Stephen G. Pernaw & Company, Inc.

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Transportation: Engineering • Planning • Design

MEMORANDUM

Ref: 2150A

To: J. Chris Nadeau, P.E.
Nobis

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Grappone Mazda Dealership
Concord, New Hampshire

Date: February 4, 2022

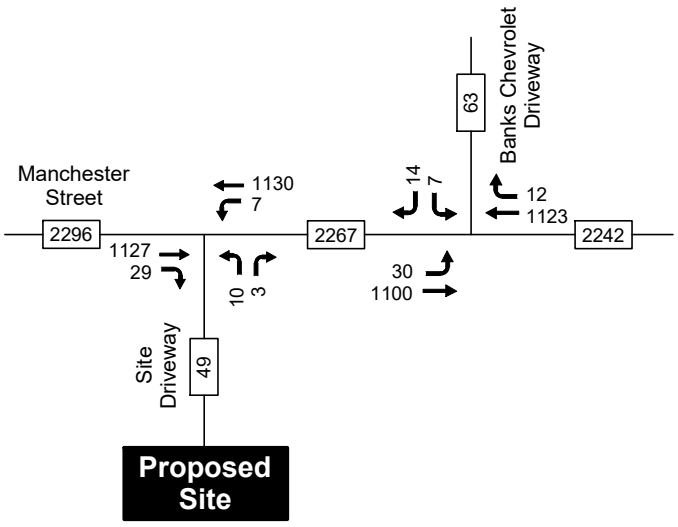
Background - On November 29, 2021, Pernaw & Company, Inc. published the report entitled *"Traffic Impact Assessment-Proposed Automobile Dealership"* for the Mazda dealership that will be located at 134 Manchester Street, along with Addendum One dated January 24, 2022 that addressed the recent change in building size. As requested at the meeting with city staff on January 24, 2022, our office has determined the appropriate amount of lateral separation between the existing Banks Chevrolet driveway (on the north side of Manchester Street) and the proposed Grappone Mazda driveway (on the south side of Manchester Street). This was accomplished by obtaining turning movement count data at the Banks Chevrolet driveway, preparing 2033 design hour volumes for the two subject driveways, and preparing vehicle queuing estimates based on three generally accepted methodologies.

Design Hour Volumes - Figure 1 summarizes the 2033 AM and PM peak hour traffic volumes for the subject driveways. These traffic volumes formed the basis for the vehicle queuing analyses.

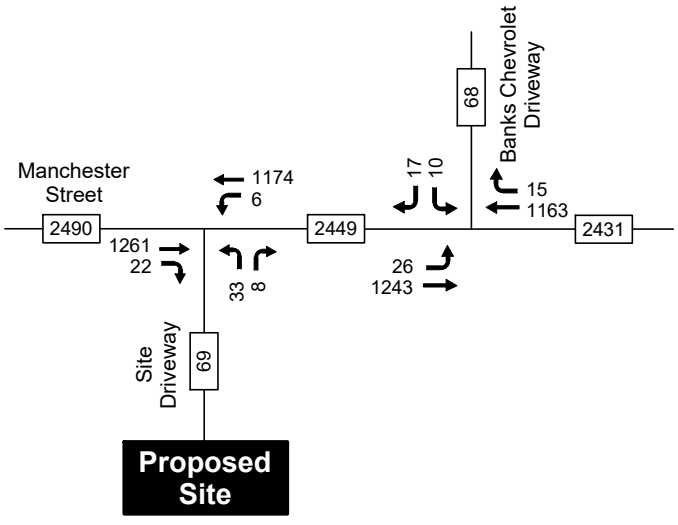
Vehicle Queuing Results - The tabulation below summarizes the various results for the AM and PM peak hour periods. Method 3 produced the most conservative results, and indicates that the 95th percentile queues are 1 vehicle for the Grappone driveway and 2 vehicles for Banks driveway.

VEHICLE QUEUING SUMMARY - 2033

	WB Left-Turn Arrivals (Grappone)	EB Left-Turn Arrivals (Banks)
2033 AM Peak Hour - LT Volume	7 vehicles	30 vehicles
Method 1: AASHTO Queue	0.23 veh (6')	1.00 veh (25')
Method 2: Synchro Queue (95th)	0.00 veh (0')	0.20 veh (5')
Method 3: SimTraffic Queue (95th)	29'	44'
2033 PM Peak Hour - LT Volume	6 vehicles	26 vehicles
Method 1: AASHTO Queue	0.20 veh (5')	0.87 veh (22')
Method 2: Synchro Queue (95th)	0.00 veh (0')	0.20 veh (5')
Method 3: SimTraffic Queue (95th)	22'	46'



2033 AM BUILD



2033 PM BUILD

NORTH

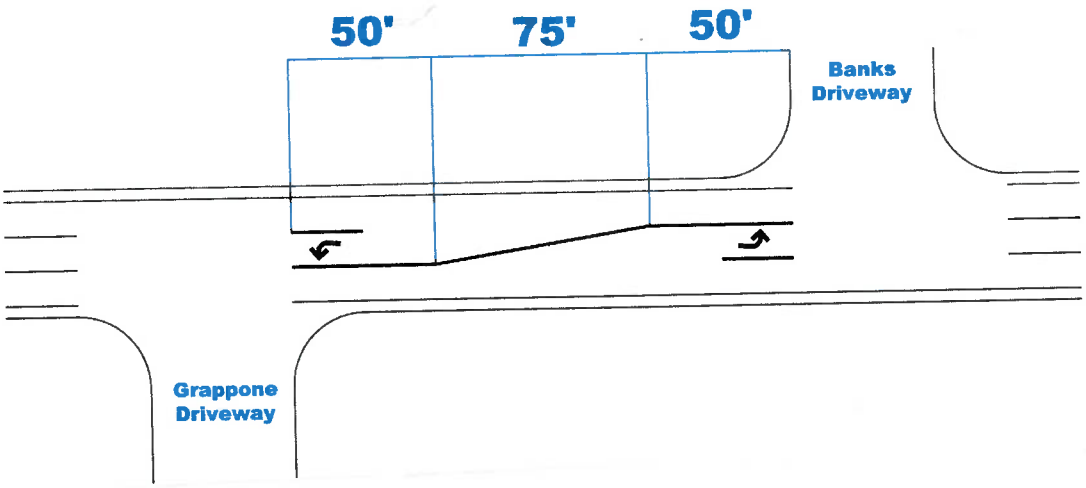
2150A

Figure 1

Supplemental 2033 Build Traffic Volumes

Traffic Impact Assessment, Proposed Automobile Dealership, Concord, New Hampshire

Recommended Driveway Separation - The following schematic diagram shows the recommended 175-foot separation between the site driveways, and one possible way for the future three-lane highway to be delineated.



ATTACHMENTS

Intersection						
Int Delay, s/veh	0.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1127	29	7	1130	10	3
Future Vol, veh/h	1127	29	7	1130	10	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	-	-	50	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	95	95	90	90
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1252	32	7	1189	11	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1284	0	2471	1268
Stage 1	-	-	-	-	1268	-
Stage 2	-	-	-	-	1203	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	547	-	34	208
Stage 1	-	-	-	-	267	-
Stage 2	-	-	-	-	287	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	547	-	34	208
Mov Cap-2 Maneuver	-	-	-	-	34	-
Stage 1	-	-	-	-	267	-
Stage 2	-	-	-	-	283	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	125
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	34	208	-	-	547	-
HCM Lane V/C Ratio	0.327	0.016	-	-	0.013	-
HCM Control Delay (s)	155.7	22.6	-	-	11.7	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	1.1	0	-	-	0	-

Intersection						
Int Delay, s/veh	0.8					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	1100	1123	12	7	14
Future Vol, veh/h	30	1100	1123	12	7	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	-	150
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	95	95	90	90
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	33	1222	1182	13	8	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1195	0	-	0	2477	1189
Stage 1	-	-	-	-	1189	-
Stage 2	-	-	-	-	1288	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	591	-	-	-	33	231
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	261	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	591	-	-	-	31	231
Mov Cap-2 Maneuver	-	-	-	-	31	-
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	261	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	66.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	591	-	-	-	31	231
HCM Lane V/C Ratio	0.056	-	-	-	0.251	0.067
HCM Control Delay (s)	11.5	-	-	-	156.3	21.7
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8	0.2

Intersection: 1: Proposed Site Driveway & Manchester Street

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	16	36	16	57	28
Average Queue (ft)	1	7	0	12	4
95th Queue (ft)	10	29	8	44	20
Link Distance (ft)	1178		109	1482	1482
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		50			
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		5	0		

Intersection: 2: Manchester Street & Banks Driveway

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	49	16	2	45	43
Average Queue (ft)	17	1	0	10	12
95th Queue (ft)	44	14	2	35	38
Link Distance (ft)		109	874	195	
Upstream Blk Time (%)		0			
Queuing Penalty (veh)		0			
Storage Bay Dist (ft)	50				150
Storage Blk Time (%)	1				
Queuing Penalty (veh)	8				

Network Summary

Network wide Queuing Penalty: 13

Intersection						
Int Delay, s/veh	8.8					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1261	22	6	1174	33	8
Future Vol, veh/h	1261	22	6	1174	33	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	50	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	90	90	90	90
Heavy Vehicles, %	4	0	0	2	0	0
Mvmt Flow	1386	24	7	1304	37	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1410	0	2716	1398
Stage 1	-	-	-	-	1398	-
Stage 2	-	-	-	-	1318	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	490	-	~ 23	174
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	253	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	490	-	~ 23	174
Mov Cap-2 Maneuver	-	-	-	-	~ 23	-
Stage 1	-	-	-	-	231	-
Stage 2	-	-	-	-	249	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	$ 533.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	23	174	-	-	490	-
HCM Lane V/C Ratio	1.594	0.051	-	-	0.014	-
HCM Control Delay (s)	$ 656	26.8	-	-	12.4	-
HCM Lane LOS	F	D	-	-	B	-
HCM 95th %tile Q(veh)	4.7	0.2	-	-	0	-

Notes

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

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	1243	1163	15	10	17
Future Vol, veh/h	26	1243	1163	15	10	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	50	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	90	90	90	90
Heavy Vehicles, %	0	4	4	0	0	0
Mvmt Flow	29	1366	1292	17	11	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1309	0	-	0	2725	1301
Stage 1	-	-	-	-	1301	-
Stage 2	-	-	-	-	1424	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	535	-	-	-	23	199
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	224	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	535	-	-	-	22	199
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	244	-
Stage 2	-	-	-	-	224	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	119.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	535	-	-	-	22	199
HCM Lane V/C Ratio	0.053	-	-	-	0.505	0.095
HCM Control Delay (s)	12.1	-	-	-	280	25
HCM Lane LOS	B	-	-	-	F	D
HCM 95th %tile Q(veh)	0.2	-	-	-	1.5	0.3

Intersection: 1: Proposed Site Driveway & Manchester Street

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	6	33	38	262	36
Average Queue (ft)	0	4	3	141	8
95th Queue (ft)	4	22	20	326	30
Link Distance (ft)	1178		108	1482	1482
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		50			
Storage Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		

Intersection: 2: Manchester Street & Banks Driveway

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	50	15	13	83	41
Average Queue (ft)	18	1	1	25	13
95th Queue (ft)	46	13	7	69	39
Link Distance (ft)		108	824	132	132
Upstream Blk Time (%)		0		0	
Queuing Penalty (veh)		0		0	
Storage Bay Dist (ft)	50				
Storage Blk Time (%)	1				
Queuing Penalty (veh)	13				

Network Summary

Network wide Queuing Penalty: 13

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Transportation: Engineering • Planning • Design

M E M O R A N D U M

Ref: 2150A

To: Beth Fenstermacher, Assistant City Planner
City of Concord

From: Stephen G. Pernaw, P.E., PTOE

Subject: Grappone Mazda - Response to Engineering Services Transportation Review

Date: March 2, 2021

On February 17, 2022 the City issued a memorandum that provided comments regarding four documents from our office regarding the proposed automobile dealership at 134 Manchester Street. The purpose of this memorandum is to provide responses to all applicable comments. A portion of each comment is repeated or paraphrased below, for convenience:

City Comment 5 – Overview – First Bullet: *"… the traffic study omitted the following: description of existing conditions of the roadway width, lane widths, signing, lighting, road conditions, and adjacent uses the driveway locations including those across the street from the proposed development site."*

SGP & Co. Inc. Response: Page 3 of the *"Traffic Impact Assessment"* (TIA) contains a description of Manchester Street in general terms. The field survey and site plan by Nobis indicates that the travel lanes are approximately 12-feet in width. The overall roadway width is variable due to the shoulders in the immediate area (see Site Plan). Other than the posted speed limit signs mentioned in the TIA, there are no regulatory or warning signs in the vicinity of the subject site. Pole-mounted luminaires are present at various locations along the south side of the highway, including one along the site frontage. The pavement condition is fair, with longitudinal cracking noted in several areas. There are commercial driveways on both sides of the subject site and the Banks Chevrolet dealership driveway is located on the north side of Manchester Street. The centerline offset between the proposed Mazda driveway and the Banks driveway measures approximately 120-feet.

