

TRAFFIC IMPACT ASSESMENT

PROPOSED ASSISTED LIVING FACILITY

Rye, New Hampshire

February 2021

Prepared for
Benchmark Senior Living



**Stephen G. Pernaw
& Company, Inc.**

**TRAFFIC IMPACT ASSESSMENT
PROPOSED ASSISTED LIVING FACILITY
RYE, NEW HAMPSHIRE
FEBRUARY 9, 2021**

INTRODUCTION

This study has been prepared for Benchmark Senior Living to assess the traffic impacts associated with the proposed 70-unit assisted living facility on US Route 1 (US1) in Rye, New Hampshire. The subject site is located on the west side of the highway, north of the Dow Lane intersection. This assessment evaluates the existing US1/Evolve at Rye intersection, as it will also provide access to the new assisted living facility. The analysis periods include the weekday morning (AM) and evening (PM) commuter peak periods, and both Opening Year (2022) and Horizon Year (2032) analyses are included.

This report is intended to summarize the traffic count data collected, the future traffic projections, the technical analyses, and our findings relative to traffic operations, capacity, and safety.

PROPOSAL

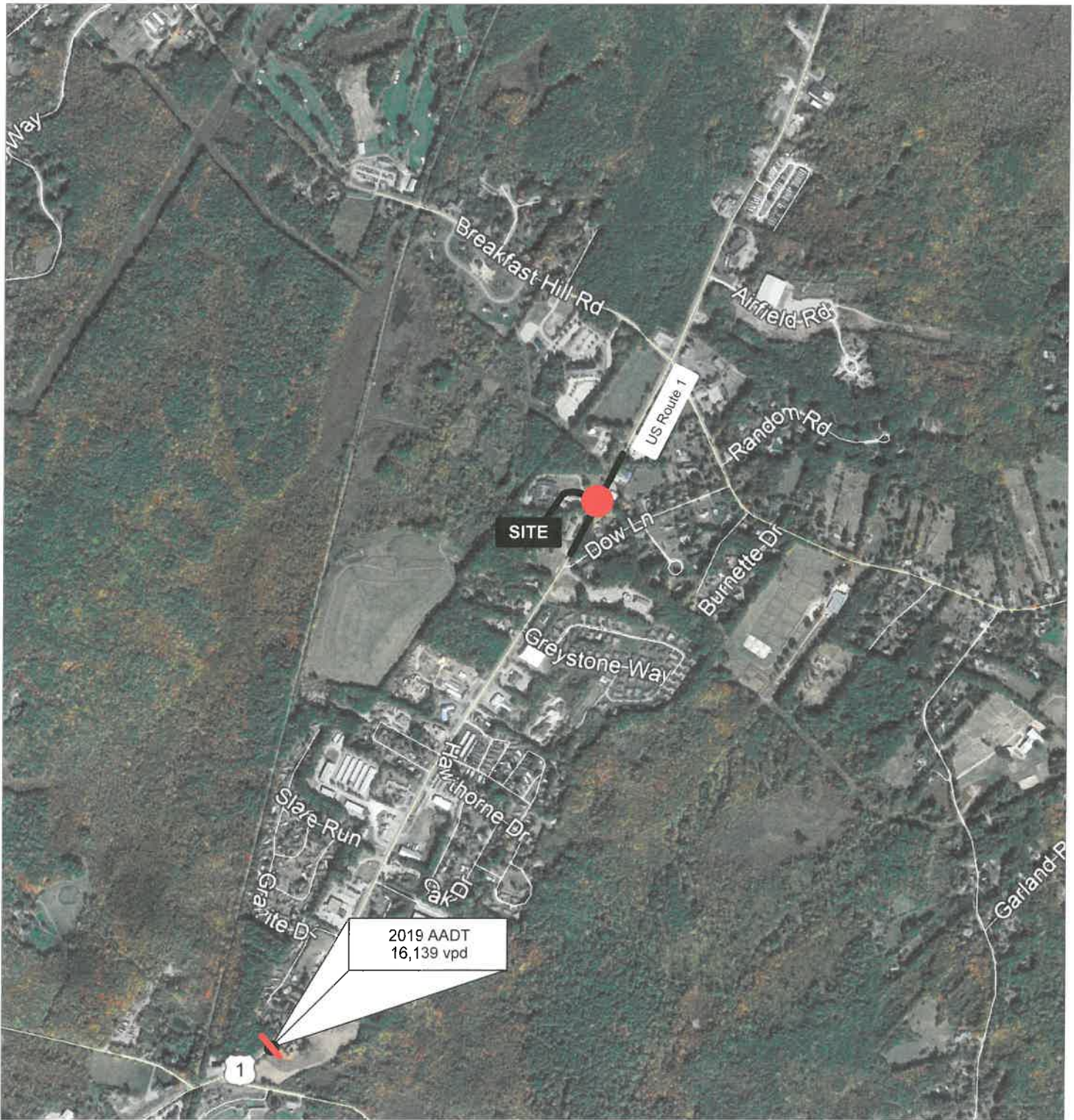
The proposed assisted living facility involves the construction of a new building addition to the existing senior living facility known as Evolve at Rye. The existing facility specializes in mind and memory care whereas the proposed facility caters to those that need an independent living that provides help performing daily routine activities such as bathing or dressing, or need reminders to take medication. The 70-unit assisted living facility will contain 91 beds.



Access to the site will be provided via the existing two-way site driveway located on the west side of US1. Figure 1 shows the location of the subject site with respect to the area highway system. Appendix A contains a land title survey plan prepared by MSC Civil Engineers and a schematic site plan prepared by Udelsman Associates.

EXISTING CONDITIONS

ROADWAYS

US Route 1 (Lafayette Road) functions as a principal arterial highway and it carries through traffic in a general north-south direction between Portsmouth to the north, through Rye to North Hampton, and points south. In the immediate study area, US1 is a three-lane highway with one through lane in each direction and a continuous two-way center left-turn lane. There are paved and gravel shoulders of variable width along both sides of the highway. The horizontal alignment of the highway is straight and the vertical alignment of the highway follows a southbound down grade of approximately -3%. The posted speed limit on this section of US1 is 45 miles per hour.



-  = AUTOMATIC TRAFFIC RECORDER LOCATION (NHDOT)
-  = INTERSECTION TURNING MOVEMENT COUNT LOCATION



2066B

Figure 1

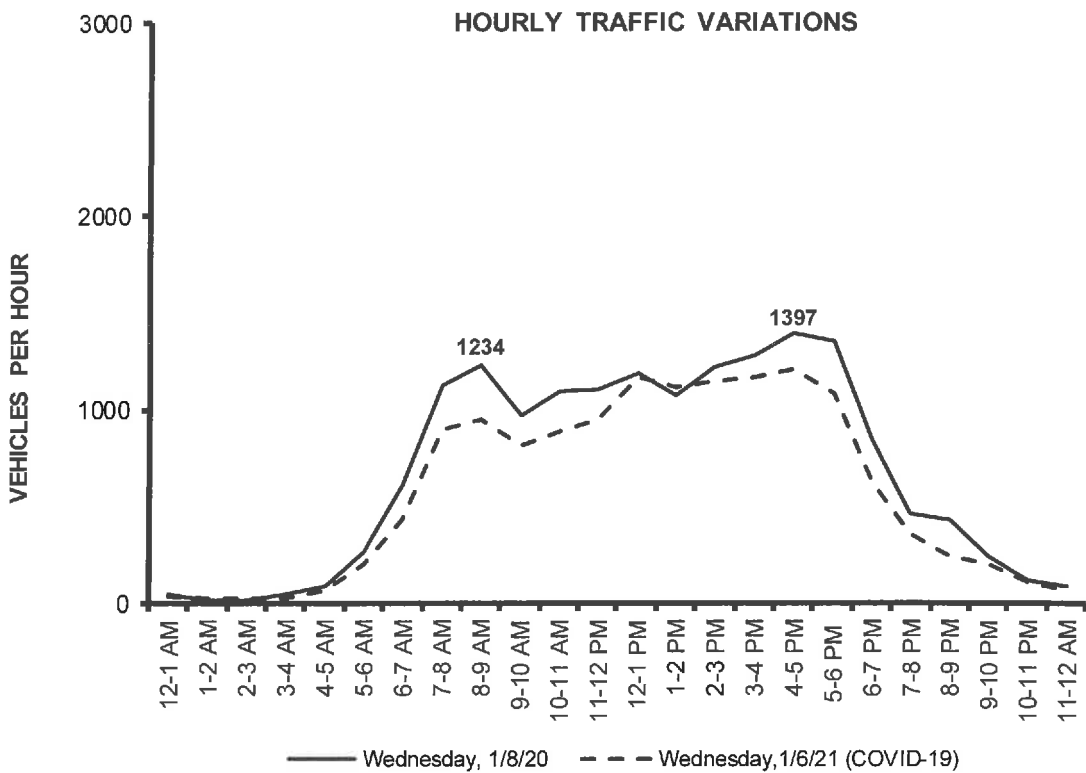
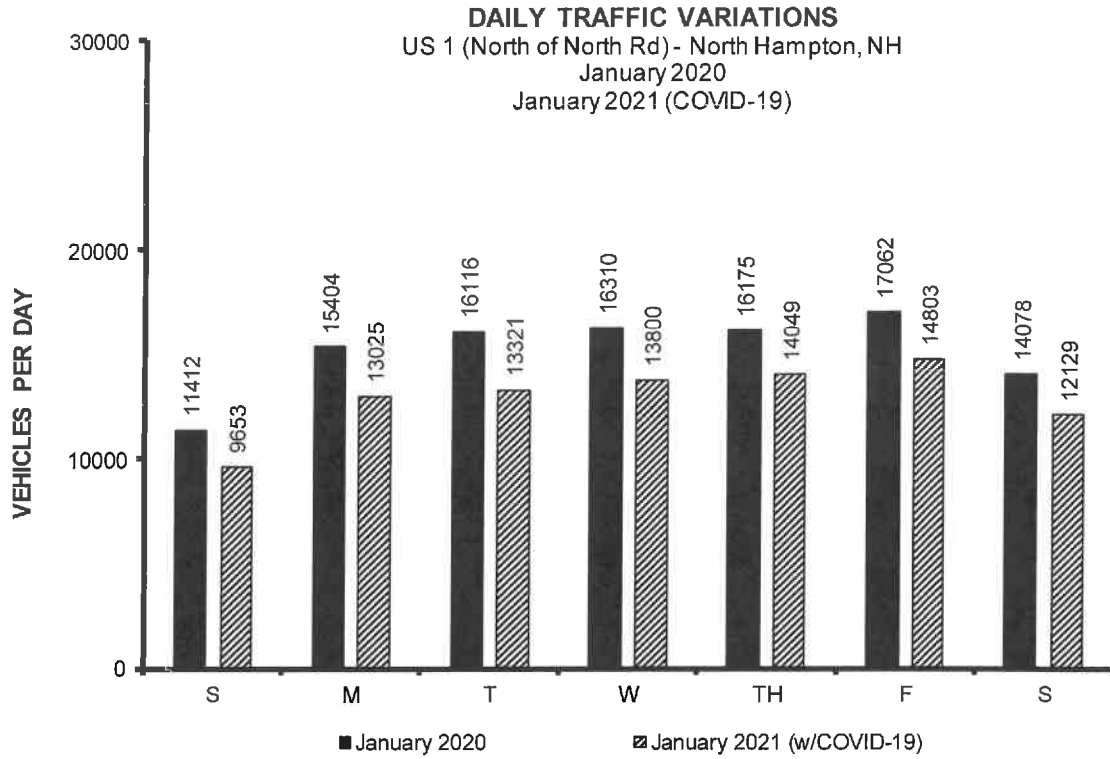
Site Location

Traffic Impact Assessment, Proposed Assisted Living Facility, Rye, New Hampshire

TRAFFIC VOLUMES

The New Hampshire Department of Transportation conducted a short-term automatic traffic recorder count in January 2021 on US1, in North Hampton north of North Road. This count station is located approximately 1.2 miles south of the subject site. According to NHDOT statistics, this section of US1 carried an estimated Annual Average Daily Traffic (AADT) volume of 16,139 vehicles per day (vpd) in 2019. By way of comparison, the AADT was higher in 2018 (16,254 vpd) and 2017 (16,356 vpd), indicating that the annual growth rate has been nil. The raw data collected in January 2021 is affected by the Covid-19 pandemic somewhat, as this roadway carried an average weekday traffic volume of 13,800 vpd.

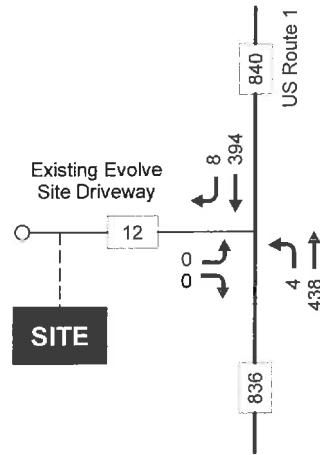
Although this data does not directly apply to the subject site given the several intersections and driveways between the site and the count station, it demonstrates that traffic demand on US1 generally reaches peak levels during the typical AM and PM commuter periods on weekdays. The daily and hourly variations in traffic demand at this count station are illustrated graphically on Page 4. Appendix B contains the detail sheets pertaining to this count.



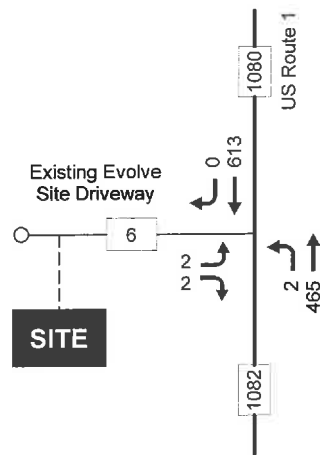
To establish the current traffic demand at the subject site, Pernaw & Company, Inc. conducted turning movement and vehicle classification counts on US1 at the existing site driveway on Wednesday, January 20, 2021 from 7:00 to 9:00 AM and from 3:00 to 6:00 PM. Several facts and conclusions are evident from this count data:

- Peak traffic periods on US1 were found to occur from 8:00 to 9:00 AM in the morning and from 3:30 to 4:30 PM in the evening. The traffic flow traveling past the site totaled 832 vehicles (AM) and 1,078 vehicles (PM) during the peak hour periods. The heavier directional traffic flow was northbound in the AM (53%) and reversed to southbound in the PM (57%).
- The existing site generated only 12 (AM) and 6 (PM) vehicle-trips during the peak hour periods.
- Analysis of the five-hour traffic count data revealed that 52% of the site vehicles traveled to/from points north on US1, and the remaining 48% traveled to and from points south.
- Truck traffic on US1 accounted for approximately 7% (AM) and 3% (PM) of the total traffic flow passing the site during the peak hour periods.

The peak hour traffic count data for the study area intersection is summarized on Figure 2. Appendix C contains the detail sheets from the manual turning movement counts.



AM PEAK HOUR
Wednesday, January 20, 2021
8:00 to 9:00 AM



PM PEAK HOUR
Wednesday, January 20, 2021
3:30 to 4:30 PM



2066B

Figure 2

2021 Existing Traffic Volumes

Traffic Impact Assessment, Proposed Assisted Living Facility, Rye, New Hampshire

NO-BUILD TRAFFIC VOLUMES

In order to identify the net impact that site traffic will have in the study area, future traffic projections with and without the proposed assisted living facility are necessary. The future traffic projections without the proposed facility are referred to as the “No-Build” traffic projections and these are summarized on Figure 3 for the 2032 horizon year case. These projections are based on the existing traffic volumes (January 2021 data), a Covid-19 adjustment factor of 1.19, a 1.0 percent annual background traffic growth rate (compounded annually) to account for regional growth in the area, and a peak-month seasonal adjustment factor of 1.26. The derivation of these factors is contained in Appendix D.

The 2032 No-Build traffic projections also account for the additional traffic associated with a pending residential development (30 townhomes) located immediately south of the subject site (see Appendix E). The No-Build traffic projections therefore reflect worst-case, peak-month, peak-hour conditions.

SITE GENERATED TRAFFIC

To estimate the quantity of vehicle trips that will be produced by the proposed assisted living facility, Pernaw & Company, Inc. considered the standardized trip-generation rates published by the Institute of Transportation Engineers (ITE)¹. The most applicable land use category is Land Use Code (LUC) 254 – Assisted Living, and the number of beds was used as the independent variable. The following table summarizes the results of the trip generation analysis and the impact that this will have on the driveway volumes.

