

December 15, 2022

Tipping Point Resources Group JV, LLC
2 Poplar Street
New Haven, CT 06513-4324

Attn: Mr. Alfred N. Kovalik, PE

**RE: Traffic Impact Statement
Proposed Dredging Operation
125 & 133 Depot Road
Montville, CT
Our File: 22028**

Dear Mr. Kovalik:

Pursuant to your request our office has prepared this statement outlining the potential traffic impact of a proposed dredging operation located at 125 & 133 Depot Road in the Town of Montville, CT. The site proposed for development is shown in Figure 1. This letter presents our findings.

The current proposal is to operate a dredging operation on the Thames River and to process and store dredged materials on site and to remove those materials from the site via truck. There are no proposed changes to the existing site access. All site access will be from Depot Road.

Dredging operations are typically allowed to occur only between October 1 and February 28 so as not to disturb the spawning periods of fish within the Thames River. There may be certain projects that are approved to operate outside of that window. The approval being sought is for the storage of up to 10,000 cubic yards of material on site. Therefore, operations are most likely limited to a five month period.

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It is anticipated that an average of 91 trucks per day with a peak volume of 120 trucks a day will be realized. This relates to an average of 182 truck trips and a peak daily volume of 240 truck trips could be realized. At 16 cy per truck, the 10,000 cy of stored materials could be removed within 5 to 10 days of operation. It is anticipated that between 18 and 30 truck trips will occur during the peak hours of operation.

Previous approvals for two uses on the site, the salt storage facility, and the material transfer operation, were based on an average of 148 truck trips per day with a peak total of 448 truck trips per day during winter pre-storm events. Peak hour truck volumes of 30 truck trips during the summer months and 62 truck trips during winter pre-storm events were presented.

If approved, the new use would result in a total of 688 truck trips per day and a peak hour volume of 92 truck trips. These volumes would occur during winter pre-storm events. During the summer, the dredging operation is not likely to be in operation.

The proposed operations will require 5 employees. Therefore, the peak hour increase in traffic related to the proposed use is 15 new trips during the summer months and 7 new trips during the winter months. These volumes are presented in Table 1.

Background traffic volumes were taken from the report prepared by our office dated October 11, 2022 for the current approved facility. Figures 9 and 10 from that report present the 2024 combined traffic volumes. These figures are presented here as the 2024 background traffic volumes for the current expansion, as Figures 2 and 3. The volumes represent the winter, and pre-storm traffic volumes.

The site generated traffic was distributed to the local roadway network utilizing the same distribution as the current facility. We project 80% of the site traffic to and from the west on Route 163, and 10% to and from the north and 10% to and from the south on

Route 2. The directional distribution is presented in Figure 4. Figure 5 presents the site generated traffic for the morning and afternoon peak hours. By adding the volumes in Figure 5 to the background volumes in Figures 2 and 3, the combined traffic volumes can be determined. These volumes are presented in Figures 6 and 7.

Capacity Analysis

Capacity analyses were conducted for the background and combined traffic volumes for the intersection of Route 32 with Route 163 and Depot Road utilizing the intersection capacity analysis program called SYNCHRO. Since the site is located at the end of Depot Road, except for three residences, a review of the site driveway intersections was not conducted. The analyses were conducted for the morning and afternoon peak hours. The analysis results are shown in Table 2.

Route 32 at Route 163 and Depot Road - This is an existing, four-way signalized intersection with Route 32 oriented in the north/south direction. Route 163 approaches from the west. Depot Road approaches from the east. The northbound and southbound Route 32 approaches each provide a single lane approach. The northbound approach provides a very generous shoulder that allows for through traffic to by-pass a waiting left turn vehicle. Route 163 provides a dedicated left turn lane and a shared through/right turn lane. Depot Road provides a single lane approach. The intersection is under signalized control and is controlled along with the Maple Avenue Intersection. The signal operates with four phases with the northbound and southbound approaches moving simultaneously followed by an internal clearance, followed by the eastbound and westbound approaches operating simultaneously, followed by the east/west approaches at Route 163 and Depot Road operating with the southbound approach at Maple Avenue. The signal provides detection on all approaches and a 112 second cycle length.

Analysis indicates that the intersection operates at an overall LOS B during the morning peak hour and at a LOS C during the afternoon peak hour under the background traffic volume conditions for the winter and the pre-storm periods. With the introduction of the site generated traffic the intersection will continue to operate at a LOS B during the winter period, and at a LOS C during the pre-storm period during the morning peak hour. The intersection will continue to operate at a LOS C during the afternoon peak hours for both the winter and pre-storm periods. For purposes of this analysis, we have utilized a 50% heavy truck factor for all movements into and out of Depot Road.

Depot Road at Lathrop Road and Pink Row - This is an existing four way, all way stop sign controlled intersection. Depot Road lies in an east/west orientation. Lathrop Road approaches from the south. Pink Row approaches from the north. Based on the low volume of traffic observed on Depot Road, the intersection was not analyzed, but likely operates at a LOS A/B on all approaches during peak hours under the combined traffic volume scenarios.

Truck Traffic

The proposed development is not a high traffic volume generator, either daily or on an hourly basis, but the traffic that it does generate is mostly truck traffic. As indicated above there are only expected to be up to a total of 12 employees on site, or the three uses. The proposed dredging operation is expected to operate between the hours of 7 a.m. and 6 p.m., on a seasonal basis.

Conclusions

The proposed dredging operation is projected to generate a total of 260 new trips per day with peak hour volumes of 35 trips during peak hours. The facility is anticipated to operate between the months of October and February. Based on the low volume of site generated traffic, and the current roadway and traffic volume conditions, it is my

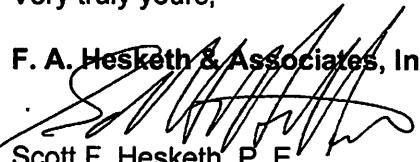
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professional opinion that the local roadway network has sufficient capacity to accommodate the traffic volumes associated with the proposed development.

We appreciate the opportunity to provide this information to you. A representative from our firm will be available to present testimony before local commissions if needed. If you require any additional information, please do not hesitate to contact our office.