City Comment 5 – Overview – Second Bullet: *"… a gap analysis may be helpful in documenting the number of sufficient gaps in the mainline traffic stream for vehicles to turn to and from the proposed development."*

SGP & Co. Inc. Response: The gaps in the traffic stream on Manchester Street were measured using the October 14, 2021 count data for the highest 15-minute interval within the weekday PM peak hour. The left-turn departure movement from the proposed site driveway requires a simultaneous gap of sufficient length in both the eastbound and westbound traffic streams. The analysis is summarized on Attachments 1-8, and it demonstrates that the number of acceptable gaps exceeds the anticipated demand by a comfortable margin. The left-turn arrival movement into the subject site requires a gap of sufficient length in the eastbound traffic stream only. The analysis is summarized on Attachments 9-12; with similar findings.

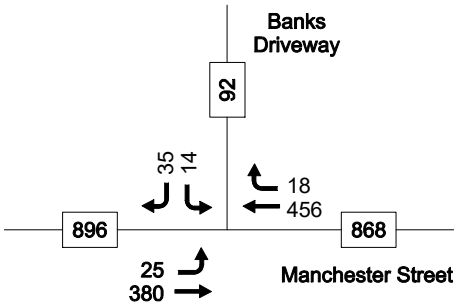
City Comment 5 – Overview – Third Bullet: *"The applicant should provide a comparison of the available sight lines with AASHTO guidelines to determine if the available sight lines for a vehicle exiting the site meet or exceed the minimum requirements based on vehicle speeds on Manchester Street. In addition, the applicant should confirm that the required sightlines to not cross into abutting parcels in which a sight line easement would be needed."*

SGP & Co. Inc. Response: Attachment 13 depicts the line of sight looking left and right from the proposed site driveway approach to Manchester Street. The "eye" location for an exiting driver is set at 14.5-feet from the traveled way, and the "eye" location for approaching drivers set at 2.0-feet from the double-yellow centerline. The AASHTO guidelines call for 200-feet of stopping sight distance for 30 mph (posted speed limit) and 305-feet for a design speed of 40 mph. This graphic demonstrates that the required sightlines who do not encroach on abutting properties.

The following comments and responses pertain to the "Traffic Volumes and Projections" section of the city memorandum:

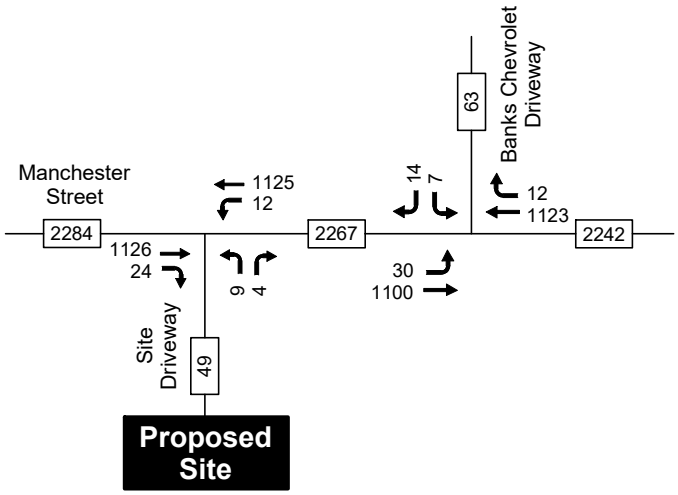
City Comment 1: *"The applicant should either provide justification for why the impacts of the proposed development should not also be evaluated during the Saturday peak hour or provide an analysis of the traffic impacts of the project during the Saturday peak hour."*

SGP & Co. Inc. Response: A supplemental traffic count was conducted at the Banks Chevrolet Driveway intersection on Saturday, February 26, 2022 from 10 AM to 2 PM. The detail sheets pertaining to this four-hour traffic count is attached (see Attachment 14). The Saturday midday peak hour occurred from 12:00 to 1:00 PM, and the following volumes were observed:

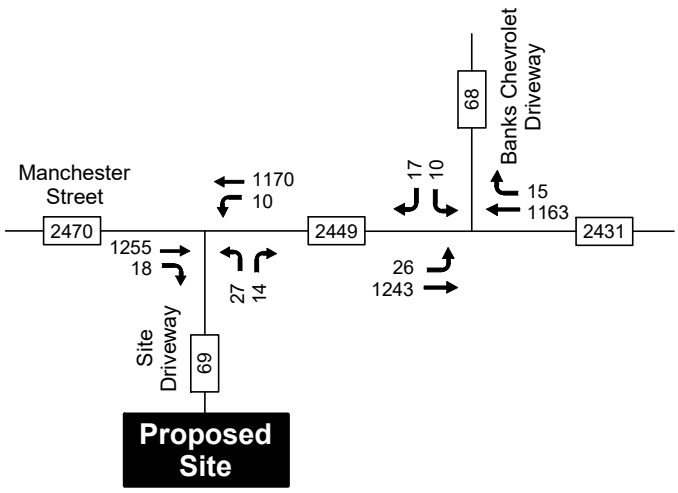


City Comment 2: *"The applicant should obtain or collect Saturday daily traffic counts along Manchester Street in the vicinity of the site to confirm whether the traffic impacts of the proposed development should be evaluated on a Saturday basis…"*

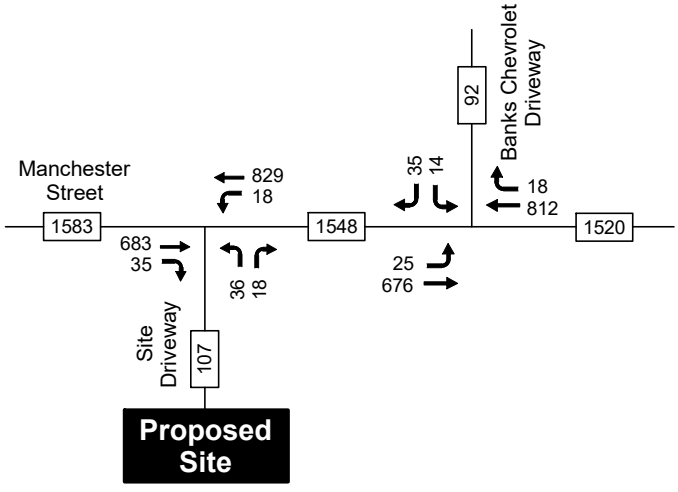
SGP & Co. Inc. Response: Supplemental 2033 Build Traffic Volumes have been prepared for the AM, PM and SAT peak hour periods and these are summarized on Figure 1. It should be noted that the traffic projections contained in the original TIA were based on an estimated 80% west / 20% east trip distribution split. Analysis of the traffic patterns observed at the Banks Chevrolet driveway revealed that the actual split is 66% west / 34% east. Consequently, the traffic volumes on Figure 1 reflect this new trip distribution pattern. These projections show that the proposed dealership will generate higher traffic levels during the Saturday midday peak hour (107 trips) than during the weekday AM (49 trips) and PM (69 trips) peak hour periods. Attachment 15 shows the updated distribution of site traffic for the three peak hour periods.



2033 AM BUILD



2033 PM BUILD



2033 SATURDAY BUILD

NORTH

2150A

Figure 1

Supplemental 2033 Build Traffic Volumes

Traffic Impact Assessment, Proposed Automobile Dealership, Concord, New Hampshire

City Comment 3: *"The methodology used in developing the seasonal adjustment factor, shown in Appendix E of the traffic study, is reasonable."*

SGP & Co. Inc. Response: No response required.

City Comment 4: *"The methodology used in developing the pandemic adjustment factor, shown in Appendix E, is reasonable."*

SGP & Co. Inc. Response: No response required.

City Comment 5: *"Consistent with other comments in this memorandum, the applicant should provide justification that the Saturday peak hour should not be included within the study or conduct an analysis of the traffic impacts of the proposed development during the Saturday peak hour. In either case, it should be confirmed that the queuing analysis in the Driveway Separation Memorandum dated February 4, 2022 is valid for the critical time periods such that the Manchester Street eastbound and westbound left turn vehicles do not queue back beyond their striped storage, deceleration and taper areas."*

SGP & Co. Inc. Response: As shown in Figure 1, the Saturday midday peak hour case is included herein. The updated "Vehicle Queuing Summary - 2033" is shown below:

VEHICLE QUEUING SUMMARY - 2033

	WB Left-Turn Arrivals (Grappone)	EB Left-Turn Arrivals (Banks)
2033 AM Peak Hour - LT Volume	12 vehicles	30 vehicles
Method 1: AASHTO Queue	0.40 veh (10')	1.00 veh (25')
Method 2: Synchro Queue (95th)	0.10 veh (3')	0.20 veh (5')
Method 3: SimTraffic Queue (95th)	1.70 veh (34')	2.15 veh (43')
2033 PM Peak Hour - LT Volume	10 vehicles	26 vehicles
Method 1: AASHTO Queue	0.33 veh (8')	0.87 veh (22')
Method 2: Synchro Queue (95th)	0.10 veh (3')	0.20 veh (5')
Method 3: SimTraffic Queue (95th)	1.60 veh (32')	2.15 veh (43')
2033 SAT Peak Hour - LT Volume	18 vehicles	25 vehicles
Method 1: AASHTO Queue	0.60 veh (15')	0.83 veh (21')
Method 2: Synchro Queue (95th)	0.10 veh (3')	0.10 veh (3')
Method 3: SimTraffic Queue (95th)	1.60 veh (32')	1.95 veh (39')

Attachments 16-24 contain the queue length computations. Attachments 25-26 summarize the westbound left-turn queue lengths observed in the field at the Banks driveway. In most instances, there were no vehicles waiting to turn left into the Banks site. The next most common instances (in descending order) were: 1) a "rolling" left-turn arrival that did not need to stop, 2) a one-vehicle queue, and least frequent: a two-vehicle queue (where it appears that two vehicles arrived together to drop-off one of the two vehicles).

City Comment 6: *"If the distribution is updated, it should be confirmed that the queuing analysis in the Driveway Separation Memorandum dated February 4, 2022 is still valid."*

SGP & Co. Inc. Response: The new trip distribution pattern is reflected in the traffic volumes shown on Figure 1, and the "Vehicle Queuing Summary" shown above has been updated accordingly. Attachment 15 shows the updated distribution of site traffic based on the travel patterns observed at the Banks driveway.

City Comment 7: *"The delay and queue length appear to have decreased in Addendum One for the NB LT Departures in the 2023 Build. The applicant should explain this change in operations."*

SGP & Co. Inc. Response: Table 3-R in Addendum One inadvertently transposed the 2023 Build PM case with the 2033 Build AM case. To clarify, the original Table 3-R and corrected Table 3-R are shown together on Page 5. It should be noted that a third version of Table 3-R is necessary given that the trip distribution patterns have been updated in conjunction with this memorandum. Page 6 contains the latest edition of Table 3-R, and the computations are attached (see Attachments 16-18).