Table 1	Trip Generation Summary Assisted Living Facility		
	Existing Site ¹	Assisted Living Facility ²	Expanded Site
Weekday Total (24 hours)			
Entering	NA veh	119 veh	NA veh
Exiting	<u>NA veh</u>	<u>119 veh</u>	<u>NA veh</u>
Total	NA trips	238 trips	NA trips
Weekday AM Peak Hour			
Entering	15 veh	11 veh	26 veh
Exiting	<u>0 veh</u>	<u>6 veh</u>	<u>6 veh</u>
Total	15 trips	17 trips	32 trips
Weekday PM Peak Hour			
Entering	2 veh	9 veh	11 veh
Exiting	<u>4 veh</u>	<u>15 veh</u>	<u>19 veh</u>
Total	6 trips	24 trips	30 trips

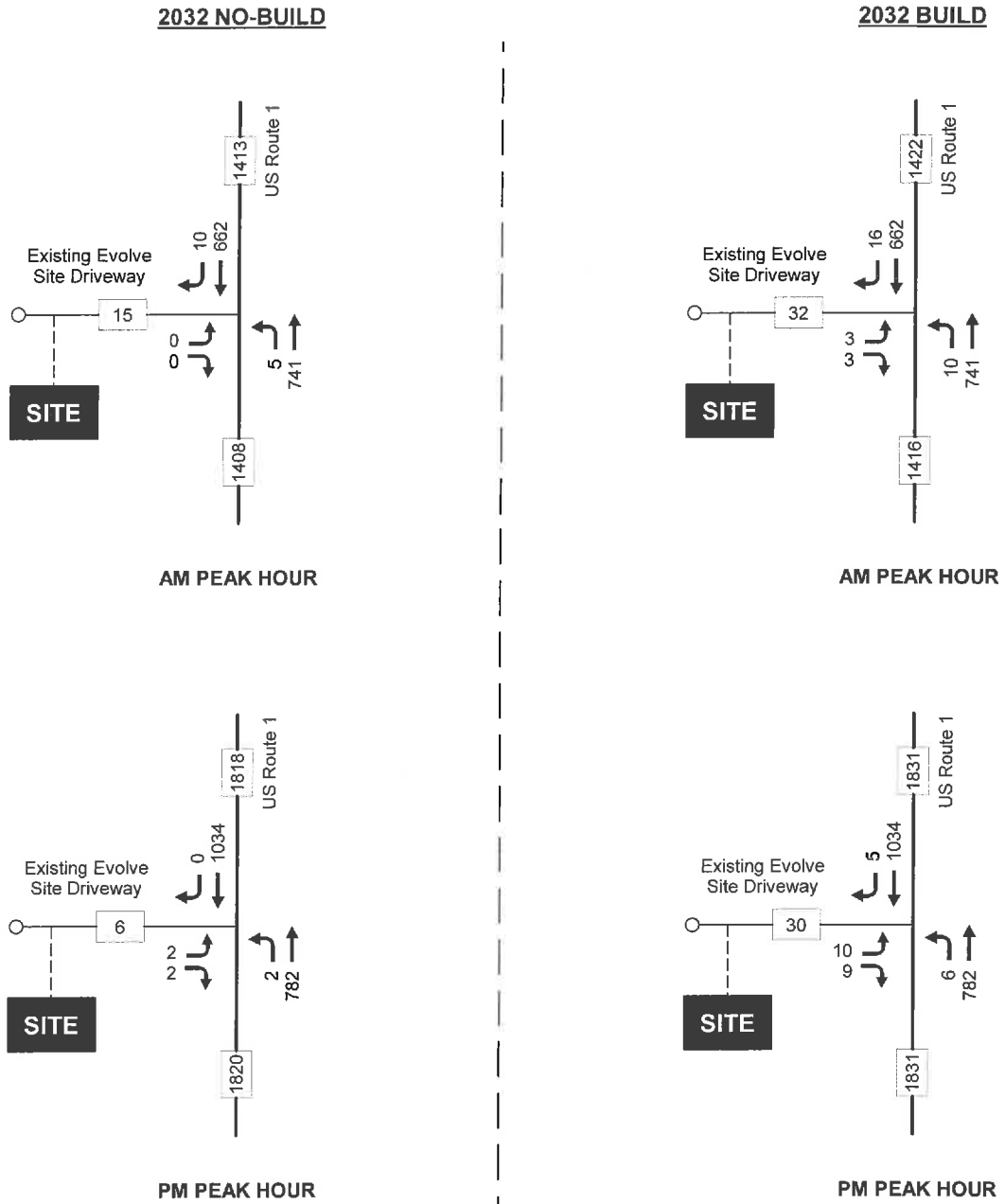
¹ Driveway count with Covid-19 adjustment factor

² ITE Land Use Code 254 - Assisted Living (91Beds)

¹ Institute of Transportation Engineers, *Trip Generation*, tenth edition (Washington, D.C., 2017)

BUILD TRAFFIC VOLUMES

The future traffic projections with the proposed assisted living facility in full operation are referred to as the “Build” traffic projections and these are also summarized schematically on Figure 3. These projections are based on the No-Build projections, the site generated traffic levels depicted in Table 1, and the expectation that the majority of the vehicles (52%) will travel to/from points north on US1. Appendix F contains the trip generation computations for this project, along with a diagram that summarizes the distribution of the primary trips at the study area intersection.



2066B

Figure 3

2032 Traffic Volumes

Traffic Impact Assessment, Proposed Assisted Living Facility, Rye, New Hampshire

IMPACT SUMMARY

TRAFFIC VOLUME INCREASES

The net impact that the proposed development project will have on traffic levels on US1 can be estimated by comparing the No-Build traffic projections with the Build traffic projections. This comparison demonstrates the greatest impact to roadway volumes will occur during the worst-case weekday PM peak hour period on US1 north of the site. Traffic volumes are projected to increase by less than +1 percent which corresponds to a net increase of approximately +13 (PM) vehicles north of the site. The impacts south of the site will be slightly less.

To put this into perspective, the most recent NHDOT traffic count on US1 revealed that random traffic flow from one day to the next varied by as much as +15%. Impacts beyond the immediate study area will dissipate as drivers turn at various intersections along the US1 corridor.

TRAFFIC OPERATIONS AND SAFETY

INTERSECTION CAPACITY - UNSIGNALIZED INTERSECTIONS

The long-range (2032) traffic projections form the basis for assessing traffic operations at the existing/proposed site driveway intersection on US1. This intersection was analyzed according to the methodologies of the *Highway Capacity Manual* as replicated by the latest edition of the *Synchro Traffic Signal Coordination Software (Version 10)*, which also performs unsignalized intersection capacity analyses.

Capacity and Level of Service (LOS) calculations pertaining to unsignalized intersections address the quality of service for those vehicles turning into and out of intersecting side streets. The availability of adequate gaps in the traffic stream on the major street (US1) actually controls the potential capacity for vehicle movements from the minor approach. Levels of Service are simply letter grades (A-F) that categorize the vehicle delays associated with specific turning maneuvers. Table 2 describes the criteria used in this analysis.

Table 2	Level-of-Service Criteria for Unsignalized Intersections		
	Control Delay (seconds/vehicle)	Level of Service by Volume-to-Capacity Ratio	
		$v/c \leq 1.0$	$v/c > 1.0$
0 - 10	A	F	
> 10 - 15	B	F	
> 15 - 25	C	F	
> 25 - 35	D	F	
> 35 - 50	E	F	
> 50	F	F	

Source: Transportation Research Board, Highway Capacity Manual 2010.

The results of this analysis for the **US1 / Existing Evolve Site Driveway** intersection are summarized on Table 3. The analysis demonstrates that all applicable turning movements will operate well below capacity during all hours of the day through 2032 and beyond. Nevertheless, vehicle delays are expected to occur during the weekday PM peak hour periods, similar to other driveways along this corridor. Vehicle queuing is expected to be minimal (3 vehicles). Appendix G contains the computations pertaining to the unsignalized intersection capacity analyses.

Table 3	STOP-Controlled Intersection Capacity Analysis US Route 1 / Existing Evolve 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
US Route 1 - NB LT Arrivals								
2032 No Build	9.1	0.01	A	<1	10.9	0.00	B	<1
2032 Build	9.2	0.01	A	<1	10.9	0.01	B	<1
Evolve Site Driveway - EB LT & RT Departures								
2032 No Build	0.0	0.00	A	-	45.9	0.12	E	<1
2032 Build	24.6	0.03	C	<1	89.1	0.61	F	3

¹ HCM Control Delay (seconds per vehicle), ² HCM Volume to Capacity Ratio, ³ HCM Level of Service, ⁴ HCM 95th Percentile Queue (vehicles)

AUXILIARY TURN LANE ANALYSES

Left-Turn Treatment - The type of treatment needed to accommodate left-turning vehicles from any street or highway to an intersecting side street (or driveway) can range from no treatment, where turning volumes are low; to the provision of a bypass lane for through traffic to travel around left-turning vehicles; to the addition of a formal center turn lane used exclusively by left-turning vehicles for deceleration and storage while waiting to complete their maneuvers.

Analysis of the 2032 Horizon Year traffic volumes using NCHRP 457 guidelines indicates that left-turn treatment is warranted on US1 at the existing/proposed site driveway (see Table 4). Favorably, this section of US1 currently provides a center turn lane for left-turn arrivals.

Right-Turn Treatment - The type of treatment needed to accommodate right-turning vehicles from any street or highway to any intersecting side street (or driveway) can range from a radius only, where turning volumes are low; to the provision of a short 10:1 right-turn taper; to the addition of an exclusive right-turn lane, where turning volumes and through traffic volumes are significant.

Analysis of the 2032 Build traffic volume projections using NCHRP 457 guidelines confirmed that right-turn treatment is not warranted at the site driveway on US1 (see Table 4). This means that the existing southbound travel lane on US1 will function adequately as a shared through-right lane for anticipated traffic volumes.

Minor-Road Approach Analysis – The type of treatment needed to accommodate exiting vehicles from the minor-road approach at a stop-controlled intersection can range from a single lane (shared left-right lane) in low-volume conditions, to two exit lanes (exclusive left-turn lane and exclusive right-turn lane) where turning volumes and through traffic volumes are significant, to multiple exit lanes in extreme cases.

Analysis of the 2032 Build traffic volumes using NCHRP 457 guidelines confirmed that one exit lane on the site driveway approach to US1 is sufficient for the anticipated traffic volumes (see Table 4).

Table 4	Auxiliary Turn Lane Warrants Analysis US Route 1 / Existing Evolve Site Driveway			
	2032 AM No-Build	2032 PM No-Build	2032 AM Build	2032 PM Build
<u>I. LEFT-TURN LANE WARRANTS ANALYSIS</u>				
Peak Hour Inputs:				
Left-Turn Volume (NB)	5	2	10	6
Advancing Volume (NB)	746	784	751	788
Opposing Volume (SB)	672	1034	678	1039
Percent Lefts	0.7%	0.3%	1.3%	0.8%
Speed (mph)	45	45	45	45
Limiting Advancing Volume (veh/h)	957	>1000	677	628
Left-Turn Treatment Warranted?	NO	NO	YES	YES
<u>II. RIGHT-TURN LANE WARRANTS ANALYSIS</u>				
Peak Hour Inputs:				
Right-Turn Volume (SB)	10	0	16	5
Approach Volume (SB)	672	1034	678	1039
Speed (mph)	45	45	45	45
Limiting Right-Turn Volume (veh/h)	25	11	25	11
Add Right-Turn Bay?	NO	NO	NO	NO
<u>III. MINOR-ROAD APPROACH ANALYSIS</u>				
Peak Hour Inputs:				
Major-Road Volume (NB-SB)	1418	1818	1429	1827
% Right-Turns on Minor (EB)	0	50	50	47
Minor-Road Approach Volume	0	4	6	19
Limiting Minor-Road Volume (veh/h)	77	74	122	70
Consider TWO Approach Lanes?	NO	NO	NO	NO

The computations pertaining to the auxiliary turn lane warrants analyses is found in Appendix H.

SIGHT DISTANCE

Sight distance at any intersection is an important safety consideration. The operator of a vehicle approaching an intersection should have an unobstructed view of the intersection and sufficient length of roadway to enable a full stop, should it be required to avoid a collision. Similarly, exiting vehicles from the site driveway approach to US1 should have sufficient visibility of approaching traffic in order to safely enter the traffic flow on to the major street.

Field observations confirm that ample stopping sight distances (SSD) currently exist looking left and looking right from the existing site driveway location. This means that drivers have sufficient sight distance to anticipate and avoid collisions. Intersection Sight Distances (ISD) reflect the distances needed for a vehicle exiting left or right under STOP control such that approaching vehicles on the major street need not reduce their travel speed to less than 70 percent of their initial speed. If the ISD is at least equal to the required SSD, then the intersection can operate in a safe manner.

Sight Distance Evaluation - US1 / Existing Site Driveway

I. Available Sight Distances

- A. Looking Left from Minor Approach = 600+ feet
- B. Looking Right from Minor Approach = 600+ feet

II. Stopping Sight Distance (Looking Left)- Southbound Approach

- A. 45 mph (posted speed) : 378 feet ample
- B. 50 mph (posted plus 5 mph): 446 feet ample

III. Stopping Sight Distance (Looking Right) - Northbound Approach

- A. 45 mph (posted speed) : 344 feet ample
- B. 50 mph (posted plus 5 mph): 405 feet ample

IV. Intersection Sight Distance - Left Turn Departure (Case B1)

- A. 45 mph (posted speed) : 497 feet ample
- B. 50 mph (posted plus 5 mph): 552 feet ample

V. Intersection Sight Distance - Right Turn Departure (Case B2)

- A. 45 mph (posted speed) : 430 feet ample
- B. 50 mph (posted plus 5 mph): 478 feet ample

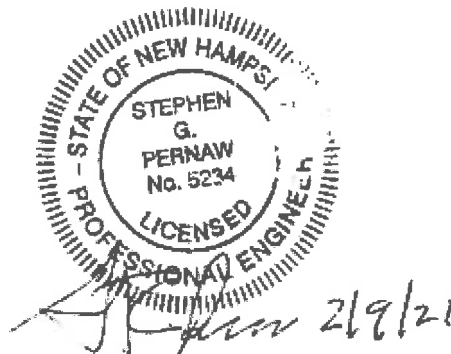
Photographs depicting the available sight distances looking left and looking right from the site driveway approach to US1 are included in Appendix I.

STUDY FINDINGS AND RECOMMENDATIONS

Based upon the existing conditions data collected on US Route 1, the anticipated traffic volume increases associated with the proposed assisted living facility, and the analysis of future traffic conditions at this study area intersection, Pernaw & Company, Inc. finds that:

1. The traffic counts conducted by Pernaw & Company, Inc. at the existing Evolve Site Driveway intersection on US1 in January 2021 revealed that the peak traffic hours on US1 occurred from 8:00 to 9:00 AM and from 3:30 to 4:30 PM on a typical weekday. During these periods, 832 vehicles (AM) and 1,078 vehicles (PM) were observed traveling past the subject site.
2. The existing site driveway accommodated only 12 (AM) and 6 (PM) vehicles during the peak hour periods.
3. The trip generation analysis revealed that, on an average weekday basis, the proposed assisted living facility will generate approximately +17 vehicle-trips (11 arrivals, 6 departures) during the AM peak hour, and 24 vehicle-trips (9 arrivals, 15 departures) during the PM peak hour period. The trip distribution analysis indicates that a slight majority of site traffic (52%) will travel to/from points north on US1.
4. Analysis of the horizon year (2032) traffic operations at the site driveway intersection confirmed that all applicable turning movements will operate well below capacity through the horizon year with the site fully operational. Although departures from the site driveway will continue to encounter long delays during the weekday PM peak hour period, vehicle queuing will be minimal (3 vehicles) and traffic congestion will not result.
5. The left-turn lane warrants analyses contained herein indicates that left-turn treatment is needed for northbound left-turn arrivals into the site. Favorably, this section of US 1 provides a center left-turn lane to safely accommodate this movement.
6. The right-turn lane warrants analyses indicate that no special treatment is needed for southbound vehicles entering the site. This means that the existing southbound travel lane on US1 will function adequately as a shared through-right lane.
7. The minor-road approach geometry analysis indicates that one departure lane is sufficient on the site driveway approach to US1.
8. Ample sight distances currently exist looking left and right from the site driveway intersection on US1. Placement of any future signs and/or plantings along the site frontage should not restrict the view of approaching vehicles on the state highway.

By maintaining clear “sight distance triangles” on the existing driveway approach to US1, vehicular access and egress should continue to be reasonably safe and efficient from a transportation engineering standpoint for the size and type of development that is proposed.