Very truly yours,

F. A. Hesketh & Associates, Inc.



Scott F. Hesketh, P. E.
Manager of Transportation Engineering

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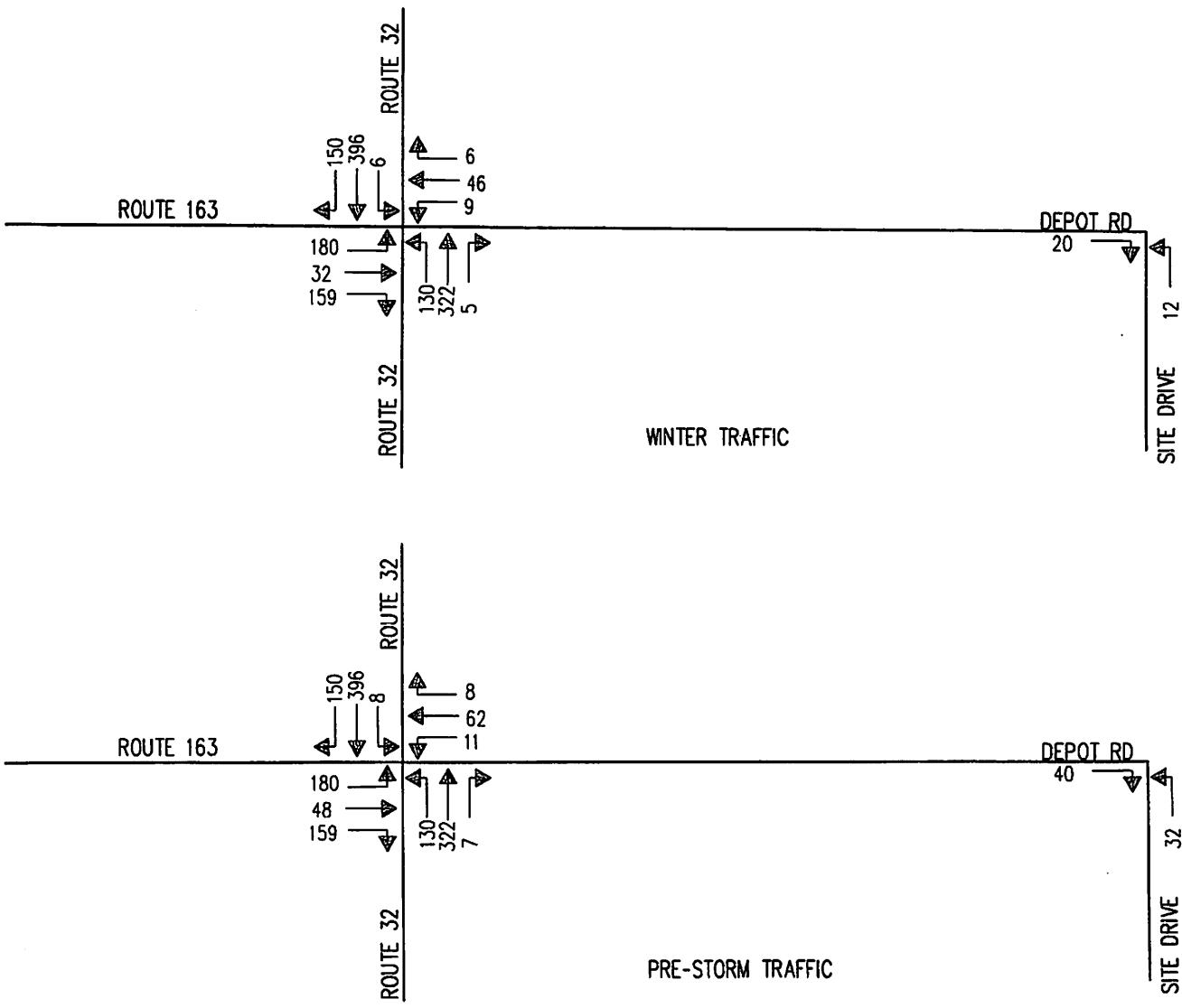
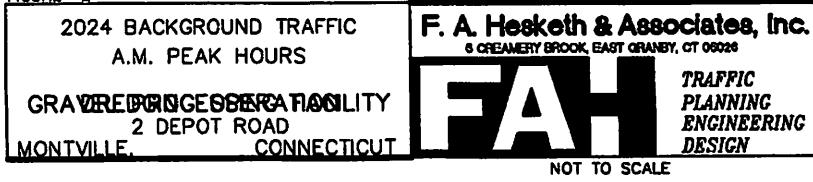


FIGURE 2

12-12-2022



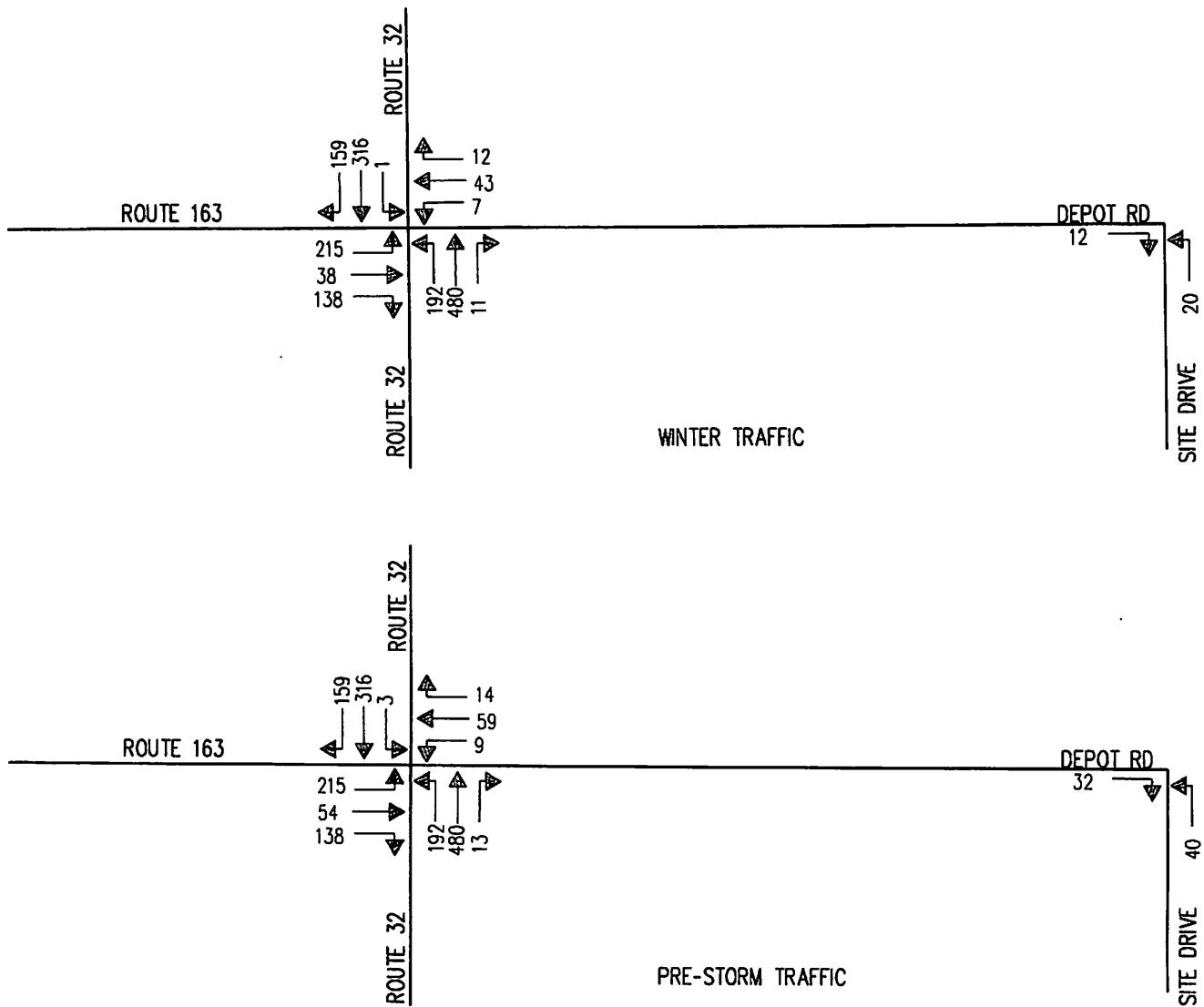


FIGURE 3

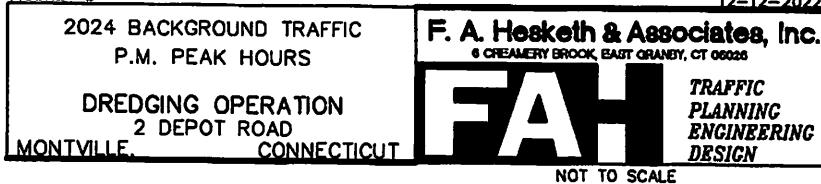


Table 1
Trip Generation Summary
Proposed Dredging Operation
Montville, CT

Land Use	ADT	A.M. Peak Hour			P.M. Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Existing Developments							
Summer Operations							
Passenger Vehicles	32	9	2	11	2	9	11
Trucks	80	6	6	12	6	6	12
Total	112	15	8	23	8	15	23
Winter Operations							
Passenger Vehicles	32	9	2	11	2	9	11
Trucks	110	11	11	22	11	11	22
Total	142	20	13	33	13	20	33
Winter / Pre-Storm Operations							
Passenger Vehicles	32	9	2	11	2	9	11
Trucks	410	31	31	62	31	31	62
Total	442	40	33	73	33	40	73
Proposed Operations							
Passenger Vehicles	20	5	0	5	0	5	5
Trucks	240	15	15	30	15	15	30
Total	260	20	15	35	15	20	35
Combined Operations							
Winter Operations							
Passenger Vehicles	52	14	2	16	2	14	16
Trucks	350	26	26	52	26	26	52
Total	402	40	28	68	28	40	68
Winter / Pre-Storm Operations							
Passenger Vehicles	52	14	2	16	2	14	16
Trucks	650	46	46	92	46	46	92
Total	702	60	48	108	48	60	108

