



# Traffic Impact Study

Traffic Engineering Services

Proposed 7-Eleven

1033 North Colony Road (US Route 5)

Wallingford, Connecticut

November 6, 2020

*Prepared for:*

Mr. Joshua H. Kline  
STONEFIELD

1 Beacon Street, Floor 15

Boston, MA 02108

MMI #7331-01

*Prepared by:*

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November 6, 2020

Mr. Joshua H. Kline, PE  
STONEFIELD  
1 Beacon Street, Floor 15  
Boston, MA 02108

**RE: Traffic Impact Study  
Traffic Engineering Services  
Proposed 7-Eleven  
1033 North Colony Road (US Route 5)  
Wallingford, Connecticut  
MMI #7331-01-02**

Dear Mr. Kline:

Milone & MacBroom, Inc. (MMI)/SLR has prepared the traffic impact study for the proposed development of the 1033 North Colony Road (U.S. Route 5) parcel in Wallingford, Connecticut. 7-Eleven, Inc. seeks to develop the site south and adjacent to the existing Sonic Restaurant into a new 7-Eleven convenience market with gas pumps. The convenience market will be 5,463 square feet (SF) and will include two of 7-Eleven's in-store eateries, Laredo Taco Company and Raise the Roost Chicken and Biscuits. There will be 12 gas pump dispensers (24 fueling positions). The project will include 43 new parking spaces plus 10 additional spaces designated for the existing Sonic Restaurant. The site will tie into the Sonic Restaurant via 2 two-way vehicular aisles. Primary vehicular access to the site will be via a new full-access driveway opposite the State Route 15 (Wilbur Cross Parkway) Exit 66 southbound off-ramp along North Colony Road. The analyses conducted and the resulting findings are summarized herein.

### **Site Environs**

The study area for this assessment comprised of the following signalized intersections:

- North Colony Road at the Route 15 southbound ramps, Park & Ride, and proposed site driveway
- North Colony Road at the Sonic and BJ's driveways
- North Colony Road at the Route 15 northbound ramps

The proposed site is located along the west side of North Colony Road opposite the Route 15 southbound off-ramp and north of the southbound on-ramp. Currently, the existing signalized intersection controls North Colony Road and the Route 15 southbound ramps. The Park & Ride driveway is unsignalized within the intersection. The intersection is very large; the distance from the northbound North Colony Road stop bar to the southbound stop bar measures approximately 240 feet. The proposed site driveway will become a new leg to the signalized intersection.

North Colony Road at the site location has a five-lane cross section for two through lanes in each direction and one left turn lane for the Route 15 southbound on-ramp. North of the proposed site driveway, the roadway has seven lanes to accommodate a third through lane and a right turn lane in the northbound direction. The posted speed limit is 35 miles per hour (mph). Sidewalks are provided north

of the proposed site driveway on both sides of the road until the Sonic/BJ's intersection. Sidewalk gaps occur north of this location. Sidewalks are not provided south of the site driveway. A CTtransit bus stop exists along the northbound side of North Colony Road at the Park & Ride serving Bus Route 215. The land use around the site is commercial with abundant driveways for various businesses along North Colony Road.

The site location is shown in Figure 1.

**Crash History**

The Connecticut Crash Data Repository hosted by the University of Connecticut (UConn) was used to review the available data for crashes occurring near the site frontage within the last 3 years (August 1, 2017, through July 31, 2020). The analysis focused on the signalized intersection of North Colony Road at the Route 15 southbound ramps and the Park & Ride, where the site driveway is proposed to be constructed opposite the off-ramp approach, as well as North Colony Road midblock approximately 350 feet to the north and south from the center of the intersection. Table 1 summarizes the data by location, severity, and type.

**TABLE 1  
 Crash Data Summary**

LOCATION	CRASH SEVERITY						TYPE OF COLLISION				
	FATAL	SERIOUS INJURY	SUSPECTED MINOR INJURY	POSSIBLE INJURY	PROPERTY DAMAGE ONLY	TOTAL	REAR-END	ANGLE	SIDESWIPE	PEDESTRIAN	TOTAL
Route 5 at Route 15 Southbound Ramps and Park & Ride			1	7	46	<b>54</b>	27	23	4		<b>54</b>
Midblock north of site				1	2	<b>3</b>	2	1			<b>3</b>
Midblock south of site					1	<b>1</b>			1		<b>1</b>
<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>8</b>	<b>49</b>	<b>58</b>	<b>29</b>	<b>24</b>	<b>5</b>	<b>0</b>	<b>58</b>

Source: UConn Connecticut Crash Data Repository from August 1, 2017, to July 31, 2020

During the 3-year period, nearly all the reported crashes were associated with the intersection. Most of the reported crashes (approximately 85%) resulted in property damage only. No crashes involving non-motorists were reported. No serious injuries or fatalities were reported. Half of the crashes occurring at the intersection were rear-end crashes, and the other half were mostly angle crashes. North of the Route 15 southbound ramps intersection, up to but not including the northerly Sonic/BJ's intersection, three rear-end and angle crashes were reported resulting in possible injury or property damage only. South of the ramps intersection, up to but not including the Route 15 northbound ramps intersection, one sideswipe crash was reported resulting in property damage only.

Compared to the total number of crashes reported at the Route 15 southbound ramps intersection during the 3-year period, most crashes (approximately 30%) were angle crashes involving a driver traveling northbound along Route 5 and a driver exiting the off-ramp due to one driver running a red light. Of the crash diagrams available that specified which driver ran the red light, it was more frequently the North Colony Road driver, although most diagrams did not specify. However, it is reasonable that the northbound North Colony Road driver would run the red light most often due to the nearly 200 feet within the intersection the driver must traverse from the northbound stop bar to the off-ramp. Possible infrastructure factors contributing to the crashes may include the red signal clearance times being too short, sight lines from the off-ramp approach looking left toward northbound North Colony Road traffic being inadequate due to fencing close to the curb around the Park & Ride, and/or the configuration of the pavement markings and signal heads as a result of the intersection geometry being confusing to drivers.

A similar proportion of the total crashes at the intersection (approximately 28%) were rear-end crashes involving drivers traveling North Colony Road southbound. Congestion and back-ups downstream of the intersection may be contributing factors.

Approximately 20% of crashes at the intersection were rear-end or sideswipe crashes occurring along the off-ramp. Driver speed, the downward grade from Route 15 to the North Colony Road signal, lane shifting, and the transition from one lane to four turning lanes may be contributing factors.

Approximately 13% of crashes at the intersection were angle crashes involving a driver traveling northbound along North Colony Road making a left turn toward the Route 15 southbound on-ramp and crashing into a driver in the opposing southbound traffic. Visibility of oncoming traffic in the farther opposing through-lane as well as congestion and back-ups along North Colony Road may be contributing factors.

### **Baseline Traffic Volumes**

Hourly automatic traffic recorder (ATR) counts conducted between April 1 to April 5, 2019, were obtained from the Connecticut Department of Transportation (CTDOT) indicating that at a location along North Colony Road south of Route 15, the average daily traffic (ADT) was approximately 28,000 vehicles.

Traffic turning movement counts (TMC) conducted on April 4, 2019, were obtained from CTDOT for the study intersections and were used to determine peak hour factors (PHF) and heavy vehicle percentages for use in the traffic capacity analysis presented later in this document. 2020 traffic volumes developed by CTDOT, based on the April 2019 counts, were also obtained for the weekday morning and afternoon peak hours for each of the three study intersections. These volumes form the baseline traffic volumes for the capacity analyses presented this study. The intersection of North Colony Road at Yale Avenue, which operates as a clustered intersection with the Route 15 northbound ramps intersection (meaning the intersections operate under one signal controller), was originally intended to be included in this study; however, the intersection was not previously counted with the provided 2019 traffic volumes, and other pre-COVID-19 volumes were not available. For purposes of this analysis, estimates of traffic here were made, so we could properly model the signal operation.

Figure 2 shows the baseline traffic volumes for the morning and afternoon peak hours.

### **Future Traffic Volumes**

Future traffic growth is attributed to new development and broader regional transportation trends. Future traffic volumes at the study intersections were estimated for two scenarios:

- No-build scenario: future traffic volumes without the traffic generated by the proposed development. This traffic scenario is reflective of future conditions before the proposed development is built.
- Build scenario: future traffic volumes with the traffic generated by the proposed development. This traffic scenario is reflective of future conditions after the proposed development is open.

The future no-build and build scenarios are then compared to determine traffic impacts due to the proposed development.

The year 2021 is when the proposed development intends to open and was used as the projection year for future traffic growth. CTDOT advised using a 0.7 percent annual growth rate to apply to the baseline traffic volumes to account for general background traffic growth. CTDOT also indicated there are no other major developments anticipated nearby that would add notable traffic through the study intersections. The 2021 no-build traffic volumes are therefore the baseline traffic volumes grown by 0.7 percent for 1 year. Figure 3 shows the 2021 no-build traffic volumes for the morning and afternoon peak hours.

### **Anticipated Site Traffic and Distribution**

The approximate number of peak-hour vehicle trips that could be generated by the proposed development was based on statistical data from the *Trip Generation* manual published by the Institute of Transportation Engineers (ITE). Land use code (LUC) 960 (Super Convenience Market/Gas Station) and other, similar land use codes were compared and presented to CTDOT. Correspondence led to the approval of LUC 960, which provides the most conservative estimate of the number of entering and exiting vehicle trips the site may generate.

Based on data collected by ITE, many of the generated trips will be pass-by trips that are not new to the transportation network. ITE defines a pass-by trip as "an intermediate stop on the way from an origin to a primary trip destination without a route diversion. Pass-by trips are attracted from traffic passing the site on an adjacent street or roadway that offers direct access to the generator." For example, in the case of the proposed site driveway location, a driver who would normally travel through the intersection may now turn into the new site and later exit the site continuing in the same direction of travel. Therefore, the portion of site-generated trips that are pass-by trips only redistribute the traffic turning movements at the intersection of the site driveway. Based on past studies, ITE has published average pass-by trip rates for a multitude of land uses including LUC 853 (Convenience Market with Gasoline Pumps) and LUC 945 (Gasoline/Service Station with Convenience Market). For LUC 853, the average pass-by rates for the weekday morning and afternoon peak hours are 63% and 66%, respectively; for LUC 945, the average weekday morning and afternoon peak hour pass-by rates are 62% and 56%, respectively. A 60% pass-by rate was approved by CTDOT for use with LUC 960. The ITE trip generation (total site-generated trips), pass-by trips, and trips that will be new to the adjacent roadway network are shown in the first, second, and third rows, respectively, in Table 2.

**TABLE 2**  
**Anticipated Site Traffic**

LAND USE	NUMBER OF VEHICLE TRIPS					
	WEEKDAY MORNING PEAK HOUR			WEEKDAY AFTERNOON PEAK HOUR		
	IN	OUT	TOTAL	IN	OUT	TOTAL
Total Site-Generated Trips <sup>1</sup>	337	337	674	275	275	550
60% Pass-By Trips	-202	-202	-404	-165	-165	-330
Trips New to Roadway Network	135	135	270	110	110	220

<sup>1</sup> Super Convenience Market/Gas Station (LUC 960), Trip Generation, 10th Edition, Institute of Transportation Engineers, 2017

The distribution of peak-hour traffic to and from the proposed site was estimated based on a review of existing roadway travel patterns along North Colony Road. The approximate existing traffic distribution was found to be:

- 35% to/from the north via North Colony Road
- 30% to/from the south via North Colony Road
- 25% to/from the north via Route 15
- 10% to/from the south via Route 15

These existing travel patterns were used to break the distribution into one for pass-by trips and one for non-pass-by trips (trips that are new to the roadway network). The distribution of pass-by trips was determined such that the trips continue in the original direction of travel after they leave the site, whereas the distribution of new, non-pass-by traffic was determined such that the trips return to where they originated from. Additionally, it was assumed that trips to and from the Route 15 ramps would most often be pass-by trips, while trips along North Colony Road would hold a greater share of non-pass-by trips due to the nature of the use of the proposed site. The resulting distributions of pass-by site traffic and new/non-pass-by site traffic are approximated in Figures 4 and 5, respectively.

The calculated pass-by and new/non-pass-by site traffic were then applied to the corresponding distributions to determine site traffic turning movements at the study intersections. The pass-by trips and new/non-pass-by trips are depicted in Figures 6 and 7, respectively. The net total trips are shown in Figure 8.

The 2021 build traffic volumes were determined by adding the net total site-generated traffic volumes to the no-build traffic volumes. The resulting 2021 build traffic volumes are shown in Figure 9.

### **Site Access**

As previously described, the proposed 7-Eleven will include a 5,463 SF convenience market with two in-store restaurants and 12 gas pump dispensers (24 fueling positions). The project will include the construction of 43 on-site parking spaces and 10 parking spaces for the adjacent Sonic Restaurant. There will be a two-way vehicular aisle around the fueling station platform for site circulation, which will tie into the existing Sonic Restaurant site. The sidewalk along the site frontage will be reconstructed with the project.

Primary vehicular access to the site will be via a new full-access driveway opposite the Route 15 Exit 66 southbound off-ramp at the signalized intersection along North Colony Road. The driveway approach will require dual left turn lanes and one right turn lane to manage queueing and prevent excessive delays to drivers. Drivers will be able to enter and exit the site via the existing Sonic Restaurant driveway to the north as well (the traffic capacity analysis assumes that all traffic will use the new primary driveway, however). A two-way aisle that ends at the southwestern side of the site will provide access to a truck loading zone.

Based on the CTDOT *Highway Design Manual*, a minimum sight distance of 390 feet will be required for a driver operating a passenger car turning right on red from the proposed site driveway.

### **Off-Site Traffic Impact Mitigation**

With the proposed site driveway located at the intersection of North Colony Road at the Route 15 southbound ramps, the intersection will require geometric, striping, and traffic signal improvements to achieve acceptable traffic operations without excessive delays to motorists, and to maintain left turn lanes into the Park & Ride, the Route 15 southbound on-ramp, and the proposed site. A second alternative was considered where mitigation measures were reduced but access to the site was limited to ingress-only at the proposed driveway location, and egress was shifted to the existing Sonic driveway. However, having a full access driveway remains the proposed alternative.

Figure 10 conceptually depicts the required intersection modifications and upgrades, and the list below describes them in detail.

- Geometric and striping modifications

The proposed site will require the addition of a northbound left turn lane into the site along North Colony Road (it is anticipated that 120 to 150 peak-hour vehicles will turn left into the site). There are presently two through lanes in each direction and a southbound left turn lane into the Park & Ride in the location where a new northbound left turn lane would be installed. The southbound left turn lane for the Park & Ride is required to prevent back-ups and potentially unsafe conditions at the intersection. Therefore, a lane must be added to the cross-section by widening along the southern site frontage to accommodate both the left turn lane into the Park & Ride and the left turn lane into the proposed site.

The addition of the northbound left turn lane will impact the alignment of the southbound through lanes along North Colony Road from the Sonic/BJ's intersection downstream to the Route 15 overpass. From the Sonic/BJ's intersection to the site driveway, the western, southbound side of North Colony Road must be widened to taper the horizontal alignment of the two through lanes. South of the Route 15 southbound on-ramp to the overpass, the curb remains as existing. This segment of roadway must be restriped and will taper to match the existing striping at the overpass. Additional restriping ancillary to the proposed geometric modifications will be required as shown in the concept plan.

- Traffic signal upgrades

Today, the intersection operates as a five-legged intersection controlling the northbound and southbound North Colony Road approaches and the Route 15 southbound off-ramp approach. The Park & Ride driveway is unsignalized within the intersection. It operates under three signal phases: a northbound protected phase, a northbound-southbound permissive phase, and a westbound protected phase for the off-ramp.

The northbound North Colony Road approach is currently located just south of the Route 15 southbound on-ramp. Since the proposed site would add the new northbound left turn movement within the existing intersection, a new northbound approach with new traffic signals must be installed. This requires the intersection to run as two clustered intersections (in other words, one large intersection is split into two smaller intersections controlled by one signal controller). This will require new signal equipment, upgrading existing signal equipment, modified signal phasing (the new signal phasing can be accomplished with four phases), and additional pavement striping.

### **Traffic Capacity Analysis**

The study intersections were evaluated by means of the capacity analysis methodologies of the *Highway Capacity Manual* using *Synchro* software. A comparison of the no-build and build analysis results indicates potential project-related traffic impacts and an assessment of the adequacy of the study intersections to carry anticipated future traffic demands.

The volume to capacity ratio (v/c) provides an indication of the degree of utilization of the available capacity of a roadway or intersection. A v/c ratio of 1 indicates a facility is at traffic capacity, although it may be considered acceptable if other traffic operation indicators are favorable.

Level of service (LOS) is a qualitative indicator of traffic operations and congestion directly related to delay and inconvenience to motorists, ranging from designation A through F. LOS D and better during peak hours is considered acceptable in many communities; in urban areas and downtowns, LOS D/E during peak hours can indicate an efficient tradeoff between traffic flow and the amount of land devoted to the movement of motor vehicles. Descriptions of the LOS designations are provided in the Appendix.

Table 3 summarizes the LOS findings of future conditions with the proposed development in place (build scenario) and without the proposed development in place (no-build scenario). The build scenario reflects the implementation of the traffic impact mitigation measures previously discussed; a scenario under which the proposed site is in place and the mitigation measures are not implemented is not considered because the mitigation will be required for the intersection to operate. The northern two study intersections are broken into v/c and LOS by lane group (non-bolded text) in addition to overall intersection v/c and LOS (bolded text). The table only shows overall operations for North Colony Road at the Route 15 northbound ramps because traffic volumes into and out of Yale Avenue, which is part of the clustered intersection, were not available and were estimated based on CTDOT ATR count data. It was preferred not to display v/c and LOS for the individual lane groups affected by the estimated volumes. The *Synchro* output sheets are attached in the Appendix.



**TABLE 3**  
**Capacity Analysis Summary**

INTERSECTIONS	WEEKDAY MORNING PEAK HOUR				WEEKDAY AFTERNOON PEAK HOUR			
	NO-BUILD		BUILD		NO-BUILD		BUILD	
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
<b>North Colony Road at State Route 15 Southbound Off-Ramp &amp; New Site Driveway</b>	<b>0.69</b>	<b>B</b>	<b>0.84</b>	<b>C</b>	<b>0.81</b>	<b>C</b>	<b>0.84</b>	<b>C</b>
EB L	-	-	0.72	D	-	-	0.70	E
EB R	-	-	0.37	A	-	-	0.30	A
WB L	0.83	D	0.81	D	0.83	D	0.72	D
WB T/R	-	-	0.44	C	-	-	0.90	E
WB R	0.24	A	0.35	A	0.90	D	0.76	C
NB L	-	-	0.69	D	-	-	0.44	D
NB T	-	-	0.27	A	-	-	0.59	A
SB T/R (to Route 15 SB on-ramp)	0.72	B	-	-	0.77	C	-	-
SB T/R (into site driveway)	-	-	0.95	D	-	-	0.94	D
<b>North Colony Road at State Route 15 Southbound On-Ramp &amp; Park-&amp;-Ride</b>	<b>0.69</b>	<b>B</b>	<b>0.74</b>	<b>B</b>	<b>0.81</b>	<b>C</b>	<b>0.81</b>	<b>B</b>
NB L	0.35	A	0.38	B	0.78	B	0.88	C
NB T/R	0.26	A	0.35	A	0.52	A	0.63	B
SB T/R (to Route 15 SB on-ramp)	-	-	0.92	B	-	-	0.85	A
<b>North Colony Road at Sonic &amp; BJ's Driveways</b>	<b>0.47</b>	<b>B</b>	<b>0.50</b>	<b>A</b>	<b>0.60</b>	<b>B</b>	<b>0.62</b>	<b>B</b>
EB L	0.21	C	0.21	C	0.19	C	0.19	C
EB T/R	0.06	A	0.06	A	0.03	A	0.03	A
WB L/T	0.51	D	0.51	D	0.82	E	0.82	E
WB R	0.12	A	0.12	A	0.35	A	0.35	A
NB L	0.09	D	0.09	C	0.19	D	0.19	D
NB T	0.22	A	0.25	A	0.54	B	0.56	B
NB R	0.08	A	0.08	A	0.30	A	0.30	A
SB L	0.26	D	0.26	D	0.44	D	0.44	D
SB T/R	0.38	A	0.41	A	0.46	B	0.48	B
<b>North Colony Road at State Route 15 Northbound Ramps</b>	<b>0.80</b>	<b>B</b>	<b>0.85</b>	<b>B</b>	<b>1.11</b>	<b>D</b>	<b>1.13</b>	<b>D</b>

EB = eastbound, WB = westbound, NB = northbound, SB = southbound; L = left, T = through, R = right

The study intersections are anticipated to operate at generally acceptable LOS both with and without the proposed development in place. However, under no-build conditions, operations are LOS D or better, and under build conditions, the left turns out of the site driveway and the throughs into the site from the Route 15 off-ramp are shown to operate at LOS E during the afternoon peak hour. Turns into and out of driveways often experience worse LOS than along the mainline to maintain favorable operations along the mainline.

The 95<sup>th</sup> percentile vehicle queues (queues under the highest traffic conditions) at the LOS E locations are anticipated to be manageable. The queues at the site driveway are anticipated to be less than four car-lengths, which would not impact on-site operations. The queues at the Route 15 southbound off-ramp are anticipated to be two to three car-lengths longer than queues under no-build conditions. The longest queue along the ramp is right-turning traffic, which under no-build conditions the analysis reports extends approximately a car-length beyond the existing lane use pavement markings. The 95<sup>th</sup> percentile queues at all other locations are shown not to increase notably due to the proposed development and turning lane storage is not exceeded. 50<sup>th</sup> percentile (average) vehicle queues are shown not to be notably impacted by the proposed development at any location.

An additional item worth noting is the increase in LOS of the southbound through movement. Delays increase from LOS B to D in the morning peak hour, and from LOS C to D in the afternoon peak hour due to the proposed signal phasing and timing changes. However, delays and queues under build conditions are not excessively long, and therefore may be found acceptable.

The intersection of North Colony Road at the Route 15 northbound ramps shows v/c ratios greater than 1 during the afternoon peak hour under both no-build and build conditions. Because the ratio only increases by 0.02 under build conditions, the proposed site does not overburden capacity at the intersection.

### **Summary and Conclusions**

A study was conducted to assess the site traffic impacts of the proposed 7-Eleven convenience market with two in-store restaurants and 12 gas pumps to be located at 1033 North Colony Road (U.S. Route 5). A detailed effort was undertaken to determine a profile of existing conditions. Trip generation estimates for the proposed site development were made based on industry data. Analyses of the new traffic expected from the proposed development of the site were performed.

It was found that the proposed development can be accommodated by the surrounding roadway network if specific off-site mitigation measures, including geometric and traffic signal improvements, are constructed and installed at the intersection of North Colony Road at the Route 15 southbound ramps, the Park & Ride, and the proposed site driveway, as well as along the southbound side of North Colony Road from the Sonic/BJ's intersection to the Route 15 overpass. The geometric widening associated with the mitigation will allow a northbound left turn lane into the site to be constructed while maintaining the existing southbound left turn lane into the Park & Ride. A concept plan has been provided illustrating the layout of the described mitigation measures.

We recommend that the site driveway have dual left turn lanes and one right turn lane to manage vehicle queueing into the fueling platform area. Our analysis suggests that 95<sup>th</sup> percentile queues will be sufficiently short and will not adversely impact site operations in this manner.

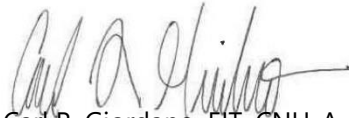
We hope this report is useful to you, the Town of Wallingford, and CTDOT in assessing the traffic impacts of this project. If you have any questions or need any further information, please do not hesitate to contact either of the undersigned.

Very truly yours,

MILONE & MACBROOM, INC.