APPENDIX

Appendix A	Site Plan
Appendix B	Automatic Traffic Recorder Counts
Appendix C	Intersection Turning Movement Counts
Appendix D	Adjustment Factors
Appendix E	Other Development Traffic Volumes
Appendix F	Site Generated Traffic Volumes / Trip Distribution
Appendix G	Capacity and Level of Service Calculations – Unsignalized
Appendix H	Auxiliary Turn Lane Warrants Analysis
Appendix I	Sight Distance Photographs

Appendix A

Site Plan

LEGEND
ALTAACSM LAND TITLE SURVEY
PROPERTY OF
BANCUARY CARE, LLC
299 LAFAYETTE ROAD
RAYE, NEW HAMPSHIRE
COUNTY OF ROCKINGHAM

LEGEND
ALTAACSM LAND TITLE SURVEY
PROPERTY OF
BANCUARY CARE, LLC
299 LAFAYETTE ROAD
RAYE, NEW HAMPSHIRE
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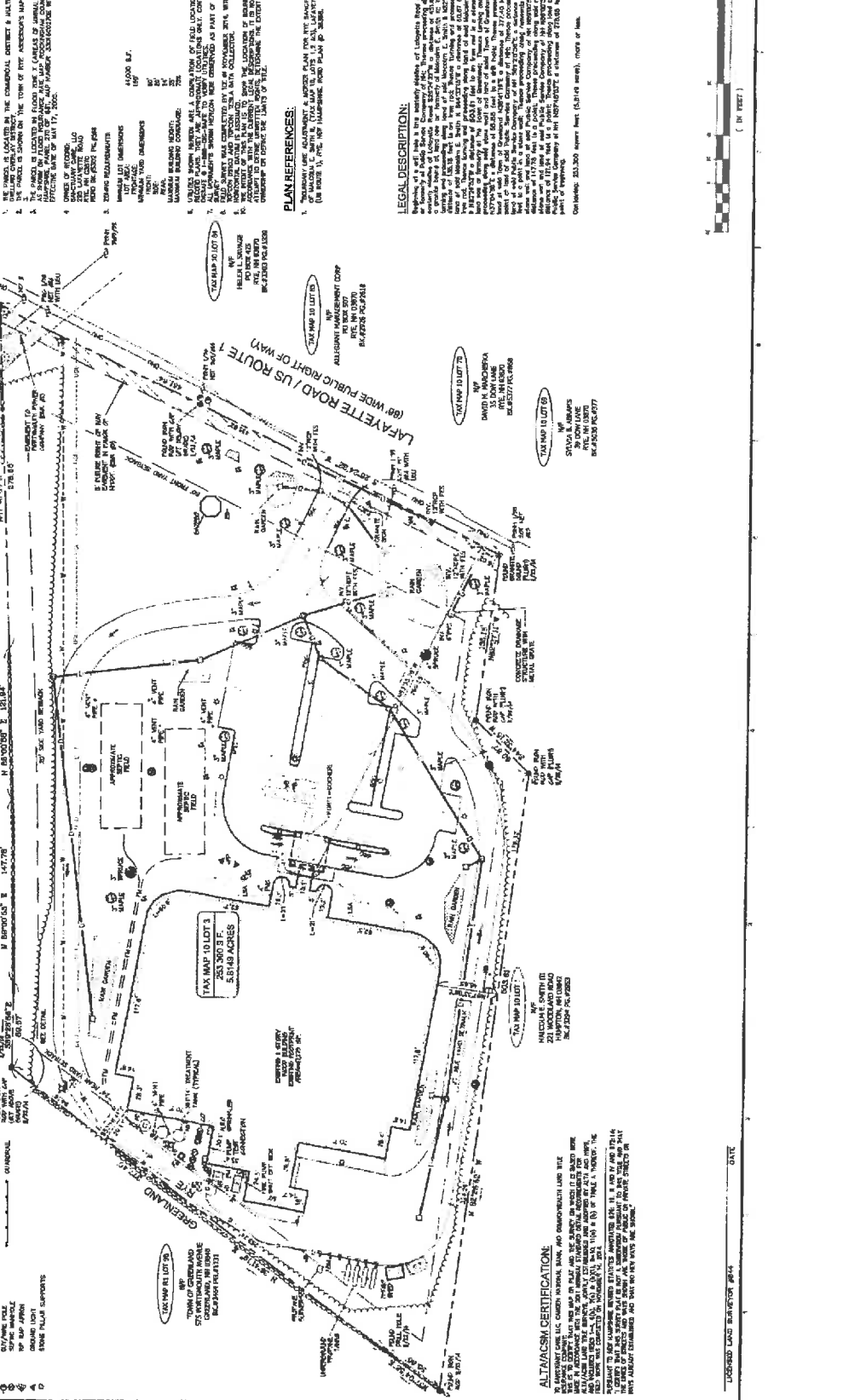


NOTES:
1. THE SURVEY LOCATES IN THE COMMERCIAL DISTRICT & HAS A LIMITED
2. ALL LOTS ARE SHOWN IN THE TOWN OF RYE, NEW HAMPSHIRE MAP TO SCALE
3. THE SURVEY IS BASED ON THE BENCH MARKS SHOWN ON THE MAP AND THE
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PLAN REFERENCES:
1. "BENCH MARK ADJUSTMENTS" MAP FOR THE BENCH MARKS
(A) MAP NO. 1, THE 1874 "NEW HAMPSHIRE PLANNING PLAN" MAP.

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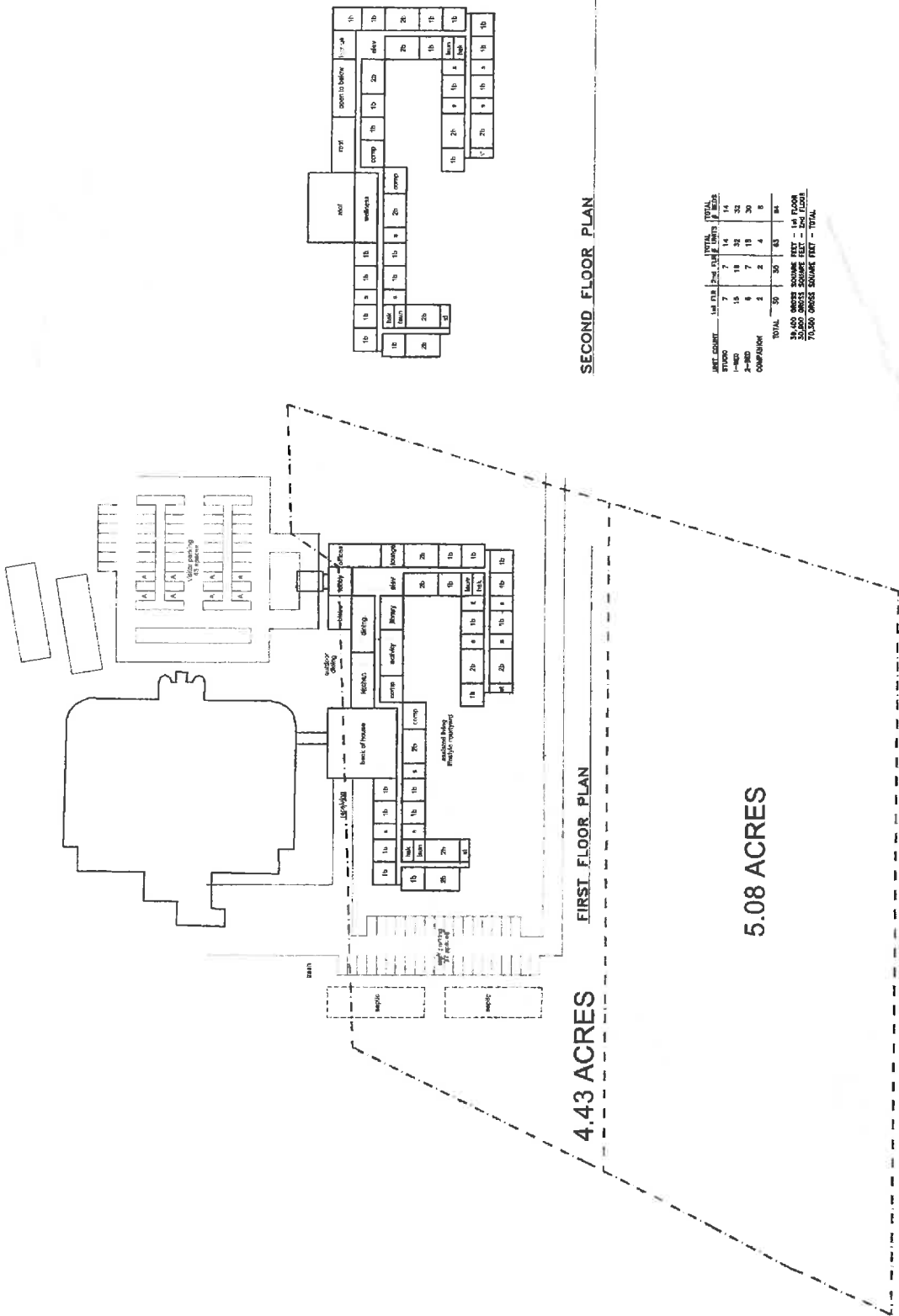


REV. NO.	REVISIONS	DATE

DATE: 12/19/20
 SHEMATIC SITE PLAN & FLOOR PLANS
 BENCHMARK SENIOR LIVING
 RYE ASSISTED LIVING
 NEW HAMPSHIRE

SCALE: 1"=40'-0"
 UDELSMAN ASSOCIATES
 161 FEDERAL HILL ROAD
 RYE, NEW HAMPSHIRE 03099
 603-465-9960

PROJECT NO: PROJ0001
 SHEET NO: A1



SECOND FLOOR PLAN

FIRST FLOOR PLAN

UNIT COUNT	1st	2nd	TOTAL
1-BED	15	18	33
2-BED	6	7	13
COMPARISON	2	2	4
TOTAL	23	27	50

18,660 GROSS SQUARE FEET - 1st FLOOR
 20,800 GROSS SQUARE FEET - 2nd FLOOR
 79,500 GROSS SQUARE FEET - TOTAL

Appendix B

Automatic Traffic Recorder Counts



Transportation Data Management System



Excel Version

Weekly Volume Report			
Location ID:	02345001	Type:	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	NORTH HAMPTON	Period:	Mon 1/4/2021 - Sun 1/10/2021
AADT:			

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM	22	31	32	26	48	47	34	34	0.3%
1:00 AM	18	22	28	19	19	29	34	24	0.2%
2:00 AM	24	19	21	18	24	16	23	21	0.2%
3:00 AM	19	29	28	37	32	14	16	25	0.2%
4:00 AM	71	56	72	68	57	32	22	54	0.4%
5:00 AM	176	199	198	200	179	64	45	152	1.2%
6:00 AM	423	443	434	451	433	146	100	347	2.7%
7:00 AM	835	818	897	848	808	348	228	683	5.3%
8:00 AM	888	963	944	961	940	544	350	799	6.2%
9:00 AM	788	810	816	789	800	693	527	746	5.8%
10:00 AM	910	848	891	909	942	932	711	878	6.8%
11:00 AM	979	967	946	1017	1119	1152	874	1,008	7.8%
12:00 PM	1012	1028	1162	1125	1251	1239	1068	1,126	8.7%
1:00 PM	1035	1041	1115	1138	1126	1243	1086	1,112	8.6%
2:00 PM	1118	1045	1143	1174	1266	1208	1024	1,140	8.8%
3:00 PM	1161	1155	1170	1210	1352	1119	951	1,160	8.9%
4:00 PM	1171	1181	1205	1207	1279	988	795	1,118	8.6%
5:00 PM	1001	1059	1088	1125	1193	813	607	984	7.6%
6:00 PM	578	693	627	676	711	522	437	606	4.7%
7:00 PM	320	370	360	365	477	336	259	355	2.7%
8:00 PM	187	218	241	271	292	264	203	239	1.8%
9:00 PM	136	151	204	211	186	177	132	171	1.3%
10:00 PM	88	110	109	132	173	137	86	119	0.9%
11:00 PM	65	65	69	72	96	66	41	68	0.5%
Total	13,025	13,321	13,800	14,049	14,803	12,129	9,653		
24hr Total	13025	13321	13800	14049	14803	12129	9653	12,969	
AM Pk Hr	11:00	11:00	11:00	11:00	11:00	11:00	11:00		
AM Peak	979	967	946	1017	1119	1152	874	1,008	
PM Pk Hr	4:00	4:00	4:00	3:00	3:00	1:00	1:00		
PM Peak	1171	1181	1205	1210	1352	1243	1086	1,207	
% Pk Hr	8.99%	8.87%	8.73%	8.61%	9.13%	10.25%	11.25%	9.40%	



Transportation Data Management System



Excel Version

Weekly Volume Report			
Location ID:	02345001	Type:	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	NORTH HAMPTON	Period:	Mon 1/6/2020 - Sun 1/12/2020
AADT:			

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM	30	51	43	45	47	78	66	51	0.3%
1:00 AM	21	17	18	26	25	37	41	26	0.2%
2:00 AM	20	21	16	25	29	15	27	22	0.1%
3:00 AM	24	37	46	27	36	25	22	31	0.2%
4:00 AM	86	91	91	98	88	47	17	74	0.5%
5:00 AM	287	283	262	290	250	109	81	223	1.5%
6:00 AM	605	607	608	578	616	209	143	481	3.2%
7:00 AM	1077	1087	1125	1057	1081	426	294	878	5.8%
8:00 AM	1226	1265	1234	1205	1213	687	540	1,053	6.9%
9:00 AM	900	968	967	934	1013	855	688	904	5.9%
10:00 AM	906	1045	1092	1000	1058	1037	918	1,008	6.6%
11:00 AM	1081	1148	1104	1120	1169	1244	1064	1,133	7.4%
12:00 PM	1158	1163	1188	1093	1332	1302	1260	1,214	8.0%
1:00 PM	1151	1093	1075	1122	1207	1359	1181	1,170	7.7%
2:00 PM	1173	1214	1217	1185	1395	1348	1218	1,250	8.2%
3:00 PM	1306	1306	1285	1358	1356	1277	1046	1,276	8.4%
4:00 PM	1264	1395	1397	1392	1440	1118	863	1,267	8.3%
5:00 PM	1242	1267	1352	1394	1291	905	645	1,157	7.6%
6:00 PM	734	799	846	845	832	669	485	744	4.9%
7:00 PM	392	443	464	494	534	420	282	433	2.8%
8:00 PM	310	365	433	366	403	349	226	350	2.3%
9:00 PM	224	237	240	282	317	275	160	248	1.6%
10:00 PM	123	137	117	148	214	170	97	144	0.9%
11:00 PM	64	77	90	91	116	117	48	86	0.6%
Total	15,404	16,116	16,310	16,175	17,062	14,078	11,412		
24hr Total	15404	16116	16310	16175	17062	14078	11412	15,222	
AM Pk Hr	8:00	8:00	8:00	8:00	8:00	11:00	11:00		
AM Peak	1226	1265	1234	1205	1213	1244	1064	1,207	
PM Pk Hr	3:00	4:00	4:00	5:00	4:00	1:00	12:00		
PM Peak	1306	1395	1397	1394	1440	1359	1260	1,364	
% Pk Hr	8.48%	8.66%	8.57%	8.62%	8.44%	9.65%	11.04%	9.07%	