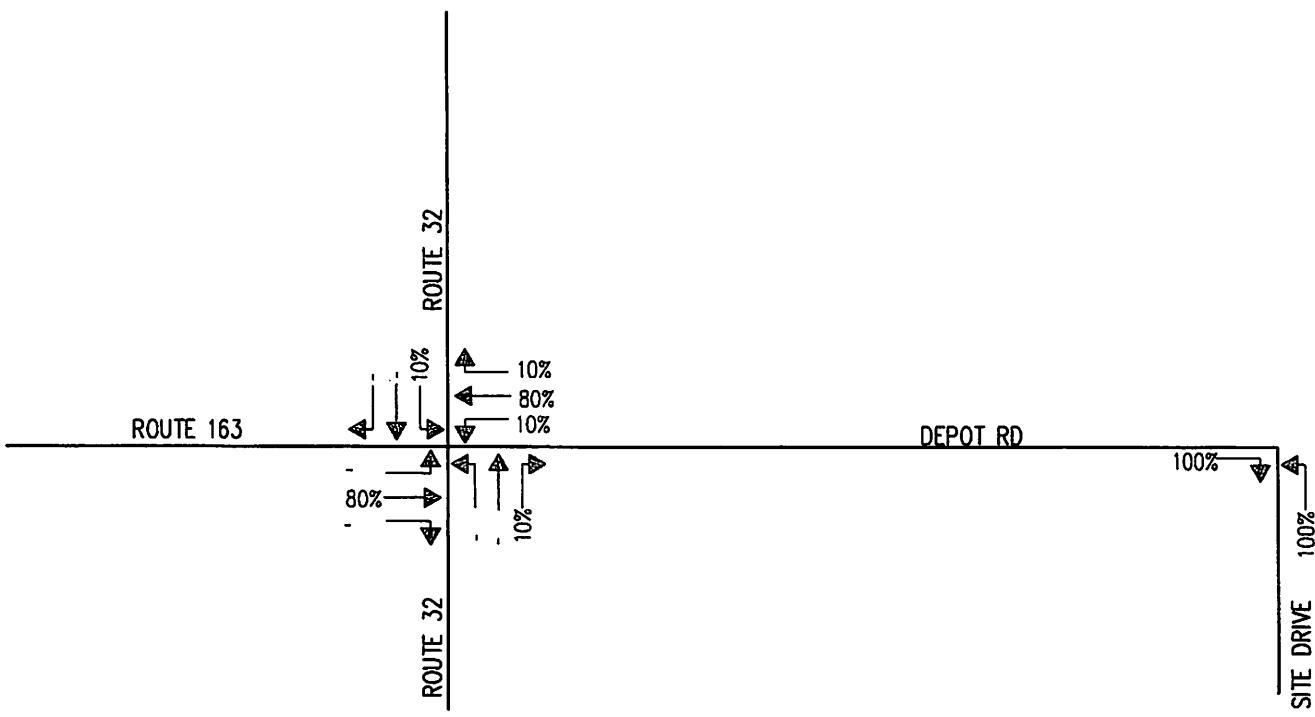


FIGURE 4

DIRECTIONAL DISTRIBUTION OF
SITE GENERATED TRAFFIC VOLUMES
ALL PEAK HOURS
DREDGING OPERATION
2 DEPOT ROAD
MONTVILLE, CONNECTICUT

12-12-2022

F. A. Hesketh & Associates, Inc.
6 CREAMERY BROOK, EAST GRANBY, CT 06026



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NOT TO SCALE

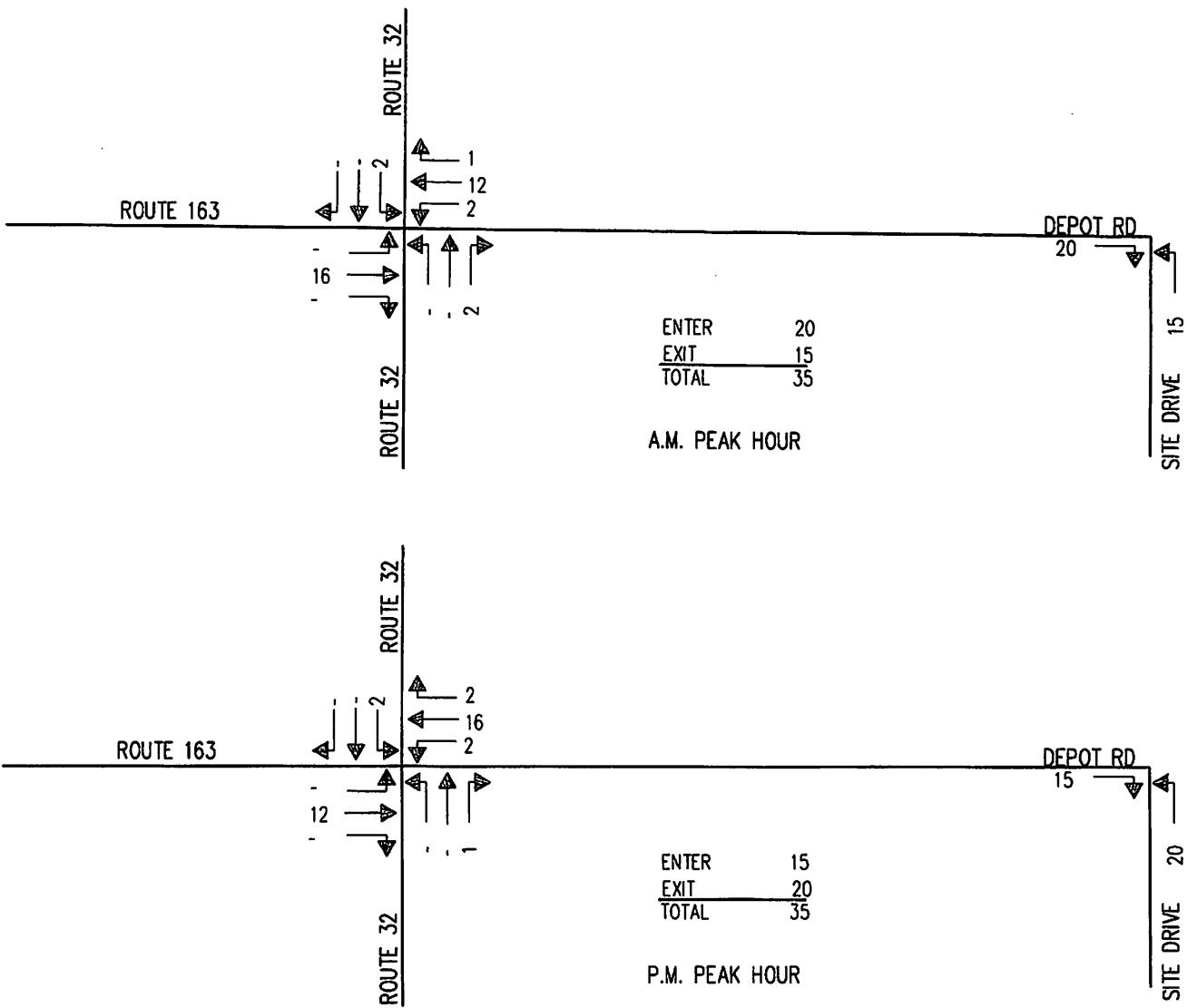
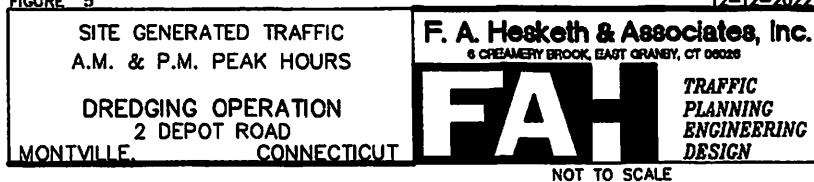