David G. Sullivan, PE, Associate  
Manager of Traffic & Transportation Planning




Carl R. Giordano, EIT, CNU-A  
Project Transportation Engineer

Enclosures

7331-01-02-n420-ltr



**MILONE &  
MACBROOM**

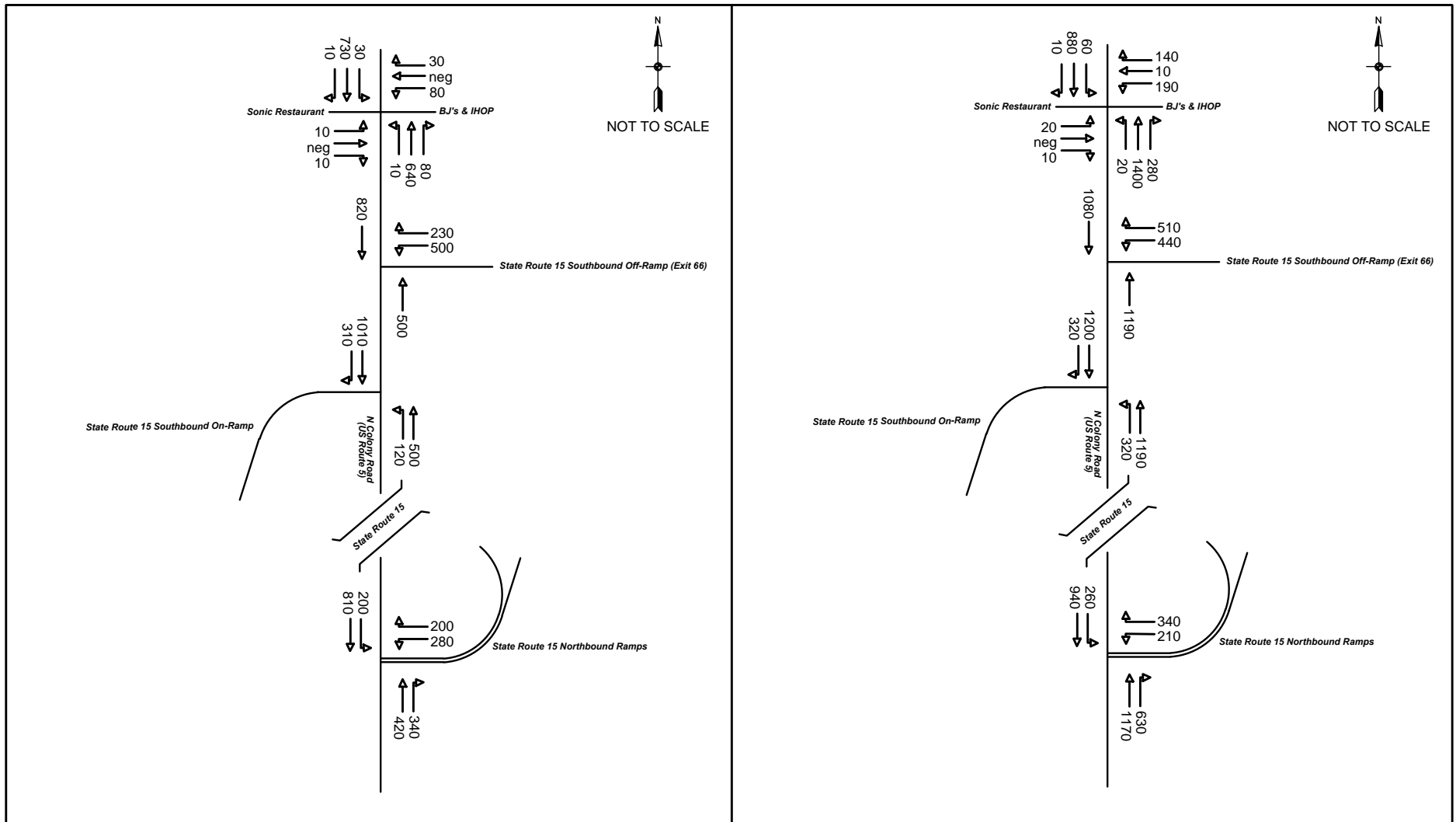
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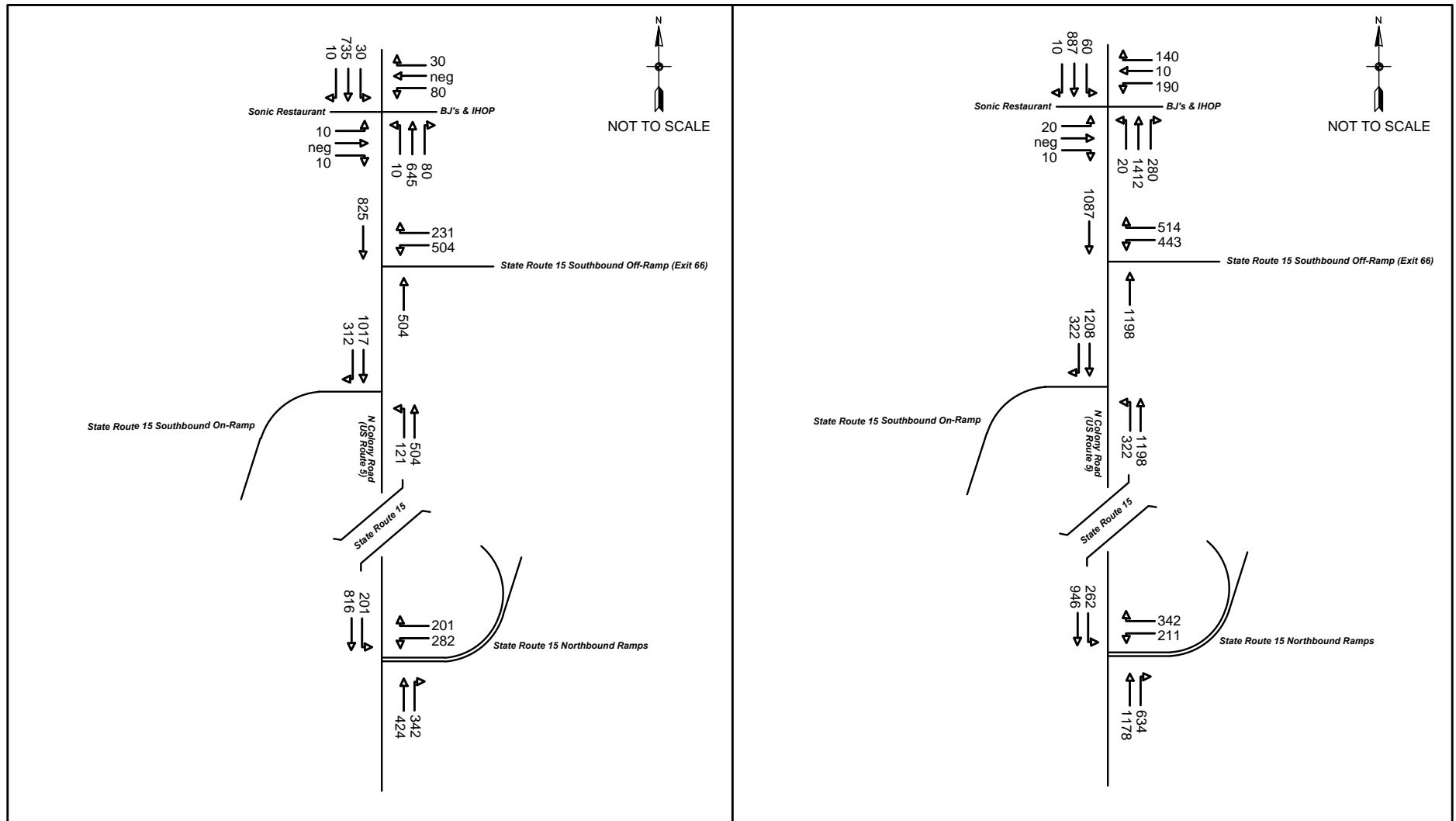
### SITE LOCATION

1033 N Colony Road (US Route 5)  
Wallingford, Connecticut

**FIGURE 1**



Source: CTDOT traffic volumes for the SCRCOG Route 5 Corridor Study dated 8/22/2019



WEEKDAY MORNING PEAK HOUR

WEEKDAY AFTERNOON PEAK HOUR

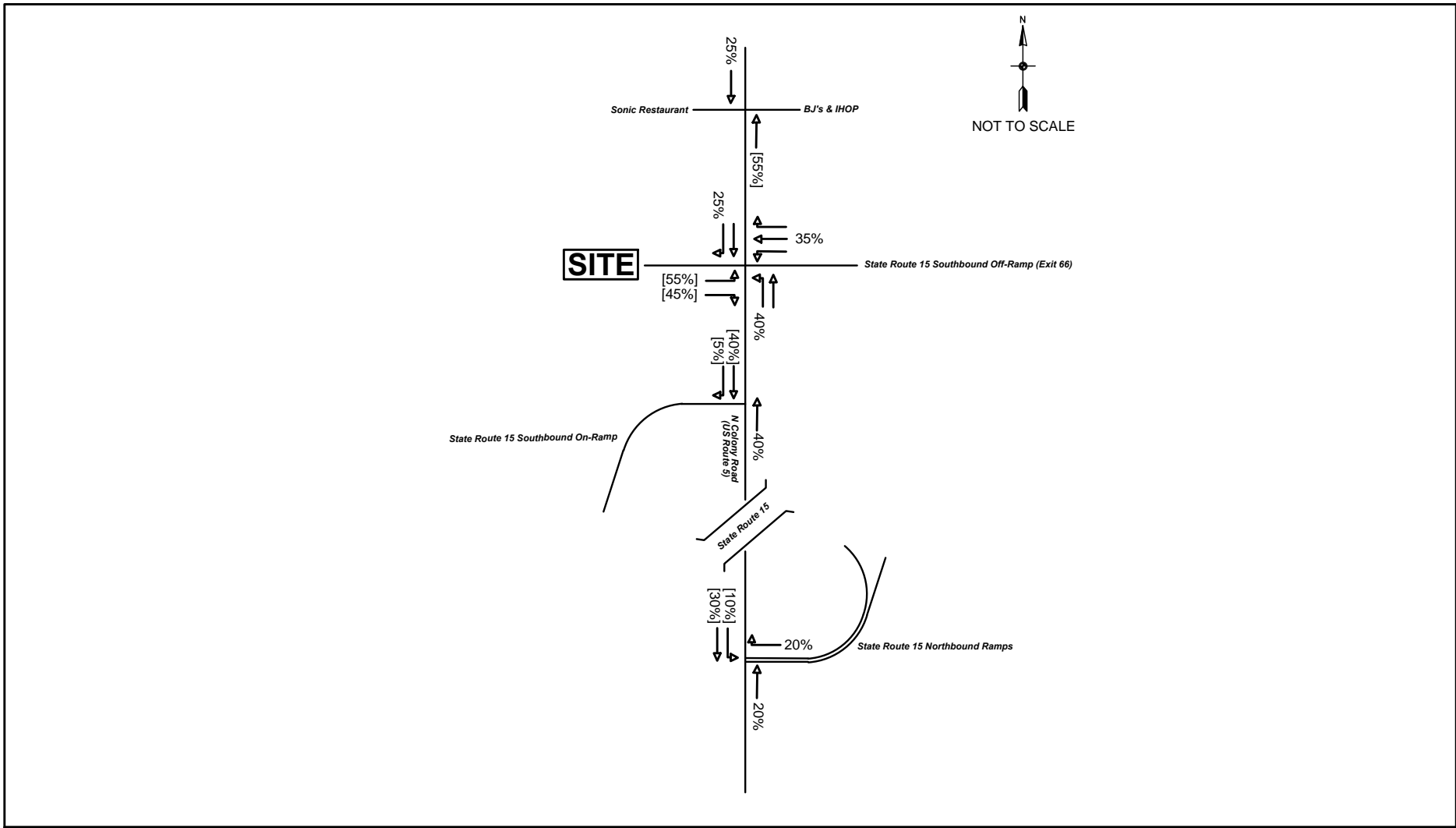


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**2021 NO-BUILD TRAFFIC VOLUMES**  
**1033 N Colony Road (US Route 5)**  
**Wallingford, Connecticut**

**LEGEND**  
 neg = negligible

**FIGURE 3**



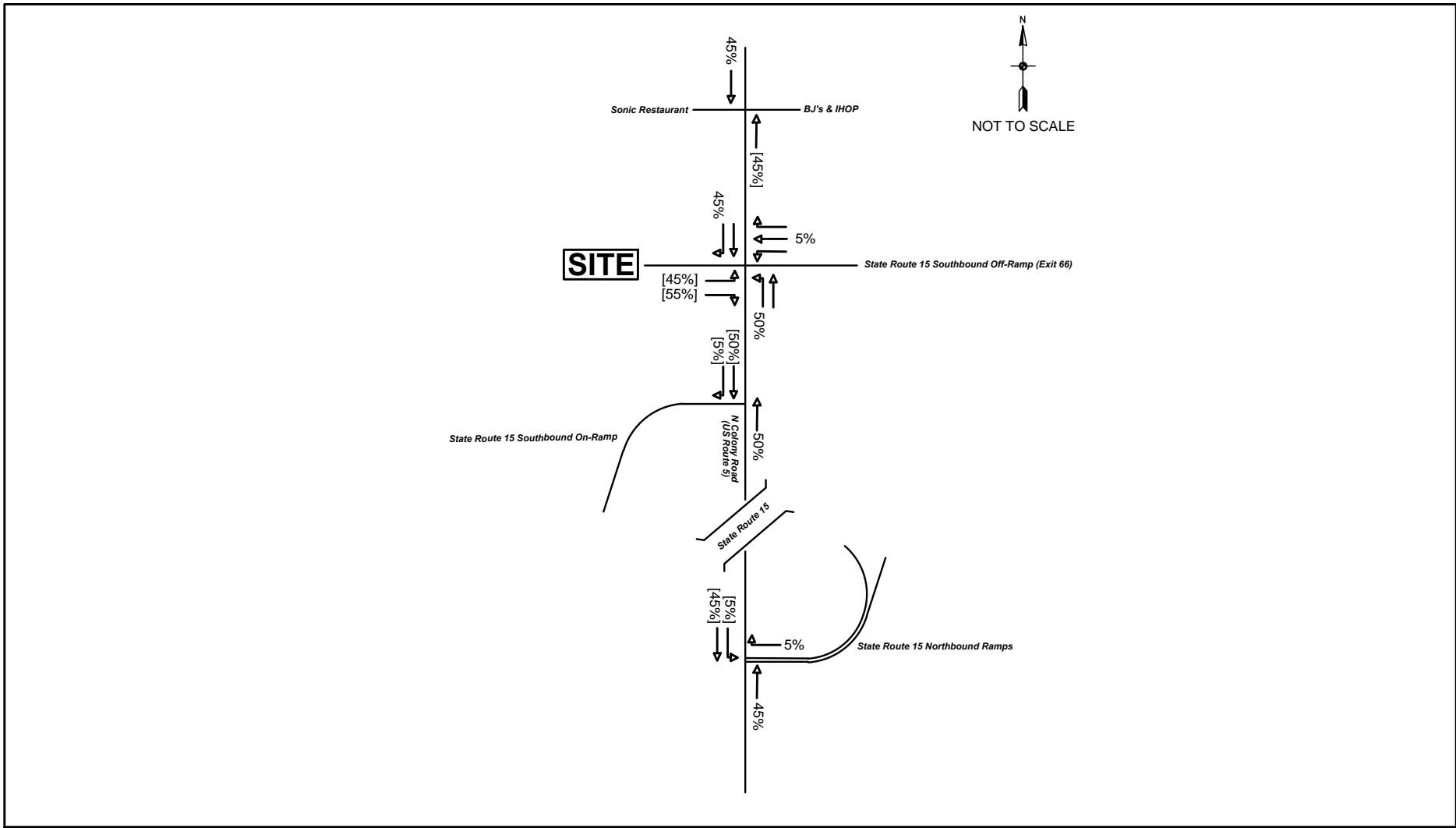
WEEKDAY MORNING PEAK HOUR



**SITE-GENERATED TRAFFIC DISTRIBUTION: PASS-BY TRAFFIC**  
**1033 N Colony Road (US Route 5)**  
**Wallingford, Connecticut**

**LEGEND**  
 ENTERING TRAFFIC XX  
 EXITING TRAFFIC [XX]

**FIGURE 4**



WEEKDAY MORNING PEAK HOUR

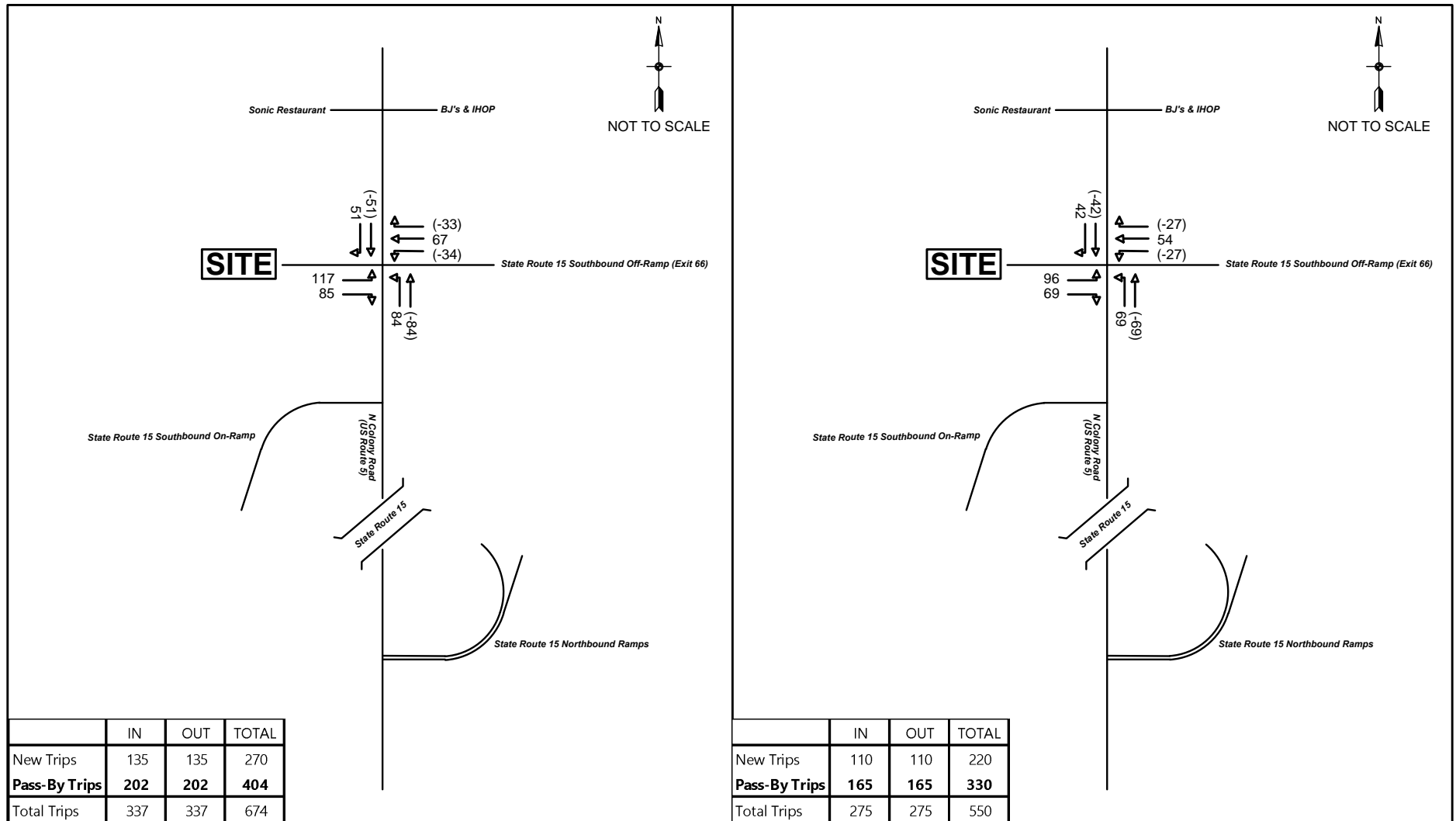


**SITE-GENERATED TRAFFIC DISTRIBUTION: NEW TRAFFIC**  
**1033 N Colony Road (US Route 5)**  
**Wallingford, Connecticut**