Appendix C

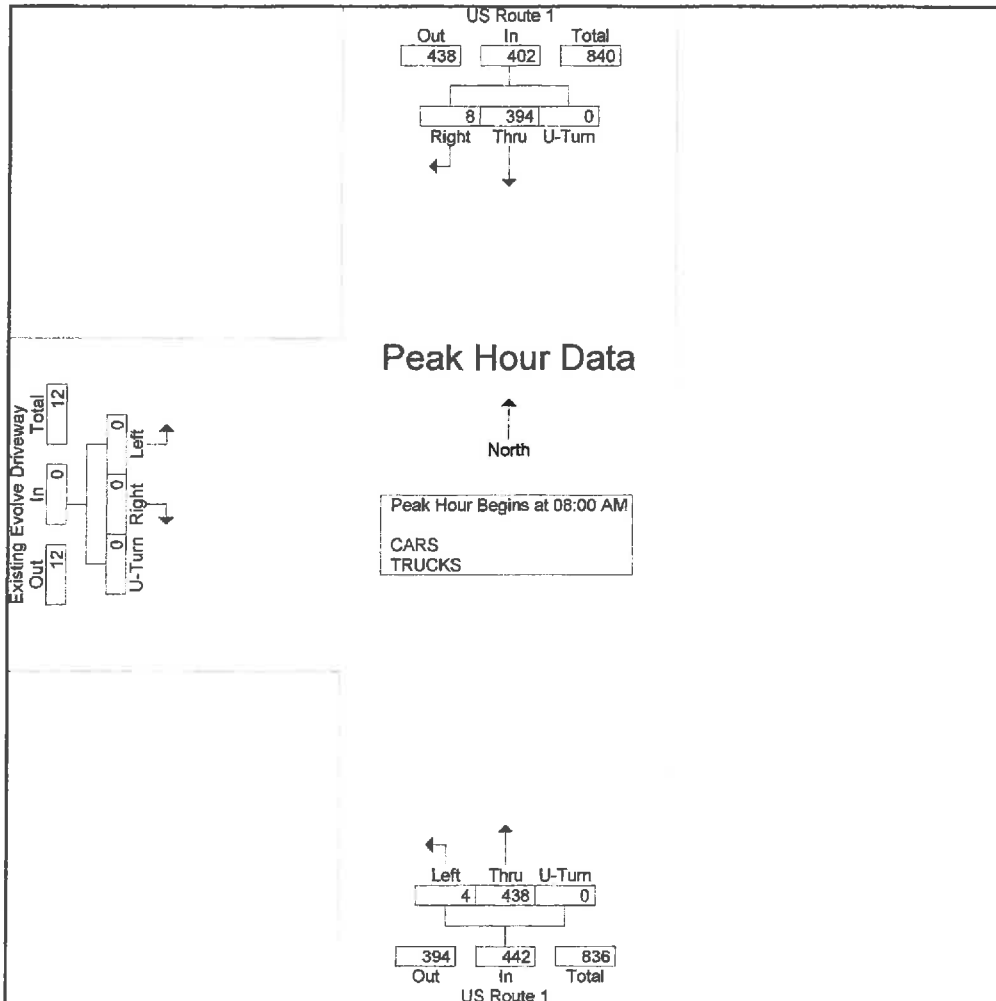
Intersection Turning Movement Counts

Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PT
Site Code : 2066A
Start Date : 1/20/2021
Page No : 2

Start Time	US Route 1 From North				US Route 1 From South				Existing Evolve Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	2	103	0	105	98	0	0	98	0	0	0	0	203
08:15 AM	2	107	0	109	112	0	0	112	0	0	0	0	221
08:30 AM	1	81	0	82	109	1	0	110	0	0	0	0	192
08:45 AM	3	103	0	106	119	3	0	122	0	0	0	0	228
Total Volume	8	394	0	402	438	4	0	442	0	0	0	0	844
% App. Total	2	98	0		99.1	0.9	0		0	0	0		
PHF	.667	.921	.000	.922	.920	.333	.000	.906	.000	.000	.000	.000	.925

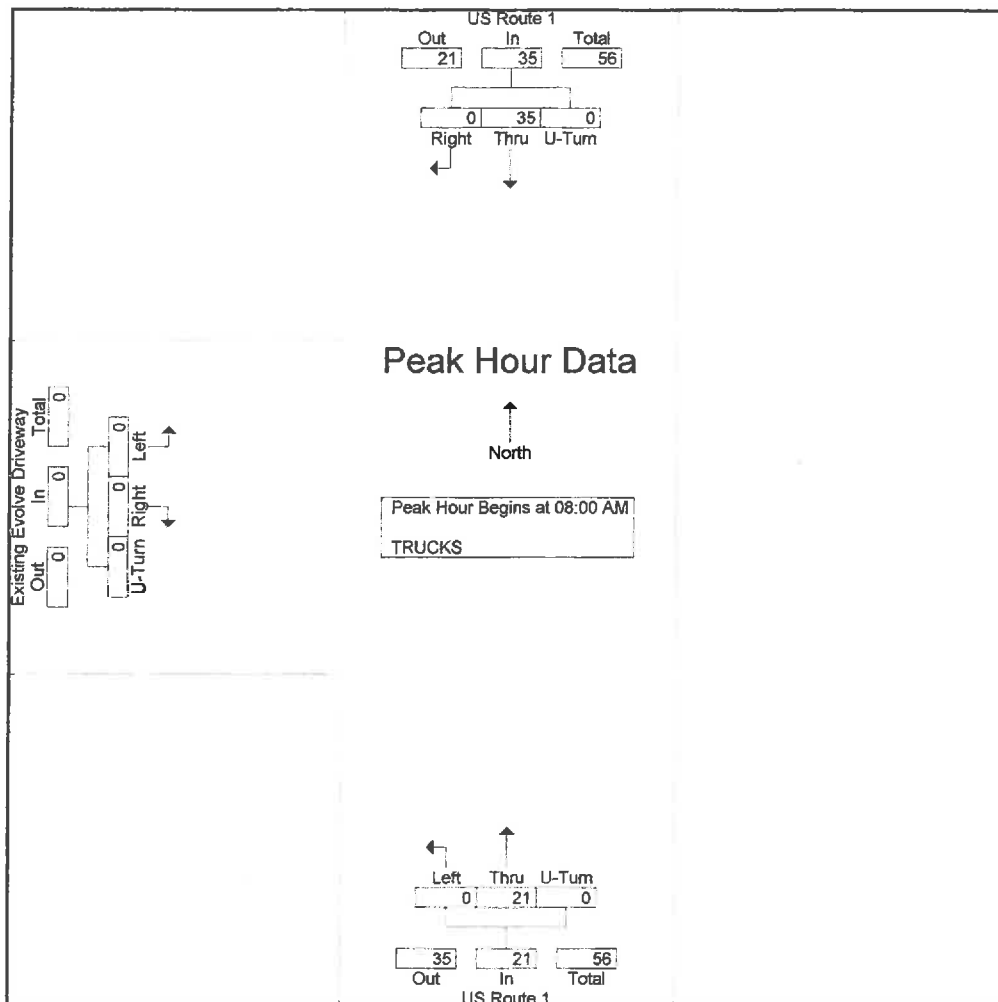


Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 2

Start Time	US Route 1 From North				US Route 1 From South				Existing Evolve Driveway From West				Int. Total	
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total		
Peak Hour Analysis From 08:00 AM to 08:45 AM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 08:00 AM														
08:00 AM	0	13	0	13	3	0	0	3	0	0	0	0	0	16
08:15 AM	0	9	0	9	8	0	0	8	0	0	0	0	0	17
08:30 AM	0	6	0	6	4	0	0	4	0	0	0	0	0	10
08:45 AM	0	7	0	7	6	0	0	6	0	0	0	0	0	13
Total Volume	0	35	0	35	21	0	0	21	0	0	0	0	0	56
% App. Total	0	100	0	100	100	0	0	100	0	0	0	0	0	100
PHF	.000	.673	.000	.673	.656	.000	.000	.656	.000	.000	.000	.000	.000	.824



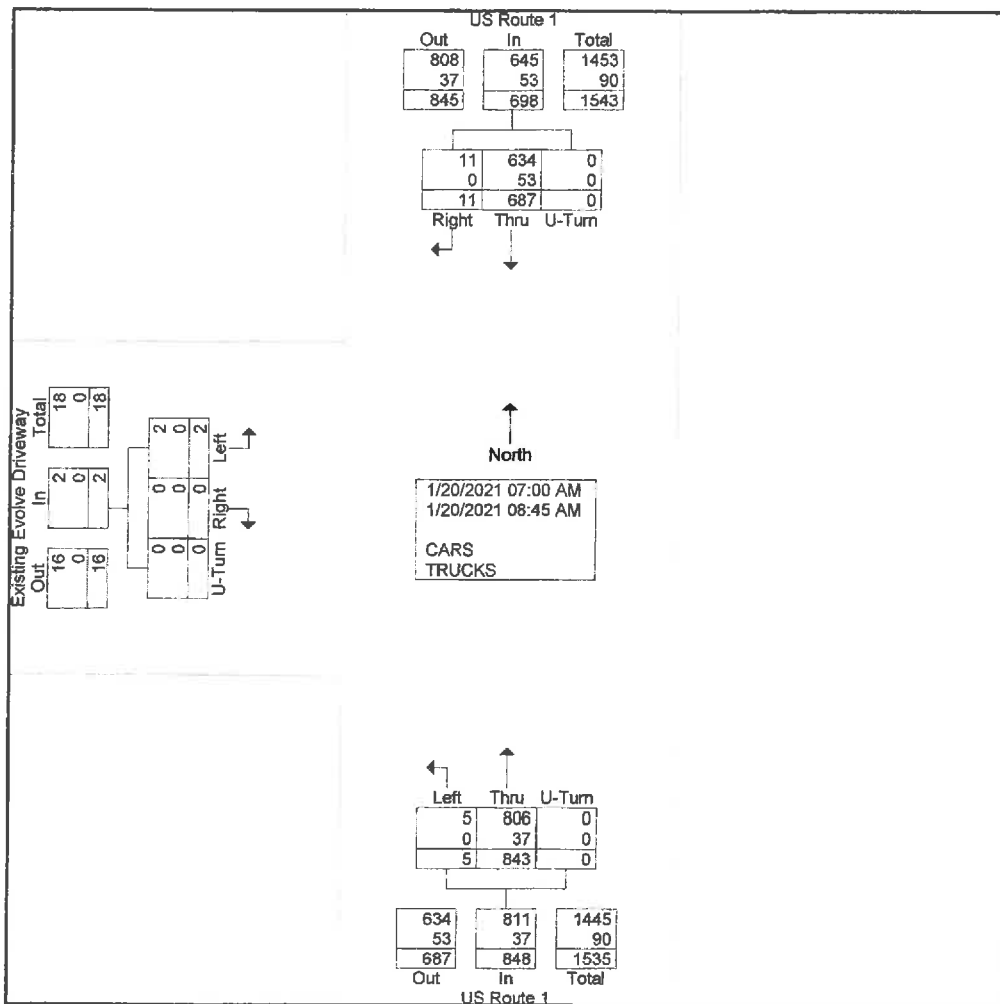
Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 1

Groups Printed- CARS - TRUCKS

Start Time	US Route 1 From North				US Route 1 From South				Existing Evolve Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
07:00 AM	1	71	0	72	64	0	0	64	0	0	0	0	136
07:15 AM	0	73	0	73	114	1	0	115	0	1	0	1	189
07:30 AM	2	70	0	72	107	0	0	107	0	0	0	0	179
07:45 AM	0	79	0	79	120	0	0	120	0	1	0	1	200
Total	3	293	0	296	405	1	0	406	0	2	0	2	704
08:00 AM	2	103	0	105	98	0	0	98	0	0	0	0	203
08:15 AM	2	107	0	109	112	0	0	112	0	0	0	0	221
08:30 AM	1	81	0	82	109	1	0	110	0	0	0	0	192
08:45 AM	3	103	0	106	119	3	0	122	0	0	0	0	228
Total	8	394	0	402	438	4	0	442	0	0	0	0	844
Grand Total	11	687	0	698	843	5	0	848	0	2	0	2	1548
Apprch %	1.6	98.4	0		99.4	0.6	0		0	100	0		
Total %	0.7	44.4	0	45.1	54.5	0.3	0	54.8	0	0.1	0	0.1	
CARS	11	634	0	645	806	5	0	811	0	2	0	2	1458
% CARS	100	92.3	0	92.4	95.6	100	0	95.6	0	100	0	100	94.2
TRUCKS	0	53	0	53	37	0	0	37	0	0	0	0	90
% TRUCKS	0	7.7	0	7.6	4.4	0	0	4.4	0	0	0	0	5.8



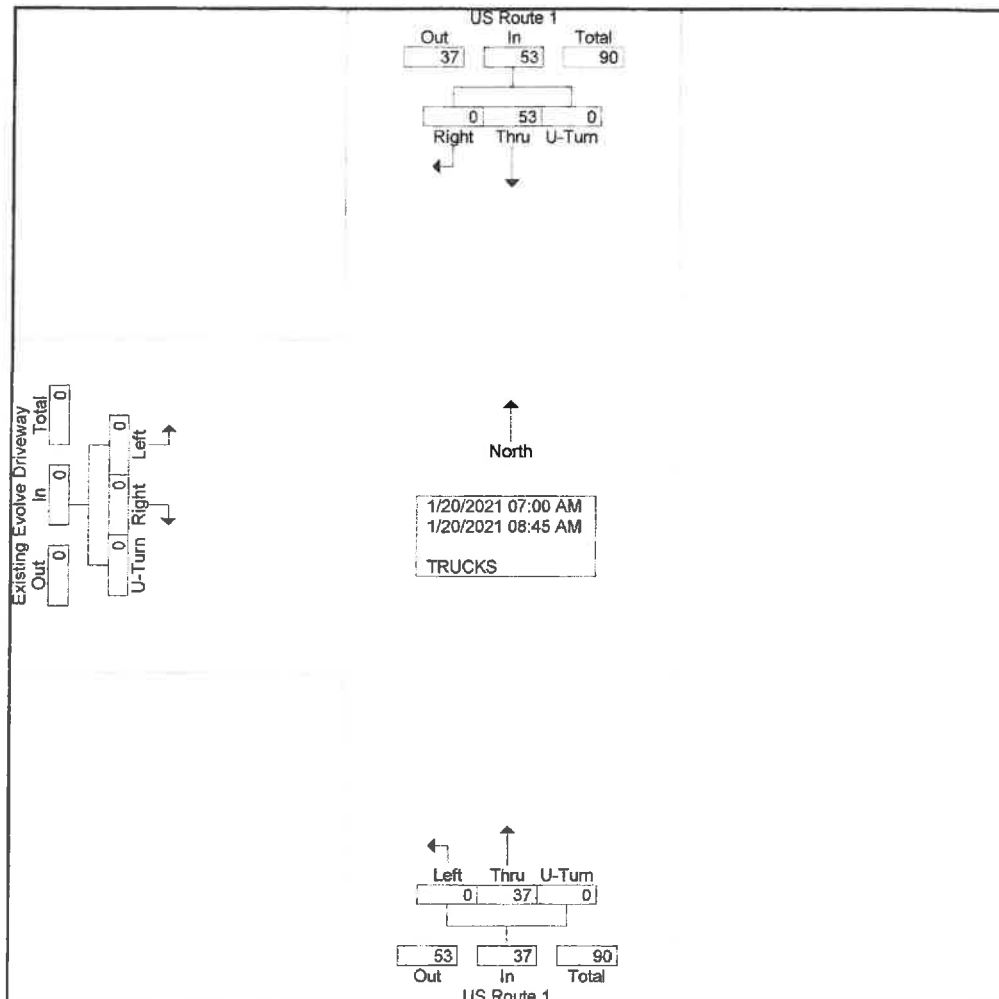
Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PT
Site Code : 2066A
Start Date : 1/20/2021
Page No : 1

Groups Printed- TRUCKS

Start Time	US Route 1 From North				US Route 1 From South				Existing Evolve Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
07:00 AM	0	4	0	4	4	0	0	4	0	0	0	0	8
07:15 AM	0	5	0	5	3	0	0	3	0	0	0	0	8
07:30 AM	0	5	0	5	4	0	0	4	0	0	0	0	9
07:45 AM	0	4	0	4	5	0	0	5	0	0	0	0	9
Total	0	18	0	18	16	0	0	16	0	0	0	0	34
08:00 AM	0	13	0	13	3	0	0	3	0	0	0	0	16
08:15 AM	0	9	0	9	8	0	0	8	0	0	0	0	17
08:30 AM	0	6	0	6	4	0	0	4	0	0	0	0	10
08:45 AM	0	7	0	7	6	0	0	6	0	0	0	0	13
Total	0	35	0	35	21	0	0	21	0	0	0	0	56
Grand Total	0	53	0	53	37	0	0	37	0	0	0	0	90
Apprch %	0	100	0		100	0	0		0	0	0	0	
Total %	0	58.9	0	58.9	41.1	0	0	41.1	0	0	0	0	