FIGURE 5



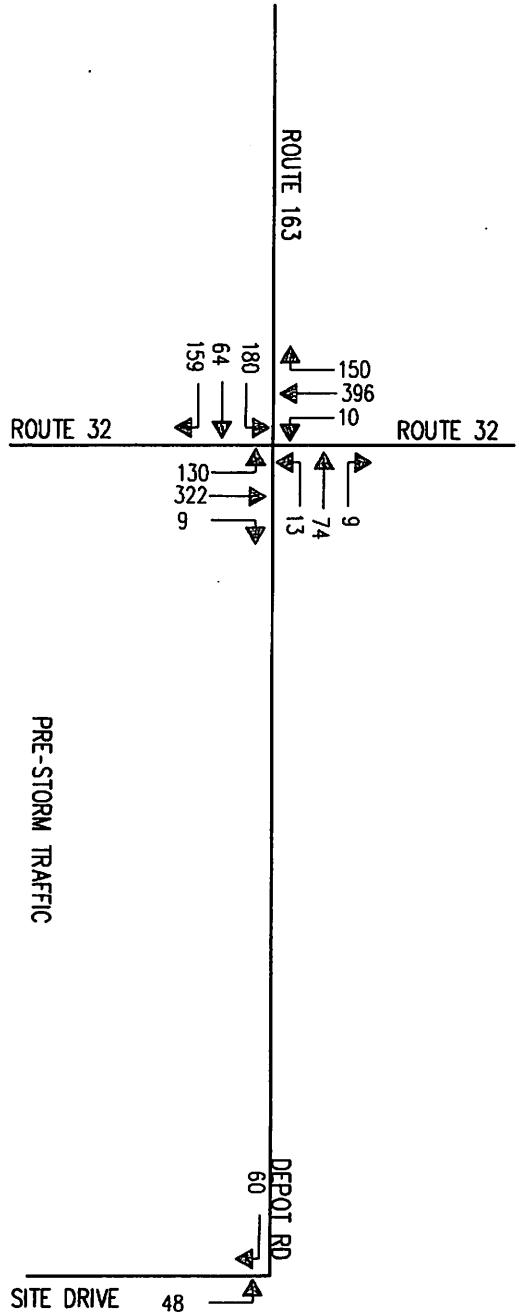
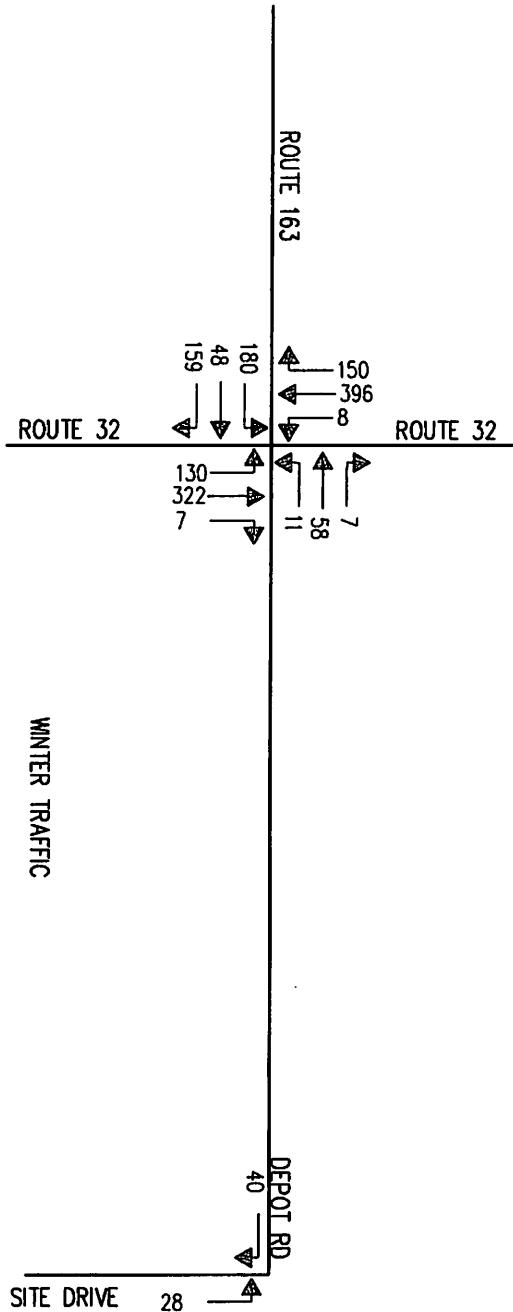


FIGURE 6

2024 COMBINED TRAFFIC

A.M. PEAK HOURS

DREDGING OPERATION
2 DEPOT ROAD
MONTVILLE, CONNECTICUT

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6 CEDARWOOD BROOK, EAST GRANBY, CT 06026

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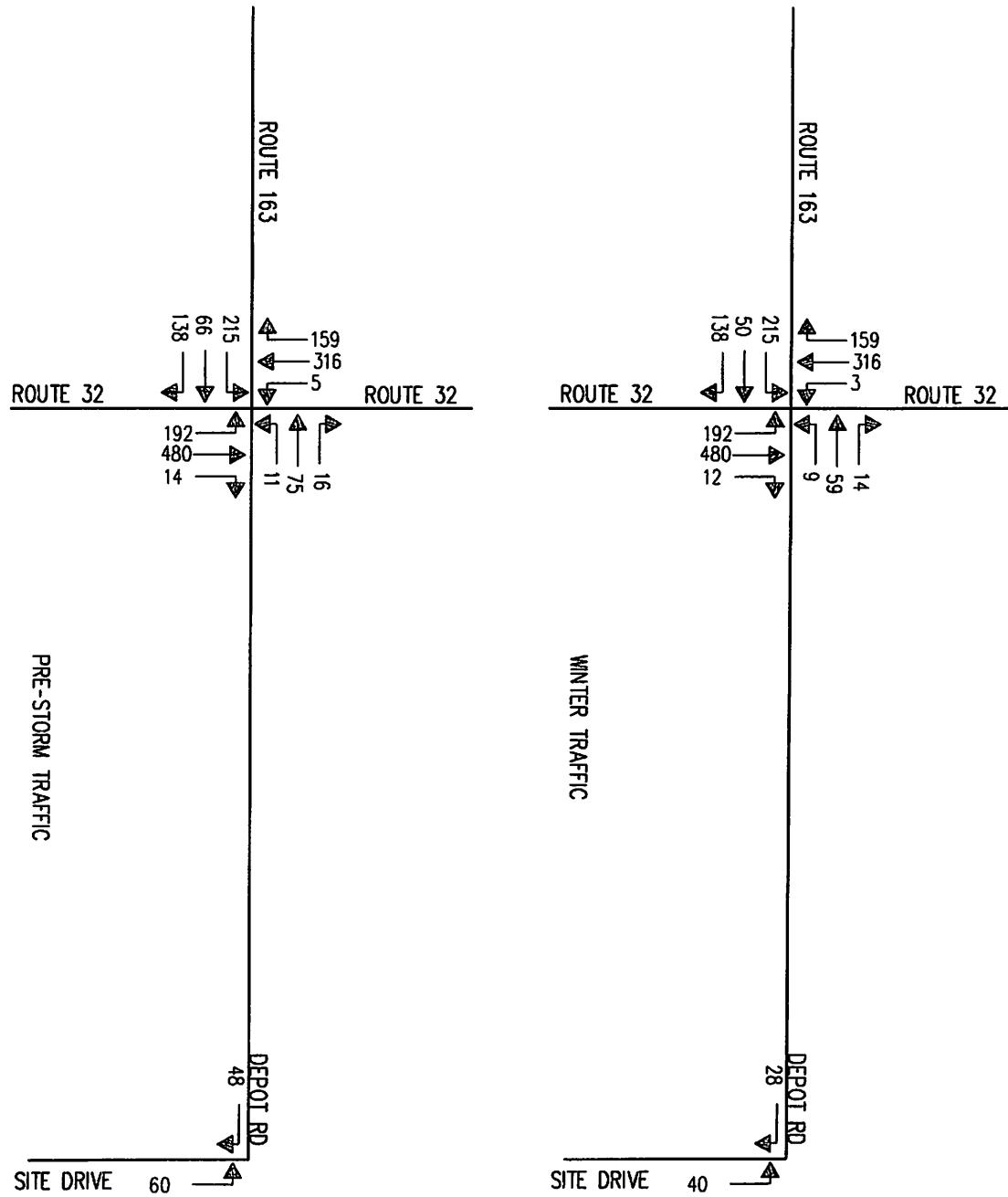
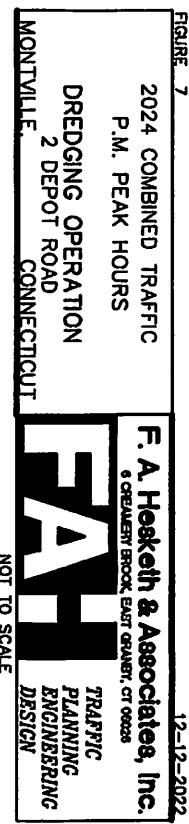