**LEGEND**  
 ENTERING TRAFFIC XX  
 EXITING TRAFFIC [XX]

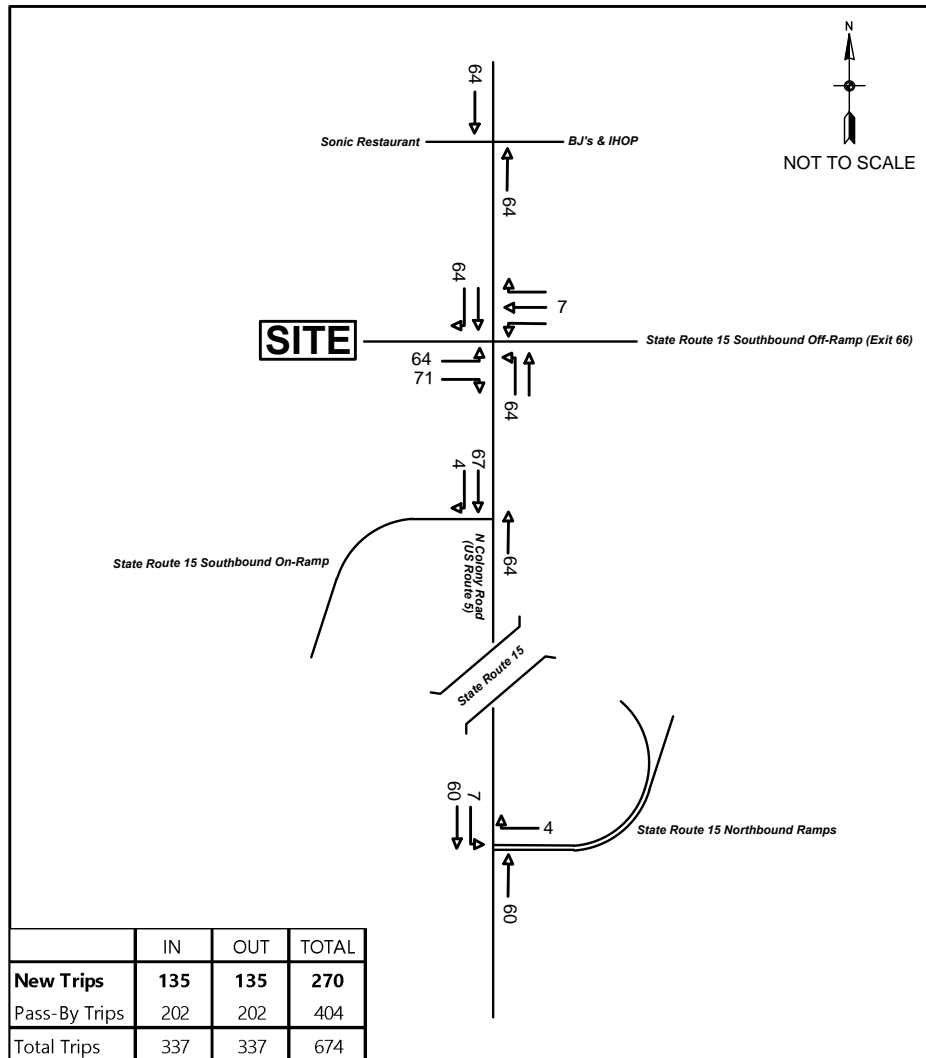
**FIGURE 5**



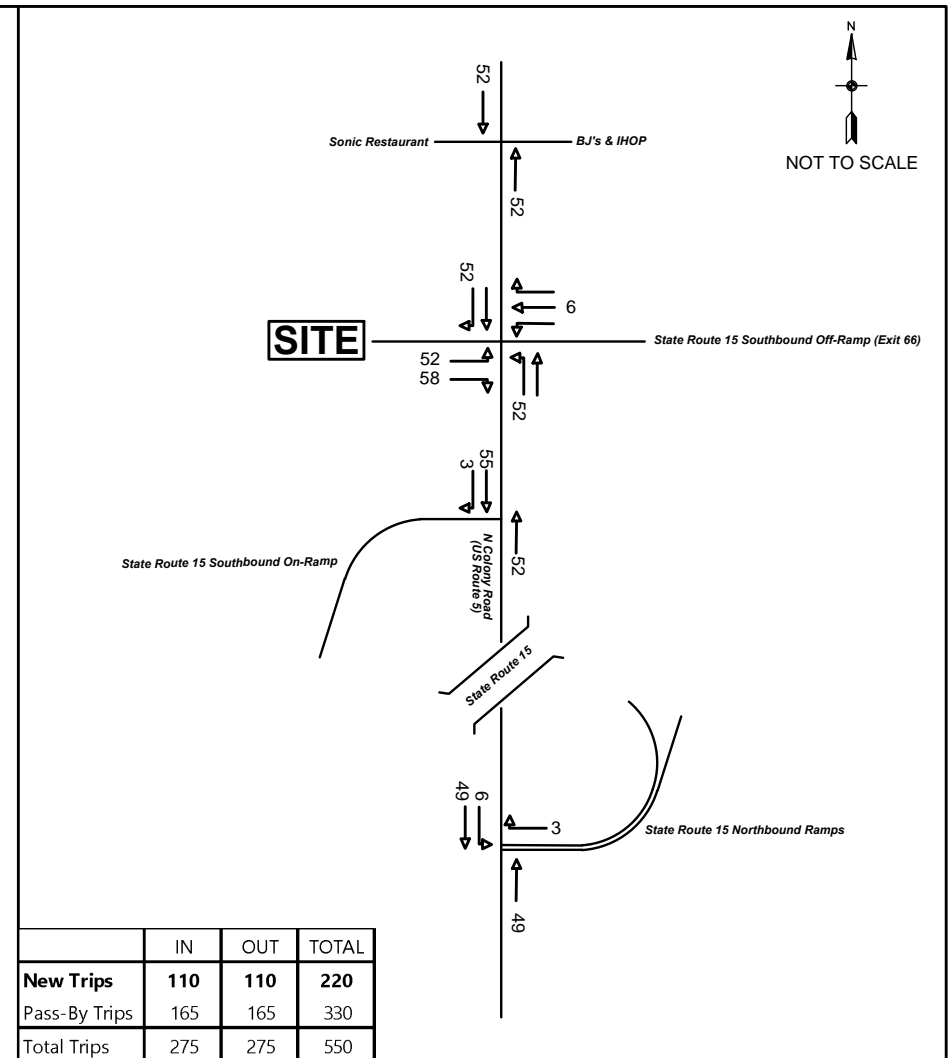


**SITE-GENERATED TRAFFIC VOLUMES: PASS-BY TRAFFIC**  
**1033 N Colony Road (US Route 5)**  
**Wallingford, Connecticut**

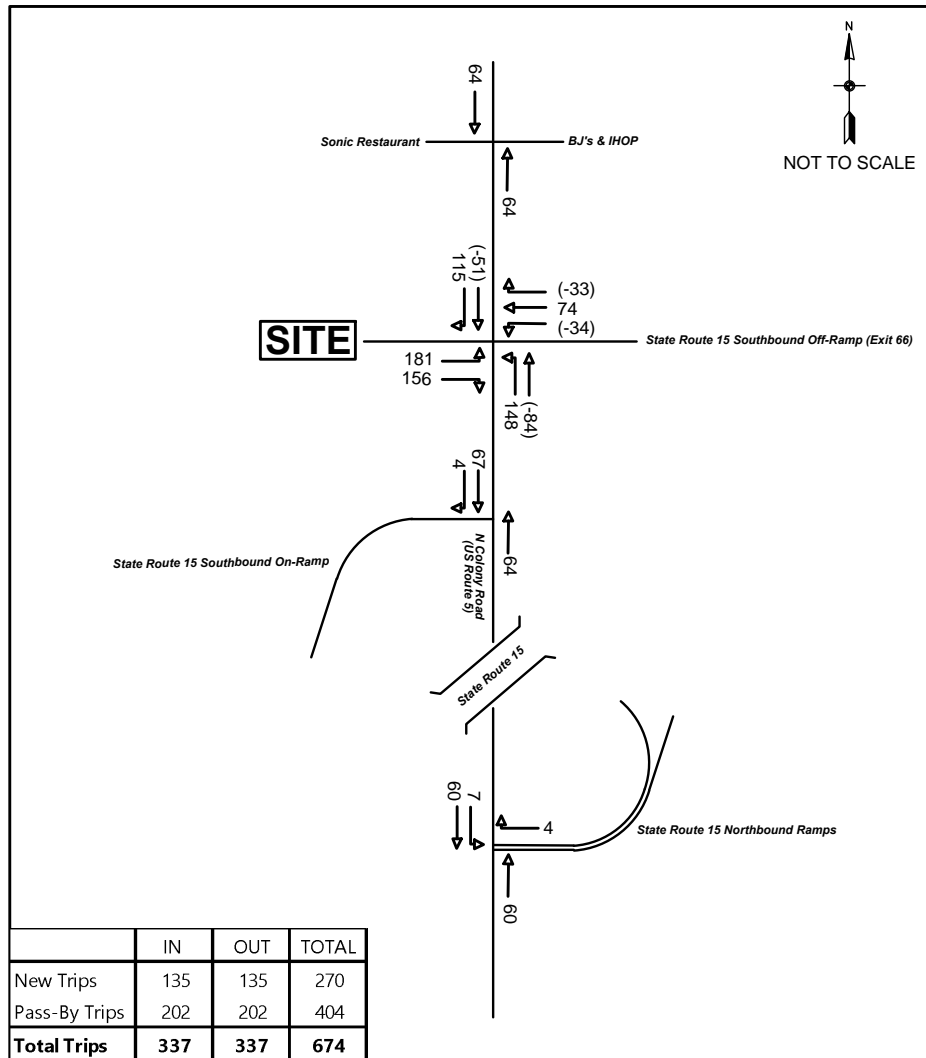
**FIGURE 6**



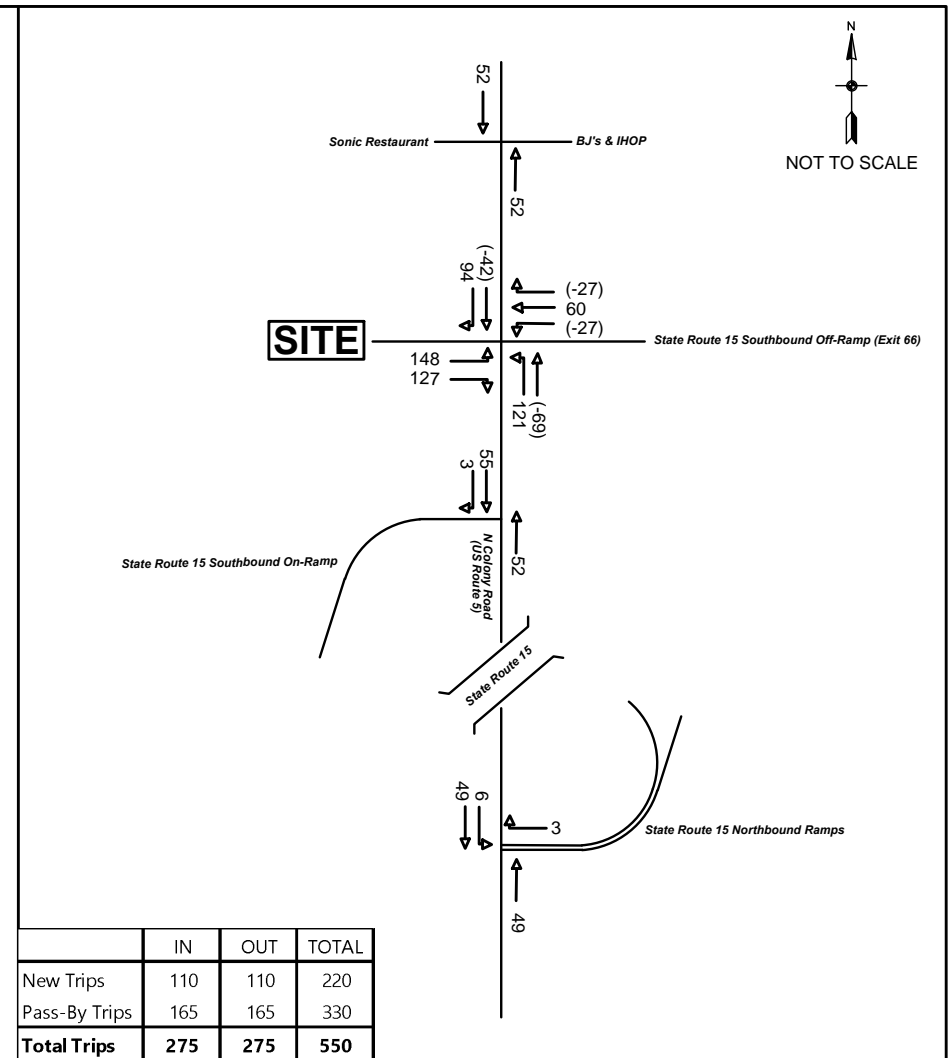
WEEKDAY MORNING PEAK HOUR



WEEKDAY AFTERNOON PEAK HOUR




WEEKDAY MORNING PEAK HOUR



WEEKDAY AFTERNOON PEAK HOUR



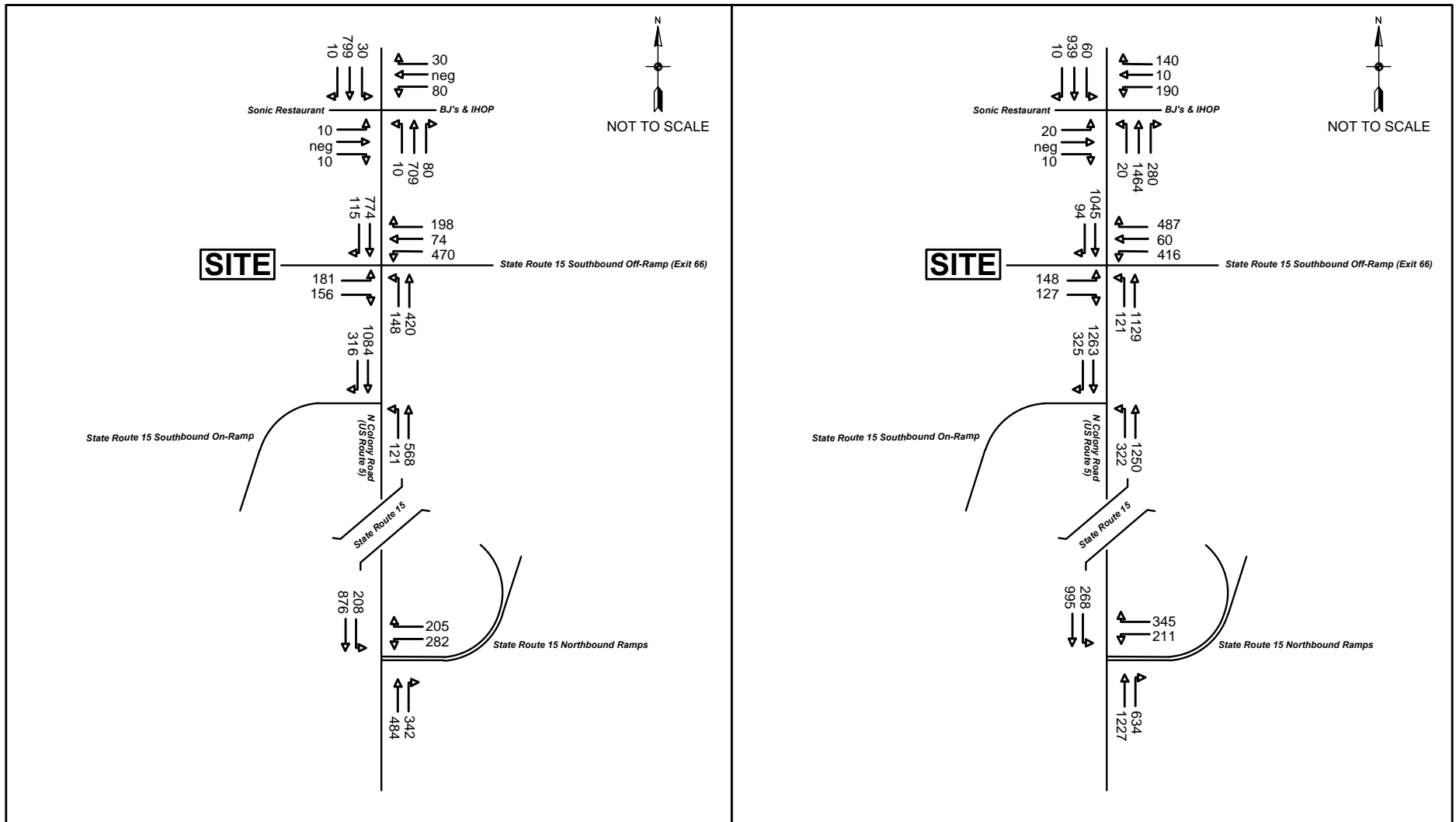
NOW PART OF  SLR

195 CHURCH STREET, 7TH FLOOR  
NEW HAVEN, CT 06510  
203.344.7887  
WWW.MMINC.COM | SLRCONSULTING.COM

**SITE-GENERATED TRAFFIC VOLUMES: TOTAL**  
**1033 N Colony Road (US Route 5)**  
**Wallingford, Connecticut**

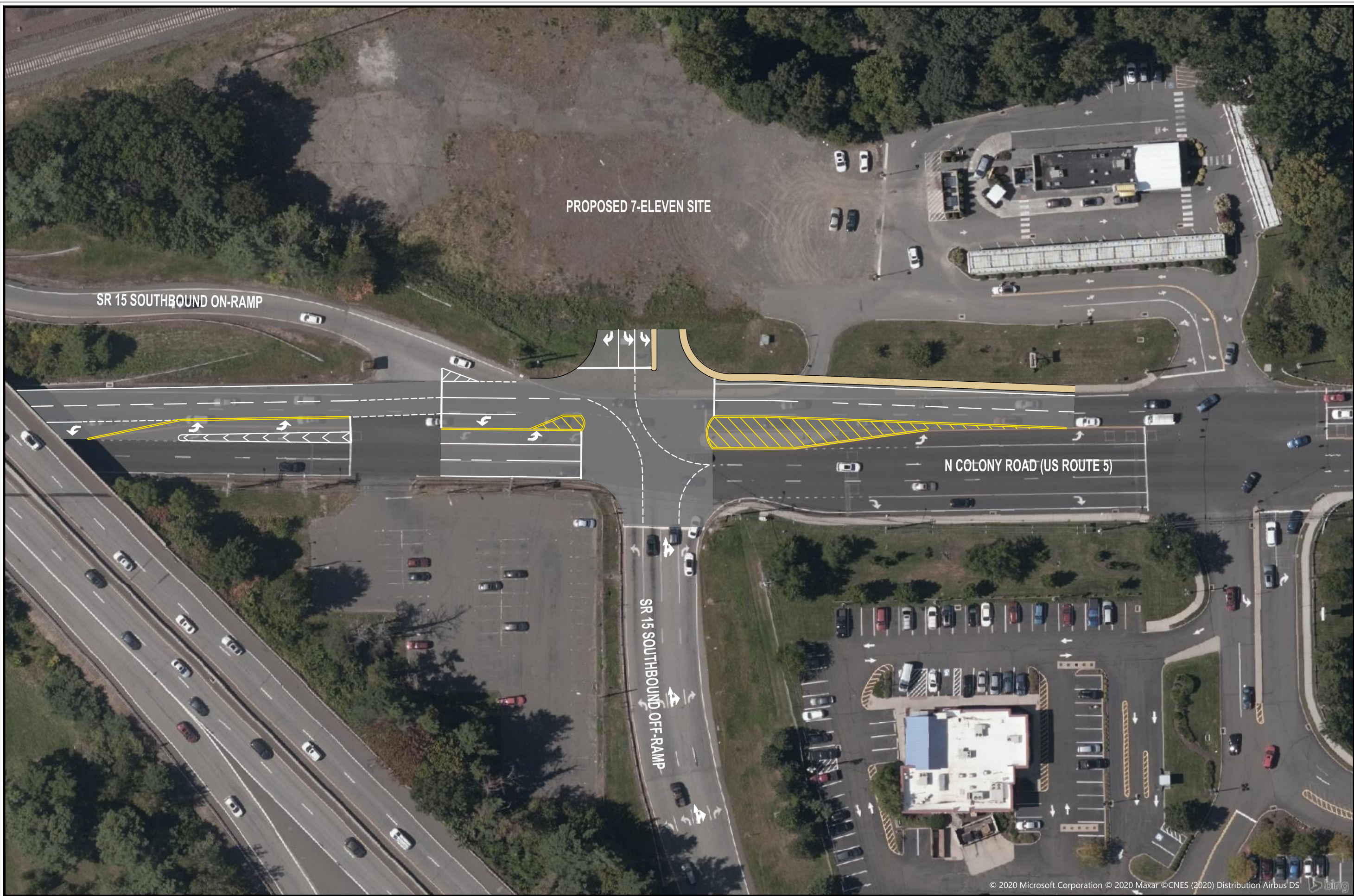
**LEGEND**  
**NEW SITE TRAFFIC XX**  
**PASS-BY TRAFFIC (-XX)**

**FIGURE 8**



D:\working\CA\DESIGN\7331-01-DE\CA\WORKPLANSET\7331-01-RTES-SITE-CONCEPTING Layout Table 10

Plotted by: COORDINATOR On this date: Fri, 2020 November 6 - 8:13am



PROPOSED 7-ELEVEN SITE

SR 15 SOUTHBOUND ON-RAMP

N COLONY ROAD (US ROUTE 5)

SR 15 SOUTHBOUND OFF-RAMP



**MILONE & MACBROOM**  
 NOW PART OF **SLR**  
 55 BEAULY DRIVE  
 CHESTER, CT 06410  
 203.271.1773  
 WWW.MMNC.COM | SLRCONSULTING.COM

REVISIONS

NO.	DESCRIPTION

CONCEPTUAL TRANSPORTATION MITIGATION  
PROPOSED 7-ELEVEN

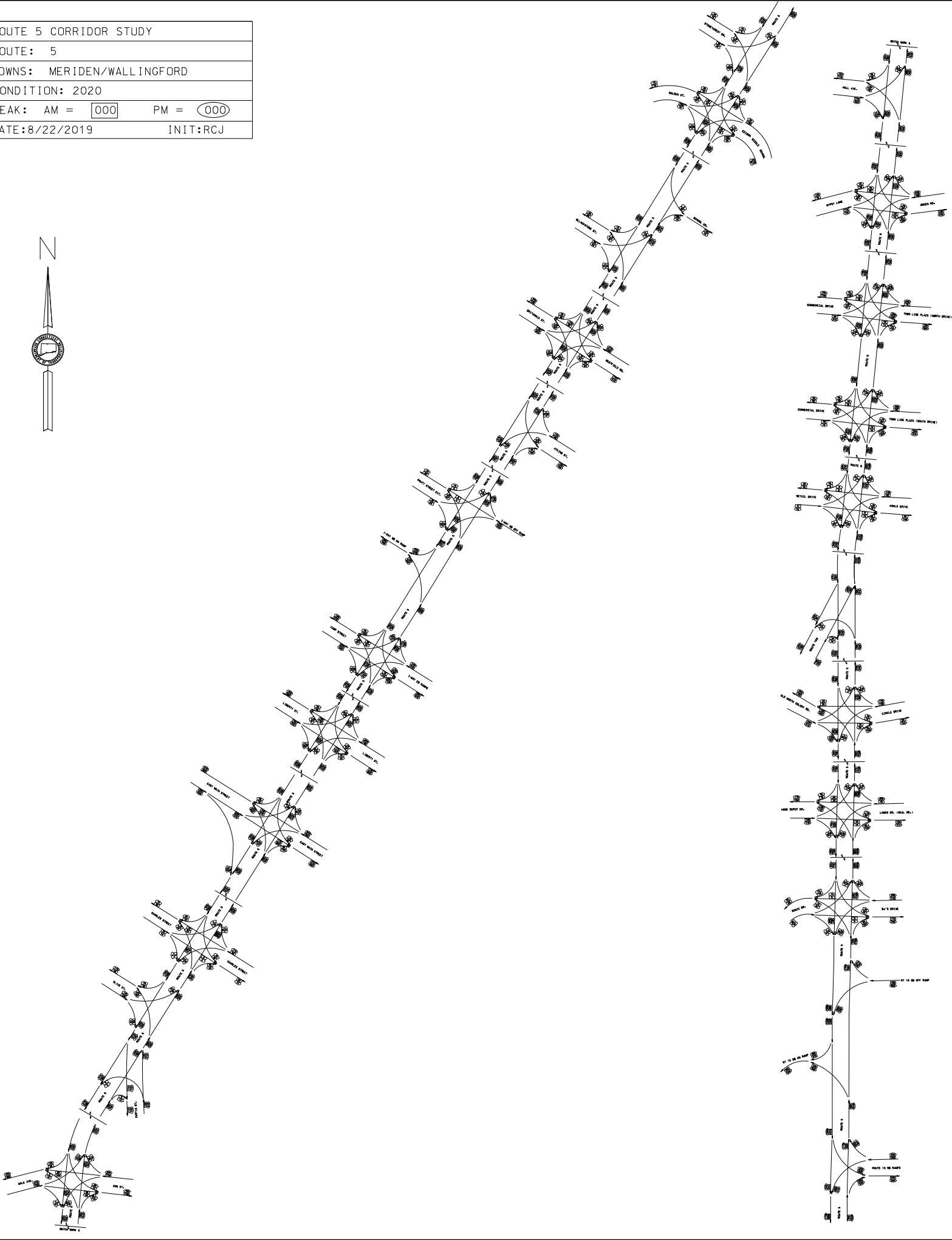
1033 N COLONY ROAD  
WALLINGFORD, CT

DESIGNED	DRAWN	CHECKED
SCALE 1"=60'		
DATE NOVEMBER 4, 2020		
PROJECT NO. 7331-01		

**FIG 10**

# **APPENDIX**

ROUTE 5 CORRIDOR STUDY	
ROUTE: 5	
TOWNS: MERIDEN/WALLINGFORD	
CONDITION: 2020	
PEAK: AM = 000	PM = 000
DATE: 8/22/2019	INIT: RCJ



# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

Route 5 at Sonic Dr/BJ's Drive  
Meriden, Connecticut

File Name : 18753  
Site Code : 18753  
Start Date : 4/4/2019  
Page No : 1

Groups Printed- Lights - Buses - Trucks - Bicycles on Crosswalk - Pedestrians

Start Time	Route 5 From North					BJ's Dr From East					Route 5 From South					Sonic Dr From West					Int. Total	
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total		
07:00 AM	0	127	5	0	132	7	1	15	0	23	17	81	0	0	98	0	0	1	0	1	1	254
07:15 AM	0	157	2	0	159	3	0	15	0	18	21	119	1	0	141	0	0	0	0	0	0	318
07:30 AM	0	158	5	0	163	4	0	18	0	22	22	109	1	0	132	0	0	0	0	0	0	317
07:45 AM	1	217	3	0	221	3	0	18	0	21	16	145	1	0	162	0	0	1	0	1	1	405
<b>Total</b>	<b>1</b>	<b>659</b>	<b>15</b>	<b>0</b>	<b>675</b>	<b>17</b>	<b>1</b>	<b>66</b>	<b>0</b>	<b>84</b>	<b>76</b>	<b>454</b>	<b>3</b>	<b>0</b>	<b>533</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>1294</b>
08:00 AM	1	138	9	0	148	4	0	15	0	19	18	149	1	0	168	0	0	0	0	0	0	335
08:15 AM	1	161	3	0	165	10	0	18	0	28	18	130	2	0	150	1	0	2	0	3	3	346
08:30 AM	0	154	11	0	165	6	0	18	0	24	22	163	1	0	186	0	0	0	0	0	0	375
08:45 AM	1	141	11	0	153	0	0	19	0	19	29	148	3	0	180	0	0	0	0	0	0	352
<b>Total</b>	<b>3</b>	<b>594</b>	<b>34</b>	<b>0</b>	<b>631</b>	<b>20</b>	<b>0</b>	<b>70</b>	<b>0</b>	<b>90</b>	<b>87</b>	<b>590</b>	<b>7</b>	<b>0</b>	<b>684</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>3</b>	<b>1408</b>
<b>Grand Total</b>	<b>4</b>	<b>1253</b>	<b>49</b>	<b>0</b>	<b>1306</b>	<b>37</b>	<b>1</b>	<b>136</b>	<b>0</b>	<b>174</b>	<b>163</b>	<b>1044</b>	<b>10</b>	<b>0</b>	<b>1217</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>5</b>	<b>5</b>	<b>2702</b>
<b>Apprch %</b>	<b>0.3</b>	<b>95.9</b>	<b>3.8</b>	<b>0</b>		<b>21.3</b>	<b>0.6</b>	<b>78.2</b>	<b>0</b>		<b>13.4</b>	<b>85.8</b>	<b>0.8</b>	<b>0</b>		<b>20</b>	<b>0</b>	<b>80</b>	<b>0</b>			
<b>Total %</b>	<b>0.1</b>	<b>46.4</b>	<b>1.8</b>	<b>0</b>	<b>48.3</b>	<b>1.4</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>6.4</b>	<b>6</b>	<b>38.6</b>	<b>0.4</b>	<b>0</b>	<b>45</b>	<b>0</b>	<b>0</b>	<b>0.1</b>	<b>0</b>	<b>0.2</b>		
<b>Lights</b>	<b>4</b>	<b>1224</b>									<b>1007</b>											
<b>% Lights</b>	<b>100</b>	<b>97.7</b>	<b>100</b>	<b>0</b>	<b>97.8</b>	<b>91.9</b>	<b>0</b>	<b>99.3</b>	<b>0</b>	<b>97.1</b>	<b>98.2</b>	<b>96.5</b>	<b>100</b>	<b>0</b>	<b>96.7</b>	<b>100</b>	<b>0</b>	<b>75</b>	<b>0</b>	<b>80</b>	<b>97.2</b>	
<b>Buses</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>
<b>% Buses</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0</b>	<b>0.2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.4</b>	<b>0</b>	<b>0</b>	<b>0.3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.3</b>
<b>Trucks</b>	<b>0</b>	<b>26</b>	<b>0</b>	<b>0</b>	<b>26</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>3</b>	<b>33</b>	<b>0</b>	<b>0</b>	<b>36</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>68</b>
<b>% Trucks</b>	<b>0</b>	<b>2.1</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>8.1</b>	<b>100</b>	<b>0.7</b>	<b>0</b>	<b>2.9</b>	<b>1.8</b>	<b>3.2</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>25</b>	<b>0</b>	<b>20</b>	<b>2.5</b>	
<b>Bicycles on Crosswalk</b>																						
<b>% Bicycles on Crosswalk</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Pedestrians</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Pedestrians</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