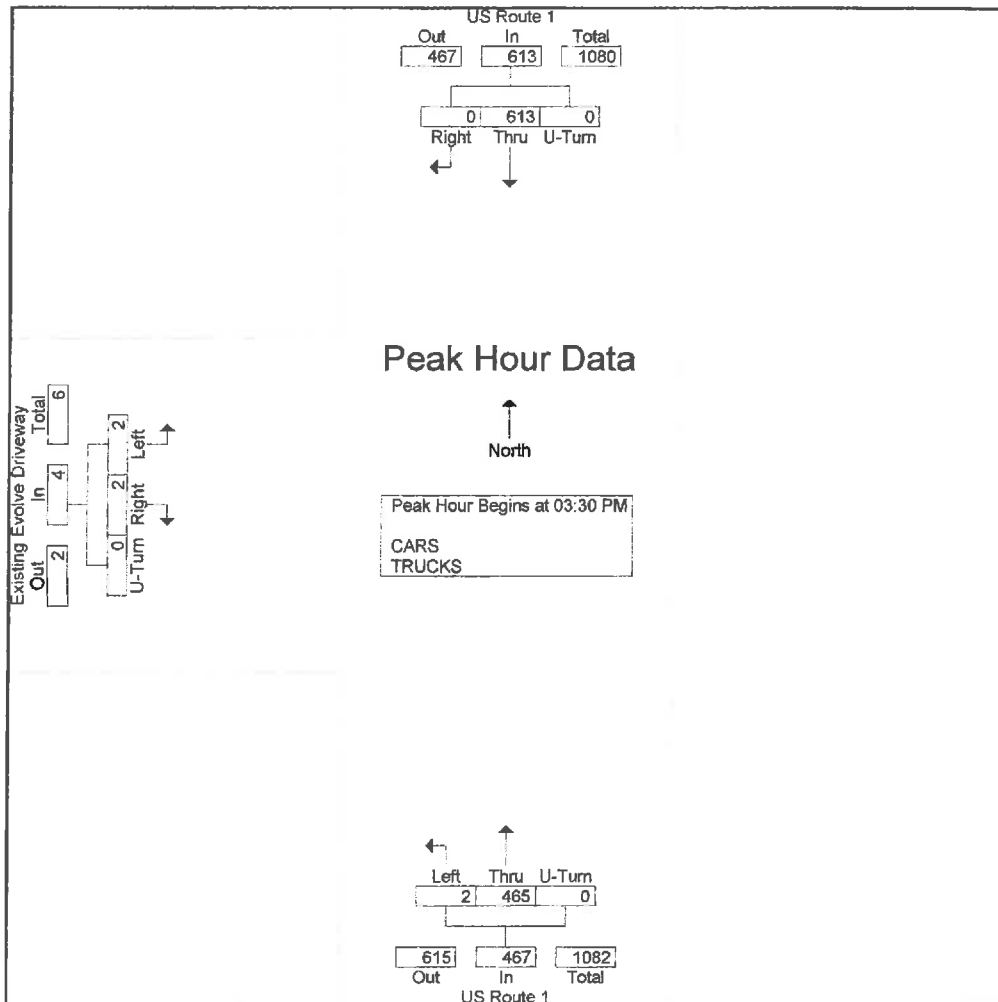


Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PM
Site Code : 2066A
Start Date : 1/20/2021
Page No : 3

Start Time	US Route 1 From North				US Route 1 From South				Existing Evolve Driveway From West				Int. Total	
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total		
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 03:30 PM														
03:30 PM	0	170	0	170	113	0	0	113	0	0	0	0	0	283
03:45 PM	0	145	0	145	119	1	0	120	2	1	0	3	0	268
04:00 PM	0	150	0	150	133	0	0	133	0	0	0	0	0	283
04:15 PM	0	148	0	148	100	1	0	101	0	1	0	1	0	250
Total Volume	0	613	0	613	465	2	0	467	2	2	0	4	0	1084
% App. Total	0	100	0		99.6	0.4	0		50	50	0			
PHF	.000	.901	.000	.901	.874	.500	.000	.878	.250	.500	.000	.333		.958

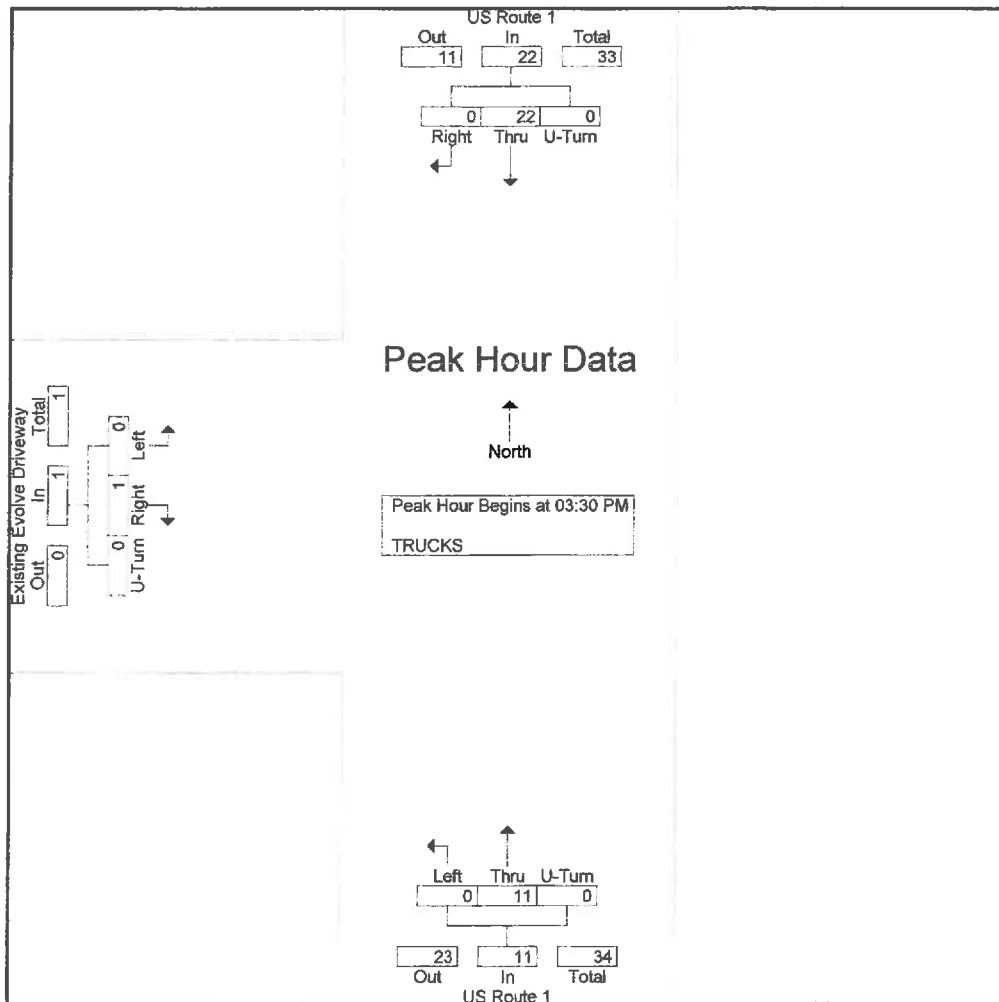


Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PM
Site Code : 2066A
Start Date : 1/20/2021
Page No : 2

Start Time	US Route 1 From North				US Route 1 From South				Existing Evolve Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
Peak Hour Analysis From 03:30 PM to 04:15 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:30 PM													
03:30 PM	0	7	0	7	2	0	0	2	0	0	0	0	9
03:45 PM	0	9	0	9	3	0	0	3	1	0	0	1	13
04:00 PM	0	4	0	4	4	0	0	4	0	0	0	0	8
04:15 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
Total Volume	0	22	0	22	11	0	0	11	1	0	0	1	34
% App. Total	0	100	0	100	100	0	0	100	100	0	0	100	100
PHF	.000	.611	.000	.611	.688	.000	.000	.688	.250	.000	.000	.250	.654



Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 1

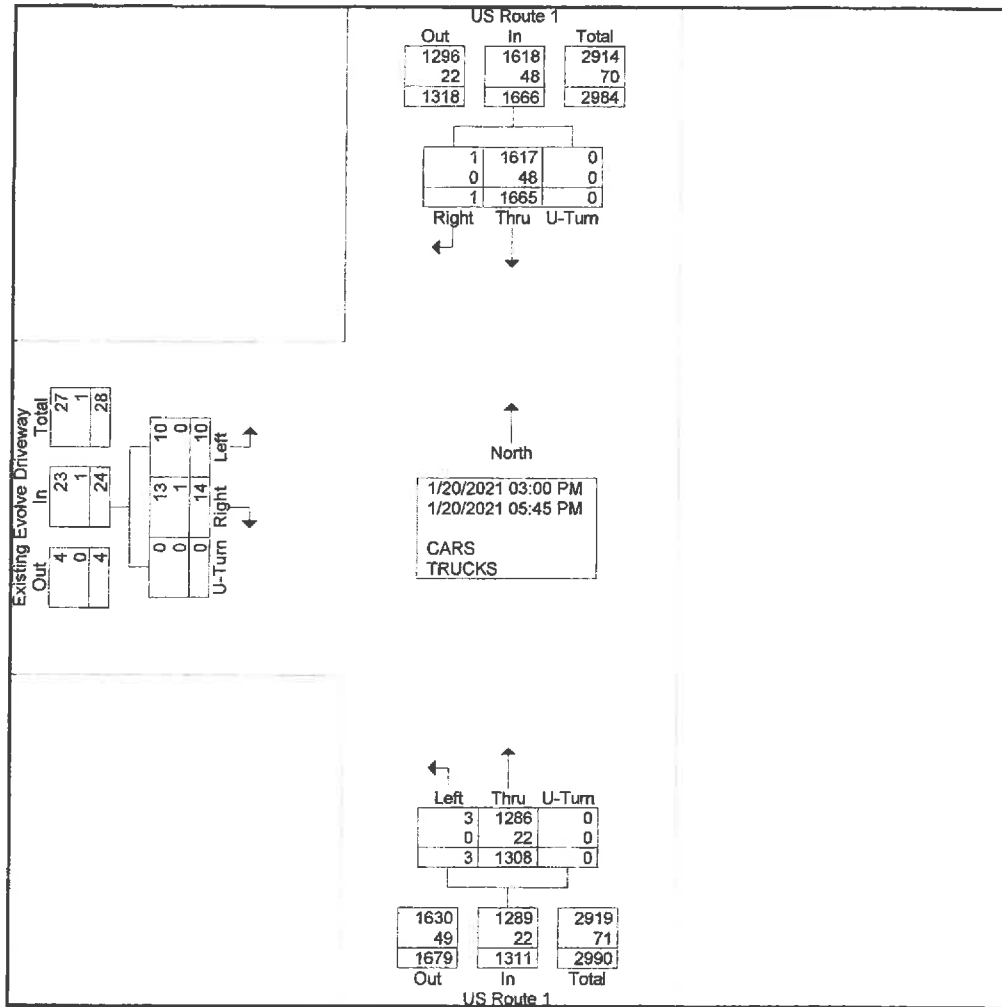
Groups Printed- CARS - TRUCKS

Start Time	US Route 1 From North				US Route 1 From South				Existing Evolve Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
03:00 PM	0	157	0	157	110	0	0	110	1	2	0	3	270
03:15 PM	0	127	0	127	105	1	0	106	1	0	0	1	234
03:30 PM	0	170	0	170	113	0	0	113	0	0	0	0	283
03:45 PM	0	145	0	145	119	1	0	120	2	1	0	3	268
Total	0	599	0	599	447	2	0	449	4	3	0	7	1055
04:00 PM	0	150	0	150	133	0	0	133	0	0	0	0	283
04:15 PM	0	148	0	148	100	1	0	101	0	1	0	1	250
04:30 PM	0	111	0	111	103	0	0	103	0	0	0	0	214
04:45 PM	1	127	0	128	111	0	0	111	2	2	0	4	243
Total	1	536	0	537	447	1	0	448	2	3	0	5	990
05:00 PM	0	163	0	163	136	0	0	136	1	1	0	2	301
05:15 PM	0	133	0	133	106	0	0	106	1	1	0	2	241
05:30 PM	0	130	0	130	95	0	0	95	4	2	0	6	231
05:45 PM	0	104	0	104	77	0	0	77	2	0	0	2	183
Total	0	530	0	530	414	0	0	414	8	4	0	12	956
Grand Total	1	1665	0	1666	1308	3	0	1311	14	10	0	24	3001
Apprch %	0.1	99.9	0		99.8	0.2	0		58.3	41.7	0		
Total %	0	55.5	0	55.5	43.6	0.1	0	43.7	0.5	0.3	0	0.8	
CARS	1	1617	0	1618	1286	3	0	1289	13	10	0	23	2930
% CARS	100	97.1	0	97.1	98.3	100	0	98.3	92.9	100	0	95.8	97.6
TRUCKS	0	48	0	48	22	0	0	22	1	0	0	1	71
% TRUCKS	0	2.9	0	2.9	1.7	0	0	1.7	7.1	0	0	4.2	2.4

Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 2



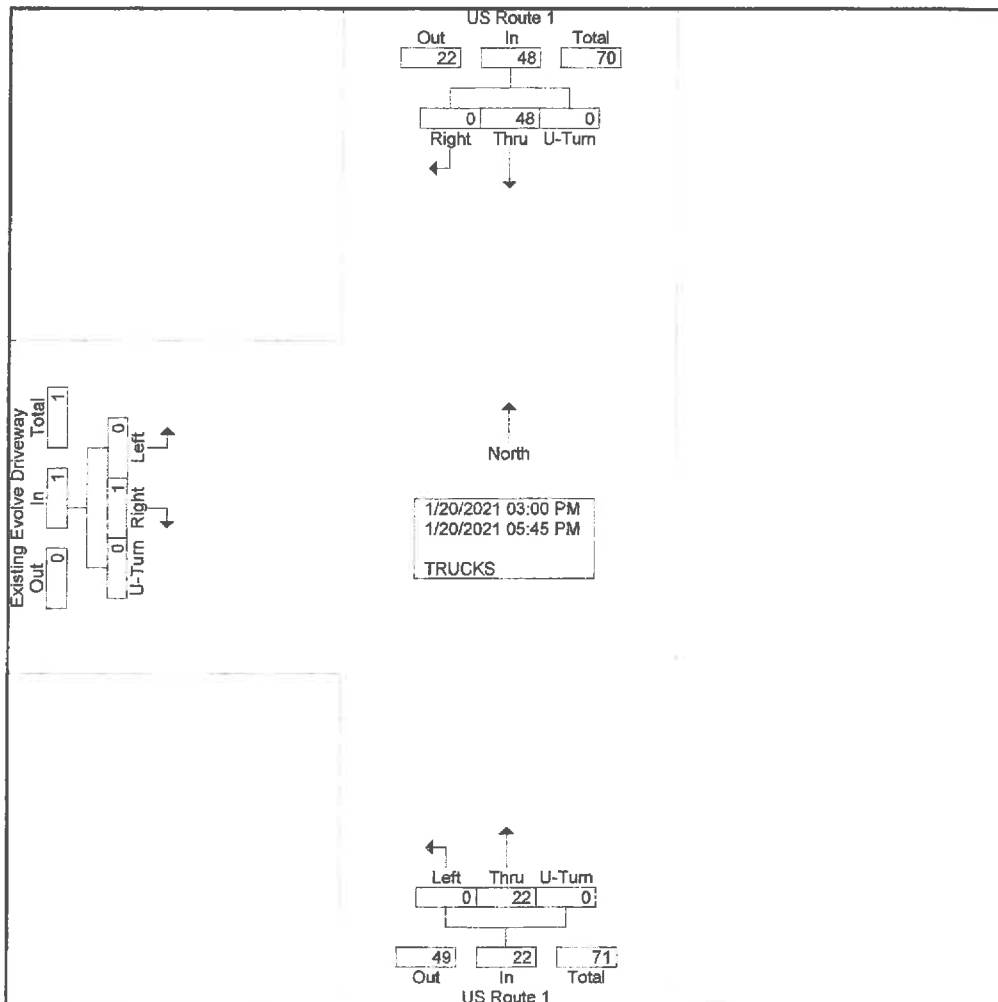
Stephen G. Pernaw & Company, Inc.
P.O. Box 1721
Concord, New Hampshire 03302

Weather: Clear
Collected By: MV
Job Number: 2066A
Town/State: Ryr

File Name : 2066A_Site_Dwy_AM_&_PI
Site Code : 2066A
Start Date : 1/20/2021
Page No : 1

