

Garret Home, LLC

TRAFFIC STUDY

Proposed Retail

Route 108, 1860 Kingstown Road
South Kingstown, RI



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EXECUTIVE SUMMARY

The Town of South Kingstown, Rhode Island, has proposed a traffic study for the development of a parcel that is along Route 108 (Kingstown Road) approximately 230 ft south of Southwinds Drive. The study investigates the concept for a 7,545± sf retail store.

The study investigated the potential traffic impacts associated with the development in the weekday evening peak period and Saturday mid-day peak period. This investigation included a field reconnaissance, traffic counting, and research of pertinent planning and traffic data available with Rhode Island Department of Transportation (RIDOT) and the Town of South Kingstown. Normal growth was added to the existing peak hour through traffic volumes to estimate the year of project completion (2020) background traffic volumes. The background increase was based on a growth rate of 1 percent per year for one year.

The number of trips generated by the development proposal was estimated using ITE Trip Generation Manual 10th Edition. Adjusting for internal and pass-by trips, it is projected that the site will generate approximately 37 trips in the PM peak hour and 51 trips in the Saturday mid-day peak hour.

The intersection capacity analyses were prepared using the methodology described in the Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB) for the existing and build traffic volume scenarios to simulate the traffic impact of a proposed Mixed-Use Development on the adjacent roadway network. The signalized intersections were analyzed in terms of vehicle capacity and motorist delay. The unsignalized intersections were generally evaluated in terms of average side street delay, as well as the capacity of the roadway approach.

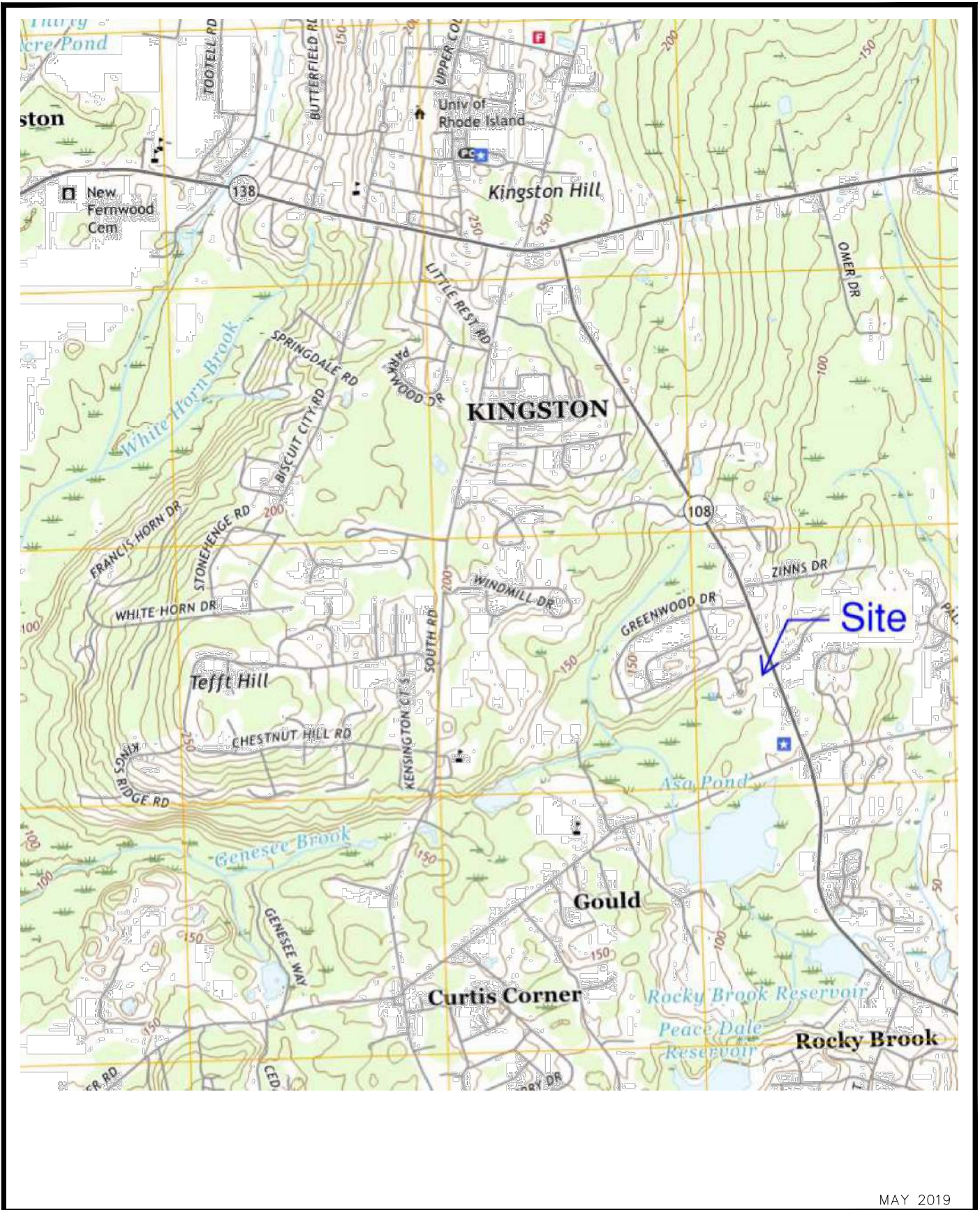
This study found that the existing roadway network can readily absorb the small increase in traffic expected from the retail development with little perceptible change in traffic operations. Therefore, no modifications to accommodate traffic impacts are proposed for the Physical Alteration Permit submitted to RIDOT.