Table 3-R (Addendum One) — **STOP-Controlled Intersection Capacity Analysis, Manchester Street / Proposed Site Driveway**

	Weekday AM Peak Hour				Weekday PM Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
1. Proposed Site Driveway - NB LT Departures								
2023 Build	75.3	0.18	F	1	161.8	0.34	F	1
2033 Build	211.3	0.80	F	3	>300*	1.67	F	5
2. Proposed Site Driveway - NB RT Departures								
2023 Build	18.2	0.01	C	<1	22.6	0.02	C	<1
2033 Build	20.3	0.04	C	<1	26.8	0.05	D	<1
3. Manchester Street - WB LT-Turn Arrivals								
2023 Build	10.5	0.01	B	<1	11.7	0.01	B	<1
2033 Build	11.0	0.01	B	<1	12.4	0.01	B	<1

[1] HCM Control Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] HCM Level of Service, [4] HCM 95th Percentile Queue (vehicles)
*HCM 2010 Pg 19-28: "If demand exceeds capacity during a 15-minute period, the delay results computed by the procedures may not accurate"

Table 3-R (Addendum One) Corrected — **STOP-Controlled Intersection Capacity Analysis, Manchester Street / Proposed Site Driveway**

	Weekday AM Peak Hour				Weekday PM Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
1. Proposed Site Driveway - NB LT Departures								
2023 Build	75.3	0.18	F	1	211.3	0.80	F	3
2033 Build	161.8	0.34	F	1	>300*	1.67	F	5
2. Proposed Site Driveway - NB RT Departures								
2023 Build	18.2	0.01	C	<1	20.3	0.04	C	<1
2033 Build	22.6	0.02	C	<1	26.8	0.05	D	<1
3. Manchester Street - WB LT-Turn Arrivals								
2023 Build	10.5	0.01	B	<1	11.0	0.01	B	<1
2033 Build	11.7	0.01	B	<1	12.4	0.01	B	<1

[1] HCM Control Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] HCM Level of Service, [4] HCM 95th Percentile Queue (vehicles)
*HCM 2010 Pg 19-28: "If demand exceeds capacity during a 15-minute period, the delay results computed by the procedures may not accurate"

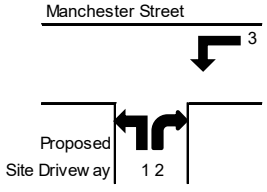
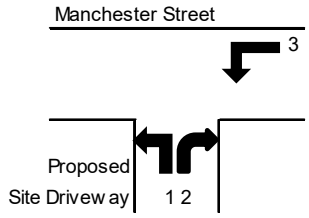


Table 3-R (Response to Comments)

STOP-Controlled Intersection Capacity Analysis - 3/2/2022
Manchester Street / Proposed Site Driveway

	Weekday AM Peak Hour				Weekday PM Peak Hour				Saturday Peak Hour			
	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]	Delay [1]	V/C [2]	LOS [3]	Queue [4]
1. Site Driveway - NB LT Departures												
2033 Build	162.2	0.31	F	1	>300*	1.30	F	4	59.0	0.38	F	2
2. Site Driveway - NB RT Departures												
2033 Build	22.6	0.02	C	<1	27.4	0.09	D	<1	14.0	0.05	B	<1
3. Manchester St. - WB LT-Turn Arrivals												
2033 Build	11.7	0.02	B	<1	12.4	0.02	B	<1	9.3	0.02	A	<1

[1] HCM Control Delay (seconds per vehicle), [2] HCM Volume to Capacity Ratio, [3] HCM Level of Service, [4] HCM 95th Percentile Queue (vehicles)
*HCM 2010 Pg 19-28: "If demand exceeds capacity during a 15-minute period, the delay results computed by the procedures may not accurate"



The following comments and responses pertain to the "Site Access and On-Site Circulation" section of the city memorandum:

City Comment 1: *"The elimination of one additional existing driveway opening on Manchester Street is a positive improvement for access management along the Manchester Street corridor."*

SGP & Co. Inc. Response: We concur.

City Comment 1: *"Ideally, the proposed driveway would be aligned across from the opposite (Banks) driveway to form a standard four-way intersection, or with a positive offset such that the mainline or driveway left turns would not conflict. If either of these site driveway designs cannot be accomplished, the applicant shall present a solution, for review and approval by the City's Traffic Engineer and Planning Board, to address the need for left turn treatment for the 2023 opening year and 2033 horizon year, to mitigate the projects impacts to Manchester Street and neighboring driveways."*

SGP & Co. Inc. Response: According to city staff communications with the Applicant, the relocation of the site driveway (175' from Banks driveway) is a city **suggestion** and not a requirement. Based on this input from the city, and the Applicant's desire to keep the proposed site driveway in its original position, our office recommends that the existing shoulder on the north side of Manchester Street be widened to 12-feet in width to function as a "bypass" shoulder, as shown on Exhibit 1.

CC: J. Chris Nadeau, P.E., Nobis
Amanda Osmer, Grappone Mazda

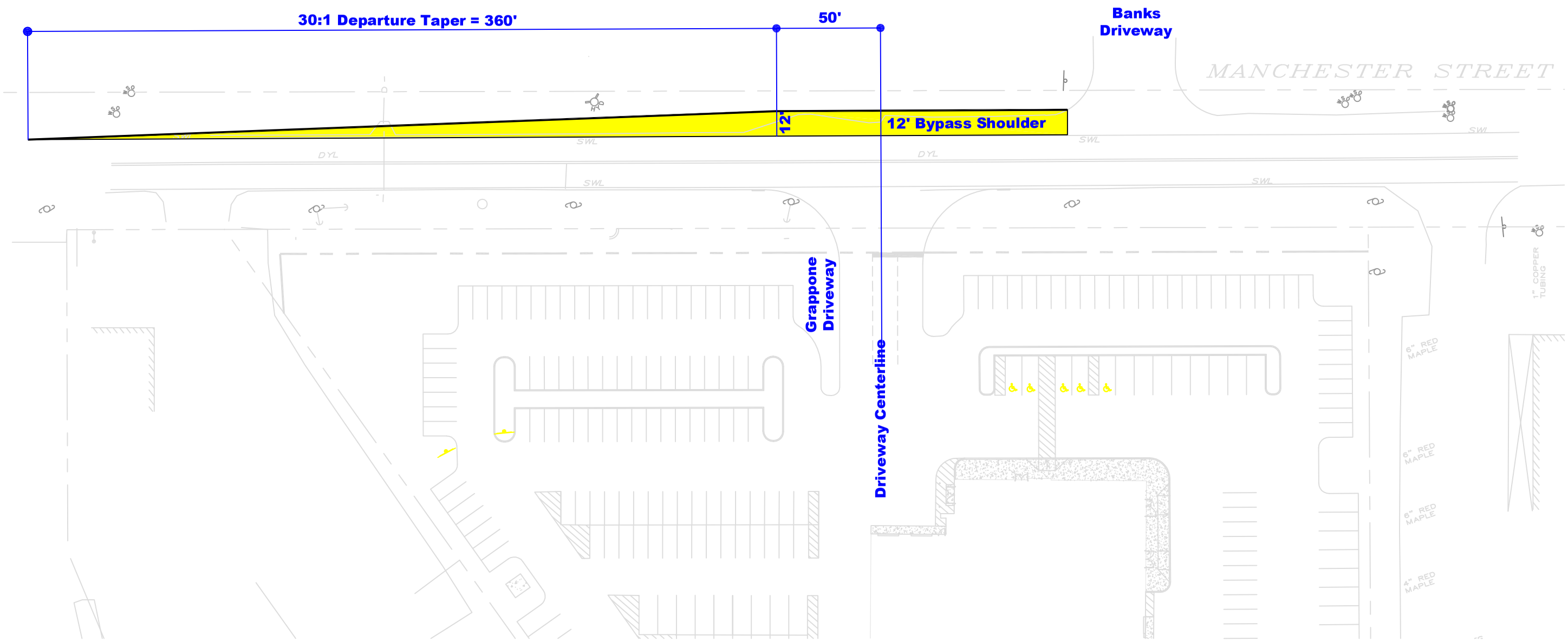


EXHIBIT 1

REVISIONS		
NUMBER	DATE	DESCRIPTION

PROPOSED GRAPPONE MAZDA DEALERSHIP
CONCORD, NEW HAMPSHIRE

TRAFFIC MITIGATION PLAN

DRAWN:	SCALE:
CAP	1" = 50'
DESIGNED:	JOB NO.
SGP	2150A
CHECKED:	DATE:
SGP	2/28/21

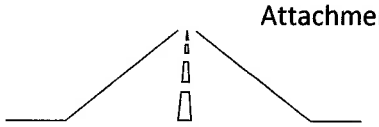
TRANSPORTATION
• ENGINEERING
• PLANNING
• DESIGN

SGP

Stephen G. Pernaw & Co. Inc.

P.O. Box 1721, Concord, NH 03302
Phone: (603) 228-5750, Fax: (866) 929-6094

ATTACHMENTS

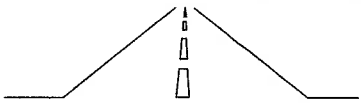


Stephen G. Pernaw & Company, Inc.

Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn departure movement from Grappone driveway (Critical headway = 7.1 seconds)

Detector		Time		Gap Size	Gap ≥7.1
m	EB Arrival Time =	0.6771084			
m	EB Arrival Time =	0.6771241	1.56883E-05	1.4	0
m	EB Arrival Time =	0.6771458	2.17466E-05	1.9	0
z	WB Arrival Time =	0.6771658	1.99382E-05	1.7	0
m	EB Arrival Time =	0.6771713	5.51577E-06	0.5	0
m	EB Arrival Time =	0.6771861	1.48745E-05	1.3	0
z	WB Arrival Time =	0.6772047	1.85366E-05	1.6	0
m	EB Arrival Time =	0.6772095	4.79239E-06	0.4	0
z	WB Arrival Time =	0.6772282	1.87627E-05	1.6	0
m	EB Arrival Time =	0.6772469	1.86722E-05	1.6	0
z	WB Arrival Time =	0.6772677	2.08424E-05	1.8	0
m	EB Arrival Time =	0.6772840	1.62308E-05	1.4	0
m	EB Arrival Time =	0.6773229	3.88817E-05	3.4	0
m	EB Arrival Time =	0.6773451	2.22439E-05	1.9	0
z	WB Arrival Time =	0.6773502	5.06366E-06	0.4	0
z	WB Arrival Time =	0.6773893	3.91529E-05	3.4	0
m	EB Arrival Time =	0.6773977	8.40929E-06	0.7	0
m	EB Arrival Time =	0.6774240	2.62225E-05	2.3	0
m	EB Arrival Time =	0.6774535	2.95229E-05	2.6	0
m	EB Arrival Time =	0.6774692	1.57335E-05	1.4	0
m	EB Arrival Time =	0.6774873	1.80845E-05	1.6	0
m	EB Arrival Time =	0.6775862	9.89222E-05	8.5	1
m	EB Arrival Time =	0.6776837	9.74754E-05	8.4	1
m	EB Arrival Time =	0.6777667	8.3053E-05	7.2	1
z	WB Arrival Time =	0.6777725	5.78704E-06	0.5	0
m	EB Arrival Time =	0.6777949	2.23343E-05	1.9	0
z	WB Arrival Time =	0.6778059	1.09863E-05	0.9	0
z	WB Arrival Time =	0.6778843	7.83963E-05	6.8	0
z	WB Arrival Time =	0.6778972	1.29756E-05	1.1	0
z	WB Arrival Time =	0.6779226	2.53635E-05	2.2	0
z	WB Arrival Time =	0.6779557	3.31398E-05	2.9	0
z	WB Arrival Time =	0.6779733	1.7542E-05	1.5	0
z	WB Arrival Time =	0.6780075	3.42701E-05	3.0	0
m	EB Arrival Time =	0.6781126	0.000105026	9.1	1
m	EB Arrival Time =	0.6781568	4.42618E-05	3.8	0
m	EB Arrival Time =	0.6781649	8.0476E-06	0.7	0
z	WB Arrival Time =	0.6781793	1.44224E-05	1.2	0
m	EB Arrival Time =	0.6781960	1.66829E-05	1.4	0
z	WB Arrival Time =	0.6781989	2.89352E-06	0.3	0
m	EB Arrival Time =	0.6782062	7.27901E-06	0.6	0
z	WB Arrival Time =	0.6782345	2.83927E-05	2.5	0
m	EB Arrival Time =	0.6782465	1.19358E-05	1.0	0
z	WB Arrival Time =	0.6782585	1.1981E-05	1.0	0
m	EB Arrival Time =	0.6782791	2.06615E-05	1.8	0
z	WB Arrival Time =	0.6782982	1.90791E-05	1.6	0
m	EB Arrival Time =	0.6783190	2.0752E-05	1.8	0
z	WB Arrival Time =	0.6783348	1.58239E-05	1.4	0
m	EB Arrival Time =	0.6783443	9.53957E-06	0.8	0
z	WB Arrival Time =	0.6783542	9.85605E-06	0.9	0
m	EB Arrival Time =	0.6783747	2.05711E-05	1.8	0

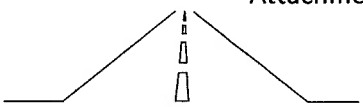


Stephen G. Pernaw & Company, Inc.

Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn departure movement from Grappone driveway (Critical headway = 7.1 seconds)

Detector		Time		Gap Size	Gap ≥7.1
z	WB Arrival Time =	0.6783916	1.68186E-05	1.5	0
m	EB Arrival Time =	0.6784096	1.80845E-05	1.6	0
z	WB Arrival Time =	0.6784180	8.36408E-06	0.7	0
z	WB Arrival Time =	0.6784400	2.19727E-05	1.9	0
m	EB Arrival Time =	0.6784433	3.34563E-06	0.3	0
z	WB Arrival Time =	0.6784693	2.59512E-05	2.2	0
m	EB Arrival Time =	0.6784728	3.48126E-06	0.3	0
m	EB Arrival Time =	0.6784790	6.28436E-06	0.5	0
z	WB Arrival Time =	0.6785165	3.74349E-05	3.2	0
z	WB Arrival Time =	0.6785512	3.47222E-05	3.0	0
z	WB Arrival Time =	0.6785737	2.25152E-05	1.9	0
m	EB Arrival Time =	0.6785764	2.71267E-06	0.2	0
z	WB Arrival Time =	0.6786055	2.90708E-05	2.5	0
m	EB Arrival Time =	0.6786129	7.41464E-06	0.6	0
m	EB Arrival Time =	0.6786516	3.87008E-05	3.3	0
z	WB Arrival Time =	0.6786656	1.39703E-05	1.2	0
m	EB Arrival Time =	0.6787434	7.77633E-05	6.7	0
m	EB Arrival Time =	0.6787869	4.35836E-05	3.8	0
m	EB Arrival Time =	0.6788157	2.87996E-05	2.5	0
m	EB Arrival Time =	0.6788497	3.39536E-05	2.9	0
m	EB Arrival Time =	0.6789004	5.06818E-05	4.4	0
z	WB Arrival Time =	0.6789713	7.09364E-05	6.1	0
m	EB Arrival Time =	0.6791198	0.000148519	12.8	1
m	EB Arrival Time =	0.6791742	5.43439E-05	4.7	0
m	EB Arrival Time =	0.6792372	6.30697E-05	5.4	0
m	EB Arrival Time =	0.6792646	2.73528E-05	2.4	0
m	EB Arrival Time =	0.6792858	2.12493E-05	1.8	0
m	EB Arrival Time =	0.6793102	2.43689E-05	2.1	0
z	WB Arrival Time =	0.6793287	1.84462E-05	1.6	0
m	EB Arrival Time =	0.6793369	8.27365E-06	0.7	0
m	EB Arrival Time =	0.6794247	8.78002E-05	7.6	1
m	EB Arrival Time =	0.6794543	2.95681E-05	2.6	0
z	WB Arrival Time =	0.6794625	8.18323E-06	0.7	0
m	EB Arrival Time =	0.6795101	4.76526E-05	4.1	0
m	EB Arrival Time =	0.6795321	2.19727E-05	1.9	0
z	WB Arrival Time =	0.6795580	2.58608E-05	2.2	0
m	EB Arrival Time =	0.6795613	3.30042E-06	0.3	0
z	WB Arrival Time =	0.6795927	3.14218E-05	2.7	0
m	EB Arrival Time =	0.6796025	9.76562E-06	0.8	0
z	WB Arrival Time =	0.6796195	1.69994E-05	1.5	0
m	EB Arrival Time =	0.6796299	1.0489E-05	0.9	0
z	WB Arrival Time =	0.6796731	4.31315E-05	3.7	0
m	EB Arrival Time =	0.6796843	1.12124E-05	1.0	0
z	WB Arrival Time =	0.6797006	1.63213E-05	1.4	0
z	WB Arrival Time =	0.6797366	3.59881E-05	3.1	0
z	WB Arrival Time =	0.6797592	2.25604E-05	1.9	0
m	EB Arrival Time =	0.6797729	1.3699E-05	1.2	0
z	WB Arrival Time =	0.6797876	1.46936E-05	1.3	0
z	WB Arrival Time =	0.6798193	3.17383E-05	2.7	0
z	WB Arrival Time =	0.6798541	3.48126E-05	3.0	0

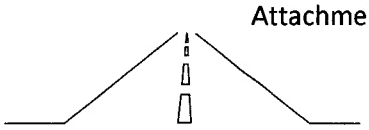


Stephen G. Pernaw & Company, Inc.

Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn departure movement from Grappone driveway (Critical headway = 7.1 seconds)

Detector		Time		Gap Size	Gap ≥7.1
z	WB Arrival Time =	0.6798689	1.47841E-05	1.3	0
m	EB Arrival Time =	0.6798742	5.33492E-06	0.5	0
z	WB Arrival Time =	0.6798992	2.50018E-05	2.2	0
z	WB Arrival Time =	0.6799434	4.42166E-05	3.8	0
m	EB Arrival Time =	0.6799508	7.36943E-06	0.6	0
z	WB Arrival Time =	0.6799669	1.60952E-05	1.4	0
z	WB Arrival Time =	0.6799863	1.94408E-05	1.7	0
m	EB Arrival Time =	0.6799909	4.56633E-06	0.4	0
z	WB Arrival Time =	0.6800128	2.18822E-05	1.9	0
z	WB Arrival Time =	0.6800453	3.24617E-05	2.8	0
z	WB Arrival Time =	0.6800602	1.49197E-05	1.3	0
m	EB Arrival Time =	0.6800662	6.01309E-06	0.5	0
z	WB Arrival Time =	0.6801092	4.30411E-05	3.7	0
z	WB Arrival Time =	0.6801433	3.40441E-05	2.9	0
z	WB Arrival Time =	0.6801740	3.07436E-05	2.7	0
m	EB Arrival Time =	0.6802150	4.10066E-05	3.5	0
z	WB Arrival Time =	0.6802289	1.38798E-05	1.2	0
z	WB Arrival Time =	0.6802641	3.51743E-05	3.0	0
m	EB Arrival Time =	0.6802757	1.16645E-05	1.0	0
z	WB Arrival Time =	0.6802916	1.58239E-05	1.4	0
m	EB Arrival Time =	0.6803095	1.79489E-05	1.6	0
m	EB Arrival Time =	0.6803426	3.30494E-05	2.9	0
z	WB Arrival Time =	0.6803652	2.26056E-05	2.0	0
m	EB Arrival Time =	0.6803849	1.97573E-05	1.7	0
z	WB Arrival Time =	0.6804215	3.65307E-05	3.2	0
m	EB Arrival Time =	0.6804352	1.37442E-05	1.2	0
z	WB Arrival Time =	0.6804517	1.65021E-05	1.4	0
m	EB Arrival Time =	0.6804596	7.86675E-06	0.7	0
z	WB Arrival Time =	0.6805075	4.78787E-05	4.1	0
z	WB Arrival Time =	0.6805511	4.36288E-05	3.8	0
z	WB Arrival Time =	0.6805992	4.815E-05	4.2	0
z	WB Arrival Time =	0.6806316	3.24164E-05	2.8	0
z	WB Arrival Time =	0.6806542	2.25604E-05	1.9	0
z	WB Arrival Time =	0.6807052	5.10435E-05	4.4	0
m	EB Arrival Time =	0.6807084	3.11957E-06	0.3	0
z	WB Arrival Time =	0.6807447	3.63046E-05	3.1	0
m	EB Arrival Time =	0.6807551	1.04438E-05	0.9	0
z	WB Arrival Time =	0.6807694	1.4332E-05	1.2	0
m	EB Arrival Time =	0.6807766	7.14337E-06	0.6	0
z	WB Arrival Time =	0.6808039	2.73076E-05	2.4	0
z	WB Arrival Time =	0.6808238	1.98929E-05	1.7	0
m	EB Arrival Time =	0.6808482	2.43689E-05	2.1	0
z	WB Arrival Time =	0.6808866	3.84295E-05	3.3	0
z	WB Arrival Time =	0.6809066	1.99834E-05	1.7	0
m	EB Arrival Time =	0.6809109	4.34028E-06	0.4	0
z	WB Arrival Time =	0.6809290	1.80845E-05	1.6	0
z	WB Arrival Time =	0.6809543	2.52731E-05	2.2	0
z	WB Arrival Time =	0.6809860	3.17383E-05	2.7	0
z	WB Arrival Time =	0.6810140	2.79857E-05	2.4	0
z	WB Arrival Time =	0.6810418	2.77597E-05	2.4	0



Stephen G. Pernaw & Company, Inc.

Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

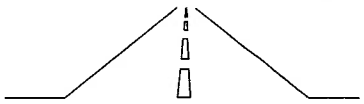
Traffic Tracker

Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp

Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv

Movement: Left-turn departure movement from Grappone driveway (Critical headway = 7.1 seconds)

Detector		Time		Gap Size	Gap ≥7.1
z	WB Arrival Time =	0.6810840	4.22725E-05	3.7	0
z	WB Arrival Time =	0.6811061	2.20631E-05	1.9	0
m	EB Arrival Time =	0.6811158	9.6752E-06	0.8	0
z	WB Arrival Time =	0.6811302	1.44224E-05	1.2	0
m	EB Arrival Time =	0.6811339	3.66211E-06	0.3	0
m	EB Arrival Time =	0.6811577	2.38263E-05	2.1	0
z	WB Arrival Time =	0.6811721	1.44224E-05	1.2	0
m	EB Arrival Time =	0.6811864	1.4332E-05	1.2	0
z	WB Arrival Time =	0.6812028	1.63213E-05	1.4	0
m	EB Arrival Time =	0.6812111	8.31887E-06	0.7	0
z	WB Arrival Time =	0.6812397	2.86187E-05	2.5	0
m	EB Arrival Time =	0.6812961	5.63784E-05	4.9	0
m	EB Arrival Time =	0.6813306	3.44962E-05	3.0	0
z	WB Arrival Time =	0.6813794	4.88733E-05	4.2	0
z	WB Arrival Time =	0.6813999	2.04807E-05	1.8	0
m	EB Arrival Time =	0.6814190	1.90791E-05	1.6	0
z	WB Arrival Time =	0.6814258	6.8269E-06	0.6	0
z	WB Arrival Time =	0.6814669	4.10518E-05	3.5	0
z	WB Arrival Time =	0.6814855	1.85818E-05	1.6	0
z	WB Arrival Time =	0.6815274	4.19108E-05	3.6	0
z	WB Arrival Time =	0.6815771	4.96871E-05	4.3	0
z	WB Arrival Time =	0.6816004	2.33742E-05	2.0	0
z	WB Arrival Time =	0.6816443	4.38549E-05	3.8	0
z	WB Arrival Time =	0.6816694	2.50922E-05	2.2	0
z	WB Arrival Time =	0.6816862	1.67734E-05	1.4	0
z	WB Arrival Time =	0.6817069	2.07972E-05	1.8	0
z	WB Arrival Time =	0.6818834	0.000176459	15.2	1
m	EB Arrival Time =	0.6819584	7.50054E-05	6.5	0
m	EB Arrival Time =	0.6819805	2.21083E-05	1.9	0
m	EB Arrival Time =	0.6820022	2.16562E-05	1.9	0
z	WB Arrival Time =	0.6820764	7.41916E-05	6.4	0
z	WB Arrival Time =	0.6820986	2.22439E-05	1.9	0
z	WB Arrival Time =	0.6821260	2.7398E-05	2.4	0
z	WB Arrival Time =	0.6821461	2.0119E-05	1.7	0
m	EB Arrival Time =	0.6821520	5.83225E-06	0.5	0
z	WB Arrival Time =	0.6821764	2.44141E-05	2.1	0
z	WB Arrival Time =	0.6822469	7.05295E-05	6.1	0
z	WB Arrival Time =	0.6822628	1.59144E-05	1.4	0
z	WB Arrival Time =	0.6822816	1.87627E-05	1.6	0
z	WB Arrival Time =	0.6823021	2.04807E-05	1.8	0
z	WB Arrival Time =	0.6823207	1.86722E-05	1.6	0
z	WB Arrival Time =	0.6823459	2.51374E-05	2.2	0
z	WB Arrival Time =	0.6823762	3.02915E-05	2.6	0
m	EB Arrival Time =	0.6823805	4.34028E-06	0.4	0
z	WB Arrival Time =	0.6824110	3.04724E-05	2.6	0
m	EB Arrival Time =	0.6824259	1.49649E-05	1.3	0
z	WB Arrival Time =	0.6824410	1.50101E-05	1.3	0
m	EB Arrival Time =	0.6824491	8.13802E-06	0.7	0
z	WB Arrival Time =	0.6824711	2.19727E-05	1.9	0
m	EB Arrival Time =	0.6824759	4.88281E-06	0.4	0

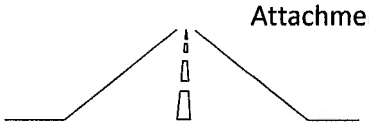


Stephen G. Pernaw & Company, Inc.

Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn departure movement from Grappone driveway (Critical headway = 7.1 seconds)

Detector		Time		Gap Size	Gap ≥7.1
m	EB Arrival Time =	0.6825126	3.66663E-05	3.2	0
z	WB Arrival Time =	0.6825401	2.75336E-05	2.4	0
m	EB Arrival Time =	0.6825443	4.15943E-06	0.4	0
z	WB Arrival Time =	0.6825766	3.22808E-05	2.8	0
m	EB Arrival Time =	0.6825810	4.38549E-06	0.4	0
z	WB Arrival Time =	0.6826034	2.24248E-05	1.9	0
z	WB Arrival Time =	0.6826329	2.95229E-05	2.6	0
m	EB Arrival Time =	0.6826370	4.11422E-06	0.4	0
z	WB Arrival Time =	0.6826708	3.37728E-05	2.9	0
m	EB Arrival Time =	0.6827027	3.18739E-05	2.8	0
m	EB Arrival Time =	0.6827374	3.4677E-05	3.0	0
z	WB Arrival Time =	0.6827376	2.26056E-07	0.0	0
m	EB Arrival Time =	0.6827555	1.79036E-05	1.5	0
m	EB Arrival Time =	0.6827876	3.21452E-05	2.8	0
m	EB Arrival Time =	0.6828226	3.49935E-05	3.0	0
m	EB Arrival Time =	0.6828829	6.02666E-05	5.2	0
m	EB Arrival Time =	0.6829271	4.41714E-05	3.8	0
z	WB Arrival Time =	0.6829782	5.11339E-05	4.4	0
z	WB Arrival Time =	0.6829958	1.75872E-05	1.5	0
z	WB Arrival Time =	0.6830903	9.44915E-05	8.2	1
z	WB Arrival Time =	0.6831330	4.26794E-05	3.7	0
z	WB Arrival Time =	0.6831569	2.3962E-05	2.1	0
z	WB Arrival Time =	0.6831769	1.99834E-05	1.7	0
z	WB Arrival Time =	0.6832058	2.889E-05	2.5	0
z	WB Arrival Time =	0.6832337	2.79405E-05	2.4	0
z	WB Arrival Time =	0.6832650	3.1241E-05	2.7	0
z	WB Arrival Time =	0.6832834	1.84462E-05	1.6	0
z	WB Arrival Time =	0.6833076	2.41428E-05	2.1	0
z	WB Arrival Time =	0.6833448	3.72088E-05	3.2	0
m	EB Arrival Time =	0.6833710	2.62677E-05	2.3	0
z	WB Arrival Time =	0.6833969	2.58608E-05	2.2	0
m	EB Arrival Time =	0.6834156	1.86722E-05	1.6	0
z	WB Arrival Time =	0.6834247	9.08746E-06	0.8	0
z	WB Arrival Time =	0.6834388	1.41511E-05	1.2	0
m	EB Arrival Time =	0.6834445	5.6514E-06	0.5	0
m	EB Arrival Time =	0.6834699	2.54539E-05	2.2	0
m	EB Arrival Time =	0.6834875	1.7542E-05	1.5	0
m	EB Arrival Time =	0.6835069	1.93956E-05	1.7	0
z	WB Arrival Time =	0.6835286	2.17466E-05	1.9	0
m	EB Arrival Time =	0.6835316	3.02915E-06	0.3	0
m	EB Arrival Time =	0.6835542	2.26056E-05	2.0	0
z	WB Arrival Time =	0.6835630	8.72577E-06	0.8	0
m	EB Arrival Time =	0.6835794	1.64117E-05	1.4	0
m	EB Arrival Time =	0.6836032	2.38715E-05	2.1	0
m	EB Arrival Time =	0.6836395	3.62142E-05	3.1	0
m	EB Arrival Time =	0.6836704	3.09245E-05	2.7	0
m	EB Arrival Time =	0.6836948	2.44141E-05	2.1	0
m	EB Arrival Time =	0.6837156	2.07972E-05	1.8	0
m	EB Arrival Time =	0.6837459	3.03367E-05	2.6	0
m	EB Arrival Time =	0.6837648	1.88531E-05	1.6	0



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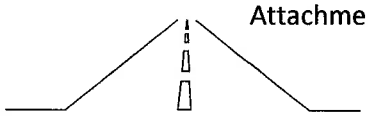
Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn departure movement from Grappone driveway (Critical headway = 7.1 seconds)

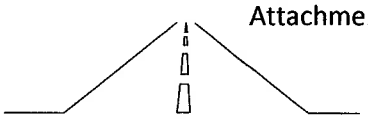
Detector		Time		Gap Size	Gap ≥7.1
m	EB Arrival Time =	0.6837835	1.87627E-05	1.6	0
z	WB Arrival Time =	0.6839208	0.000137216	11.9	1
m	EB Arrival Time =	0.6839635	4.27246E-05	3.7	0
m	EB Arrival Time =	0.6839839	2.03903E-05	1.8	0
m	EB Arrival Time =	0.6840107	2.68555E-05	2.3	0
m	EB Arrival Time =	0.6840583	4.75622E-05	4.1	0
z	WB Arrival Time =	0.6840682	9.90126E-06	0.9	0
m	EB Arrival Time =	0.6840711	2.89352E-06	0.3	0
m	EB Arrival Time =	0.6840957	2.46401E-05	2.1	0
z	WB Arrival Time =	0.6841156	1.98477E-05	1.7	0
m	EB Arrival Time =	0.6841286	1.3066E-05	1.1	0
m	EB Arrival Time =	0.6841540	2.53183E-05	2.2	0
m	EB Arrival Time =	0.6841993	4.53016E-05	3.9	0
m	EB Arrival Time =	0.6842235	2.42332E-05	2.1	0
m	EB Arrival Time =	0.6842470	2.35098E-05	2.0	0
m	EB Arrival Time =	0.6842765	2.94777E-05	2.5	0
m	EB Arrival Time =	0.6842976	2.10684E-05	1.8	0
z	WB Arrival Time =	0.6843251	2.75788E-05	2.4	0
m	EB Arrival Time =	0.6843295	4.34028E-06	0.4	0
m	EB Arrival Time =	0.6843548	2.53635E-05	2.2	0
z	WB Arrival Time =	0.6843688	1.39703E-05	1.2	0
z	WB Arrival Time =	0.6843872	1.8401E-05	1.6	0
m	EB Arrival Time =	0.6844146	2.73528E-05	2.4	0
m	EB Arrival Time =	0.6844477	3.31398E-05	2.9	0
z	WB Arrival Time =	0.6844593	1.16193E-05	1.0	0
m	EB Arrival Time =	0.6844752	1.59144E-05	1.4	0
m	EB Arrival Time =	0.6844933	1.80393E-05	1.6	0
z	WB Arrival Time =	0.6844984	5.10887E-06	0.4	0
m	EB Arrival Time =	0.6845294	3.09697E-05	2.7	0
m	EB Arrival Time =	0.6845626	3.32303E-05	2.9	0
m	EB Arrival Time =	0.6845886	2.60417E-05	2.3	0
m	EB Arrival Time =	0.6846108	2.21535E-05	1.9	0
m	EB Arrival Time =	0.6846477	3.69376E-05	3.2	0
z	WB Arrival Time =	0.6847036	5.59263E-05	4.8	0
z	WB Arrival Time =	0.6847383	3.46318E-05	3.0	0
m	EB Arrival Time =	0.6847646	2.63581E-05	2.3	0
m	EB Arrival Time =	0.6848174	5.28067E-05	4.6	0
z	WB Arrival Time =	0.6848178	4.06901E-07	0.0	0
m	EB Arrival Time =	0.6848374	1.95313E-05	1.7	0
z	WB Arrival Time =	0.6848541	1.67734E-05	1.4	0
z	WB Arrival Time =	0.6848900	3.58073E-05	3.1	0
z	WB Arrival Time =	0.6849089	1.89435E-05	1.6	0
z	WB Arrival Time =	0.6849316	2.26508E-05	2.0	0
z	WB Arrival Time =	0.6849624	3.08793E-05	2.7	0
m	EB Arrival Time =	0.6849681	5.6514E-06	0.5	0
z	WB Arrival Time =	0.6849954	2.73528E-05	2.4	0
m	EB Arrival Time =	0.6850158	2.03451E-05	1.8	0
z	WB Arrival Time =	0.6850227	6.87211E-06	0.6	0
z	WB Arrival Time =	0.6850381	1.5417E-05	1.3	0
m	EB Arrival Time =	0.6850428	4.70197E-06	0.4	0



Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn departure movement from Grappone driveway (Critical headway = 7.1 seconds)

Detector		Time		Gap Size	Gap ≥7.1
z	WB Arrival Time =	0.6850636	2.08424E-05	1.8	0
m	EB Arrival Time =	0.6850671	3.48126E-06	0.3	0
z	WB Arrival Time =	0.6850976	3.05176E-05	2.6	0
m	EB Arrival Time =	0.6851330	3.54004E-05	3.1	0
z	WB Arrival Time =	0.6851421	9.08746E-06	0.8	0
m	EB Arrival Time =	0.6851860	4.39001E-05	3.8	0
z	WB Arrival Time =	0.6852100	2.40072E-05	2.1	0
z	WB Arrival Time =	0.6852367	2.67198E-05	2.3	0
z	WB Arrival Time =	0.6852719	3.51291E-05	3.0	0
z	WB Arrival Time =	0.6852965	2.46853E-05	2.1	0
z	WB Arrival Time =	0.6853229	2.63129E-05	2.3	0
m	EB Arrival Time =	0.6854725	0.000149649	12.9	1
z	WB Arrival Time =	0.6854794	6.87211E-06	0.6	0
m	EB Arrival Time =	0.6854933	1.39251E-05	1.2	0
z	WB Arrival Time =	0.6855131	1.98025E-05	1.7	0
m	EB Arrival Time =	0.6855339	2.0752E-05	1.8	0
m	EB Arrival Time =	0.6855496	1.57335E-05	1.4	0
z	WB Arrival Time =	0.6855548	5.2445E-06	0.5	0
z	WB Arrival Time =	0.6855849	3.01107E-05	2.6	0
m	EB Arrival Time =	0.6856072	2.22891E-05	1.9	0
z	WB Arrival Time =	0.6856156	8.36408E-06	0.7	0
z	WB Arrival Time =	0.6856733	5.77347E-05	5.0	0
m	EB Arrival Time =	0.6856908	1.74967E-05	1.5	0
z	WB Arrival Time =	0.6856997	8.8614E-06	0.8	0
m	EB Arrival Time =	0.6857032	3.48126E-06	0.3	0
z	WB Arrival Time =	0.6857278	2.46401E-05	2.1	0
m	EB Arrival Time =	0.6857324	4.56633E-06	0.4	0
m	EB Arrival Time =	0.6857459	1.35634E-05	1.2	0
z	WB Arrival Time =	0.6857556	9.62999E-06	0.8	0
z	WB Arrival Time =	0.6857762	2.06615E-05	1.8	0
m	EB Arrival Time =	0.6857862	9.94647E-06	0.9	0
z	WB Arrival Time =	0.6858015	1.53718E-05	1.3	0
m	EB Arrival Time =	0.6858075	5.92267E-06	0.5	0
z	WB Arrival Time =	0.6858270	1.95312E-05	1.7	0
m	EB Arrival Time =	0.6858341	7.09816E-06	0.6	0
z	WB Arrival Time =	0.6858472	1.31113E-05	1.1	0
m	EB Arrival Time =	0.6858724	2.52279E-05	2.2	0
z	WB Arrival Time =	0.6858814	8.99703E-06	0.8	0
z	WB Arrival Time =	0.6859727	9.12815E-05	7.9	1
z	WB Arrival Time =	0.6859976	2.48662E-05	2.1	0
m	EB Arrival Time =	0.6860069	9.31351E-06	0.8	0
z	WB Arrival Time =	0.6860451	3.82487E-05	3.3	0
z	WB Arrival Time =	0.6860746	2.94777E-05	2.5	0
z	WB Arrival Time =	0.6861008	2.62225E-05	2.3	0
z	WB Arrival Time =	0.6862789	0.000178042	15.4	1
z	WB Arrival Time =	0.6863378	5.89102E-05	5.1	0
z	WB Arrival Time =	0.6863593	2.15205E-05	1.9	0
m	EB Arrival Time =	0.6863869	2.76241E-05	2.4	0
m	EB Arrival Time =	0.6864374	5.04557E-05	4.4	0
m	EB Arrival Time =	0.6864516	1.41963E-05	1.2	0



Stephen G. Pernaw & Company, Inc.

Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

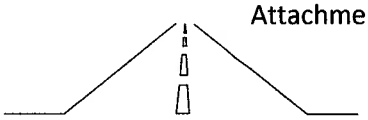
Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn departure movement from Grappone driveway (Critical headway = 7.1 seconds)

Detector		Time		Gap Size	Gap ≥7.1
m	EB Arrival Time =	0.6864877	3.61238E-05	3.1	0
m	EB Arrival Time =	0.6865233	3.5536E-05	3.1	0
m	EB Arrival Time =	0.6865525	2.92517E-05	2.5	0
m	EB Arrival Time =	0.6866106	5.80964E-05	5.0	0
m	EB Arrival Time =	0.6866571	4.64771E-05	4.0	0
z	WB Arrival Time =	0.6866808	2.36907E-05	2.0	0
z	WB Arrival Time =	0.6866941	1.33373E-05	1.2	0
m	EB Arrival Time =	0.6867049	1.07603E-05	0.9	0
z	WB Arrival Time =	0.6867203	1.5417E-05	1.3	0
m	EB Arrival Time =	0.6867294	9.08746E-06	0.8	0
z	WB Arrival Time =	0.6867524	2.30125E-05	2.0	0
m	EB Arrival Time =	0.6868508	9.83796E-05	8.5	1
z	WB Arrival Time =	0.6869254	7.45985E-05	6.4	0
z	WB Arrival Time =	0.6869428	1.74515E-05	1.5	0
z	WB Arrival Time =	0.6869700	2.72172E-05	2.4	0
m	EB Arrival Time =	0.6869726	2.53183E-06	0.2	0
m	EB Arrival Time =	0.6870145	4.1956E-05	3.6	0
z	WB Arrival Time =	0.6870422	2.77145E-05	2.4	0
z	WB Arrival Time =	0.6870624	2.02094E-05	1.7	0
m	EB Arrival Time =	0.6870665	4.06901E-06	0.4	0
z	WB Arrival Time =	0.6870916	2.50922E-05	2.2	0
z	WB Arrival Time =	0.6871140	2.24248E-05	1.9	0
z	WB Arrival Time =	0.6871515	3.74349E-05	3.2	0
z	WB Arrival Time =	0.6871783	2.68555E-05	2.3	0
z	WB Arrival Time =	0.6872079	2.96134E-05	2.6	0
z	WB Arrival Time =	0.6872262	1.82201E-05	1.6	0
z	WB Arrival Time =	0.6872637	3.75705E-05	3.2	0
z	WB Arrival Time =	0.6872937	2.9975E-05	2.6	0
z	WB Arrival Time =	0.6873096	1.59144E-05	1.4	0
z	WB Arrival Time =	0.6873886	7.90292E-05	6.8	0
m	EB Arrival Time =	0.6874312	4.2589E-05	3.7	0
m	EB Arrival Time =	0.6874615	3.02463E-05	2.6	0
z	WB Arrival Time =	0.6874768	1.53266E-05	1.3	0
z	WB Arrival Time =	0.6875146	3.77514E-05	3.3	0

899.1

4:15 - 4:30 PM:

Number of Gaps ≥ 7.1 = 13
PM Left-turn departures = 27 / 4 = 7



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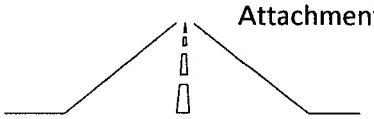
Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn Arrivals into Grappone driveway (Critical headway = 4.1 seconds)

Detector		Time		Gap Size	Gap ≥4.1
m	EB Arrival Time =	0.6771084			
m	EB Arrival Time =	0.6771241	1.56883E-05	1.4	0
m	EB Arrival Time =	0.6771458	2.17466E-05	1.9	0
m	EB Arrival Time =	0.6771713	2.54539E-05	2.2	0
m	EB Arrival Time =	0.6771861	1.48745E-05	1.3	0
m	EB Arrival Time =	0.6772095	2.3329E-05	2.0	0
m	EB Arrival Time =	0.6772469	3.74349E-05	3.2	0
m	EB Arrival Time =	0.6772840	3.70732E-05	3.2	0
m	EB Arrival Time =	0.6773229	3.88817E-05	3.4	0
m	EB Arrival Time =	0.6773451	2.22439E-05	1.9	0
m	EB Arrival Time =	0.6773977	5.26259E-05	4.5	1
m	EB Arrival Time =	0.6774240	2.62225E-05	2.3	0
m	EB Arrival Time =	0.6774535	2.95229E-05	2.6	0
m	EB Arrival Time =	0.6774692	1.57335E-05	1.4	0
m	EB Arrival Time =	0.6774873	1.80845E-05	1.6	0
m	EB Arrival Time =	0.6775862	9.89222E-05	8.5	1
m	EB Arrival Time =	0.6776837	9.74754E-05	8.4	1
m	EB Arrival Time =	0.6777667	8.3053E-05	7.2	1
m	EB Arrival Time =	0.6777949	2.81214E-05	2.4	0
m	EB Arrival Time =	0.6781126	0.000317699	27.4	1
m	EB Arrival Time =	0.6781568	4.42618E-05	3.8	0
m	EB Arrival Time =	0.6781649	8.0476E-06	0.7	0
m	EB Arrival Time =	0.6781960	3.11053E-05	2.7	0
m	EB Arrival Time =	0.6782062	1.01725E-05	0.9	0
m	EB Arrival Time =	0.6782465	4.03284E-05	3.5	0
m	EB Arrival Time =	0.6782791	3.26425E-05	2.8	0
m	EB Arrival Time =	0.6783190	3.98311E-05	3.4	0
m	EB Arrival Time =	0.6783443	2.53635E-05	2.2	0
m	EB Arrival Time =	0.6783747	3.04272E-05	2.6	0
m	EB Arrival Time =	0.6784096	3.49031E-05	3.0	0
m	EB Arrival Time =	0.6784433	3.36824E-05	2.9	0
m	EB Arrival Time =	0.6784728	2.94325E-05	2.5	0
m	EB Arrival Time =	0.6784790	6.28436E-06	0.5	0
m	EB Arrival Time =	0.6785764	9.7385E-05	8.4	1
m	EB Arrival Time =	0.6786129	3.64855E-05	3.2	0
m	EB Arrival Time =	0.6786516	3.87008E-05	3.3	0
m	EB Arrival Time =	0.6787434	9.17336E-05	7.9	1
m	EB Arrival Time =	0.6787869	4.35836E-05	3.8	0
m	EB Arrival Time =	0.6788157	2.87996E-05	2.5	0
m	EB Arrival Time =	0.6788497	3.39536E-05	2.9	0
m	EB Arrival Time =	0.6789004	5.06818E-05	4.4	1
m	EB Arrival Time =	0.6791198	0.000219455	19.0	1
m	EB Arrival Time =	0.6791742	5.43439E-05	4.7	1
m	EB Arrival Time =	0.6792372	6.30697E-05	5.4	1
m	EB Arrival Time =	0.6792646	2.73528E-05	2.4	0
m	EB Arrival Time =	0.6792858	2.12493E-05	1.8	0
m	EB Arrival Time =	0.6793102	2.43689E-05	2.1	0
m	EB Arrival Time =	0.6793369	2.67198E-05	2.3	0
m	EB Arrival Time =	0.6794247	8.78002E-05	7.6	1
m	EB Arrival Time =	0.6794543	2.95681E-05	2.6	0

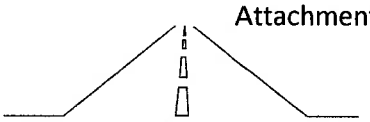


Stephen G. Pernaw & Company, Inc.

Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn Arrivals into Grappone driveway (Critical headway = 4.1 seconds)

Detector		Time		Gap Size	Gap ≥4.1
m	EB Arrival Time =	0.6795101	5.58359E-05	4.8	1
m	EB Arrival Time =	0.6795321	2.19727E-05	1.9	0
m	EB Arrival Time =	0.6795613	2.91612E-05	2.5	0
m	EB Arrival Time =	0.6796025	4.11874E-05	3.6	0
m	EB Arrival Time =	0.6796299	2.74884E-05	2.4	0
m	EB Arrival Time =	0.6796843	5.43439E-05	4.7	1
m	EB Arrival Time =	0.6797729	8.85688E-05	7.7	1
m	EB Arrival Time =	0.6798742	0.000101364	8.8	1
m	EB Arrival Time =	0.6799508	7.65878E-05	6.6	1
m	EB Arrival Time =	0.6799909	4.01024E-05	3.5	0
m	EB Arrival Time =	0.6800662	7.52767E-05	6.5	1
m	EB Arrival Time =	0.6802150	0.000148835	12.9	1
m	EB Arrival Time =	0.6802757	6.07187E-05	5.2	1
m	EB Arrival Time =	0.6803095	3.37728E-05	2.9	0
m	EB Arrival Time =	0.6803426	3.30494E-05	2.9	0
m	EB Arrival Time =	0.6803849	4.23629E-05	3.7	0
m	EB Arrival Time =	0.6804352	5.02749E-05	4.3	1
m	EB Arrival Time =	0.6804596	2.43689E-05	2.1	0
m	EB Arrival Time =	0.6807084	0.000248797	21.5	1
m	EB Arrival Time =	0.6807551	4.67484E-05	4.0	0
m	EB Arrival Time =	0.6807766	2.14753E-05	1.9	0
m	EB Arrival Time =	0.6808482	7.15694E-05	6.2	1
m	EB Arrival Time =	0.6809109	6.27532E-05	5.4	1
m	EB Arrival Time =	0.6811158	0.000204852	17.7	1
m	EB Arrival Time =	0.6811339	1.80845E-05	1.6	0
m	EB Arrival Time =	0.6811577	2.38263E-05	2.1	0
m	EB Arrival Time =	0.6811864	2.87543E-05	2.5	0
m	EB Arrival Time =	0.6812111	2.46401E-05	2.1	0
m	EB Arrival Time =	0.6812961	8.49971E-05	7.3	1
m	EB Arrival Time =	0.6813306	3.44962E-05	3.0	0
m	EB Arrival Time =	0.6814190	8.84332E-05	7.6	1
m	EB Arrival Time =	0.6819584	0.000539415	46.6	1
m	EB Arrival Time =	0.6819805	2.21083E-05	1.9	0
m	EB Arrival Time =	0.6820022	2.16562E-05	1.9	0
m	EB Arrival Time =	0.6821520	0.000149785	12.9	1
m	EB Arrival Time =	0.6823805	0.000228543	19.7	1
m	EB Arrival Time =	0.6824259	4.54373E-05	3.9	0
m	EB Arrival Time =	0.6824491	2.31481E-05	2.0	0
m	EB Arrival Time =	0.6824759	2.68555E-05	2.3	0
m	EB Arrival Time =	0.6825126	3.66663E-05	3.2	0
m	EB Arrival Time =	0.6825443	3.16931E-05	2.7	0
m	EB Arrival Time =	0.6825810	3.66663E-05	3.2	0
m	EB Arrival Time =	0.6826370	5.60619E-05	4.8	1
m	EB Arrival Time =	0.6827027	6.56467E-05	5.7	1
m	EB Arrival Time =	0.6827374	3.4677E-05	3.0	0
m	EB Arrival Time =	0.6827555	1.81297E-05	1.6	0
m	EB Arrival Time =	0.6827876	3.21452E-05	2.8	0
m	EB Arrival Time =	0.6828226	3.49935E-05	3.0	0
m	EB Arrival Time =	0.6828829	6.02666E-05	5.2	1
m	EB Arrival Time =	0.6829271	4.41714E-05	3.8	0

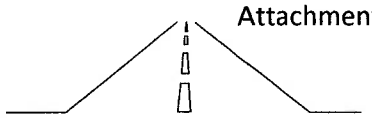


Stephen G. Pernaw & Company, Inc.

Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn Arrivals into Grappone driveway (Critical headway = 4.1 seconds)

Detector		Time		Gap Size	Gap ≥4.1
m	EB Arrival Time =	0.6833710	0.000443974	38.4	1
m	EB Arrival Time =	0.6834156	4.45331E-05	3.8	0
m	EB Arrival Time =	0.6834445	2.889E-05	2.5	0
m	EB Arrival Time =	0.6834699	2.54539E-05	2.2	0
m	EB Arrival Time =	0.6834875	1.7542E-05	1.5	0
m	EB Arrival Time =	0.6835069	1.93956E-05	1.7	0
m	EB Arrival Time =	0.6835316	2.47758E-05	2.1	0
m	EB Arrival Time =	0.6835542	2.26056E-05	2.0	0
m	EB Arrival Time =	0.6835794	2.51374E-05	2.2	0
m	EB Arrival Time =	0.6836032	2.38715E-05	2.1	0
m	EB Arrival Time =	0.6836395	3.62142E-05	3.1	0
m	EB Arrival Time =	0.6836704	3.09245E-05	2.7	0
m	EB Arrival Time =	0.6836948	2.44141E-05	2.1	0
m	EB Arrival Time =	0.6837156	2.07972E-05	1.8	0
m	EB Arrival Time =	0.6837459	3.03367E-05	2.6	0
m	EB Arrival Time =	0.6837648	1.88531E-05	1.6	0
m	EB Arrival Time =	0.6837835	1.87627E-05	1.6	0
m	EB Arrival Time =	0.6839635	0.000179941	15.5	1
m	EB Arrival Time =	0.6839839	2.03903E-05	1.8	0
m	EB Arrival Time =	0.6840107	2.68555E-05	2.3	0
m	EB Arrival Time =	0.6840583	4.75622E-05	4.1	1
m	EB Arrival Time =	0.6840711	1.27948E-05	1.1	0
m	EB Arrival Time =	0.6840957	2.46401E-05	2.1	0
m	EB Arrival Time =	0.6841286	3.29138E-05	2.8	0
m	EB Arrival Time =	0.6841540	2.53183E-05	2.2	0
m	EB Arrival Time =	0.6841993	4.53016E-05	3.9	0
m	EB Arrival Time =	0.6842235	2.42332E-05	2.1	0
m	EB Arrival Time =	0.6842470	2.35098E-05	2.0	0
m	EB Arrival Time =	0.6842765	2.94777E-05	2.5	0
m	EB Arrival Time =	0.6842976	2.10684E-05	1.8	0
m	EB Arrival Time =	0.6843295	3.19191E-05	2.8	0
m	EB Arrival Time =	0.6843548	2.53635E-05	2.2	0
m	EB Arrival Time =	0.6844146	5.9724E-05	5.2	1
m	EB Arrival Time =	0.6844477	3.31398E-05	2.9	0
m	EB Arrival Time =	0.6844752	2.75336E-05	2.4	0
m	EB Arrival Time =	0.6844933	1.80393E-05	1.6	0
m	EB Arrival Time =	0.6845294	3.60786E-05	3.1	0
m	EB Arrival Time =	0.6845626	3.32303E-05	2.9	0
m	EB Arrival Time =	0.6845886	2.60417E-05	2.3	0
m	EB Arrival Time =	0.6846108	2.21535E-05	1.9	0
m	EB Arrival Time =	0.6846477	3.69376E-05	3.2	0
m	EB Arrival Time =	0.6847646	0.000116916	10.1	1
m	EB Arrival Time =	0.6848174	5.28067E-05	4.6	1
m	EB Arrival Time =	0.6848374	1.99382E-05	1.7	0
m	EB Arrival Time =	0.6849681	0.000130706	11.3	1
m	EB Arrival Time =	0.6850158	4.76978E-05	4.1	1
m	EB Arrival Time =	0.6850428	2.69911E-05	2.3	0
m	EB Arrival Time =	0.6850671	2.43236E-05	2.1	0
m	EB Arrival Time =	0.6851330	6.5918E-05	5.7	1
m	EB Arrival Time =	0.6851860	5.29876E-05	4.6	1



Stephen G. Pernaw & Company, Inc.

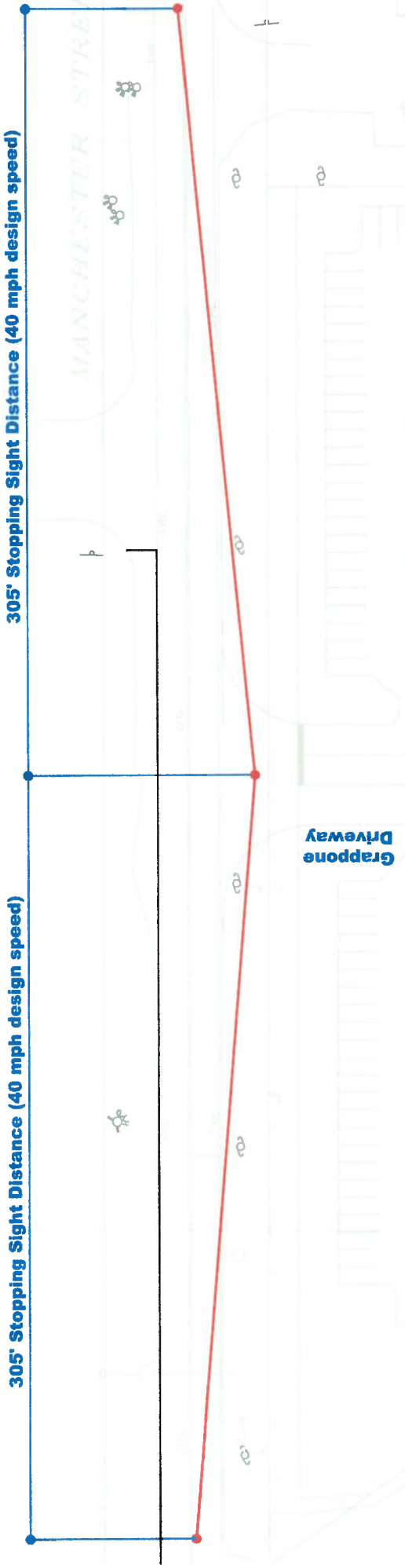
Manchester Street Gap Analysis - October 14, 2021 (4:15 - 4:30 PM)

Traffic Tracker
Environment \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Enviroment 1.tdp
Data File \\STEVE-PC\Network\Projects\2150A\Traffic Tracker\Interval 415 430.csv
Movement: Left-turn Arrivals into Grappone driveway (Critical headway = 4.1 seconds)

Detector		Time		Gap Size	Gap ≥4.1
m	EB Arrival Time =	0.6854725	0.000286504	24.8	1
m	EB Arrival Time =	0.6854933	2.07972E-05	1.8	0
m	EB Arrival Time =	0.6855339	4.05545E-05	3.5	0
m	EB Arrival Time =	0.6855496	1.57335E-05	1.4	0
m	EB Arrival Time =	0.6856072	5.76443E-05	5.0	1
m	EB Arrival Time =	0.6856908	8.35956E-05	7.2	1
m	EB Arrival Time =	0.6857032	1.23427E-05	1.1	0
m	EB Arrival Time =	0.6857324	2.92065E-05	2.5	0
m	EB Arrival Time =	0.6857459	1.35634E-05	1.2	0
m	EB Arrival Time =	0.6857862	4.0238E-05	3.5	0
m	EB Arrival Time =	0.6858075	2.12945E-05	1.8	0
m	EB Arrival Time =	0.6858341	2.66294E-05	2.3	0
m	EB Arrival Time =	0.6858724	3.83391E-05	3.3	0
m	EB Arrival Time =	0.6860069	0.000134458	11.6	1
m	EB Arrival Time =	0.6863869	0.000380046	32.8	1
m	EB Arrival Time =	0.6864374	5.04557E-05	4.4	1
m	EB Arrival Time =	0.6864516	1.41963E-05	1.2	0
m	EB Arrival Time =	0.6864877	3.61238E-05	3.1	0
m	EB Arrival Time =	0.6865233	3.5536E-05	3.1	0
m	EB Arrival Time =	0.6865525	2.92517E-05	2.5	0
m	EB Arrival Time =	0.6866106	5.80964E-05	5.0	1
m	EB Arrival Time =	0.6866571	4.64771E-05	4.0	0
m	EB Arrival Time =	0.6867049	4.77883E-05	4.1	1
m	EB Arrival Time =	0.6867294	2.45045E-05	2.1	0
m	EB Arrival Time =	0.6868508	0.000121392	10.5	1
m	EB Arrival Time =	0.6869726	0.000121799	10.5	1
m	EB Arrival Time =	0.6870145	4.1956E-05	3.6	0
m	EB Arrival Time =	0.6870665	5.19929E-05	4.5	1
m	EB Arrival Time =	0.6874312	0.000364719	31.5	1
m	EB Arrival Time =	0.6874615	3.02463E-05	2.6	0

4:15 - 4:30 PM:

Number of Gaps ≥ 4.1 = 55
PM Left-turn arrivals = 10 / 4 = 3


305' Stopping Sight Distance (40 mph design speed)
305' Stopping Sight Distance (40 mph design speed)
Grappone Driveway

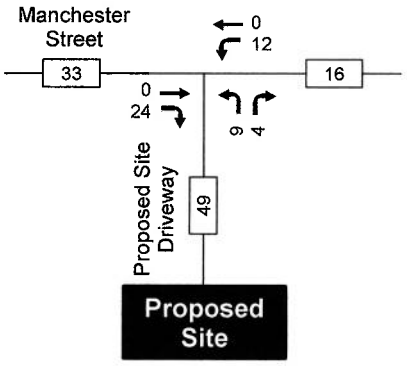
Stephen G. Pernaw & Company, Inc.

Banks Chevrolet Driveway Volumes (February 2022)

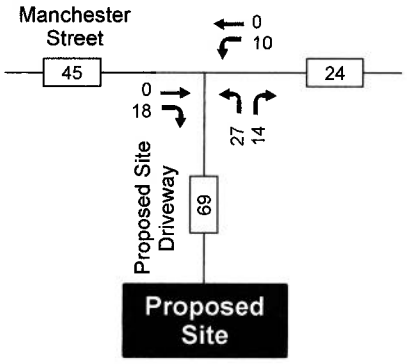
54 Manchester Street, Concord, New Hampshire

February 26, 2022 (Saturday)

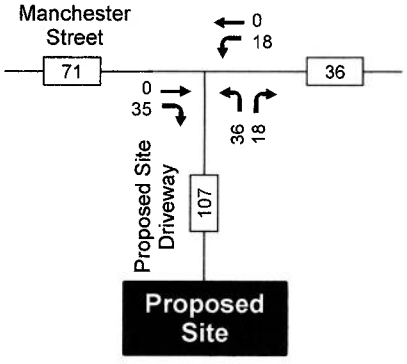
		EBT	EBL	SBR	SBL	WBR	WBT	TOTAL	
10:00 -	10:15	80	5	5	3	2	78	173	
10:15 -	10:30	103	7	10	3	5	104	232	
10:30 -	10:45	87	8	6	3	2	101	207	
10:45 -	11:00	96	10	6	0	2	97	211	823
11:00 -	11:15	84	4	14	3	7	89	201	851
11:15 -	11:30	109	16	10	3	6	120	264	883
11:30	11:45	126	1	6	3	3	82	221	897
11:45	12:00	87	4	6	2	7	97	203	889
12:00	12:15	96	6	7	5	3	122	239	927
12:15	12:30	100	5	11	2	3	102	223	886
12:30	12:45	96	7	12	4	7	116	242	907
12:45	1:00	88	7	5	3	5	116	224	928
1:00 -	1:15	105	4	12	5	5	101	232	921
1:15 -	1:30	83	5	10	7	6	119	230	928
1:30 -	1:14	99	9	11	2	6	98	225	911
1:45 -	2:00	96	1	6	6	3	96	208	895
Total Count	**10 AM - 2 PM**	**1535**	**99**	**137**	**54**	**72**	**1638**		
Peak Hour	**12 PM - 1 PM**	**380**	**25**	**35**	**14**	**18**	**456**	**928**	



AM Peak Hour



PM Peak Hour



Saturday Peak Hour

NORTH

2150A 030122

Attachment

Site Generated Traffic Volumes

Traffic Impact Assessment, Proposed Automobile Dealership, Concord, New Hampshire

HCM 6th TWSC
1: Proposed Site Driveway & Manchester Street

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1126	24	12	1125	9	4
Future Vol, veh/h	1126	24	12	1125	9	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	95	95	90	90
Heavy Vehicles, %	5	0	0	5	0	0
Mvmt Flow	1251	27	13	1184	10	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1278	0	2475	1265
Stage 1	-	-	-	-	1265	-
Stage 2	-	-	-	-	1210	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	550	-	33	209
Stage 1	-	-	-	-	268	-
Stage 2	-	-	-	-	285	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	550	-	32	209
Mov Cap-2 Maneuver	-	-	-	-	32	-
Stage 1	-	-	-	-	268	-
Stage 2	-	-	-	-	278	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	119.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	32	209	-	-	550	-
HCM Lane V/C Ratio	0.313	0.021	-	-	0.023	-
HCM Control Delay (s)	162.2	22.6	-	-	11.7	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	1	0.1	-	-	0.1	-