Groups Printed- TRUCKS

Start Time	US Route 1 From North				US Route 1 From South				Existing Evolve Driveway From West				Int. Total
	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Right	Left	U-Turn	App. Total	
03:00 PM	0	10	0	10	2	0	0	2	0	0	0	0	12
03:15 PM	0	10	0	10	2	0	0	2	0	0	0	0	12
03:30 PM	0	7	0	7	2	0	0	2	0	0	0	0	9
03:45 PM	0	9	0	9	3	0	0	3	1	0	0	1	13
Total	0	36	0	36	9	0	0	9	1	0	0	1	46
04:00 PM	0	4	0	4	4	0	0	4	0	0	0	0	8
04:15 PM	0	2	0	2	2	0	0	2	0	0	0	0	4
04:30 PM	0	0	0	0	3	0	0	3	0	0	0	0	3
04:45 PM	0	3	0	3	2	0	0	2	0	0	0	0	5
Total	0	9	0	9	11	0	0	11	0	0	0	0	20
05:00 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	1	0	1	0	0	0	0	0	0	0	0	1
05:45 PM	0	1	0	1	2	0	0	2	0	0	0	0	3
Total	0	3	0	3	2	0	0	2	0	0	0	0	5
Grand Total	0	48	0	48	22	0	0	22	1	0	0	1	71
Apprch %	0	100	0		100	0	0		100	0	0		
Total %	0	67.6	0	67.6	31	0	0	31	1.4	0	0	1.4	



Appendix D

Adjustment Factors

**Seasonal Adjustment Factors
NHDOT Group 4 (Urban Highways)**



Year 2019 Monthly Data - Urban

<u>Month</u>	ADT	Adjustment to	
		Average	Peak
Jan	11,431	1.12	1.23
Feb	11,848	1.08	1.18
Mar	12,141	1.06	1.15
Apr	12,860	1.00	1.09
May	13,551	0.95	1.03
Jun	13,785	0.93	1.02
Jul	13,942	0.92	1.01
Aug	14,016	0.92	1.00
Sep	13,379	0.96	1.05
Oct	13,339	0.96	1.05
Nov	12,265	1.05	1.14
Dec	11,496	1.12	1.22

Year 2018 Monthly Data - Urban

<u>Month</u>	ADT	Adjustment to	
		Average	Peak
Jan	11,282	1.13	1.24
Feb	11,848	1.08	1.18
Mar	11,828	1.08	1.18
Apr	12,491	1.02	1.12
May	13,587	0.94	1.03
Jun	13,911	0.92	1.00
Jul	13,765	0.93	1.01
Aug	13,945	0.92	1.00
Sep	13,168	0.97	1.06
Oct	13,367	0.96	1.04
Nov	12,215	1.05	1.14
Dec	11,963	1.07	1.17

Year 2017 Monthly Data - Urban

<u>Month</u>	ADT	Adjustment to	
		Average	Peak
Jan	12254	1.21	1.33
Feb	13494	1.10	1.21
Mar	14,335	1.03	1.14
Apr	15004	0.99	1.09
May	15547	0.95	1.05
Jun	16310	0.91	1.00
Jul	15523	0.95	1.05
Aug	15974	0.93	1.02
Sep	15546	0.95	1.05
Oct	15104	0.98	1.08
Nov	14,544	1.02	1.12
Dec	14151	1.05	1.15

Average Peak-Month Factor	1.26
----------------------------------	-------------



STEPHEN G. PERNAW & COMPANY, INC.
 PROJECT: Proposed Assisted Living Facility, Rye, New Hampshire
 NUMBER: 2066B
 COUNT STATION: 02345001

HISTORICAL GROWTH CALCULATIONS

LOCATION : US1 (North of North Road) - North Hampton, NH
 CASE : AADT

ARITHMETIC PROJECTIONS

YEAR	AADT	Regression Output:		PROJECTIONS	
2015	16290	Constant	97160.1	2020	16158
2016	16353	Std Err of Y Est	72.270556	2021	16118
2017	16356	R Squared	0.5064726	2022	16078
2018	16254	No. of Observations	5	2023	16038
2019	16139	Degrees of Freedom	3	2024	15998
		X Coefficient	-40.1	2025	15958
		Std Err of Coef.	22.853957	2026	15918
				2027	15877
				2028	15837
				2029	15797
				2030	15757

RATE = -40 VPD/YEAR

GEOMETRIC PROJECTIONS

YEAR	AADT	Ln AADT	Regression Output:		PROJECTIONS	
2015	16290	9.69831	Constant	14.67912	2020	16158
2016	16353	9.70217	Std Err of Y Est	0.004444	2021	16118
2017	16356	9.70235	R Squared	0.5072766	2022	16078
2018	16254	9.69609	No. of Observations	5	2023	16038
2019	16139	9.68899	Degrees of Freedom	3	2024	15999
			X Coefficient	-0.0024698	2025	15960
			Std Err of Coef.	0.0014053	2026	15920
					2027	15881
					2028	15842
					2029	15803
					2030	15764

RATE = -0.2 % / YEAR

CONCLUSION: USE 1%/YR



Transportation Data Management System

List View All DIRs

Record 70 of 5744 Goto Record

Location ID	02345001	MPO ID	
Type	SPOT	HPMS ID	
On NHS	Yes	On HPMS	Yes
LRS ID	U0000001__	LRS Loc Pt.	
SF Group	04	Route Type	
AF Group	04	Route	US 1
GF Group	E	Active	Yes
Class Dist Grp	Default	Category	1
Seas Class Grp	Default		
WIM Group	Default		
QC Group	Perm		
Funct'l Class	Other Principal Arterial	Milepost	
Located On	Lafayette Rd		
Loc On Alias	US 1 (LAFAYETTE RD) NORTH OF NORTH RD (SB-NB) (01345005-01345006)		

More Detail

STATION DATA Show Data

Directions: 2-WAY NB SB

AADT

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2019	16,139	1,576	10	50	14,783 (92%)	1,356 (8%)	
2018	16,254	1,620	10	54	14,985 (92%)	1,269 (8%)	
2017	16,356						
2016	16,353						
2015	16,290						

1-5 of 65

Travel Demand Model									
Model Year	Model AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

VOLUME COUNT			
Date	Int	Total	
Sun 1/10/2021	60	9,653	
Sat 1/9/2021	60	12,129	
Fri 1/8/2021	60	14,803	
Thu 1/7/2021	60	14,049	
Wed 1/6/2021	60	13,800	
Tue 1/5/2021	60	13,321	
Mon 1/4/2021	60	13,025	
Sun 1/3/2021	60	8,526	
Sat 1/2/2021	60	10,880	
Fri 1/1/2021	60	8,555	

1-10 of 9422
 mm / dd / yyyy

VOLUME TREND	
Year	Annual Growth
2019	-1%
2018	-1%
2017	0%
2016	0%
2015	1%
2014	-1%
2013	-1%
2012	-3%
2011	0%
2010	0%

1-10 of 64

CALCULATION SHEET



Stephen G. Pernaw & Company, Inc.

Project:	<u>Rye-Assisted Living</u>	Job Number:	<u>2066B</u>
Calculated By:	<u>SGP</u>	Date:	<u>1/28/2021</u>
Checked By:	<u>CA</u>	Date:	<u>1/28/2021</u>
Sheet No:	<u>1</u>	Of:	<u>1</u>
Subject:	<u>COVID-19 Adjustment Factor</u>		

I. Given:

1. NHDOT continuous traffic count (Station 02345001) on US Route 1 (North of North Rd) - Rye, NH

	<u>Ave</u> <u>Wkdy</u>
w/COVID January 2021	13,800
w/o COVID January 2020	16,213
Estimated 2021 w/o COVID	X 1.01 = 16,375
Covid Factor	= 1.19

USE 1.19 for COVID Factor



Transportation Data Management System



Excel Version

Weekly Volume Report			
Location ID:	02345001	Type:	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	NORTH HAMPTON	Period:	Mon 1/4/2021 - Sun 1/10/2021
ADT:			

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM	22	31	32	26	48	47	34	34	0.3%
1:00 AM	18	22	28	19	19	29	34	24	0.2%
2:00 AM	24	19	21	18	24	16	23	21	0.2%
3:00 AM	19	29	28	37	32	14	16	25	0.2%
4:00 AM	71	56	72	68	57	32	22	54	0.4%
5:00 AM	176	199	198	200	179	64	45	152	1.2%
6:00 AM	423	443	434	451	433	146	100	347	2.7%
7:00 AM	835	818	897	848	808	348	228	683	5.3%
8:00 AM	888	963	944	961	940	544	350	799	6.2%
9:00 AM	788	810	816	789	800	693	527	746	5.8%
10:00 AM	910	848	891	909	942	932	711	878	6.8%
11:00 AM	979	967	946	1017	1119	1152	874	1,008	7.8%
12:00 PM	1012	1028	1162	1125	1251	1239	1068	1,126	8.7%
1:00 PM	1035	1041	1115	1138	1126	1243	1086	1,112	8.6%
2:00 PM	1118	1045	1143	1174	1266	1208	1024	1,140	8.8%
3:00 PM	1161	1155	1170	1210	1352	1119	951	1,160	8.9%
4:00 PM	1171	1181	1205	1207	1279	988	795	1,118	8.6%
5:00 PM	1001	1059	1088	1125	1193	813	607	984	7.6%
6:00 PM	578	693	627	676	711	522	437	606	4.7%
7:00 PM	320	370	360	365	477	336	259	355	2.7%
8:00 PM	187	218	241	271	292	264	203	239	1.8%
9:00 PM	136	151	204	211	186	177	132	171	1.3%
10:00 PM	88	110	109	132	173	137	86	119	0.9%
11:00 PM	65	65	69	72	96	66	41	68	0.5%
Total	13,025	13,321	13,800	14,049	14,803	12,129	9,653		
24hr Total	13025	13321	13800	14049	14803	12129	9653	12,969	
AM Pk Hr	11:00	11:00	11:00	11:00	11:00	11:00	11:00		
AM Peak	979	967	946	1017	1119	1152	874	1,008	
PM Pk Hr	4:00	4:00	4:00	3:00	3:00	1:00	1:00		
PM Peak	1171	1181	1205	1210	1352	1243	1086	1,207	
% Pk Hr	8.99%	8.87%	8.73%	8.61%	9.13%	10.25%	11.25%	9.40%	



Transportation Data Management System



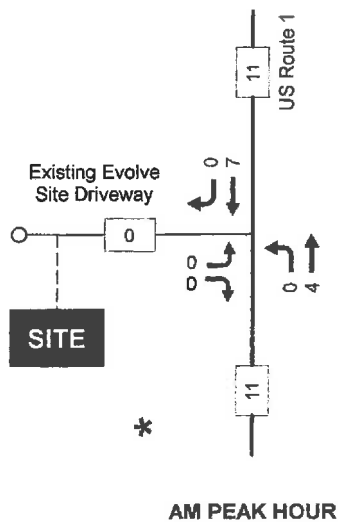
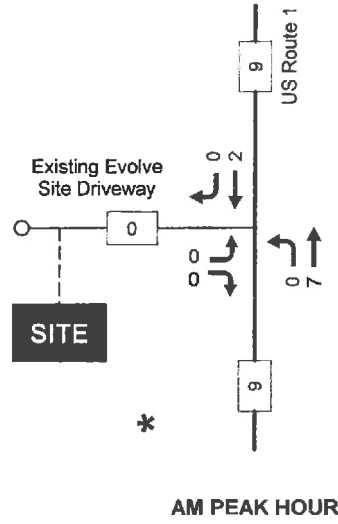
Excel Version

Weekly Volume Report			
Location ID:	02345001	Type:	SPOT
Located On:	Lafayette Rd	:	
Direction:	2-WAY		
Community:	NORTH HAMPTON	Period:	Mon 1/6/2020 - Sun 1/12/2020
AADT:			

Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg	Graph
12:00 AM	30	51	43	45	47	78	66	51	0.3%
1:00 AM	21	17	18	26	25	37	41	26	0.2%
2:00 AM	20	21	16	25	29	15	27	22	0.1%
3:00 AM	24	37	46	27	36	25	22	31	0.2%
4:00 AM	86	91	91	98	88	47	17	74	0.5%
5:00 AM	287	283	262	290	250	109	81	223	1.5%
6:00 AM	605	607	608	578	616	209	143	481	3.2%
7:00 AM	1077	1087	1125	1057	1081	426	294	878	5.8%
8:00 AM	1226	1265	1234	1205	1213	687	540	1,053	6.9%
9:00 AM	900	968	967	934	1013	855	688	904	5.9%
10:00 AM	906	1045	1092	1000	1058	1037	918	1,008	6.6%
11:00 AM	1081	1148	1104	1120	1169	1244	1064	1,133	7.4%
12:00 PM	1158	1163	1188	1093	1332	1302	1260	1,214	8.0%
1:00 PM	1151	1093	1075	1122	1207	1359	1181	1,170	7.7%
2:00 PM	1173	1214	1217	1185	1395	1348	1218	1,250	8.2%
3:00 PM	1306	1306	1285	1358	1356	1277	1046	1,276	8.4%
4:00 PM	1264	1395	1397	1392	1440	1118	863	1,267	8.3%
5:00 PM	1242	1267	1352	1394	1291	905	645	1,157	7.6%
6:00 PM	734	799	846	845	832	669	485	744	4.9%
7:00 PM	392	443	464	494	534	420	282	433	2.8%
8:00 PM	310	365	433	366	403	349	226	350	2.3%
9:00 PM	224	237	240	282	317	275	160	248	1.6%
10:00 PM	123	137	117	148	214	170	97	144	0.9%
11:00 PM	64	77	90	91	116	117	48	86	0.6%
Total	15,404	16,116	16,310	16,175	17,062	14,078	11,412		
24hr Total	15404	16116	16310	16175	17062	14078	11412	15,222	
AM Pk Hr	8:00	8:00	8:00	8:00	8:00	11:00	11:00		
AM Peak	1226	1265	1234	1205	1213	1244	1064	1,207	
PM Pk Hr	3:00	4:00	4:00	5:00	4:00	1:00	12:00		
PM Peak	1306	1395	1397	1394	1440	1359	1260	1,364	
% Pk Hr	8.48%	8.66%	8.57%	8.62%	8.44%	9.65%	11.04%	9.07%	

Appendix E

Other Development Traffic Volumes



*Source: "Traffic Memorandum - Proposed Residential Development" for Hector's Site, dated 1/29/21, by Stephen G. Pernaw & Co., Inc



Appendix F

Site Generated Traffic Volumes / Trip Distribution

Trip Generation Summary

Alternative: Alternative 1

Phase:

Project: 2066B Gen

Open Date: 1/27/2021

Analysis Date: 1/27/2021

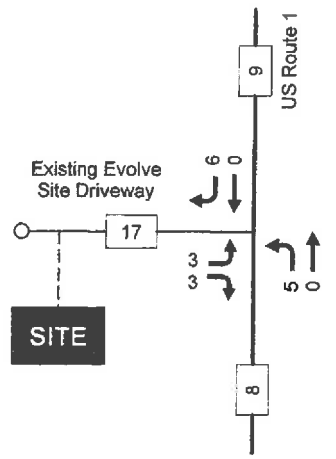
ITE	Land Use	Weekday Average Daily Trips			Weekday AM Peak Hour of Adjacent Street Traffic			Weekday PM Peak Hour of Adjacent Street Traffic		
		* Enter	Exit	Total	* Enter	Exit	Total	* Enter	Exit	Total
254	ASSISTLIVE 1	119	118	237	11	6	17	9	15	24
	91 Beds									
	Unadjusted Volume	119	118	237	11	6	17	9	15	24
	Internal Capture Trips	0	0	0	0	0	0	0	0	0
	Pass-By Trips	0	0	0	0	0	0	0	0	0
	Volume Added to Adjacent Streets	119	118	237	11	6	17	9	15	24

Total Weekday Average Daily Trips Internal Capture = 0 Percent

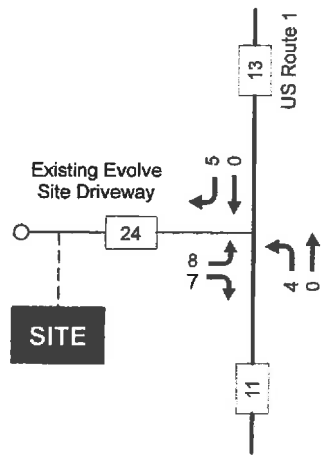
Total Weekday AM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

Total Weekday PM Peak Hour of Adjacent Street Traffic Internal Capture = 0 Percent

* - Custom rate used for selected time period.



