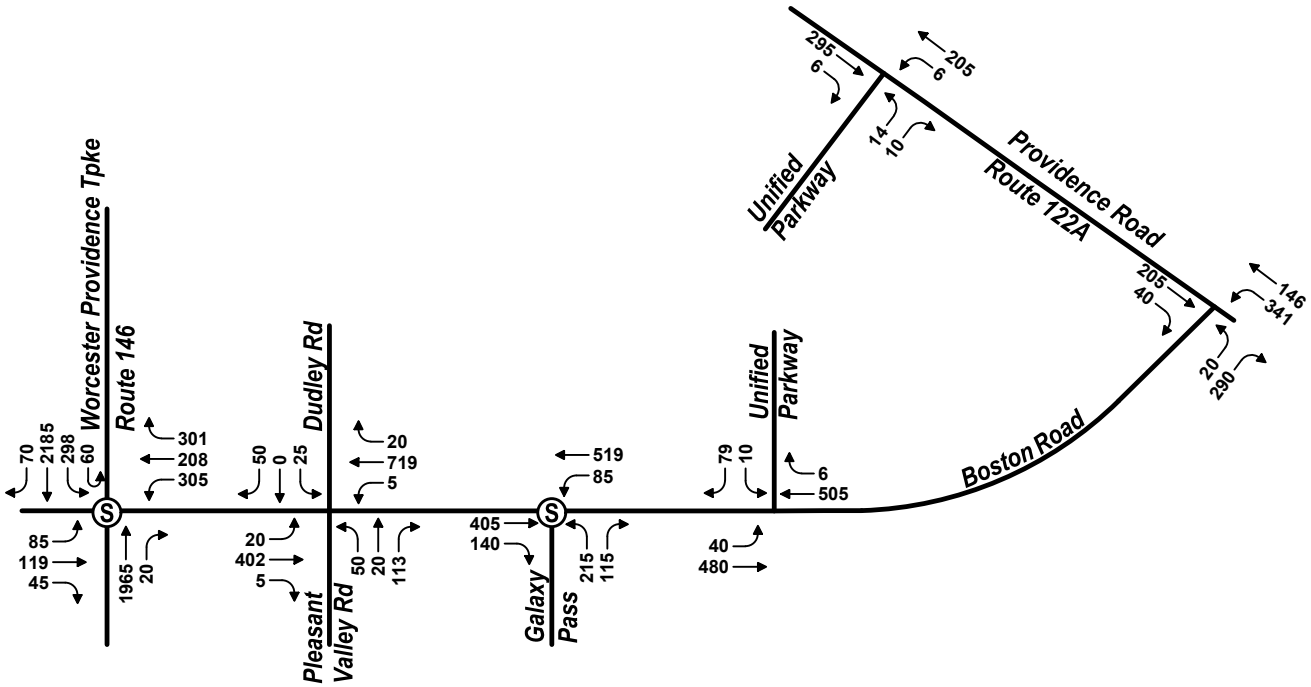
Figure 3



Ⓢ Signalized Intersection

Weekday Morning Peak Hour
2028 Build Traffic Volumes
UN1F1ED Sutton
Sutton, Massachusetts

Figure 4



Ⓢ Signalized Intersection

Weekday Evening Peak Hour
2028 Build Traffic Volumes
UN1F1ED Sutton
Sutton, Massachusetts

Figure 5

Table 1 **Operations Analysis Summary**

Intersection/Peak Hour/Lane Group	2022 Existing					2029 No-Build					2029 Build				
	v/c	Delay	LOS	50th % Queue	95th % Queue	v/c	Delay	LOS	50th % Queue	95th % Queue	v/c	Delay	LOS	50th % Queue	95th % Queue
Providence Road at Boston Road															
Weekday Morning:															
Providence Road WB L	0.19	8	A	--	18	0.22	8	A	--	20	0.23	8	A	--	23
Boston Road NB Approach	0.39	12	B	--	45	0.44	14	B	--	58	0.45	14	B	--	58
Weekday Evening:															
Providence Road WB L	0.27	9	A	--	28	0.29	9	A	--	30	0.31	9	A	--	33
Boston Road NB Approach	0.49	16	C	--	68	0.55	18	C	--	83	0.59	20	C	--	98

v/c = volume-to-capacity ratio.
Delay in seconds.
Queue lengths in feet.

Table 1 (continued) Operations Analysis Summary

Intersection/Peak Hour/Lane Group	2029 Build			
	v/c	Delay	LOS	95th % Queue
Boston Road at Unified Parkway				
Weekday Morning:				
Boston Road EB L	0.08	9	A	8
Unified Parkway SB Approach	0.06	14	B	5
Weekday Evening:				
Boston Road EB L	0.04	9	A	3
Unified Parkway SB Approach	0.21	15	C	20
Providence Road at Unified Parkway				
Weekday Morning:				
Providence Road WB L	0.01	8	A	0
Unified Parkway NB Approach	0.01	11	B	0
Weekday Evening:				
Providence Road WB L	0.01	8	A	0
Unified Parkway NB Approach	0.05	12	B	3

v/c = volume-to-capacity ratio.
Delay in seconds.
Queue lengths in feet.