HCM 6th TWSC
1: Proposed Site Driveway & Manchester Street

Intersection	
Int Delay, s/veh	6.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1255	18	10	1170	27	14
Future Vol, veh/h	1255	18	10	1170	27	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	90	90	90	90
Heavy Vehicles, %	4	0	0	2	0	0
Mvmt Flow	1379	20	11	1300	30	16

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1399	0	2711	1389
Stage 1	-	-	-	-	1389	-
Stage 2	-	-	-	-	1322	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	495	-	~ 24	176
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	252	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	495	-	~ 23	176
Mov Cap-2 Maneuver	-	-	-	-	~ 23	-
Stage 1	-	-	-	-	233	-
Stage 2	-	-	-	-	246	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	$ 365.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	23	176	-	-	495	-
HCM Lane V/C Ratio	1.304	0.088	-	-	0.022	-
HCM Control Delay (s)	$ 540.7	27.4	-	-	12.4	-
HCM Lane LOS	F	D	-	-	B	-
HCM 95th %tile Q(veh)	3.8	0.3	-	-	0.1	-

Notes

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

HCM 6th TWSC
1: Proposed Site Driveway & Manchester Street

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	683	35	18	829	36	18
Future Vol, veh/h	683	35	18	829	36	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	93	93	90	90
Heavy Vehicles, %	2	0	0	2	0	0
Mvmt Flow	719	37	19	891	40	20

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	756	0	1667	738
Stage 1	-	-	-	-	738	-
Stage 2	-	-	-	-	929	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	864	-	107	421
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	388	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	864	-	105	421
Mov Cap-2 Maneuver	-	-	-	-	105	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	379	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	44
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	105	421	-	-	864	-
HCM Lane V/C Ratio	0.381	0.048	-	-	0.022	-
HCM Control Delay (s)	59	14	-	-	9.3	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0.1	-

HCM 6th TWSC
2: Manchester Street & Banks Driveway

Intersection						
Int Delay, s/veh	0.8					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	1100	1123	12	7	14
Future Vol, veh/h	30	1100	1123	12	7	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	150	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	95	95	90	90
Heavy Vehicles, %	0	5	5	0	0	0
Mvmt Flow	33	1222	1182	13	8	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1195	0	-	0	2477	1189
Stage 1	-	-	-	-	1189	-
Stage 2	-	-	-	-	1288	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	591	-	-	-	33	231
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	261	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	591	-	-	-	31	231
Mov Cap-2 Maneuver	-	-	-	-	31	-
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	261	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	66.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	591	-	-	-	31	231
HCM Lane V/C Ratio	0.056	-	-	-	0.251	0.067
HCM Control Delay (s)	11.5	-	-	-	156.3	21.7
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	0.2	-	-	-	0.8	0.2

HCM 6th TWSC
2: Manchester Street & Banks Driveway

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	1243	1163	15	10	17
Future Vol, veh/h	26	1243	1163	15	10	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	90	90	90	90
Heavy Vehicles, %	0	4	4	0	0	0
Mvmt Flow	29	1366	1292	17	11	19

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1309	0	-	0	2725	1301
Stage 1	-	-	-	-	1301	-
Stage 2	-	-	-	-	1424	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	535	-	-	-	23	199
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	224	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	535	-	-	-	22	199
Mov Cap-2 Maneuver	-	-	-	-	22	-
Stage 1	-	-	-	-	244	-
Stage 2	-	-	-	-	224	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	119.4
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	535	-	-	-	22	199
HCM Lane V/C Ratio	0.053	-	-	-	0.505	0.095
HCM Control Delay (s)	12.1	-	-	-	280	25
HCM Lane LOS	B	-	-	-	F	D
HCM 95th %tile Q(veh)	0.2	-	-	-	1.5	0.3

HCM 6th TWSC
2: Manchester Street & Banks Driveway

Intersection						
Int Delay, s/veh	1					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	676	812	18	14	35
Future Vol, veh/h	25	676	812	18	14	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	91	91	90	90	90	90
Heavy Vehicles, %	0	4	4	0	0	0
Mvmt Flow	27	743	902	20	16	39

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	922	0	-	0	1709	912
Stage 1	-	-	-	-	912	-
Stage 2	-	-	-	-	797	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	749	-	-	-	101	335
Stage 1	-	-	-	-	395	-
Stage 2	-	-	-	-	447	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	749	-	-	-	97	335
Mov Cap-2 Maneuver	-	-	-	-	97	-
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	447	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	26.3
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	749	-	-	-	97	335
HCM Lane V/C Ratio	0.037	-	-	-	0.16	0.116
HCM Control Delay (s)	10	-	-	-	49.1	17.2
HCM Lane LOS	A	-	-	-	E	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	0.4

Queuing and Blocking Report

Intersection: 1: Proposed Site Driveway & Manchester Street

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	115	35	27	52	31
Average Queue (ft)	13	10	1	10	5
95th Queue (ft)	65	34	12	34	23
Link Distance (ft)	1178		55		1482
Upstream Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		
Storage Bay Dist (ft)		25		375	
Storage Blk Time (%)		4	0		
Queuing Penalty (veh)		48	0		

Intersection: 2: Manchester Street & Banks Driveway

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	39	73	54	50	52
Average Queue (ft)	17	6	3	10	13
95th Queue (ft)	43	37	24	35	40
Link Distance (ft)		55	873		195
Upstream Blk Time (%)	0	0			
Queuing Penalty (veh)	0	4			
Storage Bay Dist (ft)	25			150	
Storage Blk Time (%)	9	0			
Queuing Penalty (veh)	96	0			

Network Summary

Network wide Queuing Penalty: 148

Queuing and Blocking Report

Intersection: 1: Proposed Site Driveway & Manchester Street

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	141	33	36	238	46
Average Queue (ft)	14	9	3	131	14
95th Queue (ft)	84	32	21	311	42
Link Distance (ft)	1178		54	1482	1482
Upstream Blk Time (%)		0	0		
Queuing Penalty (veh)		0	1		
Storage Bay Dist (ft)		25			
Storage Blk Time (%)		7	0		
Queuing Penalty (veh)		80	0		

Intersection: 2: Manchester Street & Banks Driveway

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	37	60	42	80	47
Average Queue (ft)	18	4	3	25	15
95th Queue (ft)	43	29	23	66	41
Link Distance (ft)		54	824	133	133
Upstream Blk Time (%)	1	0		0	
Queuing Penalty (veh)	0	4		0	
Storage Bay Dist (ft)	25				
Storage Blk Time (%)	9	0			
Queuing Penalty (veh)	115	0			

Network Summary

Network wide Queuing Penalty: 199

Queuing and Blocking Report

Intersection: 1: Proposed Site Driveway & Manchester Street

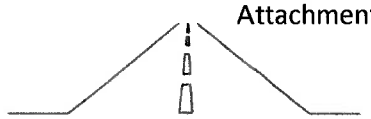
Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	39	33	36	80	38
Average Queue (ft)	2	9	2	26	14
95th Queue (ft)	16	32	17	61	39
Link Distance (ft)	1178		54	1482	1482
Upstream Blk Time (%)		0	0		
Queuing Penalty (veh)		0	0		
Storage Bay Dist (ft)		25			
Storage Blk Time (%)		2	0		
Queuing Penalty (veh)		13	0		

Intersection: 2: Manchester Street & Banks Driveway

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	35	56	26	45	52
Average Queue (ft)	13	4	1	13	22
95th Queue (ft)	39	27	13	38	50
Link Distance (ft)		54	824	133	133
Upstream Blk Time (%)	0	0			
Queuing Penalty (veh)	0	1			
Storage Bay Dist (ft)	25				
Storage Blk Time (%)	4	0			
Queuing Penalty (veh)	25	0			

Network Summary

Network wide Queuing Penalty: 39



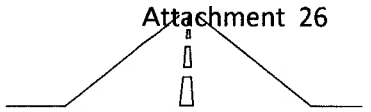
Stephen G. Pernaw & Company, Inc.

Banks Driveway - Eastbound Left-Turn Queues

10/24/2021

R = Rolling Left Turn, no full stop

	AM Peak Hour	Queue		PM Peak Hour	Queue
1	7:18:17	R	1	4:01:00	1
2	7:21:01	R	2	4:01:28	R
3	7:21:20	R	3	4:04:22	R
4	7:22:37	R	4	4:06:53	R
5	7:24:58	2	5	4:10:27	2
6	7:25:05		6	4:10:30	
7	7:25:40	1	7	4:13:58	R
8	7:26:16	1	8	4:14:25	R
9	7:28:56	1	9	4:16:59	1
10	7:31:02	1	10	4:17:17	R
11	7:33:18	R	11	4:26:47	R
12	7:35:23	R	12	4:29:22	1
13	7:38:25	R	13	4:29:47	R
14	7:38:37	R	14	4:35:37	1
15	7:39:40	R	15	4:37:10	1
16	7:39:56	1	16	4:39:00	1
17	7:44:28	1	17	4:41:49	1
18	7:45:48	1	18	4:44:50	1
19	7:47:01	R	19	4:45:08	R
20	7:47:47	R	20	4:45:22	R
21	7:48:27	R	21	4:47:25	1
22	7:55:57	R	22	4:49:55	R
23	7:59:18	1	23	4:50:28	R
24	8:00:34	2	24	4:51:16	R
25	8:00:54		25	4:55:07	R
26	8:03:01	R	26	4:57:40	1
27	8:05:58	R			
28	8:08:18	R			
29	8:10:08	R			
30	8:11:15	R			
31	8:14:35	R			



Stephen G. Pernaw & Company, Inc.

Banks Driveway - Eastbound Left-Turn Queues (Saturday 2/26/2022)

R = Rolling Left Turn, no full stop

		Queue
1	10:00:46	R
2	10:03:47	R
3	10:03:51	R
4	10:09:14	1
5	10:11:01	1
6	10:16:23	1
7	10:24:13	R
8	10:26:00	R
9	10:26:38	R
10	10:26:55	1
11	10:27:07	R
12	10:29:15	R
13	10:30:49	2
14	10:30:54	
15	10:31:38	R
16	10:33:36	R
17	10:38:13	1
18	10:38:39	1
19	10:41:26	R
20	10:43:14	R
21	10:45:11	2
22	10:50:02	
23	10:50:13	R
24	10:52:02	R
25	10:53:52	R
26	10:56:12	R
27	10:57:49	R
28	10:58:23	R
29	10:58:36	R
30	10:58:40	R

30 EB Left-Turn Arrivals

		Queue
31	11:00:38	1
32	11:05:08	1
33	11:07:56	R
34	11:12:06	R
35	11:15:40	R
36	11:15:51	1
37	11:16:24	1
38	11:17:27	R
39	11:19:21	R
40	11:19:59	1
41	11:23:08	R
42	11:23:27	1
43	11:23:42	R
44	11:24:13	1
45	11:24:29	R
46	11:24:54	1
47	11:25:03	2
48	11:28:06	
49	11:28:20	1
50	11:28:52	R
51	11:33:52	R
52	11:46:07	1`
53	11:47:27	1
54	11:48:53	1
55	11:51:55	

25 EB Left-Turn Arrivals

		Queue
56	12:00:22	R
57	12:01:39	R
58	12:05:23	R
59	12:08:15	R
60	12:11:24	R
61	12:12:50	1
62	12:15:17	R
63	12:15:31	R
64	12:24:09	R
65	12:24:25	R
66	12:29:19	1
67	12:30:11	1
68	12:32:11	R
69	12:36:26	1
70	12:39:35	1
71	12:39:43	R
72	12:44:44	R
73	12:44:49	R
74	12:49:41	R
75	12:50:09	R
76	12:52:19	2
77	12:52:22	
78	12:54:29	R
79	12:54:34	R
80	12:56:14	R

25 EB Left-Turn Arrivals

Saturday Midday
Street Peak Hour

		Queue
81	1:01:09	R
82	1:07:53	R
83	1:10:16	R
84	1:10:52	1
85	1:21:45	R
86	1:22:50	R
87	1:22:56	R
88	1:26:12	R
89	1:26:44	R
90	1:32:20	R
91	1:35:46	1
92	1:39:33	1
93	1:39:48	1
94	1:40:27	R
95	1:40:53	R
96	1:42:44	R
97	1:42:51	R
98	1:43:03	1
99	1:47:50	1

19 EB Left-Turn Arrivals