Table 2
Level of Service Summary
Proposed Dredging Operation
Depot Road - Montville, CT

Time Period		A.M. Peak Hour																
		Background Winter				Storm				Combined Winter				Pre-Storm				
<u>LOS</u>	<u>delay</u>	<u>v/c</u>	<u>Queue</u>	<u>LOS</u>	<u>delay</u>	<u>v/c</u>	<u>Queue</u>	<u>LOS</u>	<u>delay</u>	<u>v/c</u>	<u>Queue</u>	<u>LOS</u>	<u>delay</u>	<u>v/c</u>	<u>Queue</u>			
Route 32 at Route 163 & Depot Road																		
EB	Left Thru/Right	C	25.6	0.48	135	C	26.2	0.51	136	C	26.2	0.50	136	C	26.8	0.52	138	
		A	6.4	0.35	49	A	8.0	0.37	62	A	8.5	0.41	63	B	12.7	0.46	95	
WB		B	18.4	0.16	44	B	19.1	0.22	55	C	21.1	0.30	55	C	22.3	0.37	68	
NB	SB	B	18.7	0.81	#407	C	20.6	0.83	#428	C	20.2	0.83	#422	C	23.1	0.86	#444	
		B	16.9	0.66	334	B	17.9	0.67	360	B	17.6	0.67	349	B	16.7	0.69	374	
Overall:		B	17.3	0.81		B	18.4	0.83		B	18.4	0.83		C	20.4	0.86		
		P.M. Peak Hour																
		Background Winter				Storm				Combined Winter				Pre-Storm				
		<u>LOS</u>	<u>delay</u>	<u>v/c</u>	<u>Queue</u>	<u>LOS</u>	<u>delay</u>	<u>v/c</u>	<u>Queue</u>	<u>LOS</u>	<u>delay</u>	<u>v/c</u>	<u>Queue</u>	<u>LOS</u>	<u>delay</u>	<u>v/c</u>	<u>Queue</u>	
Route 32 at Route 163 & Depot Road																		
EB	Left Thru/Right	C	25.7	0.49	155	C	26.3	0.51	157	C	26.3	0.48	135	C	27.0	0.54	160	
		A	7.0	0.29	56	A	8.3	0.31	67	A	7.9	0.35	49	B	11.5	0.38	88	
WB		B	16.9	0.14	44	B	17.8	0.18	57	B	19.4	0.16	44	C	20.9	0.33	73	
NB	SB	D	37.6	0.99	#634	D	43.4	1.01	#668	D	46.3	0.81	#407	D	49.9	1.03	#688	
		B	12.9	0.50	247	B	13.6	0.50	265	B	13.6	0.66	334	B	14.1	0.51	276	
Overall:		C	24.5	0.99		C	27.1	1.01		C	27.9	1.01		C	30.3	1.03		

SYNCHRO Capacity Analysis Worksheets

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter

AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	48	159	11	58	7	130	322	7	8	396	150
Future Volume (vph)	180	48	159	11	58	7	130	322	7	8	396	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.885			0.988			0.998			0.963	
Flt Protected	0.950				0.993			0.986			0.999	
Satd. Flow (prot)	1770	1486	0	0	1243	0	0	1821	0	0	1779	0
Flt Permitted	0.696				0.945			0.648			0.992	
Satd. Flow (perm)	1296	1486	0	0	1183	0	0	1196	0	0	1767	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		179			6			1			20	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		792			598			255			345	
Travel Time (s)		18.0			13.6			5.8			7.8	
Peak Hour Factor	0.83	0.83	0.83	0.64	0.64	0.64	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	50%	2%	50%	50%	50%	2%	2%	50%	50%	2%	2%
Adj. Flow (vph)	217	58	192	17	91	11	157	388	8	10	477	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	217	250	0	0	119	0	0	553	0	0	668	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			1	2		1	2		1	2
Detector Template	Left	Thru										
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4 9			4 9		3	2 3			2	

Lane Group	Ø4	Ø9
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	4	9

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter
AM Peak Hour

Lane Group	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4.9	4.9		4.9	4.9		2			2		
Detector Phase	4.9	4.9		4.9	4.9		1	1		2	2	
Switch Phase												
Minimum Initial (s)							5.0			5.0	5.0	
Minimum Split (s)							9.5			22.5	22.5	
Total Split (s)							12.0			50.0	50.0	
Total Split (%)							10.7%			44.6%	44.6%	
Maximum Green (s)							7.5			45.5	45.5	
Yellow Time (s)							3.5			3.5	3.5	
All-Red Time (s)							1.0			1.0	1.0	
Lost Time Adjust (s)											0.0	
Total Lost Time (s)											4.5	
Lead/Lag							Lead					
Lead-Lag Optimize?							Yes					
Vehicle Extension (s)							3.0			3.0	3.0	
Recall Mode							None			Max	Max	
Walk Time (s)										7.0	7.0	
Flash Dont Walk (s)										11.0	11.0	
Pedestrian Calls (#/hr)										0	0	
Act Effct Green (s)	27.3	27.3			27.3			45.6			45.6	
Actuated g/C Ratio	0.33	0.33			0.33			0.56			0.56	
v/c Ratio	0.50	0.41			0.30			0.83			0.67	
Control Delay	26.2	8.5			21.1			20.2			17.6	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	26.2	8.5			21.1			20.2			17.6	
LOS	C	A			C			C			B	
Approach Delay		16.8			21.1			20.2			17.6	
Approach LOS		B			C			C			B	
90th %ile Green (s)							0.0			45.5	45.5	
90th %ile Term Code							Skip			MaxR	MaxR	
70th %ile Green (s)							0.0			45.5	45.5	
70th %ile Term Code							Skip			MaxR	MaxR	
50th %ile Green (s)							0.0			45.5	45.5	
50th %ile Term Code							Skip			MaxR	MaxR	
30th %ile Green (s)							0.0			45.5	45.5	
30th %ile Term Code							Skip			MaxR	MaxR	
10th %ile Green (s)							0.0			45.5	45.5	
10th %ile Term Code							Skip			MaxR	MaxR	
Stops (vph)	137	50			50			259			376	
Fuel Used(gal)	3	2			1			4			6	
CO Emissions (g/hr)	198	134			67			296			388	
NOx Emissions (g/hr)	38	26			13			58			76	
VOC Emissions (g/hr)	46	31			15			69			90	
Dilemma Vehicles (#)	0	0			0			0			0	
Queue Length 50th (ft)	88	25			42			64			219	
Queue Length 95th (ft)	136	63			55			#422			349	
Internal Link Dist (ft)		712			518			175			265	
Turn Bay Length (ft)	150											
Base Capacity (vph)	690	875			632			666			993	