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	71	400	535	9	3	19
Future Vol, veh/h	71	400	535	9	3	19
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	435	582	10	3	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	592	0	-	0	1176	587
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	589	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	984	-	-	-	211	510
Stage 1	-	-	-	-	556	-
Stage 2	-	-	-	-	554	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	984	-	-	-	189	510
Mov Cap-2 Maneuver	-	-	-	-	189	-
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	554	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	984	-	-	-	414
HCM Lane V/C Ratio	0.078	-	-	-	0.058
HCM Control Delay (s)	9	0	-	-	14.2
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.2

Intersection	
Int Delay, s/veh	7.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	83	32	299	129	20	268
Future Vol, veh/h	83	32	299	129	20	268
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, %	0	-	-	0	0	-
Peak Hour Factor	73	73	93	93	87	87
Heavy Vehicles, %	3	38	2	2	17	2
Mvmt Flow	114	44	322	139	23	308

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	158	0	919	136
Stage 1	-	-	-	-	136	-
Stage 2	-	-	-	-	783	-
Critical Hdwy	-	-	4.12	-	6.57	6.22
Critical Hdwy Stg 1	-	-	-	-	5.57	-
Critical Hdwy Stg 2	-	-	-	-	5.57	-
Follow-up Hdwy	-	-	2.218	-	3.653	3.318
Pot Cap-1 Maneuver	-	-	1422	-	283	913
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	425	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1422	-	214	913
Mov Cap-2 Maneuver	-	-	-	-	214	-
Stage 1	-	-	-	-	855	-
Stage 2	-	-	-	-	321	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.8	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	744	-	-	1422	-
HCM Lane V/C Ratio	0.445	-	-	0.226	-
HCM Control Delay (s)	13.7	-	-	8.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.3	-	-	0.9	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	180	13	9	250	3	3
Future Vol, veh/h	180	13	9	250	3	3
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, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	196	14	10	272	3	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	210	0	495	203
Stage 1	-	-	-	-	203	-
Stage 2	-	-	-	-	292	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1361	-	534	838
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	758	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1361	-	529	838
Mov Cap-2 Maneuver	-	-	-	-	529	-
Stage 1	-	-	-	-	831	-
Stage 2	-	-	-	-	751	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	649	-	-	1361	-
HCM Lane V/C Ratio	0.01	-	-	0.007	-
HCM Control Delay (s)	10.6	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	480	505	6	10	79
Future Vol, veh/h	40	480	505	6	10	79
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, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	522	549	7	11	86

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	556	0	-	0	1161	553
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	608	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1015	-	-	-	216	533
Stage 1	-	-	-	-	576	-
Stage 2	-	-	-	-	543	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1015	-	-	-	203	533
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	541	-
Stage 2	-	-	-	-	543	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	15.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1015	-	-	-	451
HCM Lane V/C Ratio	0.043	-	-	-	0.214
HCM Control Delay (s)	8.7	0	-	-	15.1
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8

Intersection	
Int Delay, s/veh	8.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	205	40	341	146	20	290
Future Vol, veh/h	205	40	341	146	20	290
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, %	0	-	-	0	0	-
Peak Hour Factor	92	92	85	85	88	88
Heavy Vehicles, %	0	0	1	1	11	1
Mvmt Flow	223	43	401	172	23	330

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	266	0	1219	245
Stage 1	-	-	-	-	245	-
Stage 2	-	-	-	-	974	-
Critical Hdwy	-	-	4.11	-	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	5.51	-
Critical Hdwy Stg 2	-	-	-	-	5.51	-
Follow-up Hdwy	-	-	2.209	-	3.599	3.309
Pot Cap-1 Maneuver	-	-	1304	-	191	796
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	352	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1304	-	126	796
Mov Cap-2 Maneuver	-	-	-	-	126	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	232	-

Approach	EB	WB	NB
HCM Control Delay, s	0	6.3	19.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	593	-	-	1304	-
HCM Lane V/C Ratio	0.594	-	-	0.308	-
HCM Control Delay (s)	19.6	-	-	9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	3.9	-	-	1.3	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	295	6	6	205	14	10
Future Vol, veh/h	295	6	6	205	14	10
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, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	321	7	7	223	15	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	328	0	562	325
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	237	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1232	-	488	716
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	802	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1232	-	485	716
Mov Cap-2 Maneuver	-	-	-	-	485	-
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	797	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	560	-	-	1232	-
HCM Lane V/C Ratio	0.047	-	-	0.005	-
HCM Control Delay (s)	11.7	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Transportation Data Corporation
Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