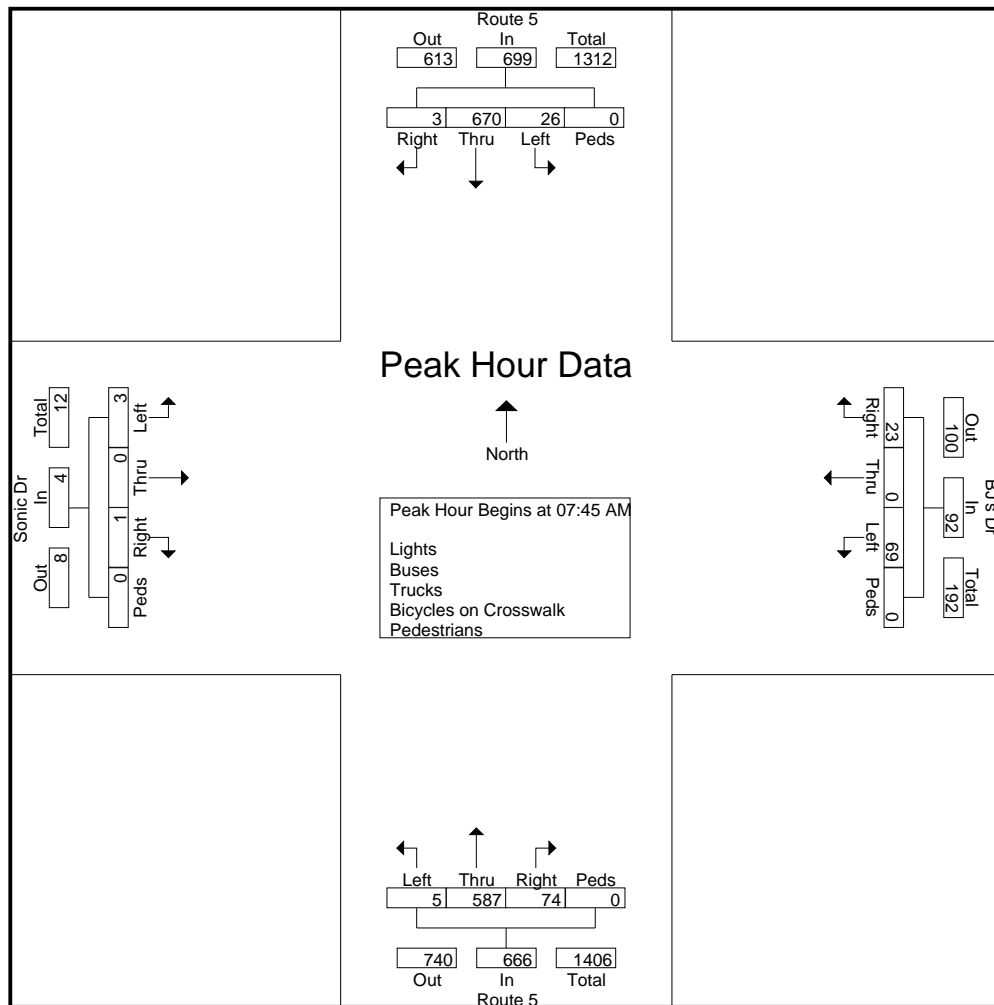


# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

File Name : 18753  
Site Code : 18753  
Start Date : 4/4/2019  
Page No : 2

Start Time	Route 5 From North					BJ's Dr From East					Route 5 From South					Sonic Dr From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	1	217	3	0	221	3	0	18	0	21	16	145	1	0	162	0	0	1	0	1	405
08:00 AM	1	138	9	0	148	4	0	15	0	19	18	149	1	0	168	0	0	0	0	0	335
08:15 AM	1	161	3	0	165	10	0	18	0	28	18	130	2	0	150	1	0	2	0	3	346
08:30 AM	0	154	11	0	165	6	0	18	0	24	22	163	1	0	186	0	0	0	0	0	375
Total Volume	3	670	26	0	699	23	0	69	0	92	74	587	5	0	666	1	0	3	0	4	1461
% App. Total	0.4	95.9	3.7	0		25	0	75	0		11.1	88.1	0.8	0		25	0	75	0		
PHF	.750	.772	.591	.000	.791	.575	.000	.958	.000	.821	.841	.900	.625	.000	.895	.250	.000	.375	.000	.333	.902



# Connecticut Counts LLC

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(860) 828-1693

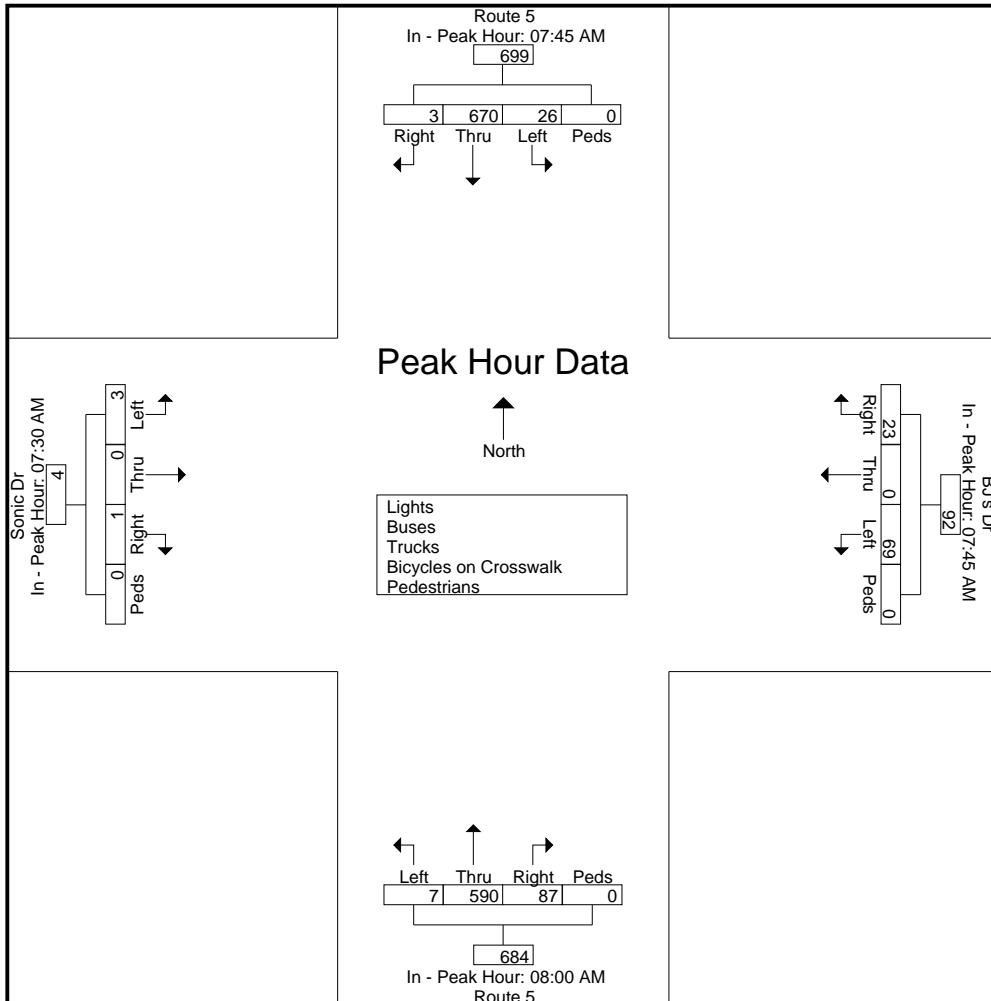
File Name : 18753  
Site Code : 18753  
Start Date : 4/4/2019  
Page No : 3

Start Time	Route 5 From North					BJ's Dr From East					Route 5 From South					Sonic Dr From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM					07:45 AM					08:00 AM					07:30 AM				
+0 mins.	1	217	3	0	221	3	0	18	0	21	18	149	1	0	168	0	0	0	0	0
+15 mins.	1	138	9	0	148	4	0	15	0	19	18	130	2	0	150	0	0	1	0	1
+30 mins.	1	161	3	0	165	10	0	18	0	28	22	163	1	0	186	0	0	0	0	0
+45 mins.	0	154	11	0	165	6	0	18	0	24	29	148	3	0	180	1	0	2	0	3
Total Volume	3	670	26	0	699	23	0	69	0	92	87	590	7	0	684	1	0	3	0	4
% App. Total	0.4	95.9	3.7	0		25	0	75	0		12.7	86.3	1	0		25	0	75	0	
PHF	.750	.772	.591	.000	.791	.575	.000	.958	.000	.821	.750	.905	.583	.000	.919	.250	.000	.375	.000	.333



# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

Route 5 at Sonic Dr/BJ's Drive  
Meriden, Connecticut

File Name : 18754  
Site Code : 18754  
Start Date : 4/4/2019  
Page No : 1

Groups Printed- Lights - Buses - Trucks - Bicycles on Crosswalk - Pedestrians

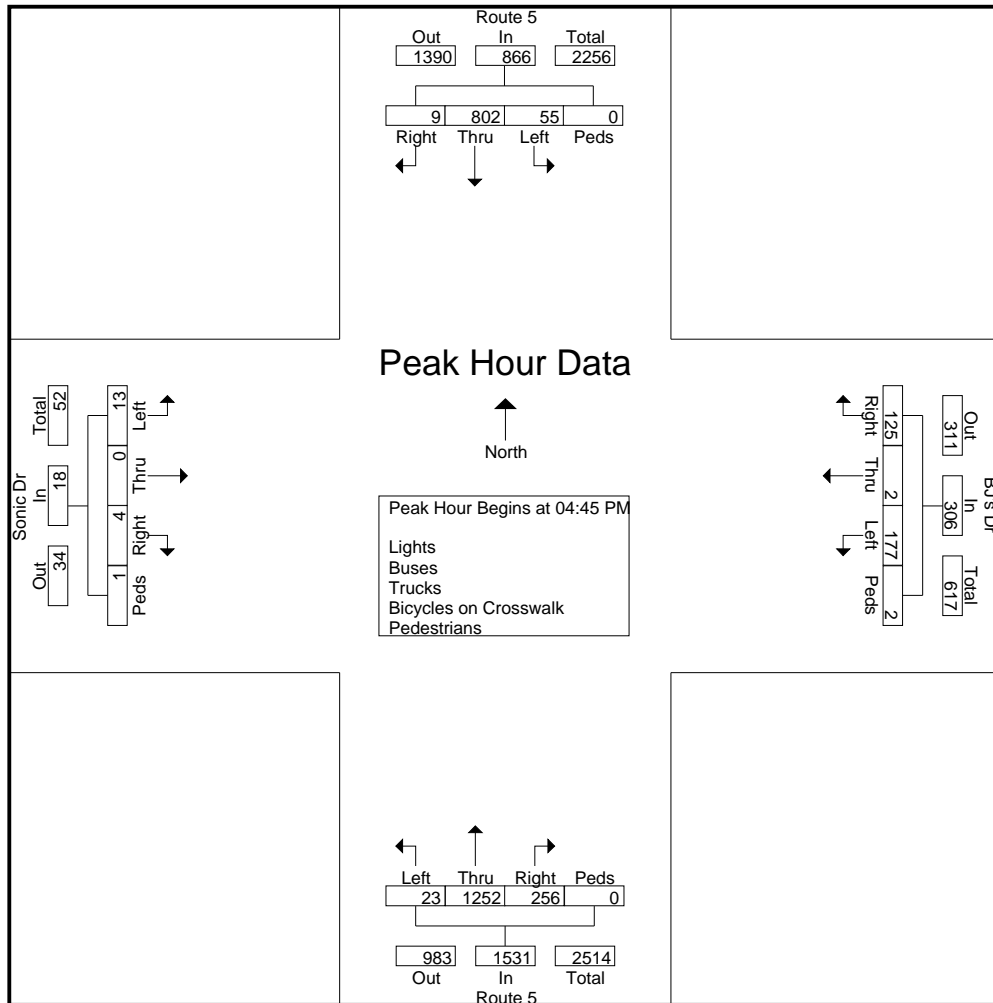
Start Time	Route 5 From North					BJ's Dr From East					Route 5 From South					Sonic Dr From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	5	216	15	0	236	29	1	40	0	70	63	268	4	0	335	0	0	5	0	5	646
04:15 PM	2	204	11	0	217	26	2	46	0	74	54	273	7	0	334	1	0	1	0	2	627
04:30 PM	3	216	18	0	237	31	1	44	0	76	57	273	6	0	336	1	1	0	0	2	651
04:45 PM	2	180	11	0	193	30	2	39	0	71	49	323	12	0	384	1	0	6	0	7	655
<b>Total</b>	<b>12</b>	<b>816</b>	<b>55</b>	<b>0</b>	<b>883</b>	<b>116</b>	<b>6</b>	<b>169</b>	<b>0</b>	<b>291</b>	<b>223</b>	<b>1137</b>	<b>29</b>	<b>0</b>	<b>1389</b>	<b>3</b>	<b>1</b>	<b>12</b>	<b>0</b>	<b>16</b>	<b>2579</b>
05:00 PM	0	223	19	0	242	35	0	40	2	77	58	316	5	0	379	1	0	5	0	6	704
05:15 PM	3	201	14	0	218	31	0	49	0	80	85	321	2	0	408	1	0	2	1	4	710
05:30 PM	4	198	11	0	213	29	0	49	0	78	64	292	4	0	360	1	0	0	0	1	652
05:45 PM	3	197	20	0	220	24	1	49	0	74	46	262	7	0	315	0	0	2	0	2	611
<b>Total</b>	<b>10</b>	<b>819</b>	<b>64</b>	<b>0</b>	<b>893</b>	<b>119</b>	<b>1</b>	<b>187</b>	<b>2</b>	<b>309</b>	<b>253</b>	<b>1191</b>	<b>18</b>	<b>0</b>	<b>1462</b>	<b>3</b>	<b>0</b>	<b>9</b>	<b>1</b>	<b>13</b>	<b>2677</b>
Grand Total	22	1635	119	0	1776	235	7	356	2	600	476	2328	47	0	2851	6	1	21	1	29	5256
Apprch %	1.2	92.1	6.7	0		39.2	1.2	59.3	0.3		16.7	81.7	1.6	0		20.7	3.4	72.4	3.4		
Total %	0.4	31.1	2.3	0	33.8	4.5	0.1	6.8	0	11.4	9.1	44.3	0.9	0	54.2	0.1	0	0.4	0	0.6	
Lights	21	1615										2302									
% Lights	95.5	98.8	100	0	98.8	99.6	100	99.7	0	99.3	99.4	98.9	100	0	99	100	100	95.2	0	93.1	98.9
Buses	0	2	0	0	2	1	0	0	0	1	1	2	0	0	3	0	0	0	0	0	6
% Buses	0	0.1	0	0	0.1	0.4	0	0	0	0.2	0.2	0.1	0	0	0.1	0	0	0	0	0	0.1
Trucks	1	18	0	0	19	0	0	1	0	1	2	24	0	0	26	0	0	1	0	1	47
% Trucks	4.5	1.1	0	0	1.1	0	0	0.3	0	0.2	0.4	1	0	0	0.9	0	0	4.8	0	3.4	0.9
Bicycles on Crosswalk																					
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	1	1	3
% Pedestrians	0	0	0	0	0	0	0	0	100	0.3	0	0	0	0	0	0	0	0	100	3.4	0.1

# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

File Name : 18754  
Site Code : 18754  
Start Date : 4/4/2019  
Page No : 2

Start Time	Route 5 From North					BJ's Dr From East					Route 5 From South					Sonic Dr From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	2	180	11	0	193	30	2	39	0	71	49	323	12	0	384	1	0	6	0	7	655
05:00 PM	0	223	19	0	242	35	0	40	2	77	58	316	5	0	379	1	0	5	0	6	704
05:15 PM	3	201	14	0	218	31	0	49	0	80	85	321	2	0	408	1	0	2	1	4	710
05:30 PM	4	198	11	0	213	29	0	49	0	78	64	292	4	0	360	1	0	0	0	1	652
Total Volume	9	802	55	0	866	125	2	177	2	306	256	1252	23	0	1531	4	0	13	1	18	2721
% App. Total	1	92.6	6.4	0		40.8	0.7	57.8	0.7		16.7	81.8	1.5	0		22.2	0	72.2	5.6		
PHF	.563	.899	.724	.000	.895	.893	.250	.903	.250	.956	.753	.969	.479	.000	.938	1.00	.000	.542	.250	.643	.958



# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

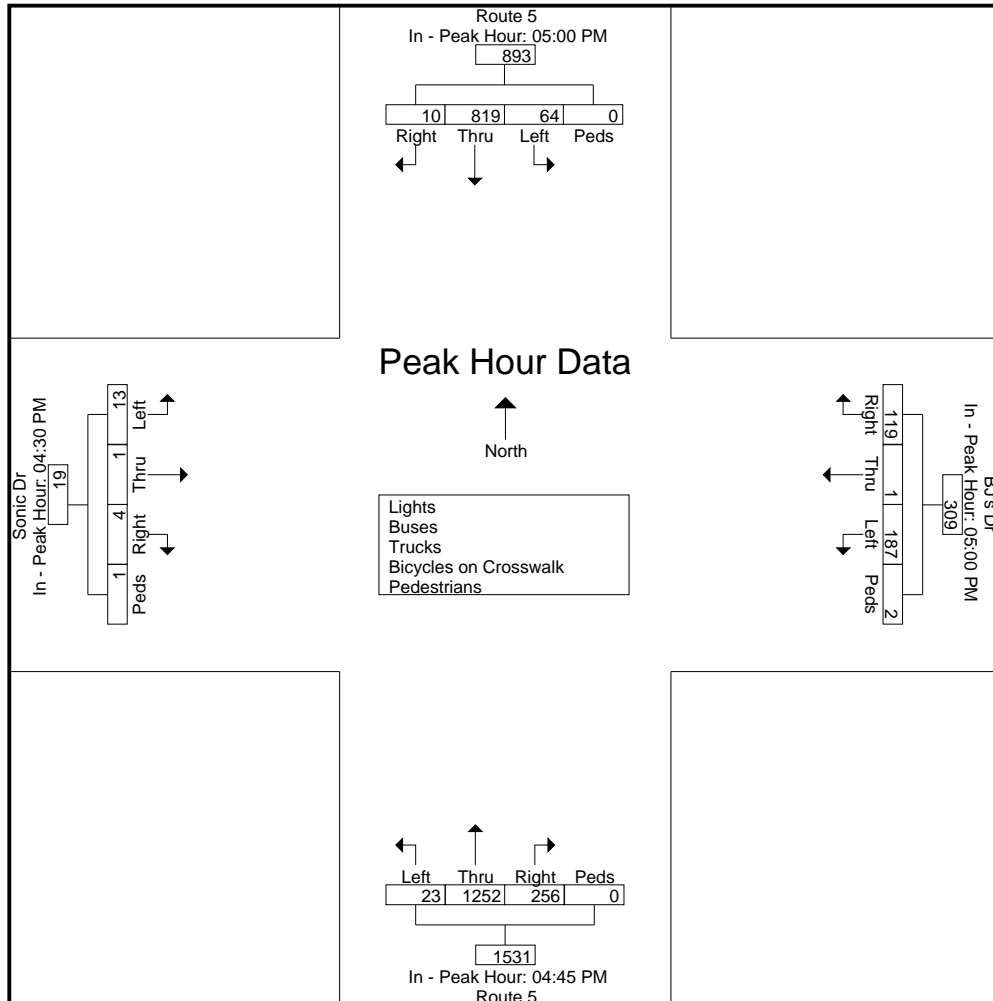
File Name : 18754  
Site Code : 18754  
Start Date : 4/4/2019  
Page No : 3

Start Time	Route 5 From North					BJ's Dr From East					Route 5 From South					Sonic Dr From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM					05:00 PM					04:45 PM					04:30 PM				
+0 mins.	0	223	19	0	242	35	0	40	2	77	49	323	12	0	384	1	1	0	0	2
+15 mins.	3	201	14	0	218	31	0	49	0	80	58	316	5	0	379	1	0	6	0	7
+30 mins.	4	198	11	0	213	29	0	49	0	78	85	321	2	0	408	1	0	5	0	6
+45 mins.	3	197	20	0	220	24	1	49	0	74	64	292	4	0	360	1	0	2	1	4
Total Volume	10	819	64	0	893	119	1	187	2	309	256	1252	23	0	1531	4	1	13	1	19
% App. Total	1.1	91.7	7.2	0		38.5	0.3	60.5	0.6		16.7	81.8	1.5	0		21.1	5.3	68.4	5.3	
PHF	.625	.918	.800	.000	.923	.850	.250	.954	.250	.966	.753	.969	.479	.000	.938	1.000	.250	.542	.250	.679