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter
AM Peak Hour

Lane Group	04	09
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	9.5
Total Split (s)	20.0	30.0
Total Split (%)	18%	27%
Maximum Green (s)	15.5	25.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	7.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	15.5	14.2
90th %ile Term Code	Max	Gap
70th %ile Green (s)	15.5	8.6
70th %ile Term Code	Max	Gap
50th %ile Green (s)	15.5	7.4
50th %ile Term Code	Max	Gap
30th %ile Green (s)	15.1	6.2
30th %ile Term Code	Gap	Gap
10th %ile Green (s)	10.6	5.9
10th %ile Term Code	Gap	Gap
Stops (vph)		
Fuel Used(gal)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.31	0.29			0.19			0.83			0.67	

Intersection Summary

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 81.9

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 18.4

Intersection LOS: B

Intersection Capacity Utilization 82.9%

ICU Level of Service E

Analysis Period (min) 15

90th %ile Actuated Cycle: 88.7

70th %ile Actuated Cycle: 83.1

50th %ile Actuated Cycle: 81.9

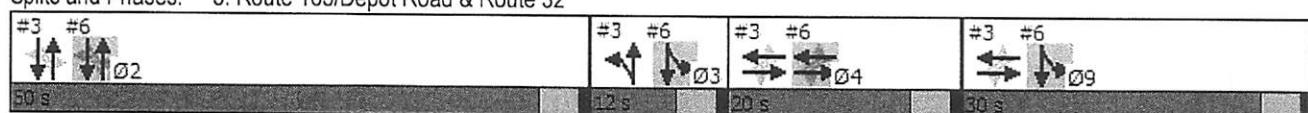
30th %ile Actuated Cycle: 80.3

10th %ile Actuated Cycle: 75.5

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Route 163/Depot Road & Route 32



Lane Group	04	09
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter Storm
AM Peak Hour

Lane Group	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↙	↖	↙	↖	↙	↖	↙	↖	↙	↖
Traffic Volume (vph)	180	64	159	13	74	9	130	322	9	10	396	150
Future Volume (vph)	180	64	159	13	74	9	130	322	9	10	396	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.893			0.987			0.997			0.964	
Flt Protected	0.950				0.993			0.986			0.999	
Satd. Flow (prot)	1770	1466	0	0	1241	0	0	1814	0	0	1779	0
Flt Permitted	0.651				0.944			0.641			0.990	
Satd. Flow (perm)	1213	1466	0	0	1180	0	0	1179	0	0	1763	0
Right Turn on Red		Yes				Yes			Yes			Yes
Satd. Flow (RTOR)	135				6			1			20	
Link Speed (mph)	30				30			30			30	
Link Distance (ft)	792				598			255			345	
Travel Time (s)	18.0				13.6			5.8			7.8	
Peak Hour Factor	0.83	0.83	0.83	0.64	0.64	0.64	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles (%)	2%	50%	2%	50%	50%	50%	2%	2%	50%	50%	2%	2%
Adj. Flow (vph)	217	77	192	20	116	14	157	388	11	12	477	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	217	269	0	0	150	0	0	556	0	0	670	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)	12				12			0			0	
Link Offset(ft)	0				0			0			0	
Crosswalk Width(ft)	16				16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			1	2		1	2		1	2
Detector Template	Left	Thru			Left	Thru		Left	Thru		Left	Thru
Leading Detector (ft)	20	100			20	100		20	100		20	100
Trailing Detector (ft)	0	0			0	0		0	0		0	0
Detector 1 Position(ft)	0	0			0	0		0	0		0	0
Detector 1 Size(ft)	20	6			20	6		20	6		20	6
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0		0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94				94			94			94
Detector 2 Size(ft)		6				6			6			6
Detector 2 Type		Cl+Ex				Cl+Ex			Cl+Ex			Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)	0.0				0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4 9			4 9		3	2 3			2	

Lane Group	Ø4	Ø9
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	4	9

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter Storm
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases	4.9	4.9		4.9	4.9		2			2			
Detector Phase	4.9	4.9		4.9	4.9		1	1		2	2		
Switch Phase													
Minimum Initial (s)							5.0			5.0	5.0		
Minimum Split (s)							9.5			22.5	22.5		
Total Split (s)							12.0			50.0	50.0		
Total Split (%)							10.7%			44.6%	44.6%		
Maximum Green (s)							7.5			45.5	45.5		
Yellow Time (s)							3.5			3.5	3.5		
All-Red Time (s)							1.0			1.0	1.0		
Lost Time Adjust (s)											0.0		
Total Lost Time (s)											4.5		
Lead/Lag							Lead						
Lead-Lag Optimize?							Yes						
Vehicle Extension (s)							3.0			3.0	3.0		
Recall Mode							None			Max	Max		
Walk Time (s)										7.0	7.0		
Flash Dont Walk (s)										11.0	11.0		
Pedestrian Calls (#/hr)										0	0		
Act Effct Green (s)	28.4	28.4			28.4			45.7			45.7		
Actuated g/C Ratio	0.34	0.34			0.34			0.55			0.55		
v/c Ratio	0.52	0.46			0.37			0.86			0.69		
Control Delay	26.8	12.7			22.3			23.1			18.7		
Queue Delay	0.0	0.0			0.0			0.0			0.0		
Total Delay	26.8	12.7			22.3			23.1			18.7		
LOS	C	B			C			C			B		
Approach Delay		19.0			22.3			23.1			18.7		
Approach LOS		B			C			C			B		
90th %ile Green (s)							0.0			45.5	45.5		
90th %ile Term Code							Skip			MaxR	MaxR		
70th %ile Green (s)							0.0			45.5	45.5		
70th %ile Term Code							Skip			MaxR	MaxR		
50th %ile Green (s)							0.0			45.5	45.5		
50th %ile Term Code							Skip			MaxR	MaxR		
30th %ile Green (s)							0.0			45.5	45.5		
30th %ile Term Code							Skip			MaxR	MaxR		
10th %ile Green (s)							0.0			45.5	45.5		
10th %ile Term Code							Skip			MaxR	MaxR		
Stops (vph)	137	82			65			262			386		
Fuel Used(gal)	3	2			1			5			6		
CO Emissions (g/hr)	199	168			87			317			402		
NOx Emissions (g/hr)	39	33			17			62			78		
VOC Emissions (g/hr)	46	39			20			73			93		
Dilemma Vehicles (#)	0	0			0			0			0		
Queue Length 50th (ft)	89	50			55			66			228		
Queue Length 95th (ft)	138	95			68			#444			374		
Internal Link Dist (ft)		712			518				175		265		
Turn Bay Length (ft)	150												
Base Capacity (vph)	652	850			637			648			977		