Providence Road (Route 122A)
north of Hatchery Road
City, State: Sutton, MA
Client: Pare / J. Shevlin

05430Bvolume
Site Code: 05430

Start Time	15-Jun-21 Tue	NB A.M.	NB P.M.	SB A.M.	SB P.M.	Combined A.M.	Combined P.M.	16-Jun Wed	NB A.M.	NB P.M.	SB A.M.	SB P.M.	Combined A.M.	Combined P.M.
12:00		1	41	4	47	5	88		1	47	5	56	6	103
12:15		1	36	2	64	3	100		2	44	1	52	3	96
12:30		3	41	4	43	7	84		3	46	1	49	4	95
12:45		1	47	0	61	1	108		3	44	2	52	5	96
01:00		0	49	0	42	0	91		2	38	1	54	3	92
01:15		1	39	1	52	2	91		1	45	0	50	1	95
01:30		2	42	1	45	3	87		1	37	3	55	4	92
01:45		2	28	2	50	4	78		1	44	3	49	4	93
02:00		0	43	1	51	1	94		1	30	1	54	2	84
02:15		0	63	1	54	1	117		2	46	1	60	3	106
02:30		2	48	1	56	3	104		1	50	1	53	2	103
02:45		0	49	2	68	2	117		4	42	6	67	10	109
03:00		2	44	0	70	2	114		1	***50***	2	62	3	112
03:15		1	***61***	4	52	5	113		0	***55***	4	61	4	116
03:30		2	***57***	1	66	3	123		1	***65***	0	58	1	123
03:45		4	***62***	1	69	5	131		2	***70***	0	58	2	128
04:00		2	***51***	1	61	3	112		2	46	0	64	2	110
04:15		1	44	2	71	3	115		1	47	3	67	4	114
04:30		1	56	6	65	7	***121***		4	53	4	***84***	8	***137***
04:45		7	46	2	58	9	***104***		7	58	2	***77***	9	***135***
05:00		6	43	4	***82***	10	***125***		4	46	6	***96***	10	***142***
05:15		9	55	7	***84***	16	***139***		11	55	5	***79***	16	***134***
05:30		22	37	4	***66***	26	103		20	52	5	71	25	123
05:45		25	35	4	***68***	29	103		28	52	8	56	36	108
06:00		23	41	15	61	38	102		28	48	19	60	47	108
06:15		40	37	24	52	64	89		34	37	23	48	57	85
06:30		46	45	36	42	82	87		50	44	30	62	80	106
06:45		50	33	31	41	81	74		39	26	26	37	65	63
07:00		34	24	32	41	66	65		41	32	27	36	68	68
07:15		54	26	36	34	90	60		36	35	30	41	66	76
07:30		***59***	24	49	30	108	54		***52***	32	37	43	89	75
07:45		***61***	25	34	35	95	60		***67***	32	27	41	94	73
08:00		***37***	28	24	31	61	59		***49***	20	21	35	70	55
08:15		***69***	12	34	28	103	40		***53***	16	41	25	94	41
08:30		41	16	39	28	80	44		35	20	38	33	73	53
08:45		47	9	32	24	79	33		52	15	49	30	101	45
09:00		50	12	40	22	90	34		39	9	33	21	72	30
09:15		28	11	22	21	50	32		36	12	34	12	70	24
09:30		39	11	43	8	82	19		42	11	35	19	77	30
09:45		40	2	40	7	80	9		48	5	35	16	83	21
10:00		50	7	36	14	86	21		40	6	38	11	78	17
10:15		40	5	47	9	87	14		43	2	31	9	74	11
10:30		46	5	35	4	81	9		32	5	39	7	71	12
10:45		32	5	47	5	79	10		43	7	44	10	87	17
11:00		37	4	***42***	5	***79***	9		46	4	***41***	5	***87***	9
11:15		38	4	***48***	7	***86***	11		45	4	***50***	5	***95***	9
11:30		57	6	***43***	3	***100***	9		50	2	***43***	1	***93***	3
11:45		59	3	***48***	0	***107***	3		49	2	***49***	5	***98***	7
Total		1172	1512	932	1997	2104	3509		1152	1588	904	2096	2056	3684
Day Total		2684		2929		5613			2740		3000		5740	
% Total		20.9%	26.9%	16.6%	35.6%				20.1%	27.7%	15.7%	36.5%		
Peak	-	07:30	03:15	11:00	05:00	11:00	04:30	-	07:30	03:00	11:00	04:30	11:00	04:30
Vol.	-	226	231	181	300	372	489	-	221	240	183	336	373	548
P.H.F.		0.819	0.931	0.943	0.893	0.869	0.879		0.825	0.857	0.915	0.875	0.952	0.965

ADT	ADT 5,676	AADT 5,676