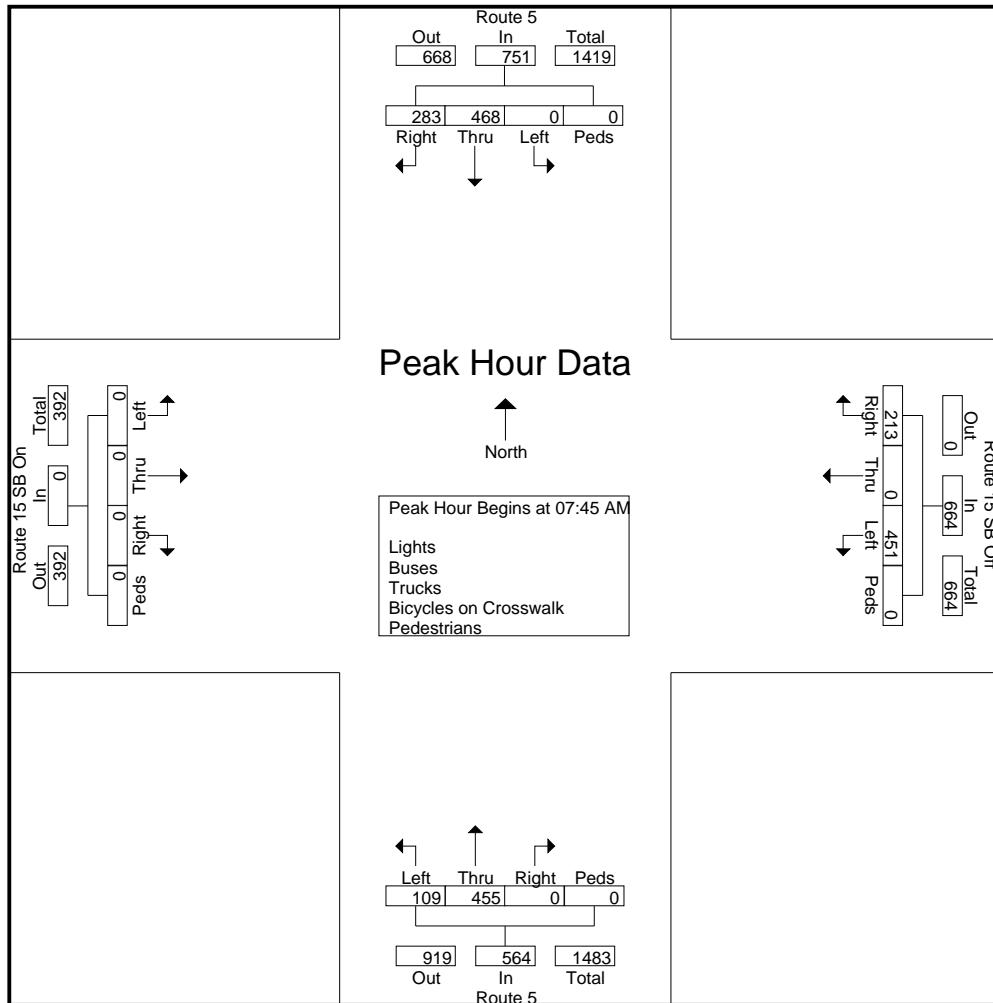


# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

File Name : 18755  
Site Code : 18755  
Start Date : 4/4/2019  
Page No : 2

Start Time	Route 5 From North					Route 15 SB Off From East					Route 5 From South					Route 15 SB On From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 06:45 AM to 09:00 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	87	143	0	0	230	51	0	127	0	178	0	105	30	0	135	0	0	0	0	0	543
08:00 AM	63	100	0	0	163	56	0	125	0	181	0	114	26	0	140	0	0	0	0	0	484
08:15 AM	70	110	0	0	180	54	0	106	0	160	0	104	20	0	124	0	0	0	0	0	464
08:30 AM	63	115	0	0	178	52	0	93	0	145	0	132	33	0	165	0	0	0	0	0	488
Total Volume	283	468	0	0	751	213	0	451	0	664	0	455	109	0	564	0	0	0	0	0	1979
% App. Total	37.7	62.3	0	0		32.1	0	67.9	0		0	80.7	19.3	0		0	0	0	0	0	
PHF	.813	.818	.000	.000	.816	.951	.000	.888	.000	.917	.000	.862	.826	.000	.855	.000	.000	.000	.000	.000	.911



# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

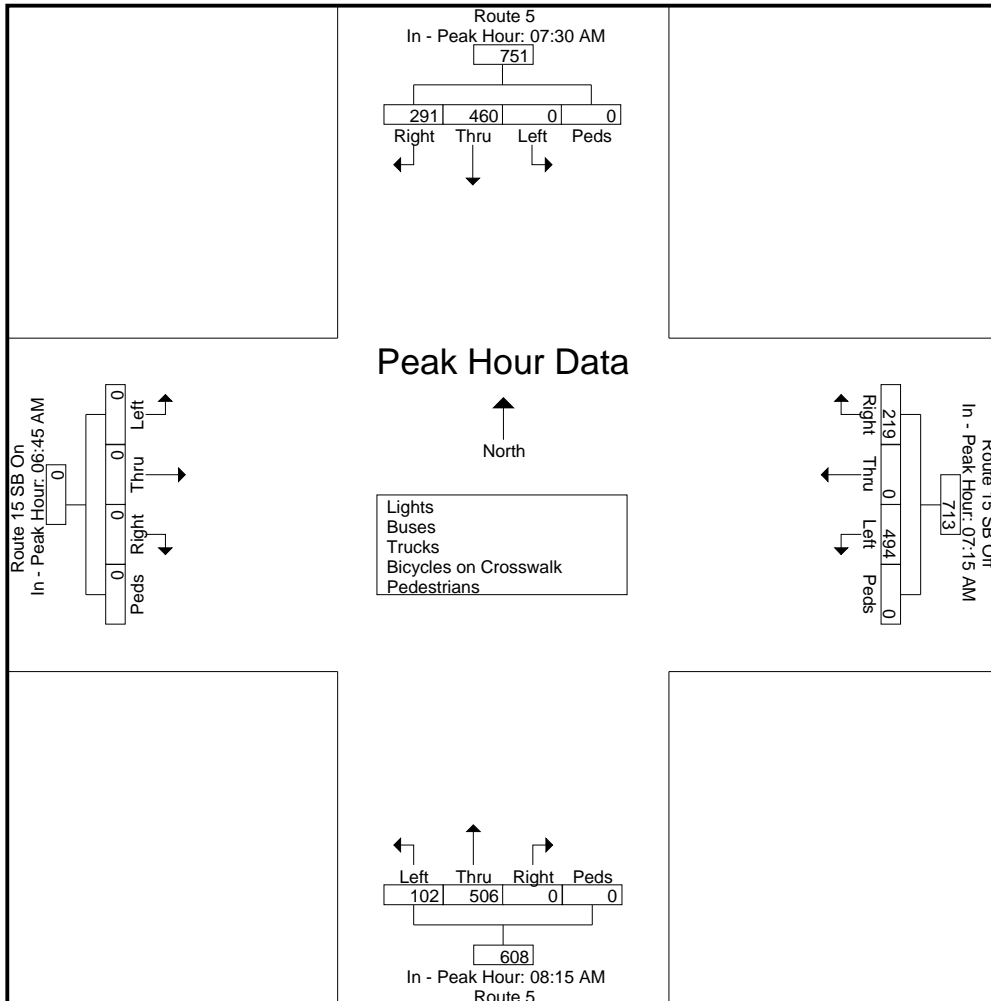
File Name : 18755  
Site Code : 18755  
Start Date : 4/4/2019  
Page No : 3

Start Time	Route 5 From North					Route 15 SB Off From East					Route 5 From South					Route 15 SB On From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 06:45 AM to 09:00 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM					07:15 AM					08:15 AM					06:45 AM				
+0 mins.	71	107	0	0	178	63	0	122	0	185	0	104	20	0	124	0	0	0	0	0
+15 mins.	87	143	0	0	230	49	0	120	0	169	0	132	33	0	165	0	0	0	0	0
+30 mins.	63	100	0	0	163	51	0	127	0	178	0	118	31	0	149	0	0	0	0	0
+45 mins.	70	110	0	0	180	56	0	125	0	181	0	152	18	0	170	0	0	0	0	0
Total Volume	291	460	0	0	751	219	0	494	0	713	0	506	102	0	608	0	0	0	0	0
% App. Total	38.7	61.3	0	0		30.7	0	69.3	0		0	83.2	16.8	0		0	0	0	0	
PHF	.836	.804	.000	.000	.816	.869	.000	.972	.000	.964	.000	.832	.773	.000	.894	.000	.000	.000	.000	.000





# Connecticut Counts LLC

Kensington, Connecticut 06037

(860) 828-1693

Route 5 at Route 15 SB Ramps  
Wallingford, Connecticut

File Name : 18756  
Site Code : 18756  
Start Date : 4/4/2019  
Page No : 1

## Groups Printed- Lights - Buses - Trucks - Bicycles on Crosswalk - Pedestrians

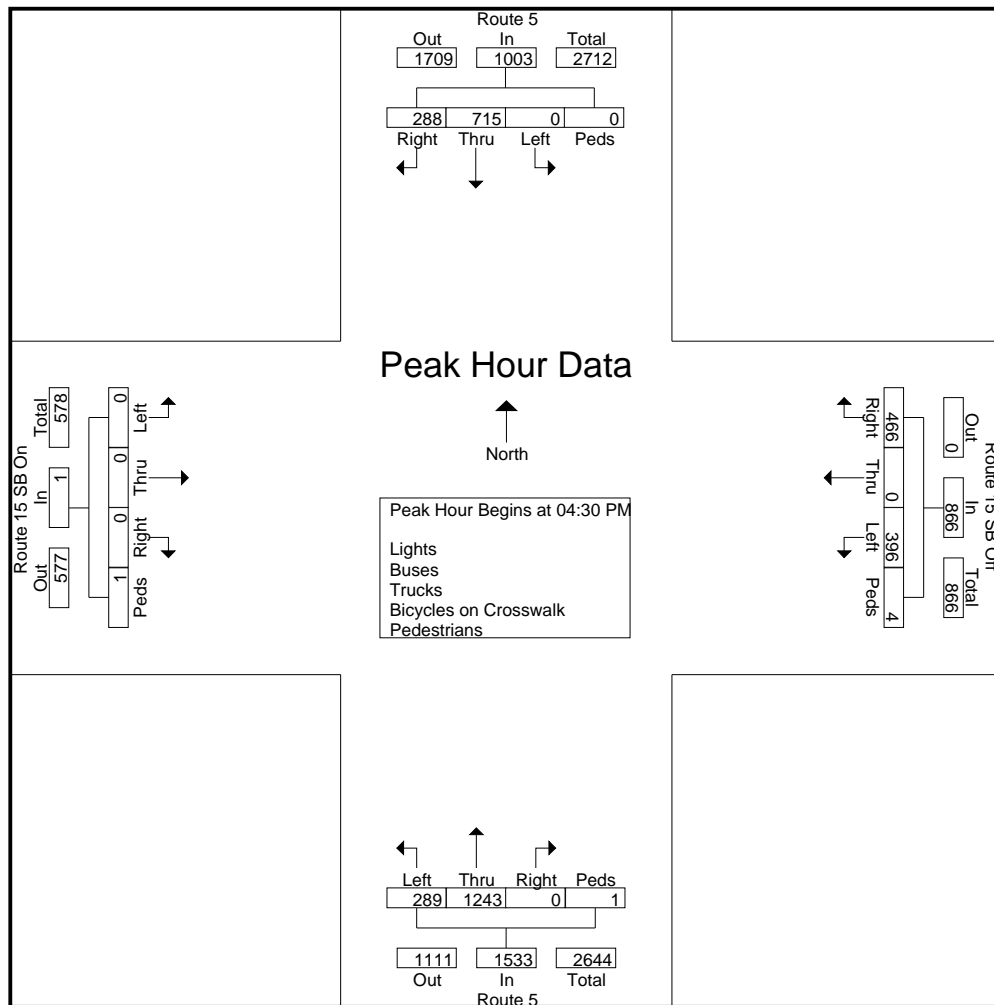
Start Time	Route 5 From North					Route 15 SB Off From East					Route 5 From South					Route 15 SB On From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
04:00 PM	72	178	0	0	250	106	0	97	0	203	0	253	53	0	306	0	0	0	0	0	759
04:15 PM	63	191	0	0	254	89	0	105	0	194	0	273	52	0	325	0	0	0	0	0	773
04:30 PM	74	190	0	0	264	111	0	115	0	226	0	287	75	0	362	0	0	0	0	0	852
04:45 PM	70	165	0	0	235	115	0	115	1	231	0	334	65	0	399	0	0	0	0	0	865
<b>Total</b>	<b>279</b>	<b>724</b>	<b>0</b>	<b>0</b>	<b>1003</b>	<b>421</b>	<b>0</b>	<b>432</b>	<b>1</b>	<b>854</b>	<b>0</b>	<b>1147</b>	<b>245</b>	<b>0</b>	<b>1392</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3249</b>
05:00 PM	75	182	0	0	257	118	0	89	3	210	0	287	74	0	361	0	0	0	0	0	828
05:15 PM	69	178	0	0	247	122	0	77	0	199	0	335	75	1	411	0	0	0	1	1	858
05:30 PM	68	183	0	0	251	120	0	88	0	208	0	271	45	0	316	0	0	0	0	0	775
05:45 PM	76	180	0	0	256	82	0	73	0	155	0	280	50	0	330	0	0	0	0	0	741
<b>Total</b>	<b>288</b>	<b>723</b>	<b>0</b>	<b>0</b>	<b>1011</b>	<b>442</b>	<b>0</b>	<b>327</b>	<b>3</b>	<b>772</b>	<b>0</b>	<b>1173</b>	<b>244</b>	<b>1</b>	<b>1418</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3202</b>
Grand Total	567	1447	0	0	2014	863	0	759	4	1626	0	2320	489	1	2810	0	0	0	1	1	6451
Apprch %	28.2	71.8	0	0		53.1	0	46.7	0.2		0	82.6	17.4	0		0	0	0	100		
Total %	8.8	22.4	0	0	31.2	13.4	0	11.8	0.1	25.2	0	36	7.6	0	43.6	0	0	0	0	0	
Lights	567	1424										2291									
% Lights	100	98.4	0	0	98.9	99.9	0	99.9	0	99.6	0	98.8	99.8	0	98.9	0	0	0	0	0	99.1
Buses	0	2	0	0	2	0	0	1	0	1	0	7	1	0	8	0	0	0	0	0	11
% Buses	0	0.1	0	0	0.1	0	0	0.1	0	0.1	0	0.3	0.2	0	0.3	0	0	0	0	0	0.2
Trucks	0	21	0	0	21	1	0	0	0	1	0	22	0	0	22	0	0	0	0	0	44
% Trucks	0	1.5	0	0	1	0.1	0	0	0	0.1	0	0.9	0	0	0.8	0	0	0	0	0	0.7
Bicycles on Crosswalk																					
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	0	0	4	4	0	0	0	1	1	0	0	0	1	1	6
% Pedestrians	0	0	0	0	0	0	0	0	100	0.2	0	0	0	100	0	0	0	0	100	100	0.1

# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

File Name : 18756  
Site Code : 18756  
Start Date : 4/4/2019  
Page No : 2

Start Time	Route 5 From North					Route 15 SB Off From East					Route 5 From South					Route 15 SB On From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	74	190	0	0	264	111	0	115	0	226	0	287	75	0	362	0	0	0	0	0	852
04:45 PM	70	165	0	0	235	115	0	115	1	231	0	334	65	0	399	0	0	0	0	0	865
05:00 PM	75	182	0	0	257	118	0	89	3	210	0	287	74	0	361	0	0	0	0	0	828
05:15 PM	69	178	0	0	247	122	0	77	0	199	0	335	75	1	411	0	0	0	1	1	858
Total Volume	288	715	0	0	1003	466	0	396	4	866	0	1243	289	1	1533	0	0	0	1	1	3403
% App. Total	28.7	71.3	0	0		53.8	0	45.7	0.5		0	81.1	18.9	0.1		0	0	0	100		
PHF	.960	.941	.000	.000	.950	.955	.000	.861	.333	.937	.000	.928	.963	.250	.932	.000	.000	.000	.250	.250	.984



# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

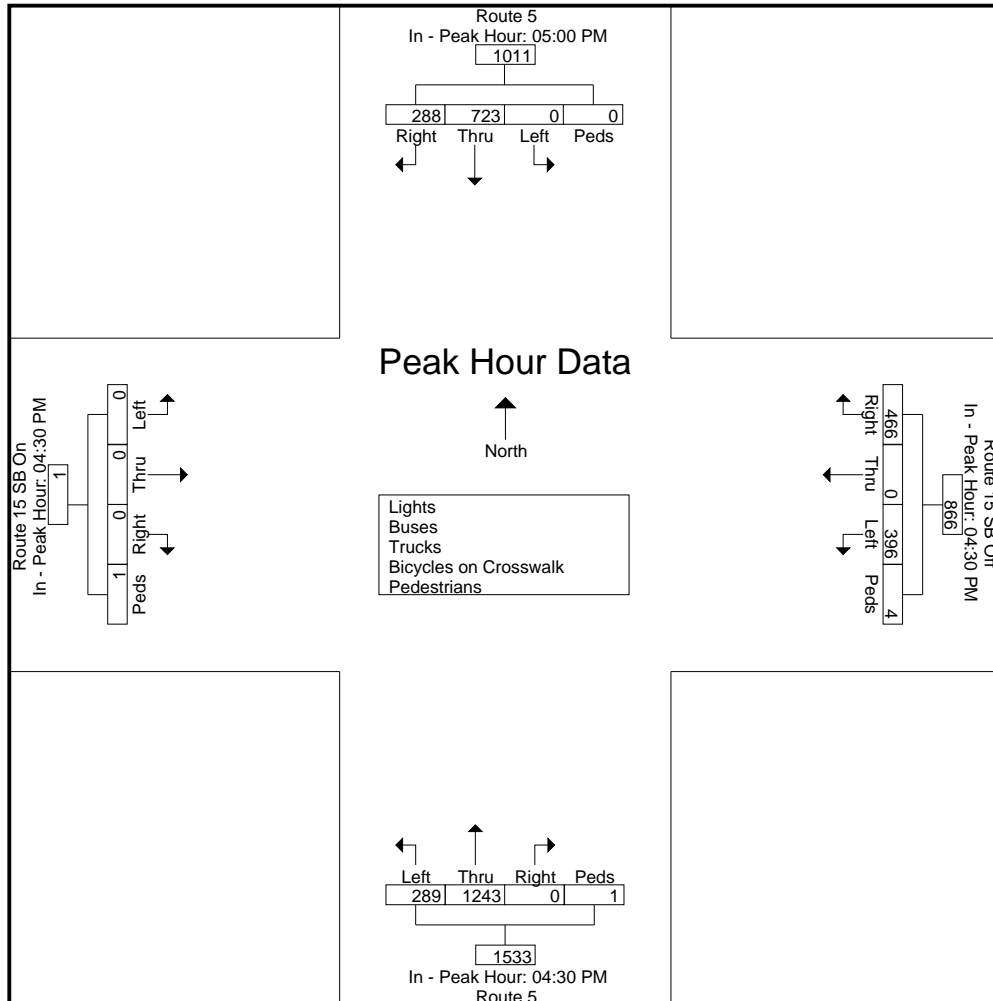
File Name : 18756  
Site Code : 18756  
Start Date : 4/4/2019  
Page No : 3

Start Time	Route 5 From North					Route 15 SB Off From East					Route 5 From South					Route 15 SB On From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM					04:30 PM					04:30 PM					04:30 PM									
+0 mins.	75	182	0	0	257	111	0	115	0	226	0	287	75	0	362	0	0	0	0	0	0	0	0	0	0
+15 mins.	69	178	0	0	247	115	0	115	1	231	0	334	65	0	399	0	0	0	0	0	0	0	0	0	0
+30 mins.	68	183	0	0	251	118	0	89	3	210	0	287	74	0	361	0	0	0	0	0	0	0	0	0	0
+45 mins.	76	180	0	0	256	122	0	77	0	199	0	335	75	1	411	0	0	0	0	1	0	0	0	1	1
Total Volume	288	723	0	0	1011	466	0	396	4	866	0	1243	289	1	1533	0	0	0	0	1	0	0	0	1	1
% App. Total	28.5	71.5	0	0		53.8	0	45.7	0.5		0	81.1	18.9	0.1		0	0	0	0	100					
PHF	.947	.988	.000	.000	.983	.955	.000	.861	.333	.937	.000	.928	.963	.250	.932	.000	.000	.000	.250	.250					



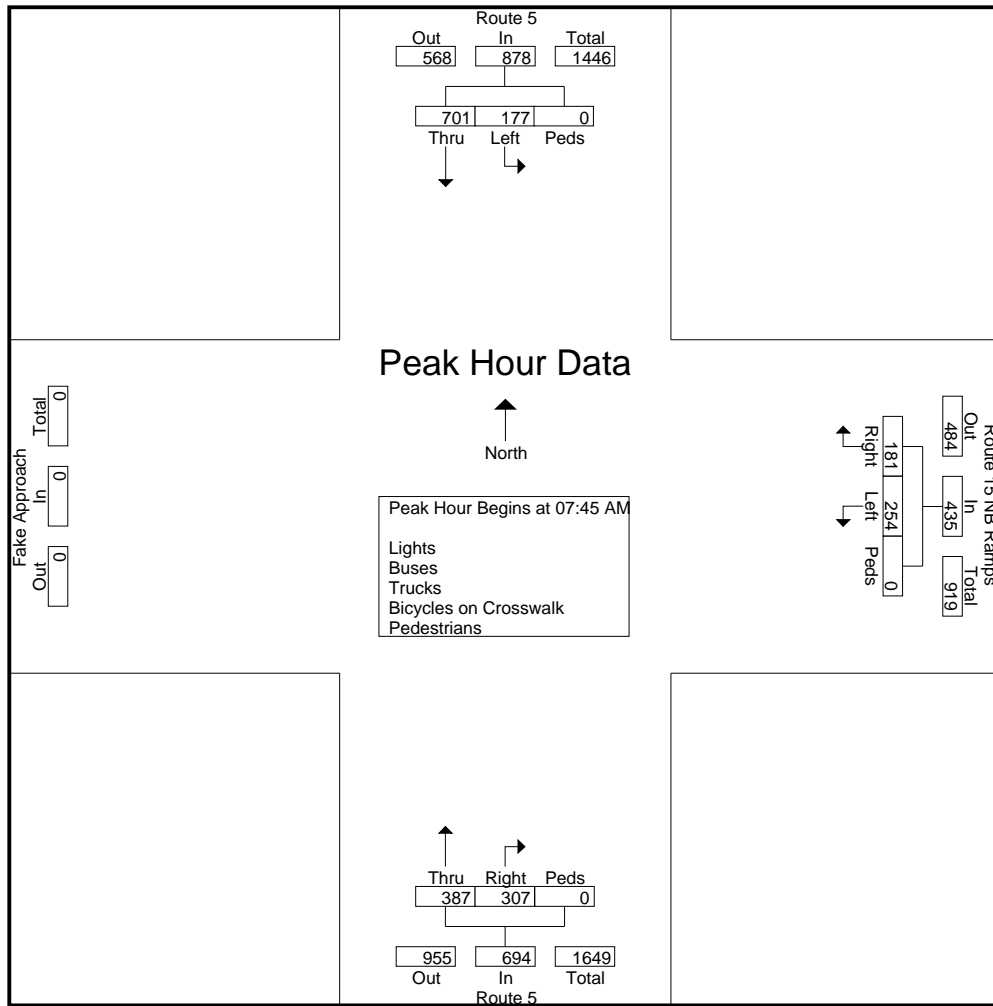


# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

File Name : 18757  
Site Code : 18757  
Start Date : 4/4/2019  
Page No : 2

Start Time	Route 5 From North				Route 15 NB Ramps From East				Route 5 From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:45 AM													
07:45 AM	214	58	0	272	55	84	0	139	82	81	0	163	574
08:00 AM	169	42	0	211	41	60	0	101	65	102	0	167	479
08:15 AM	159	36	0	195	40	55	0	95	88	84	0	172	462
08:30 AM	159	41	0	200	45	55	0	100	72	120	0	192	492
Total Volume	701	177	0	878	181	254	0	435	307	387	0	694	2007
% App. Total	79.8	20.2	0		41.6	58.4	0		44.2	55.8	0		
PHF	.819	.763	.000	.807	.823	.756	.000	.782	.872	.806	.000	.904	.874



# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

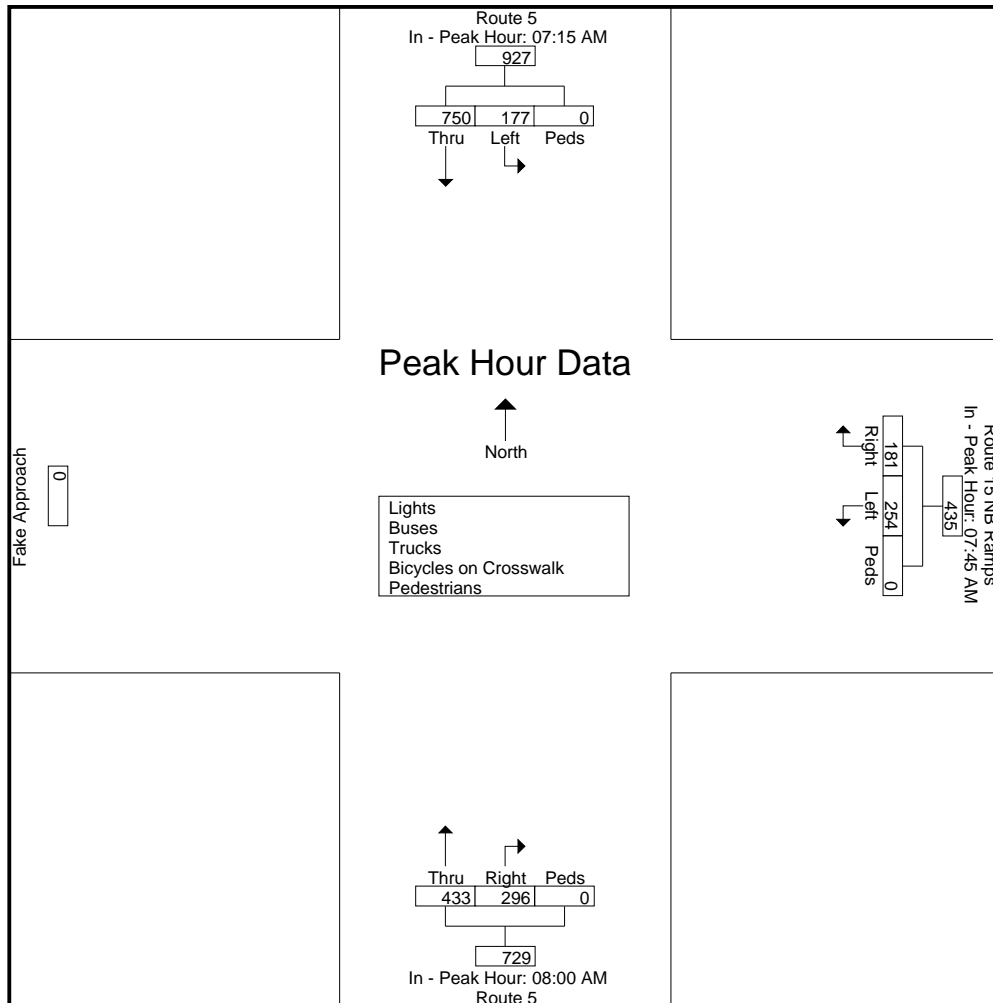
File Name : 18757  
Site Code : 18757  
Start Date : 4/4/2019  
Page No : 3

Start Time	Route 5 From North				Route 15 NB Ramps From East				Route 5 From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM				07:45 AM				08:00 AM			
+0 mins.	181	36	0	217	55	84	0	139	65	102	0	167
+15 mins.	186	41	0	227	41	60	0	101	88	84	0	172
+30 mins.	214	58	0	272	40	55	0	95	72	120	0	192
+45 mins.	169	42	0	211	45	55	0	100	71	127	0	198
Total Volume	750	177	0	927	181	254	0	435	296	433	0	729
% App. Total	80.9	19.1	0		41.6	58.4	0		40.6	59.4	0	
PHF	.876	.763	.000	.852	.823	.756	.000	.782	.841	.852	.000	.920



# Connecticut Counts LLC

Kensington, Connecticut 06037

(860) 828-1693

Route 5 at Route 15 NB Ramps  
Wallingford, Connecticut

File Name : 18758  
Site Code : 18758  
Start Date : 4/4/2019  
Page No : 1

Groups Printed- Lights - Buses - Trucks - Bicycles on Crosswalk - Pedestrians

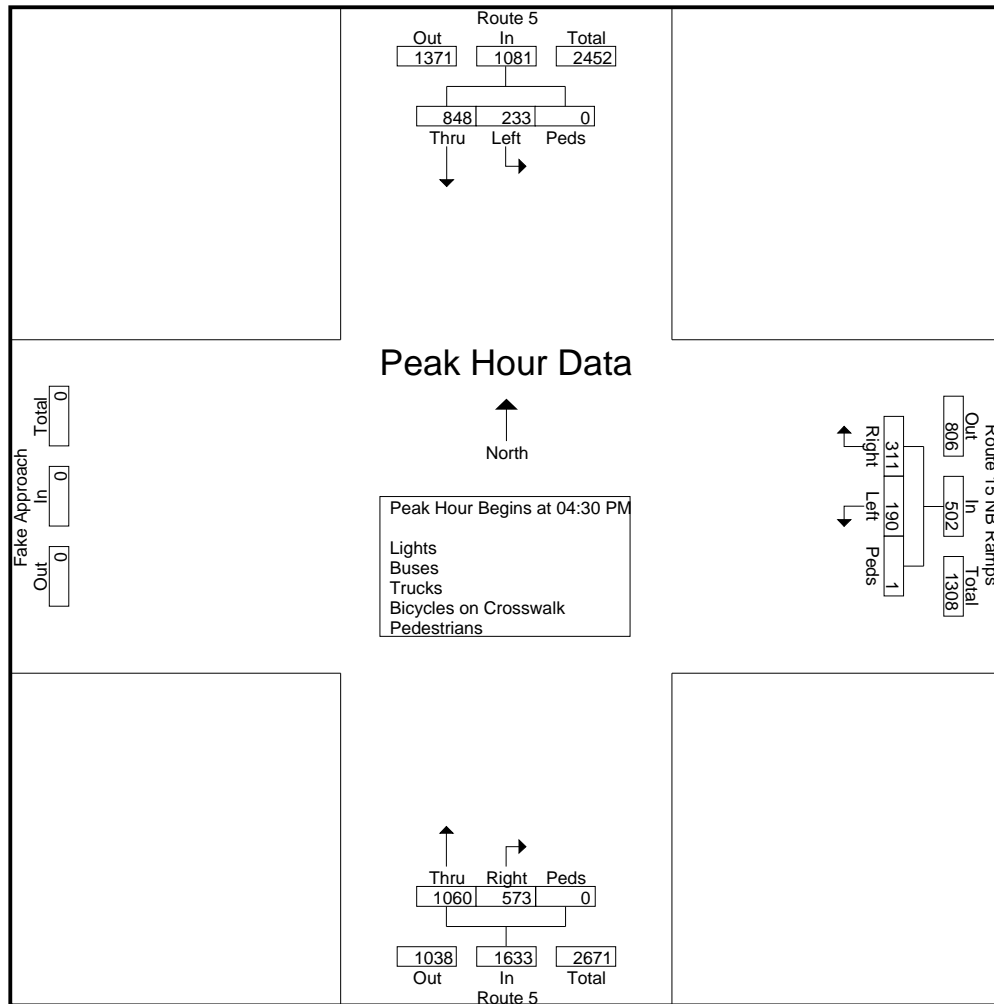
Start Time	Route 5 From North				Route 15 NB Ramps From East				Route 5 From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
04:00 PM	207	49	0	256	73	43	0	116	132	215	0	347	719
04:15 PM	245	53	0	298	83	45	0	128	107	222	0	329	755
04:30 PM	233	61	0	294	72	56	0	128	130	238	0	368	790
04:45 PM	216	64	0	280	83	52	1	136	144	262	0	406	822
Total	901	227	0	1128	311	196	1	508	513	937	0	1450	3086
05:00 PM	202	59	0	261	82	45	0	127	134	269	0	403	791
05:15 PM	197	49	0	246	74	37	0	111	165	291	0	456	813
05:30 PM	219	53	0	272	80	40	0	120	129	215	0	344	736
05:45 PM	202	56	0	258	61	42	0	103	102	231	0	333	694
Total	820	217	0	1037	297	164	0	461	530	1006	0	1536	3034
Grand Total	1721	444	0	2165	608	360	1	969	1043	1943	0	2986	6120
Apprch %	79.5	20.5	0		62.7	37.2	0.1		34.9	65.1	0		
Total %	28.1	7.3	0	35.4	9.9	5.9	0	15.8	17	31.7	0	48.8	
Lights	1695	442	0	2137	608	359	0	967	1042	1909	0	2951	6055
% Lights	98.5	99.5	0	98.7	100	99.7	0	99.8	99.9	98.3	0	98.8	98.9
Buses	4	0	0	4	0	0	0	0	0	5	0	5	9
% Buses	0.2	0	0	0.2	0	0	0	0	0	0.3	0	0.2	0.1
Trucks	22	2	0	24	0	1	0	1	1	29	0	30	55
% Trucks	1.3	0.5	0	1.1	0	0.3	0	0.1	0.1	1.5	0	1	0.9
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles on Crosswalk	0	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	0	0	0	1	1	0	0	0	0	1
% Pedestrians	0	0	0	0	0	0	100	0.1	0	0	0	0	0

# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

File Name : 18758  
Site Code : 18758  
Start Date : 4/4/2019  
Page No : 2

Start Time	Route 5 From North				Route 15 NB Ramps From East				Route 5 From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 04:30 PM													
04:30 PM	233	61	0	294	72	56	0	128	130	238	0	368	790
04:45 PM	216	64	0	280	83	52	1	136	144	262	0	406	822
05:00 PM	202	59	0	261	82	45	0	127	134	269	0	403	791
05:15 PM	197	49	0	246	74	37	0	111	165	291	0	456	813
Total Volume	848	233	0	1081	311	190	1	502	573	1060	0	1633	3216
% App. Total	78.4	21.6	0		62	37.8	0.2		35.1	64.9	0		
PHF	.910	.910	.000	.919	.937	.848	.250	.923	.868	.911	.000	.895	.978





# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

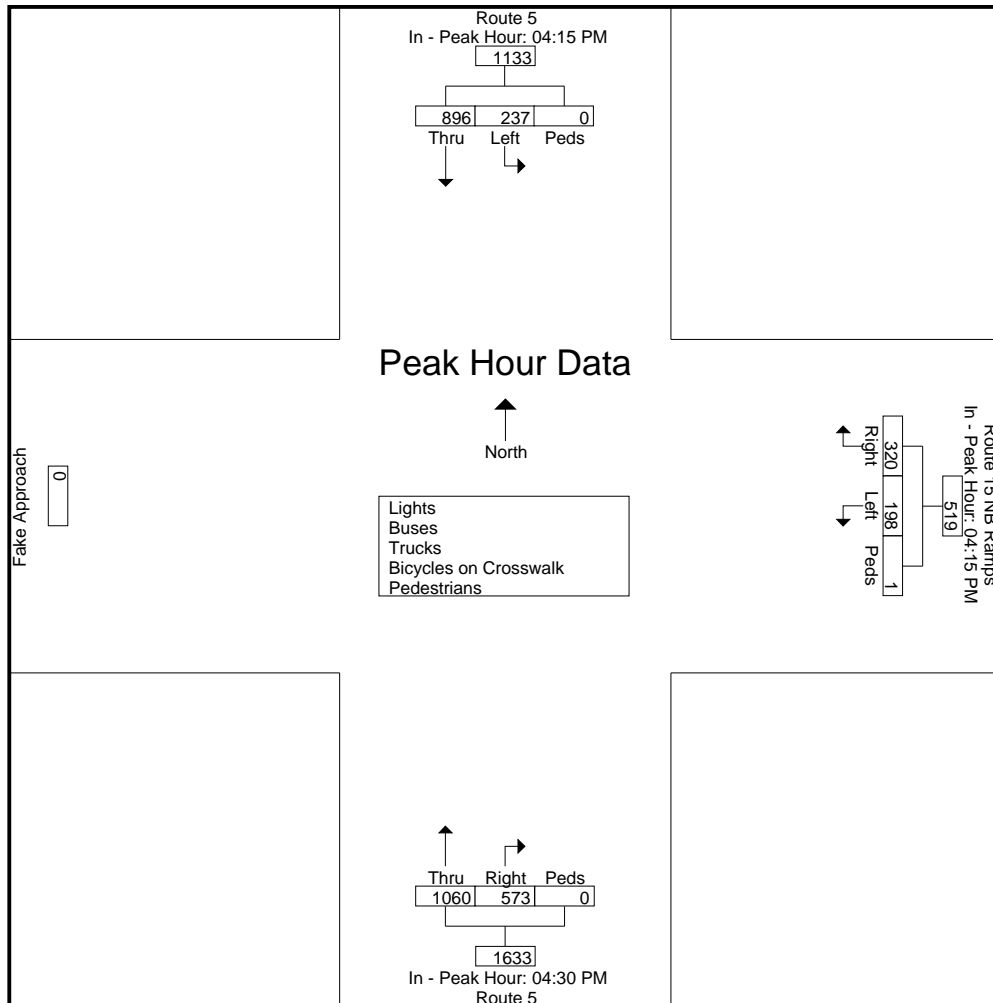
File Name : 18758  
Site Code : 18758  
Start Date : 4/4/2019  
Page No : 3

Start Time	Route 5 From North				Route 15 NB Ramps From East				Route 5 From South				Int. Total
	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:15 PM				04:15 PM				04:30 PM			
+0 mins.	245	53	0	298	83	45	0	128	130	238	0	368
+15 mins.	233	61	0	294	72	56	0	128	144	262	0	406
+30 mins.	216	64	0	280	83	52	1	136	134	269	0	403
+45 mins.	202	59	0	261	82	45	0	127	165	291	0	456
Total Volume	896	237	0	1133	320	198	1	519	573	1060	0	1633
% App. Total	79.1	20.9	0		61.7	38.2	0.2		35.1	64.9	0	
PHF	.914	.926	.000	.951	.964	.884	.250	.954	.868	.911	.000	.895





# LEVEL OF SERVICE FOR SIGNALIZED INTERSECTIONS (MOTORIZED VEHICLE MODE)

Level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometrics, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during base conditions: in the absence of traffic control, geometric delay, any incidents, and any other vehicles. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group. The criteria are given below.

<b>LEVEL-OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS MOTORIZED VEHICLE MODE</b>		
<b>LOS By Volume-to-Capacity Ratio<sup>1</sup></b>		<b>CONTROL DELAY (s/veh)</b>
<b>v/c ≤ 1.0</b>	<b>v/c &gt; 1.0</b>	
<b>A</b>	<b>F</b>	<b>≤ 10</b>
<b>B</b>	<b>F</b>	<b>&gt; 10 AND ≤ 20</b>
<b>C</b>	<b>F</b>	<b>&gt; 20 AND ≤ 35</b>
<b>D</b>	<b>F</b>	<b>&gt; 35 AND ≤ 55</b>
<b>E</b>	<b>F</b>	<b>&gt; 55 AND ≤ 80</b>
<b>F</b>	<b>F</b>	<b>&gt; 80</b>

<sup>1</sup> For approach-based and intersection-wide assessments, LOS is defined solely by control delay.

Specific descriptions of each LOS for signalized intersections are provided below:

**Level of Service A** describes operations with a control delay of 10 s/veh and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is exceptionally favorable or the cycle length is very short. If LOS A is the result of favorable progression, most vehicles arrive during the green indication and travel through the intersection without stopping.

**Level of Service B** describes operations with control delay between 10 and 20 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.

**Level of Service C** describes operations with control delay between 20 and 35 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when progression is favorable or the cycle length is moderate. Individual *cycle failures* (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.

**Level of Service D** describes operations with control delay between 35 and 55 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.

**Level of Service E** describes operations with control delay between 55 and 80 s/veh and a volume-to-capacity ratio no greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.

**Level of Service F** describes operations with control delay exceeding 80 s/veh or a volume-to-capacity ratio greater than 1.0. This level is typically assigned when the volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.

Reference: Highway Capacity Manual 6, Transportation Research Board, 2016.

# LEVEL OF SERVICE FOR TWO-WAY STOP SIGN CONTROLLED INTERSECTIONS

The level of service for a TWSC (two-way stop controlled) intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. LOS criteria are given in the Table. LOS criteria are given below:























<b>LEVEL-OF SERVICE CRITERIA FOR AWSC INTERSECTIONS</b>	
<b>LOS<sup>1</sup></b>	<b>CONTROL DELAY (s/veh)</b>
<b>A</b>	<b><math>\leq 10</math></b>
<b>B</b>	<b><math>&gt; 10 \text{ AND } \leq 15</math></b>
<b>C</b>	<b><math>&gt; 15 \text{ AND } \leq 25</math></b>
<b>D</b>	<b><math>&gt; 25 \text{ AND } \leq 35</math></b>
<b>E</b>	<b><math>&gt; 35 \text{ AND } \leq 50</math></b>
<b>F</b>	<b><math>&gt; 50</math></b>

Note: LOS criteria apply to each lane on a given approach and to each approach on the minor street.  
 LOS is not calculated for major-street approaches or for the intersection as a whole.  
 LOS F is assigned to a movement if the volume-to-capacity ratio exceeds 1.0, regardless of the control delay

Reference: Highway Capacity Manual Version 6.0, Transportation Research Board, 2016.

Lanes, Volumes, Timings  
1: N Colony Road (Route 5) & Sonic/BJ's

2021 No-Build Conditions  
AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	10	80	0	30	10	645	80	30	735	10
Future Volume (vph)	10	0	10	80	0	30	10	645	80	30	735	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		0	175		225	200		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	0.95
Fr <sub>t</sub>		0.850				0.850			0.850		0.998	
Fl <sub>t</sub> Protected	0.950				0.950		0.950			0.950		
Satd. Flow (prot)	1444	1615	0	0	1787	1495	1745	4868	1531	1745	3415	0
Fl <sub>t</sub> Permitted	0.694				0.738		0.950			0.950		
Satd. Flow (perm)	1055	1615	0	0	1388	1495	1745	4868	1531	1745	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		324				112			115			2
Link Speed (mph)		30			30			35			35	
Link Distance (ft)		225			241			392			709	
Travel Time (s)		5.1			5.5			7.6			13.8	
Peak Hour Factor	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Heavy Vehicles (%)	25%	0%	0%	1%	50%	8%	0%	3%	2%	0%	2%	0%
Adj. Flow (vph)	30	0	30	98	0	37	11	717	89	38	930	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	30	0	0	98	37	11	717	89	38	943	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			6			
Detector Phase	4	4		4	4	4	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	22.0	22.0		22.0	22.0	22.0	10.0	20.7	20.7	10.0	20.7	
Total Split (s)	22.0	22.0		22.0	22.0	22.0	16.0	37.0	37.0	16.0	37.0	
Total Split (%)	29.3%	29.3%		29.3%	29.3%	29.3%	21.3%	49.3%	49.3%	21.3%	49.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.0	1.6	1.6	2.0	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9			5.9	5.9	5.0	5.7	5.7	5.0	5.7	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	10.4	10.4		10.4	10.4	10.4	5.3	49.4	49.4	6.3	54.5	
Actuated g/C Ratio	0.14	0.14		0.14	0.14	0.14	0.07	0.66	0.66	0.08	0.73	
v/c Ratio	0.21	0.06		0.51	0.12	0.09	0.22	0.08	0.08	0.26	0.38	
Control Delay	30.2	0.2		38.4	0.8	40.9	9.5	2.5	2.5	36.1	7.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.2	0.2		38.4	0.8	40.9	9.5	2.5	2.5	36.1	7.0	
LOS	C	A		D	A	D	A	A	A	D	A	
Approach Delay		15.2			28.1			9.1			8.1	
Approach LOS		B			C			A			A	

Lanes, Volumes, Timings  
 1: N Colony Road (Route 5) & Sonic/BJ's

2021 No-Build Conditions  
 AM Peak

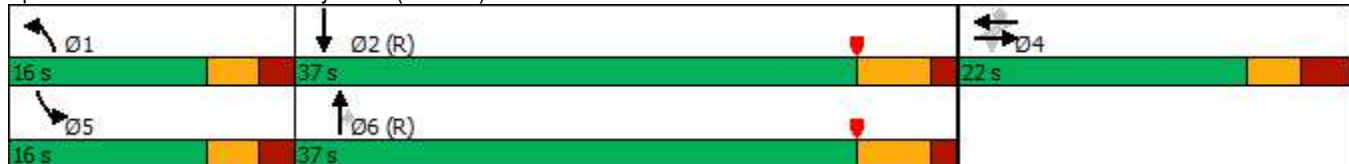


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	13	0			44	0	5	56	3	17	72	
Queue Length 95th (ft)	11	0			73	0	m21	98	8	38	174	
Internal Link Dist (ft)		145			161			312			629	
Turn Bay Length (ft)							175		225	200		
Base Capacity (vph)	226	601			297	408	255	3209	1048	255	2482	
Starvation Cap Reductn	0	0			0	0	0	0	0	0	0	
Spillback Cap Reductn	0	7			0	0	0	0	0	0	77	
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.05			0.33	0.09	0.04	0.22	0.08	0.15	0.39	

Intersection Summary

Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 6 (8%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.51  
 Intersection Signal Delay: 10.1  
 Intersection LOS: B  
 Intersection Capacity Utilization 45.7%  
 ICU Level of Service A  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: N Colony Road (Route 5) & Sonic/BJ's



Lanes, Volumes, Timings

2021 No-Build Conditions

2: Route 15 SB On-Ramp & N Colony Road (Route 5) & Route 15 SB Off-Ramp

AM Peak



Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Traffic Volume (vph)	504	0	231	121	504	0	0	513	312	0	0
Future Volume (vph)	504	0	231	121	504	0	0	513	312	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	11	11	11	12	12
Storage Length (ft)		0	0	125		0	0		0	0	0
Storage Lanes		2	2	1		0	0		0	0	0
Taper Length (ft)		25		25			25			25	
Lane Util. Factor	0.97	1.00	0.88	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00
Fr <sub>t</sub>			0.850					0.943			
Fl <sub>t</sub> Protected	0.950			0.950							
Satd. Flow (prot)	3467	0	2842	1745	3355	0	0	3230	0	0	0
Fl <sub>t</sub> Permitted	0.950			0.199							
Satd. Flow (perm)	3467	0	2842	365	3355	0	0	3230	0	0	0
Right Turn on Red			Yes			Yes			No		
Satd. Flow (RTOR)			601								
Link Speed (mph)		30			35			35		30	
Link Distance (ft)		568			629			392		295	
Travel Time (s)		12.9			12.3			7.6		6.7	
Peak Hour Factor	0.92	0.92	0.92	0.86	0.86	0.86	0.82	0.82	0.82	0.92	0.92
Heavy Vehicles (%)	1%	0%	0%	0%	4%	0%	0%	3%	0%	2%	2%
Adj. Flow (vph)	548	0	251	141	586	0	0	626	380	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	548	0	251	141	586	0	0	1006	0	0	0
Turn Type	Prot		Prot	D,P+P	NA			NA			
Protected Phases	4		4	1	1 2			2			
Permitted Phases				2							
Detector Phase	4		4	1	1 2			2			
Switch Phase											
Minimum Initial (s)	7.0		7.0	5.0				15.0			
Minimum Split (s)	21.0		21.0	9.5				23.0			
Total Split (s)	22.0		22.0	15.0				38.0			
Total Split (%)	29.3%		29.3%	20.0%				50.7%			
Yellow Time (s)	3.3		3.3	3.0				4.1			
All-Red Time (s)	3.3		3.3	1.0				3.9			
Lost Time Adjust (s)	0.0		0.0	0.0				0.0			
Total Lost Time (s)	6.6		6.6	4.0				8.0			
Lead/Lag				Lead				Lag			
Lead-Lag Optimize?											
Recall Mode	None		None	Min				C-Max			
Act Effct Green (s)	14.3		14.3	46.1	50.1			32.3			
Actuated g/C Ratio	0.19		0.19	0.61	0.67			0.43			
v/c Ratio	0.83		0.24	0.35	0.26			0.72			
Control Delay	40.9		0.6	9.7	6.7			18.1			
Queue Delay	0.0		0.0	0.0	0.0			0.1			
Total Delay	40.9		0.6	9.7	6.7			18.2			
LOS	D		A	A	A			B			
Approach Delay		28.2			7.3			18.2			
Approach LOS		C			A			B			





Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Queue Length 50th (ft)	124		0	27	60			217			
Queue Length 95th (ft)	#192		0	57	83			57			
Internal Link Dist (ft)		488			549			312		215	
Turn Bay Length (ft)				125							
Base Capacity (vph)	711		1061	432	2222			1390			
Starvation Cap Reductn	0		0	0	0			22			
Spillback Cap Reductn	0		0	0	0			0			
Storage Cap Reductn	0		0	0	0			0			
Reduced v/c Ratio	0.77		0.24	0.33	0.26			0.74			

Intersection Summary












Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	7 (9%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.83
Intersection Signal Delay:	18.2
Intersection LOS:	B
Intersection Capacity Utilization	58.6%
ICU Level of Service	B
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 2: Route 15 SB On-Ramp & N Colony Road (Route 5) & Route 15 SB Off-Ramp