AM PEAK HOUR



PM PEAK HOUR



Project Location: Rye, NH
 Project Number: 2066A

TRIP DISTRIBUTION ANALYSIS

TMC Patterns at US Route 1/Existing Evolve Site Driveway Intersection

Wednesday, January 20, 2021

AM (2-hr)

To/From North =	11	+	2	=	13	72%
To/From South =	0	+	5	=	<u>5</u>	28%
					18	100%

Wednesday, January 20, 2021

PM (3-hr)

To/From North =	1	+	10	=	11	39%
To/From South =	14	+	3	=	<u>17</u>	61%
					28	100%

Combined (5-hr, AM & PM)

To/From North =	13	+	11	=	24	52%
To/From South =	5	+	17	=	<u>22</u>	48%
					46	100%

USE	=	52%	-	48%
		N		S

Appendix G

Capacity and Level of Service Calculations – Unsignalized

HCM 2010 TWSC
 1: US Route 1 & Existing Evolve Site Driveway

Intersection

Int Delay, s/veh	0.1					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	
Traffic Vol, veh/h	0	0	5	741	662	10
Future Vol, veh/h	0	0	5	741	662	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	91	91	92	92
Heavy Vehicles, %	0	0	0	5	9	0
Mvmt Flow	0	0	5	814	720	11

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	1550	726	731	0	0
Stage 1	726	-	-	-	-
Stage 2	824	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	127	428	883	-	-
Stage 1	483	-	-	-	-
Stage 2	434	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	126	428	883	-	-
Mov Cap-2 Maneuver	126	-	-	-	-
Stage 1	480	-	-	-	-
Stage 2	434	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	0	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	883	-	-	-	-
HCM Lane V/C Ratio	0.006	-	-	-	-
HCM Control Delay (s)	9.1	-	0	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-

HCM 2010 TWSC
 1: US Route 1 & Existing Evolve Site Driveway

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		W	↑	↑	
Traffic Vol, veh/h	3	3	10	741	662	16
Future Vol, veh/h	3	3	10	741	662	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	91	91	92	92
Heavy Vehicles, %	0	0	0	5	9	0
Mvmt Flow	3	3	11	814	720	17

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	1565	729	737	0	0
Stage 1	729	-	-	-	-
Stage 2	836	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	124	426	878	-	-
Stage 1	481	-	-	-	-
Stage 2	429	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	122	426	878	-	-
Mov Cap-2 Maneuver	122	-	-	-	-
Stage 1	475	-	-	-	-
Stage 2	429	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.6	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	878	-	190	-	-
HCM Lane V/C Ratio	0.013	-	0.034	-	-
HCM Control Delay (s)	9.2	-	24.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

HCM 2010 TWSC

1: US Route 1 & Existing Evolve Site Driveway

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y		Y	↑	↑	
Traffic Vol, veh/h	2	2	2	782	1034	0
Future Vol, veh/h	2	2	2	782	1034	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	33	33	88	88	90	90
Heavy Vehicles, %	0	0	0	2	4	0
Mvmt Flow	6	6	2	889	1149	0

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	2042	1149	1149	0	-	0
Stage 1	1149	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	63	244	615	-	-	-
Stage 1	305	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	63	244	615	-	-	-
Mov Cap-2 Maneuver	63	-	-	-	-	-
Stage 1	304	-	-	-	-	-
Stage 2	403	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	45.9	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	615	-	100	-	-
HCM Lane V/C Ratio	0.004	-	0.121	-	-
HCM Control Delay (s)	10.9	-	45.9	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

HCM 2010 TWSC

1: US Route 1 & Existing Evolve Site Driveway

Intersection

Int Delay, s/veh 2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W		W	↑	↑	
Traffic Vol, veh/h	10	9	6	782	1034	5
Future Vol, veh/h	10	9	6	782	1034	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	33	33	88	88	90	90
Heavy Vehicles, %	0	0	0	2	4	0
Mvmt Flow	30	27	7	889	1149	6

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	2055	1152	1155	0	0
Stage 1	1152	-	-	-	-
Stage 2	903	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-
Pot Cap-1 Maneuver	62	243	612	-	-
Stage 1	304	-	-	-	-
Stage 2	399	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	61	243	612	-	-
Mov Cap-2 Maneuver	61	-	-	-	-
Stage 1	301	-	-	-	-
Stage 2	399	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	89.1	0.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	612	-	95	-	-
HCM Lane V/C Ratio	0.011	-	0.606	-	-
HCM Control Delay (s)	10.9	-	89.1	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0	-	2.9	-	-

Appendix H

Auxiliary Turn Lane Warrants Analysis

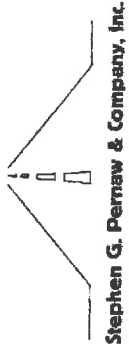


Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

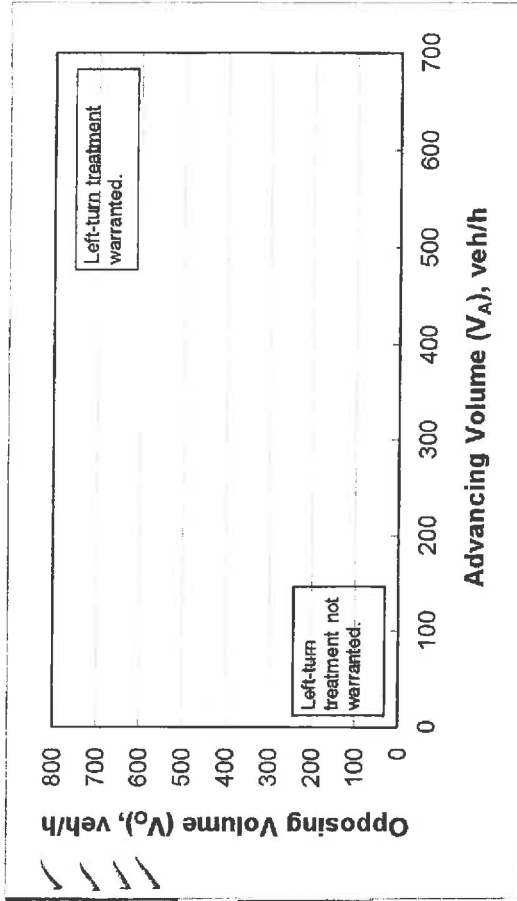
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	746
Opposing volume (V_O), veh/h:	672

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	957
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

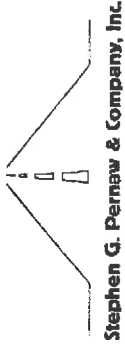


Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

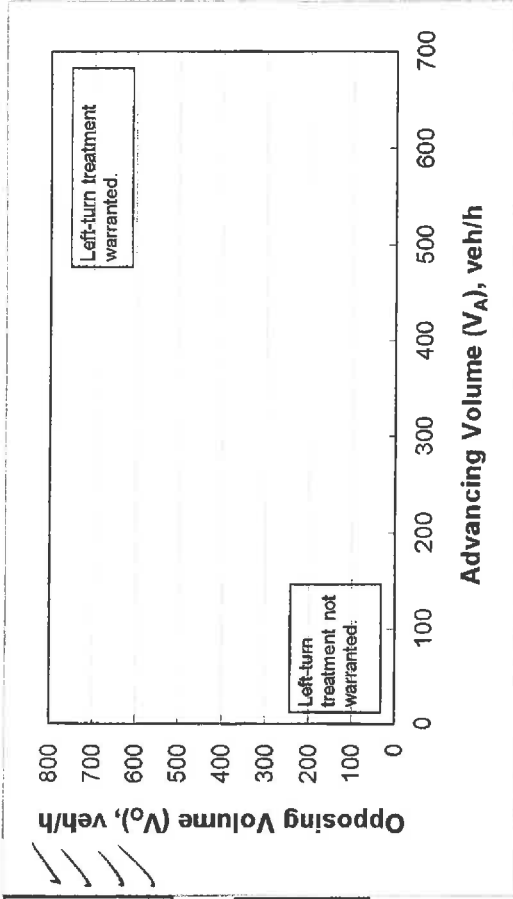
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	0%
Advancing volume (V_A), veh/h:	784
Opposing volume (V_O), veh/h:	1034

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	1097
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment NOT warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

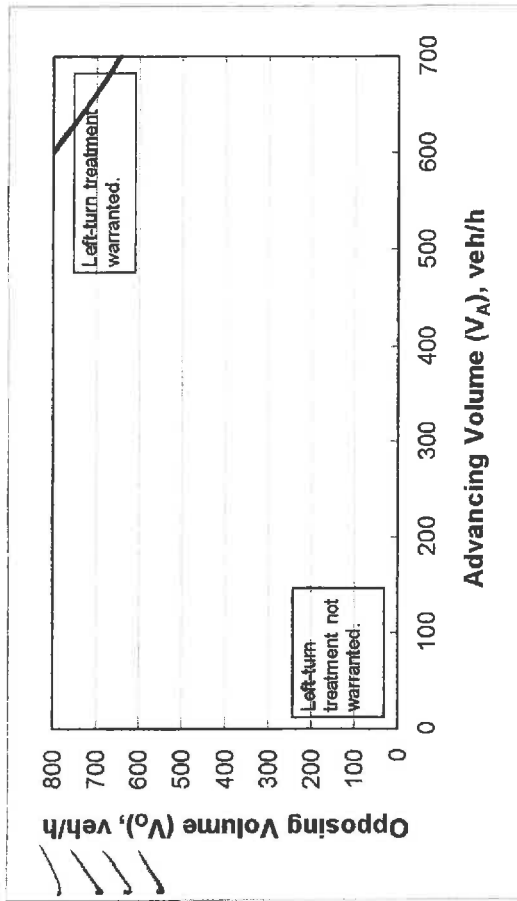
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	751
Opposing volume (V_O), veh/h:	678

OUTPUT

Variable	Value
Limiting advancing volume (V_A), veh/h:	677
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

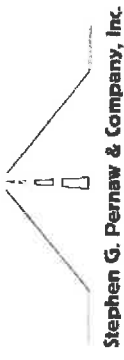


Figure 2 - 5. Guideline for determining the need for a major-road left-turn bay at a two-way stop-controlled intersection.

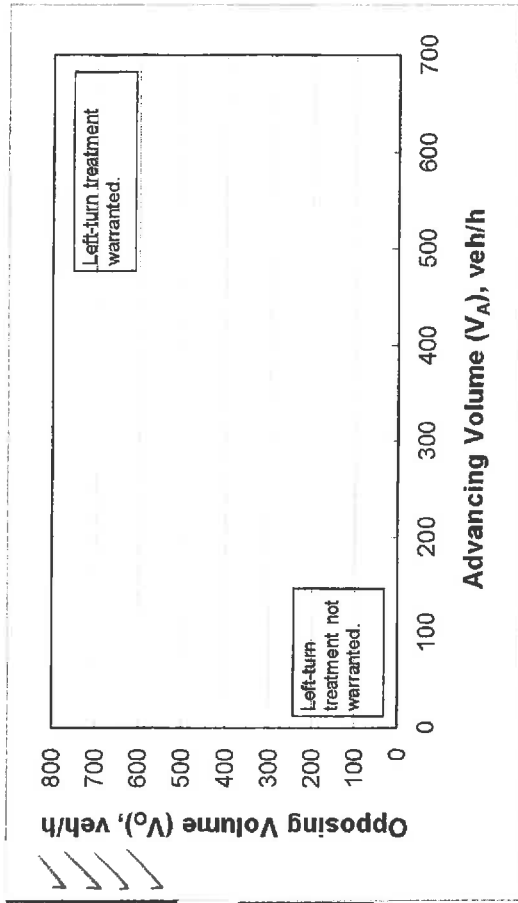
2-lane roadway (English)

INPUT

Variable	Value
85 th percentile speed, mph:	45
Percent of left-turns in advancing volume (V_A), %:	1%
Advancing volume (V_A), veh/h:	788
Opposing volume (V_O), veh/h:	1039

OUTPUT

Limiting advancing volume (V_A), veh/h:	Value 628
Guidance for determining the need for a major-road left-turn bay:	
Left-turn treatment warranted.	



CALIBRATION CONSTANTS

Variable	Value
Average time for making left-turn, s:	3.0
Critical headway, s:	5.0
Average time for left-turn vehicle to clear the advancing lane, s:	1.9

Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

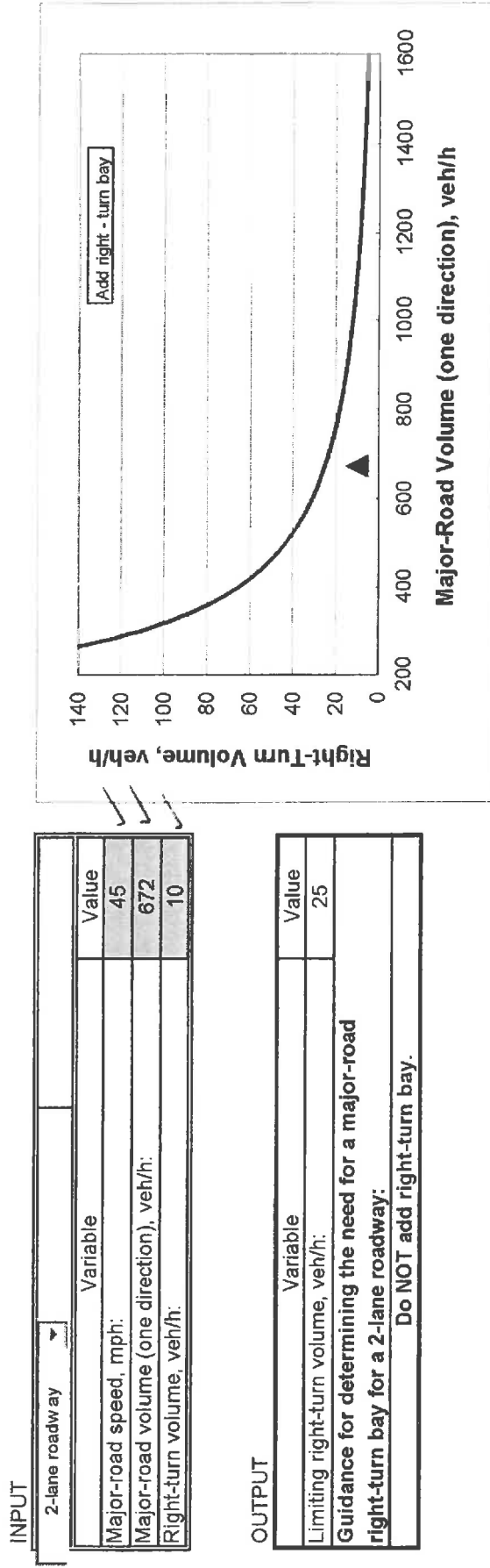


Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

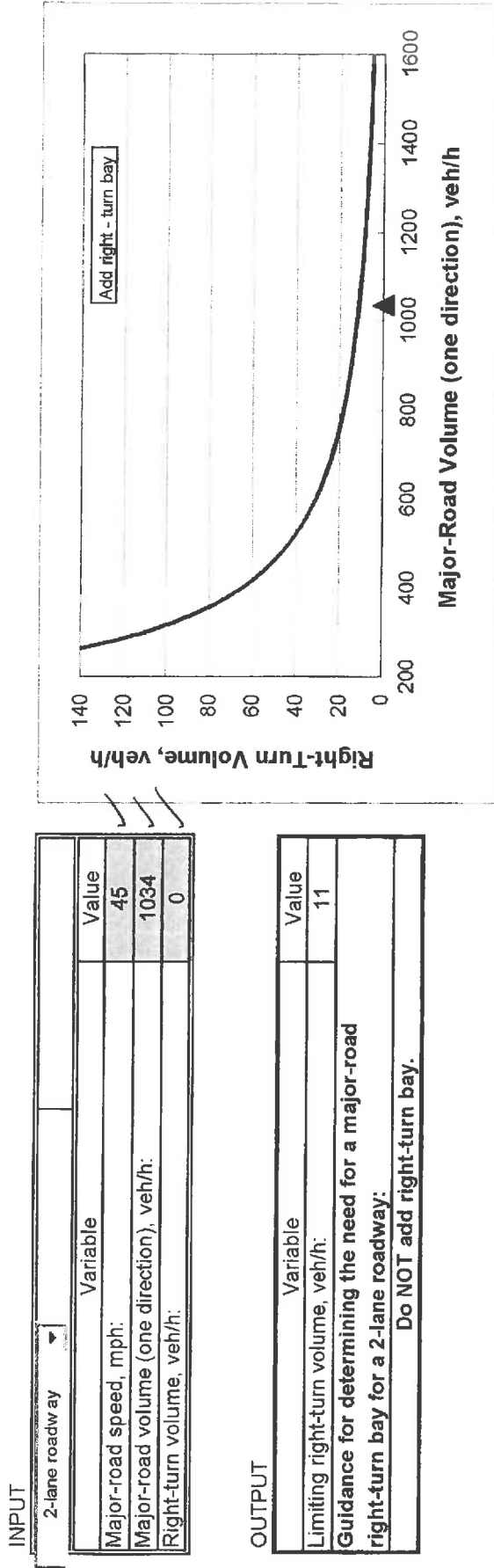


Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

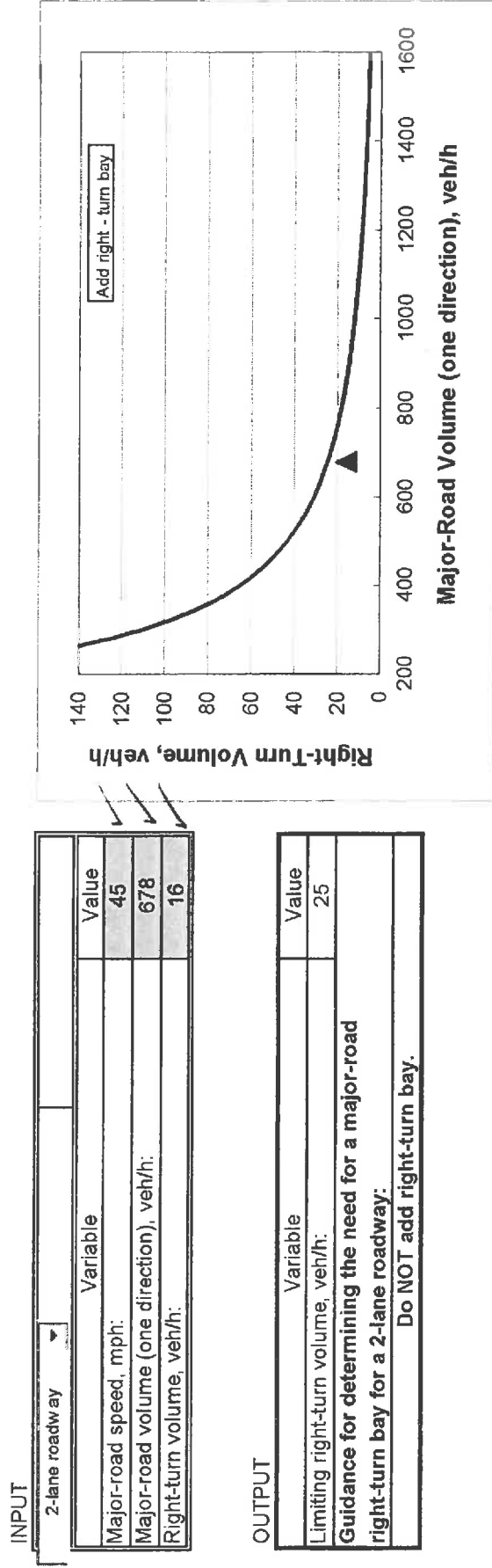


Figure 2 - 6. Guideline for determining the need for a major-road right-turn bay at a two-way stop-controlled intersection.

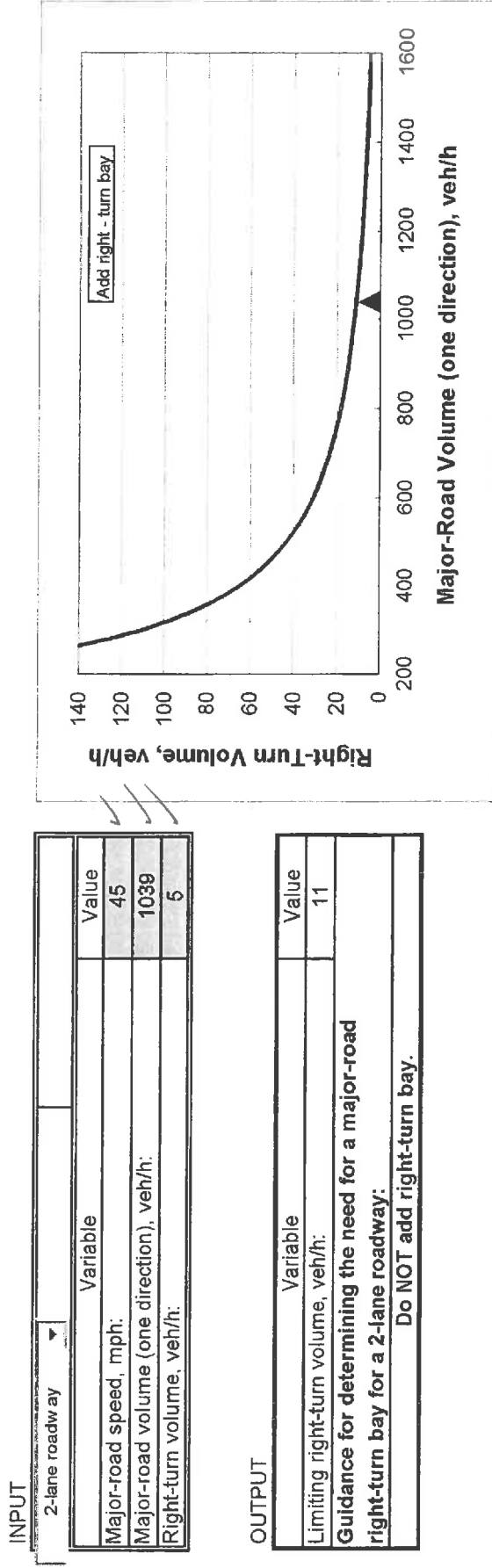
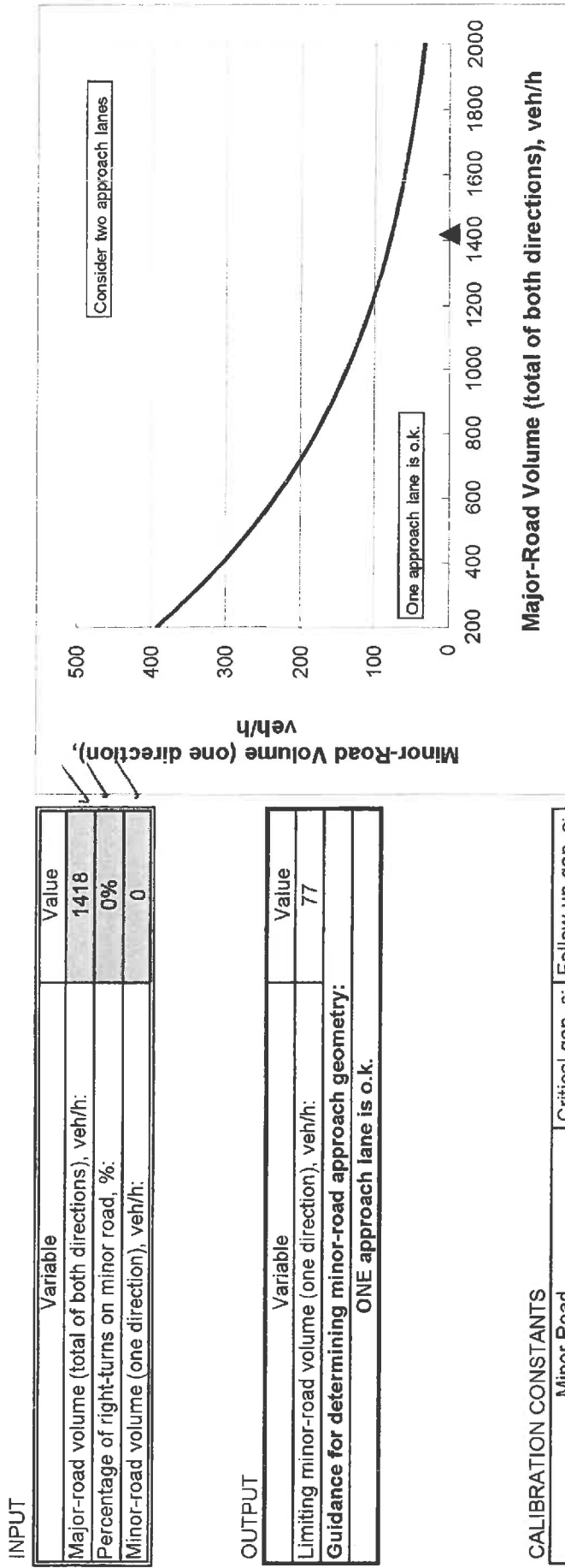


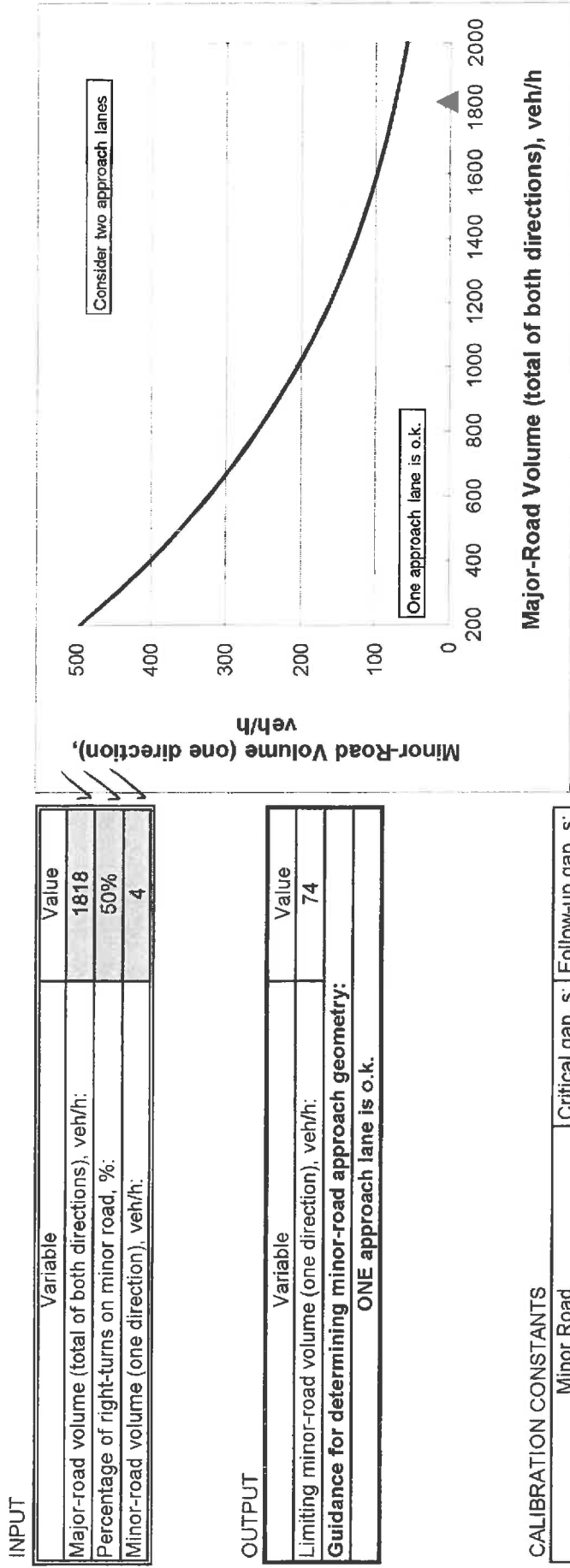
Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.



CALIBRATION CONSTANTS		
Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.



* according to Table 17 - 5 of the HCM

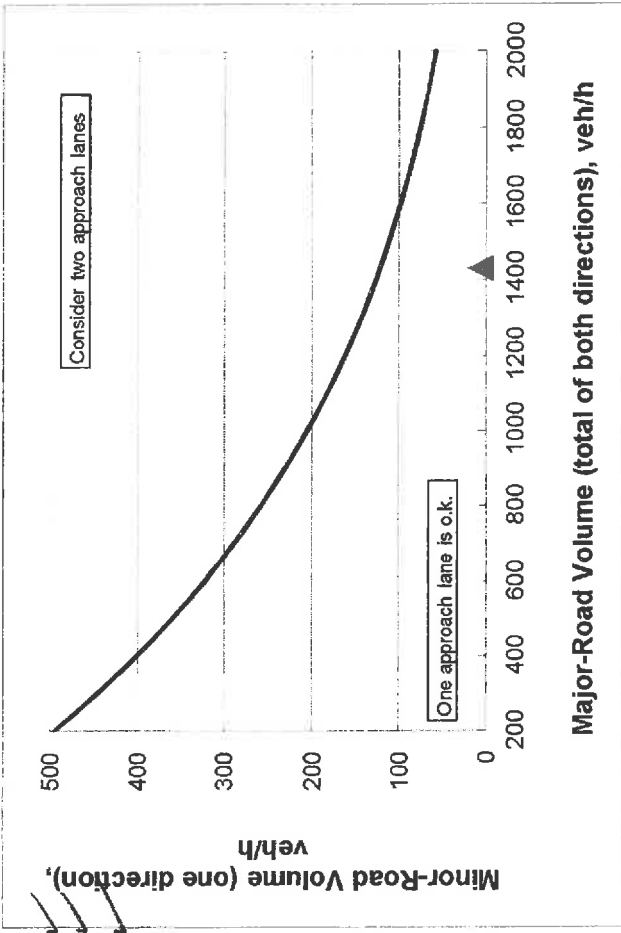
Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.

INPUT

Variable	Value
Major-road volume (total of both directions), veh/h:	1429
Percentage of right-turns on minor road, %:	50%
Minor-road volume (one direction), veh/h:	6

OUTPUT

Variable	Value
Limiting minor-road volume (one direction), veh/h:	122
Guidance for determining minor-road approach geometry:	
ONE approach lane is o.k.	

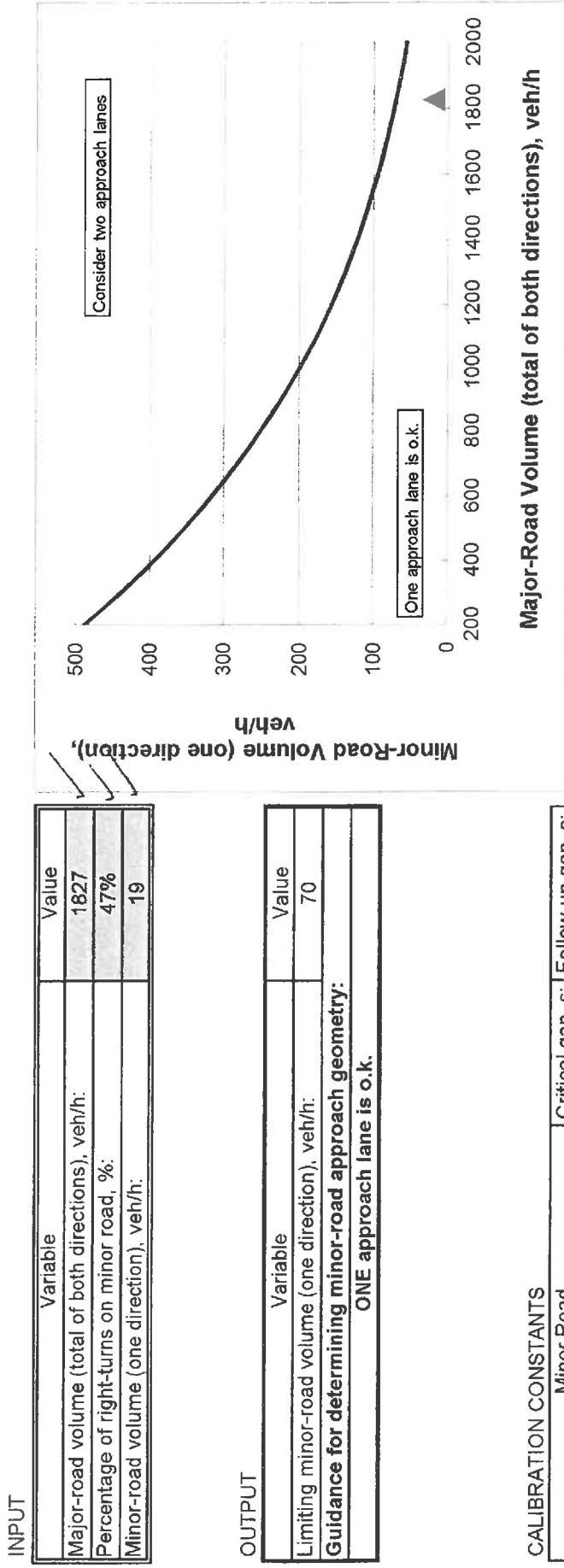


CALIBRATION CONSTANTS

Minor Road	Critical gap, s:	Follow-up gap, s:
Right-turn capacity, veh/h:	6.2	3.3
Left-turn and through capacity, veh/h:	6.5	4.0

* according to Table 17 - 5 of the HCM

Figure 2 - 4. Guideline for determining minor-road approach geometry at two-way stop-controlled intersections.



* according to Table 17 - 5 of the HCM

Appendix J

Sight Distance Photographs

Looking Left



Looking Right