Lane Group	Ø4	Ø9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	9.5
Total Split (s)	20.0	30.0
Total Split (%)	18%	27%
Maximum Green (s)	15.5	25.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	7.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	15.5	16.8
90th %ile Term Code	Max	Gap
70th %ile Green (s)	15.5	9.1
70th %ile Term Code	Max	Gap
50th %ile Green (s)	15.5	8.4
50th %ile Term Code	Max	Gap
30th %ile Green (s)	15.5	7.2
30th %ile Term Code	Max	Gap
10th %ile Green (s)	11.0	5.9
10th %ile Term Code	Gap	Gap
Stops (vph)		
Fuel Used(gal)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter Storm
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	5			4			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.33	0.32			0.24			0.86			0.69	

Intersection Summary

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 83.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 20.4

Intersection LOS: C

Intersection Capacity Utilization 83.1%

ICU Level of Service E

Analysis Period (min) 15

90th %ile Actuated Cycle: 91.3

70th %ile Actuated Cycle: 83.6

50th %ile Actuated Cycle: 82.9

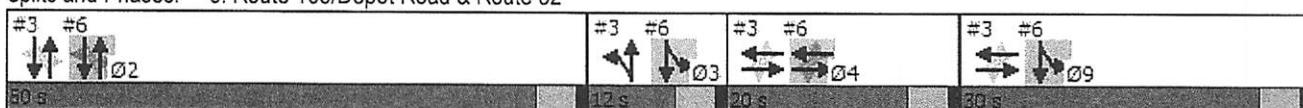
30th %ile Actuated Cycle: 81.7

10th %ile Actuated Cycle: 75.9

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Route 163/Depot Road & Route 32



Lane Group	04	09
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter
PM Peak Hour

Lane Group	E BL	E BT	E BR	W BL	W BT	W BR	N BL	N BT	N BR	S BL	S BT	S BR
Lane Configurations	↑	↓	↔	←	↑	↓	↑	↓	↑	↓	↑	↓
Traffic Volume (vph)	215	50	138	9	59	14	192	480	12	3	316	159
Future Volume (vph)	215	50	138	9	59	14	192	480	12	3	316	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25		25			25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.890			0.977			0.998			0.955	
Flt Protected	0.950				0.995			0.986				
Satd. Flow (prot)	1770	1472	0	0	1231	0	0	1818	0	0	1774	0
Flt Permitted	0.710				0.966			0.694			0.997	
Satd. Flow (perm)	1323	1472	0	0	1195	0	0	1279	0	0	1769	0
Right Turn on Red		Yes			Yes			Yes		Yes		Yes
Satd. Flow (RTOR)		145			11			1			27	
Link Speed (mph)	30		30		30		30		30		30	
Link Distance (ft)	792		598			255				345		
Travel Time (s)	18.0		13.6			5.8				7.8		
Peak Hour Factor	0.95	0.95	0.95	0.75	0.75	0.75	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	50%	2%	50%	50%	50%	2%	2%	50%	50%	2%	2%
Adj. Flow (vph)	226	53	145	12	79	19	202	505	13	3	333	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	198	0	0	110	0	0	720	0	0	503	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)	12		12		12		12		0			0
Link Offset(ft)	0		0		0		0		0		0	
Crosswalk Width(ft)	16		16		16		16		16		16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	2	1	2	1	2	1	2	1	2
Detector Template	Left	Thru										
Leading Detector (ft)	20	100	20	100	20	100	20	100	20	100	20	100
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	6	20	6	20	6	20	6	20	6
Detector 1 Type	Cl+Ex											
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)	94		94		94		94		94		94	
Detector 2 Size(ft)	6		6		6		6		6		6	
Detector 2 Type	Cl+Ex											
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Perm	NA	Perm	NA	D.P+P	NA	Perm	NA	Perm	NA		
Protected Phases	4 9		4 9		4 9		3	2 3		2		

Lane Group	04	09
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	4	9

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter
PM Peak Hour

Lane Group	EBL	EBT	EBC	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4 9	4 9		4 9	4 9		2	2 3		2	2	
Detector Phase	4 9	4 9		4 9	4 9		2	2		2	2	
Switch Phase												
Minimum Initial (s)							5.0			5.0	5.0	
Minimum Split (s)							9.5			22.5	22.5	
Total Split (s)							12.0			50.0	50.0	
Total Split (%)							10.7%			44.6%	44.6%	
Maximum Green (s)							7.5			45.5	45.5	
Yellow Time (s)							3.5			3.5	3.5	
All-Red Time (s)							1.0			1.0	1.0	
Lost Time Adjust (s)											0.0	
Total Lost Time (s)											4.5	
Lead/Lag							Lead					
Lead-Lag Optimize?							Yes					
Vehicle Extension (s)							3.0			3.0	3.0	
Recall Mode							None			Max	Max	
Walk Time (s)										7.0	7.0	
Flash Dont Walk (s)										11.0	11.0	
Pedestrian Calls (#/hr)										0	0	
Act Effct Green (s)	27.5	27.5			27.5			45.6			45.6	
Actuated g/C Ratio	0.33	0.33			0.33			0.56			0.56	
v/c Ratio	0.51	0.34			0.27			1.01			0.51	
Control Delay	26.3	7.9			19.4			45.3			13.6	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	26.3	7.9			19.4			45.3			13.6	
LOS	C	A			B			D			B	
Approach Delay		17.7			19.4			45.3			13.6	
Approach LOS		B			B			D			B	
90th %ile Green (s)							0.0			45.5	45.5	
90th %ile Term Code							Skip			MaxR	MaxR	
70th %ile Green (s)							0.0			45.5	45.5	
70th %ile Term Code							Skip			MaxR	MaxR	
50th %ile Green (s)							0.0			45.5	45.5	
50th %ile Term Code							Skip			MaxR	MaxR	
30th %ile Green (s)							0.0			45.5	45.5	
30th %ile Term Code							Skip			MaxR	MaxR	
10th %ile Green (s)							0.0			45.5	45.5	
10th %ile Term Code							Skip			MaxR	MaxR	
Stops (vph)	165	44			50			349			273	
Fuel Used(gal)	3	2			1			10			4	
CO Emissions (g/hr)	237	119			69			671			288	
NOx Emissions (g/hr)	46	23			13			130			56	
VOC Emissions (g/hr)	55	28			16			155			67	
Dilemma Vehicles (#)	0	0			0			0			0	
Queue Length 50th (ft)	92	19			36			~371			139	
Queue Length 95th (ft)	157	63			60			#668			265	
Internal Link Dist (ft)		712			518			175			265	
Turn Bay Length (ft)	150											
Base Capacity (vph)	703	851			640			710			994	

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter
PM Peak Hour

Lane Group	Ø4	Ø9
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	9.5
Total Split (s)	20.0	30.0
Total Split (%)	18%	27%
Maximum Green (s)	15.5	25.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	7.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	15.5	14.7
90th %ile Term Code	Max	Gap
70th %ile Green (s)	15.5	8.7
70th %ile Term Code	Max	Gap
50th %ile Green (s)	15.5	7.4
50th %ile Term Code	Max	Gap
30th %ile Green (s)	15.4	6.2
30th %ile Term Code	Gap	Gap
10th %ile Green (s)	10.9	5.9
10th %ile Term Code	Gap	Gap
Stops (vph)		
Fuel Used(gal)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.32	0.23				0.17			1.01			0.51

Intersection Summary

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 82.1

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 27.9

Intersection LOS: C

Intersection Capacity Utilization 92.9%

ICU Level of Service F

Analysis Period (min) 15

90th %ile Actuated Cycle: 89.2

70th %ile Actuated Cycle: 83.2

50th %ile Actuated Cycle: 81.9

30th %ile Actuated Cycle: 80.6

10th %ile Actuated Cycle: 75.8

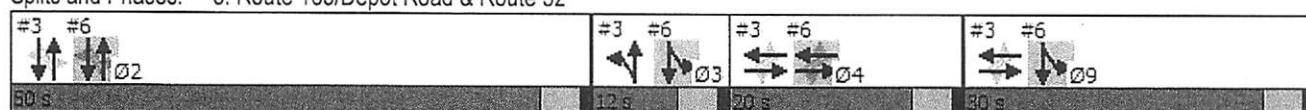
~ Volume exceeds capacity, queue is theoretically infinite.