Lanes, Volumes, Timings  
 3: N Colony Road (Route 5) & Route 15 NB Ramps

2021 No-Build Conditions  
 AM Peak

							Ø2	Ø4
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (vph)	282	201	424	342	201	816		
Future Volume (vph)	282	201	424	342	201	816		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	11	11	11	11		
Storage Length (ft)	0	0		0	175			
Storage Lanes	1	1		0	1			
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95		
Frt		0.850	0.933					
Flt Protected	0.950				0.950			
Satd. Flow (prot)	1805	1615	3151	0	1745	3421		
Flt Permitted	0.950				0.251			
Satd. Flow (perm)	1805	1615	3151	0	461	3421		
Right Turn on Red		Yes		No				
Satd. Flow (RTOR)		258						
Link Speed (mph)	30		35			35		
Link Distance (ft)	466		179			629		
Travel Time (s)	10.6		3.5			12.3		
Peak Hour Factor	0.78	0.78	0.90	0.90	0.81	0.81		
Heavy Vehicles (%)	0%	0%	6%	0%	0%	2%		
Adj. Flow (vph)	362	258	471	380	248	1007		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	362	258	851	0	248	1007		
Turn Type	Prot	pt+ov	NA		custom	NA		
Protected Phases	5	1 5	2 4		1	1 2	2	4
Permitted Phases					2			
Detector Phase	5	5	2		1	1 2		
Switch Phase								
Minimum Initial (s)	7.0				5.0		15.0	7.0
Minimum Split (s)	11.0				9.5		24.4	15.0
Total Split (s)	18.0				12.0		30.0	15.0
Total Split (%)	24.0%				16.0%		40%	20%
Yellow Time (s)	3.0				3.0		4.1	4.1
All-Red Time (s)	1.0				1.0		2.3	1.0
Lost Time Adjust (s)	0.0				0.0			
Total Lost Time (s)	4.0				4.0			
Lead/Lag					Lead		Lag	
Lead-Lag Optimize?								
Recall Mode	None				None		C-Max	None
Act Effct Green (s)	15.6	27.6	37.0		34.0	38.0		
Actuated g/C Ratio	0.21	0.37	0.49		0.45	0.51		
v/c Ratio	0.97	0.34	0.55		0.72	0.58		
Control Delay	72.9	4.0	3.3		22.3	14.4		
Queue Delay	0.0	0.0	0.7		0.0	0.0		
Total Delay	72.9	4.0	4.1		22.3	14.4		
LOS	E	A	A		C	B		
Approach Delay	44.2		4.1			16.0		
Approach LOS	D		A			B		

Lanes, Volumes, Timings  
 3: N Colony Road (Route 5) & Route 15 NB Ramps

2021 No-Build Conditions  
 AM Peak

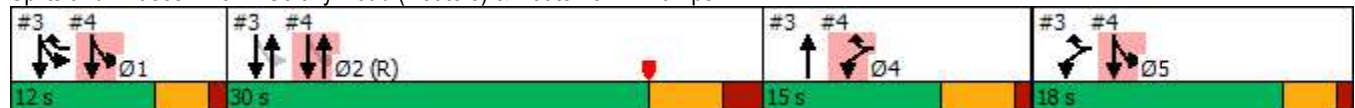


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4
Queue Length 50th (ft)	168	0	13		70	150		
Queue Length 95th (ft)	#280	27	22		m111	195		
Internal Link Dist (ft)	386		99			549		
Turn Bay Length (ft)					175			
Base Capacity (vph)	374	756	1555		345	1733		
Starvation Cap Reductn	0	0	373		0	0		
Spillback Cap Reductn	0	0	0		0	0		
Storage Cap Reductn	0	0	0		0	0		
Reduced v/c Ratio	0.97	0.34	0.72		0.72	0.58		

Intersection Summary























Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 7 (9%), Referenced to phase 2:NBSB, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 18.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 61.5%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: N Colony Road (Route 5) & Route 15 NB Ramps



Lanes, Volumes, Timings  
1: N Colony Road (Route 5) & Sonic/BJ's

2021 No-Build Conditions  
PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	0	10	190	10	140	20	1412	280	60	887	10
Future Volume (vph)	20	0	10	190	10	140	20	1412	280	60	887	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		0	175		225	200		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	0.95
Fr <sub>t</sub>		0.850				0.850			0.850		0.998	
Fl <sub>t</sub> Protected	0.950				0.955		0.950			0.950		
Satd. Flow (prot)	1719	1615	0	0	1797	1615	1745	4964	1546	1745	3447	0
Fl <sub>t</sub> Permitted	0.492				0.725		0.950			0.950		
Satd. Flow (perm)	890	1615	0	0	1365	1615	1745	4964	1546	1745	3447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		293				146			298			2
Link Speed (mph)		30			30			35				35
Link Distance (ft)		225			241			392				709
Travel Time (s)		5.1			5.5			7.6				13.8
Peak Hour Factor	0.64	0.64	0.64	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	0%	1%	0%	0%	0%	1%	1%	0%	1%	5%
Adj. Flow (vph)	31	0	16	198	10	146	21	1502	298	67	986	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	16	0	0	208	146	21	1502	298	67	997	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			6			
Detector Phase	4	4		4	4	4	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	26.0	26.0		26.0	26.0	26.0	10.0	20.7	20.7	10.0	20.7	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	17.0	47.0	47.0	17.0	47.0	
Total Split (%)	28.9%	28.9%		28.9%	28.9%	28.9%	18.9%	52.2%	52.2%	18.9%	52.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.0	1.6	1.6	2.0	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9			5.9	5.9	5.0	5.7	5.7	5.0	5.7	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	16.9	16.9			16.9	16.9	5.8	50.6	50.6	7.9	56.8	
Actuated g/C Ratio	0.19	0.19			0.19	0.19	0.06	0.56	0.56	0.09	0.63	
v/c Ratio	0.19	0.03			0.82	0.35	0.19	0.54	0.30	0.44	0.46	
Control Delay	32.0	0.1			59.1	7.7	44.7	16.2	3.0	47.0	11.2	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.2	0.0	0.0	0.2	
Total Delay	32.0	0.1			59.1	7.7	44.7	16.4	3.0	47.0	11.4	
LOS	C	A			E	A	D	B	A	D	B	
Approach Delay		21.1			37.9			14.5			13.6	
Approach LOS		C			D			B			B	

Lanes, Volumes, Timings  
 1: N Colony Road (Route 5) & Sonic/BJ's

2021 No-Build Conditions  
 PM Peak

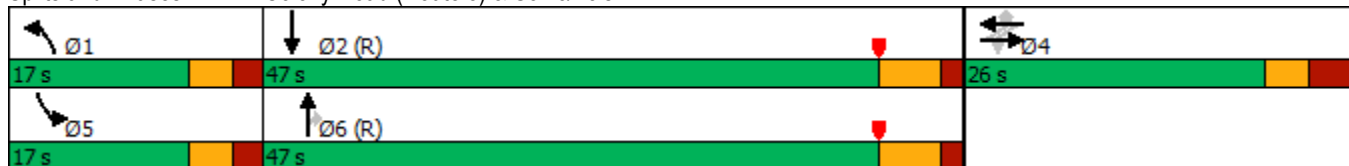


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	15	0			112	0	12	190	8	37	122	
Queue Length 95th (ft)	27	0			#203	47	m19	325	m38	75	254	
Internal Link Dist (ft)		145			161			312			629	
Turn Bay Length (ft)							175		225	200		
Base Capacity (vph)	198	588			304	474	232	2789	999	232	2175	
Starvation Cap Reductn	0	0			0	0	0	434	0	0	0	
Spillback Cap Reductn	0	39			0	0	0	0	0	0	464	
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.16	0.03			0.68	0.31	0.09	0.64	0.30	0.29	0.58	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 26 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.82  
 Intersection Signal Delay: 16.8  
 Intersection LOS: B  
 Intersection Capacity Utilization 63.0%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: N Colony Road (Route 5) & Sonic/BJ's



Lanes, Volumes, Timings

2021 No-Build Conditions

2: Route 15 SB On-Ramp & N Colony Road (Route 5) & Route 15 SB Off-Ramp

PM Peak

Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Lane Configurations											
Traffic Volume (vph)	443	0	514	322	1198	0	0	765	322	0	0
Future Volume (vph)	443	0	514	322	1198	0	0	765	322	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	11	11	11	11	11	11	12	12
Storage Length (ft)		0	0	125		0	0		0	0	0
Storage Lanes		2	2	1		0	0		0	0	0
Taper Length (ft)		25		25			25			25	
Lane Util. Factor	0.97	1.00	0.88	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00
Fr <sub>t</sub>			0.850					0.956			
Fl <sub>t</sub> Protected	0.950			0.950							
Satd. Flow (prot)	3502	0	2842	1745	3455	0	0	3290	0	0	0
Fl <sub>t</sub> Permitted	0.950			0.145							
Satd. Flow (perm)	3502	0	2842	266	3455	0	0	3290	0	0	0
Right Turn on Red			Yes			Yes			No		
Satd. Flow (RTOR)			174								
Link Speed (mph)		30			35			35		30	
Link Distance (ft)		568			629			392		295	
Travel Time (s)		12.9			12.3			7.6		6.7	
Peak Hour Factor	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	1%	0%	0%	2%	0%	0%	0%
Adj. Flow (vph)	471	0	547	346	1288	0	0	805	339	0	0
Shared Lane Traffic (%)											
Lane Group Flow (vph)	471	0	547	346	1288	0	0	1144	0	0	0
Turn Type	Prot		Prot	D,P+P	NA			NA			
Protected Phases	4		4	1	1 2			2			
Permitted Phases				2							
Detector Phase	4		4	1	1 2			2			
Switch Phase											
Minimum Initial (s)	7.0		7.0	5.0				15.0			
Minimum Split (s)	21.0		21.0	9.5				23.0			
Total Split (s)	22.0		22.0	20.0				48.0			
Total Split (%)	24.4%		24.4%	22.2%				53.3%			
Yellow Time (s)	3.3		3.3	3.0				4.1			
All-Red Time (s)	3.3		3.3	1.0				3.9			
Lost Time Adjust (s)	0.0		0.0	0.0				0.0			
Total Lost Time (s)	6.6		6.6	4.0				8.0			
Lead/Lag				Lead				Lag			
Lead-Lag Optimize?											
Recall Mode	None		None	Min				C-Max			
Act Effct Green (s)	14.6		14.6	60.8	64.8			40.6			
Actuated g/C Ratio	0.16		0.16	0.68	0.72			0.45			
v/c Ratio	0.83		0.90	0.78	0.52			0.77			
Control Delay	50.3		45.2	19.1	8.2			26.5			
Queue Delay	0.0		0.3	0.0	0.0			4.6			
Total Delay	50.3		45.5	19.1	8.2			31.1			
LOS	D		D	B	A			C			
Approach Delay		47.7			10.5			31.1			
Approach LOS		D			B			C			



Lane Group	WBL2	WBL	WBR	NBL	NBT	NBR	SBL	SBT	SBR	NEL	NER
Queue Length 50th (ft)	133		119	125	179			329			
Queue Length 95th (ft)	#201		#218	m124	m157			422			
Internal Link Dist (ft)		488			549			312		215	
Turn Bay Length (ft)				125							
Base Capacity (vph)	599		630	446	2488			1485			
Starvation Cap Reductn	0		0	0	0			269			
Spillback Cap Reductn	0		5	0	106			0			
Storage Cap Reductn	0		0	0	0			0			
Reduced v/c Ratio	0.79		0.88	0.78	0.54			0.94			

Intersection Summary












Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	41 (46%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.90
Intersection Signal Delay:	26.7
Intersection LOS:	C
Intersection Capacity Utilization	75.3%
ICU Level of Service	D
Analysis Period (min)	15
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Route 15 SB On-Ramp & N Colony Road (Route 5) & Route 15 SB Off-Ramp



Lanes, Volumes, Timings  
3: N Colony Road (Route 5) & Route 15 NB Ramps

2021 No-Build Conditions  
PM Peak

							Ø2	Ø4
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Traffic Volume (vph)	211	342	1178	634	262	946		
Future Volume (vph)	211	342	1178	634	262	946		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	11	11	11	11		
Storage Length (ft)	0	0		0	175			
Storage Lanes	1	1		0	1			
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95		
Fr <sub>t</sub>		0.850	0.948					
Fl <sub>t</sub> Protected	0.950				0.950			
Satd. Flow (prot)	1805	1615	3266	0	1745	3421		
Fl <sub>t</sub> Permitted	0.950				0.116			
Satd. Flow (perm)	1805	1615	3266	0	213	3421		
Right Turn on Red		Yes		No				
Satd. Flow (RTOR)		45						
Link Speed (mph)	30		35			35		
Link Distance (ft)	466		179			629		
Travel Time (s)	10.6		3.5			12.3		
Peak Hour Factor	0.92	0.92	0.90	0.90	0.92	0.92		
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%		
Adj. Flow (vph)	229	372	1309	704	285	1028		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	229	372	2013	0	285	1028		
Turn Type	Prot	pt+ov	NA		custom	NA		
Protected Phases	5	15	24		1	12	2	4
Permitted Phases					2			
Detector Phase	5	5	2		1	12		
Switch Phase								
Minimum Initial (s)	7.0				5.0		15.0	7.0
Minimum Split (s)	11.0				9.5		24.4	15.0
Total Split (s)	18.0				16.0		41.0	15.0
Total Split (%)	20.0%				17.8%		46%	17%
Yellow Time (s)	3.0				3.0		4.1	4.1
All-Red Time (s)	1.0				1.0		2.3	1.0
Lost Time Adjust (s)	0.0				0.0			
Total Lost Time (s)	4.0				4.0			
Lead/Lag					Lead		Lag	
Lead-Lag Optimize?								
Recall Mode	None				None		C-Max	None
Act Effct Green (s)	13.5	30.6	49.0		50.1	54.1		
Actuated g/C Ratio	0.15	0.34	0.54		0.56	0.60		
v/c Ratio	0.85	0.64	1.13		0.83	0.50		
Control Delay	65.5	28.2	71.8		42.8	10.1		
Queue Delay	1.0	0.0	0.6		0.0	0.0		
Total Delay	66.5	28.2	72.4		42.8	10.1		
LOS	E	C	E		D	B		
Approach Delay	42.8		72.4			17.2		
Approach LOS	D		E			B		



Lanes, Volumes, Timings  
 3: N Colony Road (Route 5) & Route 15 NB Ramps

2021 No-Build Conditions  
 PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4
Queue Length 50th (ft)	128	157	~691		133	135		
Queue Length 95th (ft)	#247	257	m31		m#206	206		
Internal Link Dist (ft)	386		99			549		
Turn Bay Length (ft)					175			
Base Capacity (vph)	282	575	1777		342	2057		
Starvation Cap Reductn	0	0	311		0	0		
Spillback Cap Reductn	6	0	0		0	0		
Storage Cap Reductn	0	0	0		0	0		
Reduced v/c Ratio	0.83	0.65	1.37		0.83	0.50		

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	41 (46%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.47
Intersection Signal Delay:	49.4
Intersection LOS:	D
Intersection Capacity Utilization	91.1%
ICU Level of Service	F
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: N Colony Road (Route 5) & Route 15 NB Ramps



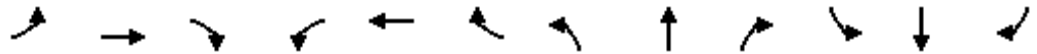
Lanes, Volumes, Timings  
1: N Colony Road (Route 5) & Sonic/BJ's

2021 Build Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	10	80	0	30	10	709	80	30	799	10
Future Volume (vph)	10	0	10	80	0	30	10	709	80	30	799	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		0	175		225	200		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	0.95
Fr <sub>t</sub>		0.850				0.850			0.850		0.998	
Fl <sub>t</sub> Protected	0.950				0.950		0.950			0.950		
Satd. Flow (prot)	1444	1615	0	0	1787	1495	1745	4868	1531	1745	3415	0
Fl <sub>t</sub> Permitted	0.694				0.738		0.950			0.950		
Satd. Flow (perm)	1055	1615	0	0	1388	1495	1745	4868	1531	1745	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		315				112			115			2
Link Speed (mph)		30			30			35				35
Link Distance (ft)		225			241			400				709
Travel Time (s)		5.1			5.5			7.8				13.8
Peak Hour Factor	0.33	0.33	0.33	0.82	0.82	0.82	0.90	0.90	0.90	0.79	0.79	0.79
Heavy Vehicles (%)	25%	0%	0%	1%	50%	8%	0%	3%	2%	0%	2%	0%
Adj. Flow (vph)	30	0	30	98	0	37	11	788	89	38	1011	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	30	0	0	98	37	11	788	89	38	1024	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			6			
Detector Phase	4	4		4	4	4	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	22.0	22.0		22.0	22.0	22.0	10.0	20.7	20.7	10.0	20.7	
Total Split (s)	22.0	22.0		22.0	22.0	22.0	16.0	37.0	37.0	16.0	37.0	
Total Split (%)	29.3%	29.3%		29.3%	29.3%	29.3%	21.3%	49.3%	49.3%	21.3%	49.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.0	1.6	1.6	2.0	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9			5.9	5.9	5.0	5.7	5.7	5.0	5.7	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	10.4	10.4			10.4	10.4	5.3	49.4	49.4	6.3	54.5	
Actuated g/C Ratio	0.14	0.14			0.14	0.14	0.07	0.66	0.66	0.08	0.73	
v/c Ratio	0.21	0.06			0.51	0.12	0.09	0.25	0.08	0.26	0.41	
Control Delay	30.2	0.2			38.4	0.8	34.0	8.9	2.2	36.1	7.3	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.2	0.2			38.4	0.8	34.0	8.9	2.2	36.1	7.3	
LOS	C	A			D	A	C	A	A	D	A	
Approach Delay		15.2			28.1			8.6			8.3	
Approach LOS		B			C			A			A	

Lanes, Volumes, Timings  
 1: N Colony Road (Route 5) & Sonic/BJ's

2021 Build Conditions  
 AM Peak

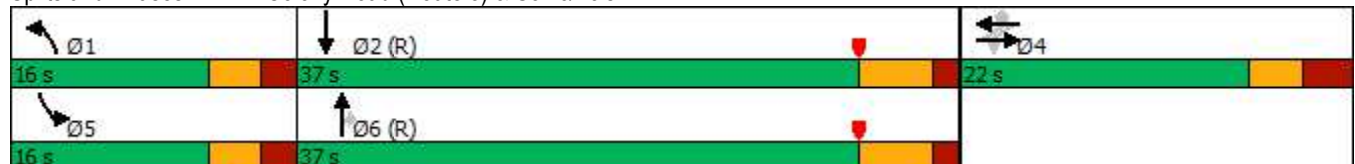


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	13	0			44	0	5	65	2	17	81	
Queue Length 95th (ft)	11	0			73	0	m15	84	m7	38	193	
Internal Link Dist (ft)		145			161			320			629	
Turn Bay Length (ft)							175		225	200		
Base Capacity (vph)	226	594			297	408	255	3209	1048	255	2482	
Starvation Cap Reductn	0	0			0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0			0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.05			0.33	0.09	0.04	0.25	0.08	0.15	0.41	

Intersection Summary

Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 6 (8%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 60  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.51  
 Intersection Signal Delay: 9.9  
 Intersection LOS: A  
 Intersection Capacity Utilization 45.7%  
 ICU Level of Service A  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: N Colony Road (Route 5) & Sonic/BJ's



Lanes, Volumes, Timings  
2: N Colony Road (Route 5) & Route 15 SB Off-Ramp

2021 Build Conditions  
AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	0	156	470	74	198	148	420	0	0	774	115
Future Volume (vph)	181	0	156	470	74	198	148	420	0	0	774	115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	12
Storage Length (ft)	0		0	0		0	0		0	0		200
Storage Lanes	2		1	2		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	0.97	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor					0.99							
Frt			0.850		0.928	0.850						0.981
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	3433	0	1583	3467	1664	1534	1711	3355	0	0	3328	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	3433	0	1583	3467	1664	1534	1711	3355	0	0	3328	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			102		54	153						22
Link Speed (mph)		30			30			35				35
Link Distance (ft)		274			568			150				400
Travel Time (s)		6.2			12.9			2.9				7.8
Confl. Peds. (#/hr)							1					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.82	0.82	0.82
Heavy Vehicles (%)	2%	0%	2%	1%	0%	0%	2%	4%	0%	0%	3%	2%
Adj. Flow (vph)	197	0	170	511	80	215	172	488	0	0	944	140
Shared Lane Traffic (%)							34%					
Lane Group Flow (vph)	197	0	170	511	153	142	172	488	0	0	1084	0
Turn Type	Prot		pt+ov	Split	NA	Prot	Prot	NA			NA	
Protected Phases	5		15	4	4	4	1	12				2
Permitted Phases												
Detector Phase	5		15	4	4	4	1					
Switch Phase												
Minimum Initial (s)	5.0			7.0	7.0	7.0	5.0					15.0
Minimum Split (s)	10.0			12.5	12.5	12.5	11.3					23.0
Total Split (s)	11.0			20.0	20.0	20.0	17.0					27.0
Total Split (%)	14.7%			26.7%	26.7%	26.7%	22.7%					36.0%
Yellow Time (s)	3.0			3.5	3.5	3.5	3.0					3.5
All-Red Time (s)	2.0			2.0	2.0	2.0	1.0					1.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0					0.0
Total Lost Time (s)	5.0			5.5	5.5	5.5	4.0					4.5
Lead/Lag							Lag					Lead
Lead-Lag Optimize?												
Recall Mode	None			Min	Min	Min	Min					C-Max
Act Effct Green (s)	6.0		18.0	13.6	13.6	13.6	11.0	40.9				25.4
Actuated g/C Ratio	0.08		0.24	0.18	0.18	0.18	0.15	0.55				0.34
v/c Ratio	0.72		0.37	0.81	0.44	0.35	0.69	0.27				0.95
Control Delay	50.3		7.5	40.9	22.0	7.0	29.0	2.1				39.8
Queue Delay	0.0		0.3	1.0	0.0	0.0	18.5	0.3				1.2
Total Delay	50.3		7.8	41.9	22.0	7.0	47.4	2.4				41.0
LOS	D		A	D	C	A	D	A				D

Lanes, Volumes, Timings  
 2: N Colony Road (Route 5) & Route 15 SB Off-Ramp

2021 Build Conditions  
 AM Peak

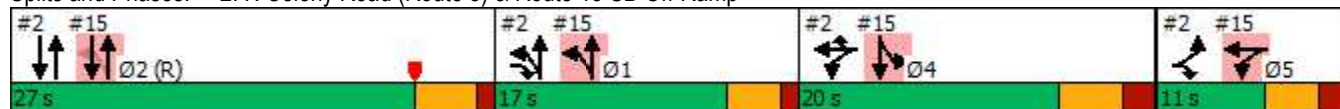


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		30.6			32.0			14.1				41.0
Approach LOS		C			C			B				D
Queue Length 50th (ft)	46		13	117	42	0	50	5				~286
Queue Length 95th (ft)	#93		36	#181	96	41	107	13				#333
Internal Link Dist (ft)		194			488			70				320
Turn Bay Length (ft)												
Base Capacity (vph)	274		496	670	365	419	296	1830				1143
Starvation Cap Reductn	0		0	0	0	0	109	718				0
Spillback Cap Reductn	0		73	40	0	0	0	0				14
Storage Cap Reductn	0		0	0	0	0	0	0				0
Reduced v/c Ratio	0.72		0.40	0.81	0.42	0.34	0.92	0.44				0.96

Intersection Summary

Area Type:	Other
Cycle Length:	75
Actuated Cycle Length:	75
Offset:	0 (0%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle:	75
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	31.1
Intersection LOS:	C
Intersection Capacity Utilization:	62.2%
ICU Level of Service:	B
Analysis Period (min):	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.