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: Route 163/Depot Road & Route 32



Lane Group	04	09
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter Storm
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	→	↓	↗	↖	↙	↗	↖	↙	↗	↖	↙
Traffic Volume (vph)	215	66	138	11	75	16	192	480	14	5	316	159
Future Volume (vph)	215	66	138	11	75	16	192	480	14	5	316	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	0		0	0		0	0		0
Storage Lanes	1		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.898			0.979			0.997			0.955	
Flt Protected	0.950				0.995			0.986				
Satd. Flow (prot)	1770	1452	0	0	1234	0	0	1813	0	0	1771	0
Flt Permitted	0.670				0.962			0.691			0.995	
Satd. Flow (perm)	1248	1452	0	0	1193	0	0	1271	0	0	1762	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		114			10			1			27	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		792			598			255			345	
Travel Time (s)		18.0			13.6			5.8			7.8	
Peak Hour Factor	0.95	0.95	0.95	0.75	0.75	0.75	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	2%	50%	2%	50%	50%	50%	2%	2%	50%	50%	2%	2%
Adj. Flow (vph)	226	69	145	15	100	21	202	505	15	5	333	167
Shared Lane Traffic (%)												
Lane Group Flow (vph)	226	214	0	0	136	0	0	722	0	0	505	0
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right									
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru										
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex										
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		0.0
Turn Type	Perm	NA		Perm	NA		D.P+P	NA		Perm	NA	
Protected Phases		4 9			4 9		3	2 3			2	

Lane Group	04	09
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Enter Blocked Intersection		
Lane Alignment		
Median Width(ft)		
Link Offset(ft)		
Crosswalk Width(ft)		
Two way Left Turn Lane		
Headway Factor		
Turning Speed (mph)		
Number of Detectors		
Detector Template		
Leading Detector (ft)		
Trailing Detector (ft)		
Detector 1 Position(ft)		
Detector 1 Size(ft)		
Detector 1 Type		
Detector 1 Channel		
Detector 1 Extend (s)		
Detector 1 Queue (s)		
Detector 1 Delay (s)		
Detector 2 Position(ft)		
Detector 2 Size(ft)		
Detector 2 Type		
Detector 2 Channel		
Detector 2 Extend (s)		
Turn Type		
Protected Phases	4	9

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter Storm

PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4 9	4 9		4 9	4 9		2	2 3		2	2	
Detector Phase	4 9	4 9		4 9	4 9		2	2		2	2	
Switch Phase												
Minimum Initial (s)							5.0		5.0	5.0		
Minimum Split (s)							9.5		22.5	22.5		
Total Split (s)							12.0		50.0	50.0		
Total Split (%)							10.7%		44.6%	44.6%		
Maximum Green (s)							7.5		45.5	45.5		
Yellow Time (s)							3.5		3.5	3.5		
All-Red Time (s)							1.0		1.0	1.0		
Lost Time Adjust (s)										0.0		
Total Lost Time (s)										4.5		
Lead/Lag							Lead					
Lead-Lag Optimize?							Yes					
Vehicle Extension (s)							3.0		3.0	3.0		
Recall Mode							None		Max	Max		
Walk Time (s)									7.0	7.0		
Flash Dont Walk (s)									11.0	11.0		
Pedestrian Calls (#/hr)									0	0		
Act Effct Green (s)	28.0	28.0			28.0			45.7		45.7		
Actuated g/C Ratio	0.34	0.34			0.34			0.55		0.55		
v/c Ratio	0.54	0.38			0.33			1.03		0.51		
Control Delay	27.0	11.5			20.9			49.9		14.1		
Queue Delay	0.0	0.0			0.0			0.0		0.0		
Total Delay	27.0	11.5			20.9			49.9		14.1		
LOS	C	B			C			D		B		
Approach Delay		19.5			20.9			49.9		14.1		
Approach LOS		B			C			D		B		
90th %ile Green (s)							0.0		45.5	45.5		
90th %ile Term Code							Skip		MaxR	MaxR		
70th %ile Green (s)							0.0		45.5	45.5		
70th %ile Term Code							Skip		MaxR	MaxR		
50th %ile Green (s)							0.0		45.5	45.5		
50th %ile Term Code							Skip		MaxR	MaxR		
30th %ile Green (s)							0.0		45.5	45.5		
30th %ile Term Code							Skip		MaxR	MaxR		
10th %ile Green (s)							0.0		45.5	45.5		
10th %ile Term Code							Skip		MaxR	MaxR		
Stops (vph)	166	70			66			351		278		
Fuel Used(gal)	3	2			1			10		4		
CO Emissions (g/hr)	240	148			89			719		294		
NOx Emissions (g/hr)	47	29			17			140		57		
VOC Emissions (g/hr)	56	34			21			167		68		
Dilemma Vehicles (#)	0	0			0			0		0		
Queue Length 50th (ft)	93	36			47			~404		140		
Queue Length 95th (ft)	160	88			73			#688		276		
Internal Link Dist (ft)		712			518			175		265		
Turn Bay Length (ft)	150											
Base Capacity (vph)	674	836			649			702		985		

Lane/Group	04	09
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	5.0	5.0
Minimum Split (s)	22.5	9.5
Total Split (s)	20.0	30.0
Total Split (%)	18%	27%
Maximum Green (s)	15.5	25.5
Yellow Time (s)	3.5	3.5
All-Red Time (s)	1.0	1.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lag	
Lead-Lag Optimize?	Yes	
Vehicle Extension (s)	3.0	3.0
Recall Mode	None	None
Walk Time (s)	7.0	
Flash Dont Walk (s)	11.0	
Pedestrian Calls (#/hr)	0	
Act Effect Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
90th %ile Green (s)	15.5	16.1
90th %ile Term Code	Max	Gap
70th %ile Green (s)	15.5	9.4
70th %ile Term Code	Max	Gap
50th %ile Green (s)	15.5	7.5
50th %ile Term Code	Max	Gap
30th %ile Green (s)	15.5	6.2
30th %ile Term Code	Max	Gap
10th %ile Green (s)	11.2	5.9
10th %ile Term Code	Gap	Gap
Stops (vph)		
Fuel Used(gal)		
CO Emissions (g/hr)		
NOx Emissions (g/hr)		
VOC Emissions (g/hr)		
Dilemma Vehicles (#)		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		

Lanes, Volumes, Timings
3: Route 163/Depot Road & Route 32

Combined - Winter Storm
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.34	0.26			0.21			1.03			0.51	

Intersection Summary

Area Type: Other

Cycle Length: 112

Actuated Cycle Length: 82.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 30.3

Intersection LOS: C

Intersection Capacity Utilization 93.2%

ICU Level of Service F

Analysis Period (min) 15

90th %ile Actuated Cycle: 90.6

70th %ile Actuated Cycle: 83.9

50th %ile Actuated Cycle: 82

30th %ile Actuated Cycle: 80.7

10th %ile Actuated Cycle: 76.1

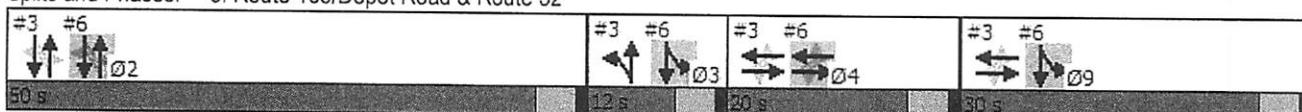
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Splits and Phases: 3: Route 163/Depot Road & Route 32



Lane Group	04	09
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		