Splits and Phases: 2: N Colony Road (Route 5) & Route 15 SB Off-Ramp



Lanes, Volumes, Timings  
3: N Colony Road (Route 5) & Route 15 NB Ramps

2021 Build Conditions  
AM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4
Lane Configurations								
Traffic Volume (vph)	282	205	484	342	208	876		
Future Volume (vph)	282	205	484	342	208	876		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	11	11	11	11		
Storage Length (ft)	0	0		0	175			
Storage Lanes	1	1		0	1			
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95		
Frt		0.850	0.938					
Flt Protected	0.950				0.950			
Satd. Flow (prot)	1805	1615	3162	0	1745	3421		
Flt Permitted	0.950				0.218			
Satd. Flow (perm)	1805	1615	3162	0	400	3421		
Right Turn on Red		Yes		No				
Satd. Flow (RTOR)		263						
Link Speed (mph)	30		35			35		
Link Distance (ft)	466		179			471		
Travel Time (s)	10.6		3.5			9.2		
Peak Hour Factor	0.78	0.78	0.90	0.90	0.81	0.81		
Heavy Vehicles (%)	0%	0%	6%	0%	0%	2%		
Adj. Flow (vph)	362	263	538	380	257	1081		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	362	263	918	0	257	1081		
Turn Type	Prot	pt+ov	NA		custom	NA		
Protected Phases	5	1 5	2 4		1	1 2	2	4
Permitted Phases					2			
Detector Phase	5	5	2		1	1 2		
Switch Phase								
Minimum Initial (s)	7.0				5.0		15.0	7.0
Minimum Split (s)	11.0				9.5		24.4	15.0
Total Split (s)	18.0				12.0		30.0	15.0
Total Split (%)	24.0%				16.0%		40%	20%
Yellow Time (s)	3.0				3.0		4.1	4.1
All-Red Time (s)	1.0				1.0		2.3	1.0
Lost Time Adjust (s)	0.0				0.0			
Total Lost Time (s)	4.0				4.0			
Lead/Lag					Lead		Lag	
Lead-Lag Optimize?								
Recall Mode	None				None		C-Max	None
Act Effct Green (s)	15.6	27.6	37.0		34.0	38.0		
Actuated g/C Ratio	0.21	0.37	0.49		0.45	0.51		
v/c Ratio	0.97	0.35	0.59		0.79	0.62		
Control Delay	72.9	4.0	3.2		22.8	7.0		
Queue Delay	0.0	0.0	1.0		0.0	0.1		
Total Delay	72.9	4.0	4.2		22.8	7.2		
LOS	E	A	A		C	A		
Approach Delay	43.9		4.2			10.2		
Approach LOS	D		A			B		

Lanes, Volumes, Timings  
 3: N Colony Road (Route 5) & Route 15 NB Ramps

2021 Build Conditions  
 AM Peak

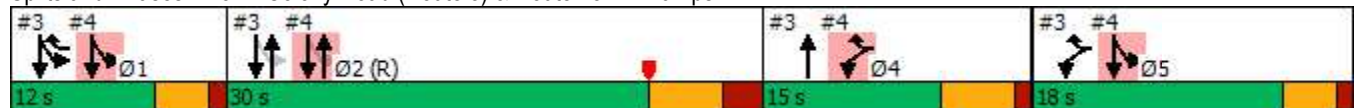


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4
Queue Length 50th (ft)	168	0	13		67	127		
Queue Length 95th (ft)	#280	27	22		m82	m134		
Internal Link Dist (ft)	386		99			391		
Turn Bay Length (ft)					175			
Base Capacity (vph)	374	759	1561		324	1733		
Starvation Cap Reductn	0	0	366		0	111		
Spillback Cap Reductn	0	0	0		0	0		
Storage Cap Reductn	0	0	0		0	0		
Reduced v/c Ratio	0.97	0.35	0.77		0.79	0.67		

Intersection Summary



















Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 7 (9%), Referenced to phase 2:NBSB, Start of Yellow  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.97  
 Intersection Signal Delay: 15.6  
 Intersection LOS: B  
 Intersection Capacity Utilization 63.5%  
 ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: N Colony Road (Route 5) & Route 15 NB Ramps



Lanes, Volumes, Timings  
 15: N Colony Road (Route 5) & Route 15 SB On-Ramp/Park&Ride

2021 Build Conditions  
 AM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	5	5	5	121	563	5	10	1079	316
Future Volume (vph)	0	0	0	5	5	5	121	563	5	10	1079	316
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	125		0	0		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt					0.955			0.999				0.966
Flt Protected					0.984		0.950			0.950		
Satd. Flow (prot)	0	0	0	0	1785	0	1805	3469	0	1805	3408	0
Flt Permitted					0.984		0.157			0.950		
Satd. Flow (perm)	0	0	0	0	1785	0	298	3469	0	1805	3408	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5			2				73
Link Speed (mph)		30			30			35				35
Link Distance (ft)		151			185			471				150
Travel Time (s)		3.4			4.2			9.2				2.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.86	0.86	0.86	0.82	0.82	0.82
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	3%	0%
Adj. Flow (vph)	0	0	0	5	5	5	141	655	6	12	1316	385
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	15	0	141	661	0	12	1701	0
Turn Type				Split	NA		custom	NA		Prot	NA	
Protected Phases				5	5		1	1 2		4	2 4	
Permitted Phases							2					
Detector Phase				5	5		1			4		
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0			7.0		
Minimum Split (s)				10.0	10.0		11.3			12.5		
Total Split (s)				11.0	11.0		17.0			20.0		
Total Split (%)				14.7%	14.7%		22.7%			26.7%		
Yellow Time (s)				3.0	3.0		3.0			3.5		
All-Red Time (s)				2.0	2.0		1.0			2.0		
Lost Time Adjust (s)					0.0		0.0			0.0		
Total Lost Time (s)					5.0		4.0			5.5		
Lead/Lag							Lag					
Lead-Lag Optimize?												
Recall Mode				None	None		Min			Min		
Act Effct Green (s)					6.0		36.9	40.9		13.6	40.0	
Actuated g/C Ratio					0.08		0.49	0.55		0.18	0.53	
v/c Ratio					0.10		0.38	0.35		0.04	0.92	
Control Delay					28.2		12.5	7.1		23.5	11.0	
Queue Delay					0.0		0.0	0.0		0.0	4.8	
Total Delay					28.2		12.5	7.1		23.5	15.8	
LOS					C		B	A		C	B	
Approach Delay					28.2			8.1			15.9	
Approach LOS					C			A			B	
Queue Length 50th (ft)					4		19	48		4	50	



Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	15.0
Minimum Split (s)	23.0
Total Split (s)	27.0
Total Split (%)	36%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	
Recall Mode	C-Max
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lanes, Volumes, Timings  
 15: N Colony Road (Route 5) & Route 15 SB On-Ramp/Park&Ride

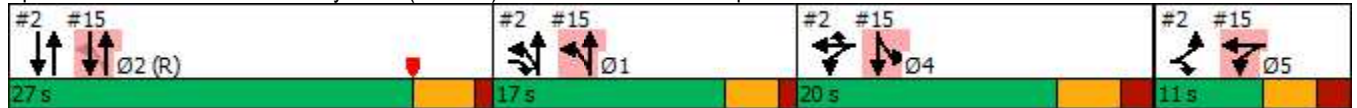
2021 Build Conditions  
 AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					22		40	74		m7	#64	
Internal Link Dist (ft)		71			105			391				70
Turn Bay Length (ft)							125					
Base Capacity (vph)					147		416	1893		348	1853	
Starvation Cap Reductn					0		0	0		0	115	
Spillback Cap Reductn					0		0	181		0	0	
Storage Cap Reductn					0		0	0		0	0	
Reduced v/c Ratio					0.10		0.34	0.39		0.03	0.98	

Intersection Summary

Area Type: Other  
 Cycle Length: 75  
 Actuated Cycle Length: 75  
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.95  
 Intersection Signal Delay: 13.5 Intersection LOS: B  
 Intersection Capacity Utilization 62.0% ICU Level of Service B  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: N Colony Road (Route 5) & Route 15 SB On-Ramp/Park&Ride

























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Lane Group	Ø2
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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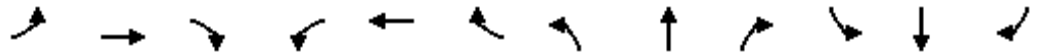
Lanes, Volumes, Timings  
1: N Colony Road (Route 5) & Sonic/BJ's

2021 Build Conditions  
PM Peak

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	0	10	190	10	140	20	1464	280	60	939	10
Future Volume (vph)	20	0	10	190	10	140	20	1464	280	60	939	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Storage Length (ft)	0		0	0		0	175		225	200		0
Storage Lanes	1		0	0		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.95	0.95
Fr <sub>t</sub>		0.850				0.850			0.850		0.998	
Fl <sub>t</sub> Protected	0.950				0.955		0.950			0.950		
Satd. Flow (prot)	1719	1615	0	0	1797	1615	1745	4964	1546	1745	3447	0
Fl <sub>t</sub> Permitted	0.492				0.725		0.950			0.950		
Satd. Flow (perm)	890	1615	0	0	1365	1615	1745	4964	1546	1745	3447	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		286				146			298			1
Link Speed (mph)		30			30			35				35
Link Distance (ft)		225			241			400				709
Travel Time (s)		5.1			5.5			7.8				13.8
Peak Hour Factor	0.64	0.64	0.64	0.96	0.96	0.96	0.94	0.94	0.94	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	0%	1%	0%	0%	0%	1%	1%	0%	1%	5%
Adj. Flow (vph)	31	0	16	198	10	146	21	1557	298	67	1043	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	31	16	0	0	208	146	21	1557	298	67	1054	0
Turn Type	Perm	NA		Perm	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4		4			6			
Detector Phase	4	4		4	4	4	1	6	6	5	2	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0	7.0	5.0	15.0	15.0	5.0	15.0	
Minimum Split (s)	26.0	26.0		26.0	26.0	26.0	10.0	20.7	20.7	10.0	20.7	
Total Split (s)	26.0	26.0		26.0	26.0	26.0	17.0	47.0	47.0	17.0	47.0	
Total Split (%)	28.9%	28.9%		28.9%	28.9%	28.9%	18.9%	52.2%	52.2%	18.9%	52.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.1	4.1	3.0	4.1	
All-Red Time (s)	2.9	2.9		2.9	2.9	2.9	2.0	1.6	1.6	2.0	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9			5.9	5.9	5.0	5.7	5.7	5.0	5.7	
Lead/Lag							Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?												
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	16.9	16.9			16.9	16.9	5.8	50.6	50.6	7.9	56.8	
Actuated g/C Ratio	0.19	0.19			0.19	0.19	0.06	0.56	0.56	0.09	0.63	
v/c Ratio	0.19	0.03			0.82	0.35	0.19	0.56	0.30	0.44	0.48	
Control Delay	32.0	0.1			59.1	7.7	43.1	14.9	2.7	47.0	11.5	
Queue Delay	0.0	0.0			0.0	0.0	0.0	0.3	0.0	0.0	0.5	
Total Delay	32.0	0.1			59.1	7.7	43.1	15.1	2.7	47.0	12.0	
LOS	C	A			E	A	D	B	A	D	B	
Approach Delay		21.1			37.9			13.5			14.1	
Approach LOS		C			D			B			B	

Lanes, Volumes, Timings  
 1: N Colony Road (Route 5) & Sonic/BJ's

2021 Build Conditions  
 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	15	0			112	0	12	207	1	37	132	
Queue Length 95th (ft)	27	0			#203	47	m19	269	m34	75	274	
Internal Link Dist (ft)		145			161			320			629	
Turn Bay Length (ft)							175		225	200		
Base Capacity (vph)	198	582			304	474	232	2789	999	232	2175	
Starvation Cap Reductn	0	0			0	0	0	506	0	0	0	
Spillback Cap Reductn	0	52			0	0	0	0	0	0	644	
Storage Cap Reductn	0	0			0	0	0	0	0	0	0	
Reduced v/c Ratio	0.16	0.03			0.68	0.31	0.09	0.68	0.30	0.29	0.69	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 26 (29%), Referenced to phase 2:SBT and 6:NBT, Start of Yellow  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.82  
 Intersection Signal Delay: 16.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 64.0%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: N Colony Road (Route 5) & Sonic/BJ's



Lanes, Volumes, Timings  
2: N Colony Road (Route 5) & Route 15 SB Off-Ramp

2021 Build Conditions  
PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	148	0	127	416	60	487	121	1129	0	0	1045	94
Future Volume (vph)	148	0	127	416	60	487	121	1129	0	0	1045	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	12
Storage Length (ft)	0		0	0		0	0		0	0		200
Storage Lanes	2		1	2		1	1		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	1.00	1.00	0.97	0.95	0.95	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor					0.99							
Frt			0.850		0.882	0.850						0.988
Flt Protected	0.950			0.950			0.950					
Satd. Flow (prot)	3467	0	1599	3502	1575	1534	1728	3455	0	0	3383	0
Flt Permitted	0.950			0.950			0.950					
Satd. Flow (perm)	3467	0	1599	3502	1575	1534	1728	3455	0	0	3383	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85		63	127						11
Link Speed (mph)		30			30			35				35
Link Distance (ft)		274			568			150				400
Travel Time (s)		6.2			12.9			2.9				7.8
Confl. Peds. (#/hr)							1					
Peak Hour Factor	0.92	0.92	0.92	0.94	0.94	0.94	0.93	0.93	0.93	0.95	0.95	0.95
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	1%	1%	0%	0%	2%	1%
Adj. Flow (vph)	161	0	138	443	64	518	130	1214	0	0	1100	99
Shared Lane Traffic (%)						45%						
Lane Group Flow (vph)	161	0	138	443	297	285	130	1214	0	0	1199	0
Turn Type	Prot		pt+ov	Split	NA	Prot	Prot	NA			NA	
Protected Phases	5		15	4	4	4	1	12				2
Permitted Phases												
Detector Phase	5		15	4	4	4	1					
Switch Phase												
Minimum Initial (s)	5.0			7.0	7.0	7.0	5.0					15.0
Minimum Split (s)	10.0			12.5	12.5	12.5	11.3					23.0
Total Split (s)	11.0			23.0	23.0	23.0	21.0					35.0
Total Split (%)	12.2%			25.6%	25.6%	25.6%	23.3%					38.9%
Yellow Time (s)	3.0			3.5	3.5	3.5	3.0					3.5
All-Red Time (s)	2.0			2.0	2.0	2.0	1.0					1.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0					0.0
Total Lost Time (s)	5.0			5.5	5.5	5.5	4.0					4.5
Lead/Lag							Lag					Lead
Lead-Lag Optimize?												
Recall Mode	None			Min	Min	Min	Min					C-Max
Act Effct Green (s)	5.9		22.3	15.9	15.9	15.9	15.4	53.6				33.7
Actuated g/C Ratio	0.07		0.25	0.18	0.18	0.18	0.17	0.60				0.37
v/c Ratio	0.70		0.30	0.72	0.90	0.76	0.44	0.59				0.94
Control Delay	58.8		7.7	41.7	58.7	32.9	22.9	2.7				39.1
Queue Delay	0.0		0.2	0.3	0.0	0.0	31.5	0.1				2.9
Total Delay	58.8		7.9	41.9	58.7	32.9	54.3	2.8				42.1
LOS	E		A	D	E	C	D	A				D

Lanes, Volumes, Timings  
 2: N Colony Road (Route 5) & Route 15 SB Off-Ramp

2021 Build Conditions  
 PM Peak

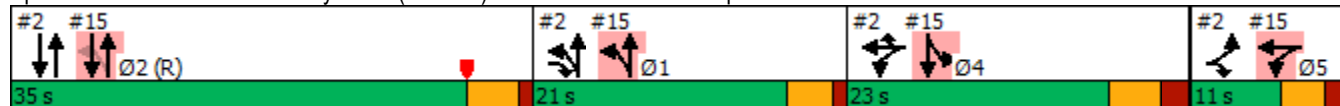


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		35.3			44.3			7.8			42.1	
Approach LOS		D			D			A			D	
Queue Length 50th (ft)	46		13	120	136	87	57	19			~393	
Queue Length 95th (ft)	#91		38	171	#282	#203	m99	22			#525	
Internal Link Dist (ft)		194			488			70			320	
Turn Bay Length (ft)												
Base Capacity (vph)	231		488	680	357	400	326	2058			1274	
Starvation Cap Reductn	0		0	0	0	0	190	119			18	
Spillback Cap Reductn	0		75	27	0	0	0	0			37	
Storage Cap Reductn	0		0	0	0	0	0	0			0	
Reduced v/c Ratio	0.70		0.33	0.68	0.83	0.71	0.96	0.63			0.97	

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	31 (34%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	30.2
Intersection LOS:	C
Intersection Capacity Utilization	71.0%
ICU Level of Service	C
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: N Colony Road (Route 5) & Route 15 SB Off-Ramp



Lanes, Volumes, Timings  
3: N Colony Road (Route 5) & Route 15 NB Ramps

2021 Build Conditions  
PM Peak



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4
Lane Configurations								
Traffic Volume (vph)	211	345	1227	634	268	995		
Future Volume (vph)	211	345	1227	634	268	995		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	11	11	11	11		
Storage Length (ft)	0	0		0	175			
Storage Lanes	1	1		0	1			
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95		
Fr <sub>t</sub>		0.850	0.949					
Fl <sub>t</sub> Protected	0.950				0.950			
Satd. Flow (prot)	1805	1615	3269	0	1745	3421		
Fl <sub>t</sub> Permitted	0.950				0.116			
Satd. Flow (perm)	1805	1615	3269	0	213	3421		
Right Turn on Red		Yes		No				
Satd. Flow (RTOR)		39						
Link Speed (mph)	30		35			35		
Link Distance (ft)	466		179			471		
Travel Time (s)	10.6		3.5			9.2		
Peak Hour Factor	0.92	0.92	0.90	0.90	0.92	0.92		
Heavy Vehicles (%)	0%	0%	2%	0%	0%	2%		
Adj. Flow (vph)	229	375	1363	704	291	1082		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	229	375	2067	0	291	1082		
Turn Type	Prot	pt+ov	NA		custom	NA		
Protected Phases	5	15	24		1	12	2	4
Permitted Phases					2			
Detector Phase	5	5	2		1	12		
Switch Phase								
Minimum Initial (s)	7.0				5.0		15.0	7.0
Minimum Split (s)	11.0				9.5		24.4	15.0
Total Split (s)	18.0				16.0		41.0	15.0
Total Split (%)	20.0%				17.8%		46%	17%
Yellow Time (s)	3.0				3.0		4.1	4.1
All-Red Time (s)	1.0				1.0		2.3	1.0
Lost Time Adjust (s)	0.0				0.0			
Total Lost Time (s)	4.0				4.0			
Lead/Lag					Lead		Lag	
Lead-Lag Optimize?								
Recall Mode	None				None		C-Max	None
Act Effct Green (s)	13.5	30.0	49.6		49.5	53.5		
Actuated g/C Ratio	0.15	0.33	0.55		0.55	0.59		
v/c Ratio	0.85	0.66	1.15		0.88	0.53		
Control Delay	65.1	29.6	79.1		44.6	5.4		
Queue Delay	1.0	0.0	0.6		0.0	0.3		
Total Delay	66.2	29.6	79.7		44.6	5.7		
LOS	E	C	E		D	A		
Approach Delay	43.5		79.7			13.9		
Approach LOS	D		E			B		



Lanes, Volumes, Timings  
 3: N Colony Road (Route 5) & Route 15 NB Ramps

2021 Build Conditions  
 PM Peak

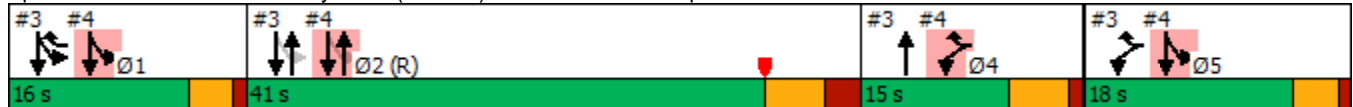


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø4
Queue Length 50th (ft)	128	162	~726		130	131		
Queue Length 95th (ft)	#247	262	m38		m#177	m161		
Internal Link Dist (ft)	386		99			391		
Turn Bay Length (ft)					175			
Base Capacity (vph)	280	559	1800		330	2034		
Starvation Cap Reductn	0	0	312		0	360		
Spillback Cap Reductn	6	0	0		0	16		
Storage Cap Reductn	0	0	0		0	0		
Reduced v/c Ratio	0.84	0.67	1.39		0.88	0.65		

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	41 (46%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.47
Intersection Signal Delay:	52.0
Intersection LOS:	D
Intersection Capacity Utilization	92.8%
ICU Level of Service	F
Analysis Period (min)	15
~	Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
#	95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m	Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: N Colony Road (Route 5) & Route 15 NB Ramps



Lanes, Volumes, Timings  
 15: N Colony Road (Route 5) & Route 15 SB On-Ramp/Park&Ride

2021 Build Conditions  
 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↔		↗	↕		↖	↕	
Traffic Volume (vph)	0	0	0	5	5	5	322	1245	5	5	1258	325
Future Volume (vph)	0	0	0	5	5	5	322	1245	5	5	1258	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	125		0	0		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt					0.955			0.999				0.969
Flt Protected					0.984		0.950			0.950		
Satd. Flow (prot)	0	0	0	0	1785	0	1805	3571	0	1805	3443	0
Flt Permitted					0.984		0.118			0.950		
Satd. Flow (perm)	0	0	0	0	1785	0	224	3571	0	1805	3443	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5			1				56
Link Speed (mph)		30			30			35				35
Link Distance (ft)		151			185			471				150
Travel Time (s)		3.4			4.2			9.2				2.9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.93	0.93	0.93	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	2%	0%
Adj. Flow (vph)	0	0	0	5	5	5	346	1339	5	5	1324	342
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	15	0	346	1344	0	5	1666	0
Turn Type				Split	NA		custom	NA		Prot	NA	
Protected Phases				5	5		1	1 2		4	2 4	
Permitted Phases							2					
Detector Phase				5	5		1			4		
Switch Phase												
Minimum Initial (s)				5.0	5.0		5.0			7.0		
Minimum Split (s)				10.0	10.0		11.3			12.5		
Total Split (s)				11.0	11.0		21.0			23.0		
Total Split (%)				12.2%	12.2%		23.3%			25.6%		
Yellow Time (s)				3.0	3.0		3.0			3.5		
All-Red Time (s)				2.0	2.0		1.0			2.0		
Lost Time Adjust (s)					0.0		0.0			0.0		
Total Lost Time (s)					5.0		4.0			5.5		
Lead/Lag							Lag					
Lead-Lag Optimize?												
Recall Mode				None	None		Min			Min		
Act Effct Green (s)					5.9		49.6	53.6		15.9	50.7	
Actuated g/C Ratio					0.07		0.55	0.60		0.18	0.56	
v/c Ratio					0.12		0.88	0.63		0.02	0.85	
Control Delay					34.5		28.9	10.9		29.8	6.3	
Queue Delay					0.0		0.0	0.8		0.0	1.2	
Total Delay					34.5		28.9	11.8		29.8	7.5	
LOS					C		C	B		C	A	
Approach Delay					34.5			15.3			7.6	
Approach LOS					C			B			A	
Queue Length 50th (ft)					5		122	175		2	46	

Lane Group	Ø2
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	2
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	15.0
Minimum Split (s)	23.0
Total Split (s)	35.0
Total Split (%)	39%
Yellow Time (s)	3.5
All-Red Time (s)	1.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	
Recall Mode	C-Max
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lanes, Volumes, Timings  
 15: N Colony Road (Route 5) & Route 15 SB On-Ramp/Park&Ride

2021 Build Conditions  
 PM Peak

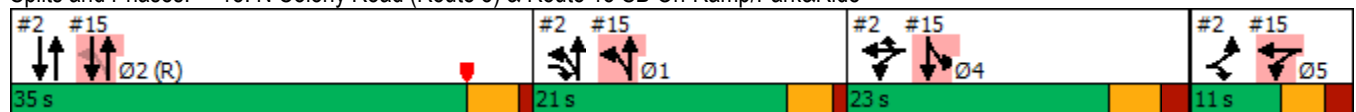


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)					25		m119	m159		m3	m65	
Internal Link Dist (ft)		71			105			391			70	
Turn Bay Length (ft)							125					
Base Capacity (vph)					123		426	2127		350	1962	
Starvation Cap Reductn					0		0	449		0	124	
Spillback Cap Reductn					0		0	197		0	0	
Storage Cap Reductn					0		0	0		0	0	
Reduced v/c Ratio					0.12		0.81	0.80		0.01	0.91	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 31 (34%), Referenced to phase 2:NBSB, Start of Yellow  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 11.5  
 Intersection LOS: B  
 Intersection Capacity Utilization 78.4%  
 ICU Level of Service D  
 Analysis Period (min) 15  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: N Colony Road (Route 5) & Route 15 SB On-Ramp/Park&Ride



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Lane Group	Ø2
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

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