I. INTRODUCTION

The traffic study for the retail development at 1860 Kingstown Road South Kingstown, Rhode Island is along Route 108 (Kingstown Road). The focus of this study was to evaluate the traffic flows and operating conditions on the roadways and intersections projected to be used by motorists traveling to and from the proposed development and to quantify the potential traffic impacts on these roadways and intersections. The study area is located among mixed use developments including restaurants, residential, auto centers and retail along Route 108. The proposed retail development site is an approximately 1.16-acres parcel located on the western side of Kingstown Road. The site is currently undeveloped. See **Figure 1** for a location map.

The project consists of a 7,545± sf retail store with access proposed to be provided by a stop controlled full-movement unsignalized driveway off Kingstown Road, approximately .20± of a mile north of the signalized intersection of Route 108 (Kingstown Road) and Curtis Corner Road/Saugatucket Road.

The study investigated the potential traffic impacts associated with the development in the weekday evening peak period and Saturday mid-day peak period. The greatest cumulative impacts of project related traffic are likely to occur during the Saturday mid-day peak hour, when traffic consists mostly of shoppers. As such, traffic operating conditions at the study intersections were analyzed during this peak period.



MAY 2019



**SITE LOCATION
PROPOSED RETAIL DEVELOPMENT
SOUTH KINGSTOWN, RHODE ISLAND**

SCHMATIC, NOT TO SCALE

FIGURE 1

II. EXISTING CONDITIONS

An investigation of the existing traffic conditions on the adjacent roadway network formed the basis for assessing any traffic issues associated with the proposed development. This investigation included a field reconnaissance, traffic counting, and research of pertinent planning and traffic data available with Rhode Island Department of Transportation (RIDOT) and the Town of South Kingstown.

Access Network

The project study area consists of the signalized intersection of Route 108 (Kingstown Road) at Route 138 (Kingstown Road/Mooresfield Road), and the signalized intersection of Route 108 (Kingstown Road) at Curtis Corner Road and Saugatucket Road. Major roadways in the vicinity of the project include Route 108 and Route 138. In the project study area there are few pedestrian accommodations. In the northern section of the study area there is an existing brick sidewalk located along the northern side of Route 138 and the southern section of the study area has two disconnected concrete sidewalks located along the western side of Route 108 in the frontage of property 1838 Kingstown Road and 1790 Kingstown Road, South Kingstown Police Department. The disconnection portion of sidewalk is from the undeveloped parcel between the two properties.

Route 108 (Kingstown Road) is a principal arterial that originates in South Kingstown at the Route 138 intersection and ends at Point Judith Lighthouse. In the vicinity of the project, Route 108 currently has one travel lane in both directions. The speed limit is 25 mph and there was no average daily traffic data provided. Along Route 108 there are several transit stops in the neighborhood. There is a RIPTA bus stop to the North of the site going northbound and one south of the site heading south bound. Bus route purple 66 appears to go from Galilee to Providence with stops at URI and the RR station. From the traffic volume collection, it was noted there were very few pedestrians and bicyclists observed during the peak hour study periods.

Route 138 (Kingstown Road/Mooresfield Road) is a principal arterial that originates in Richmond at the I-95 Ramps and extends to Route 1 in North Kingstown. In the vicinity of the study area, Route 138 currently has one travel lane in both directions. The speed limit is 40 mph and the average daily traffic, provided by RIDOT in 2000, is approximately 20,800 vehicles per day at the Route 108 intersection. The road provides access to residential neighborhoods,

University of Rhode Island and retail developments. From the traffic volume collection, it was noted there were very few pedestrians and bicyclists observed during the peak hour study periods.

Curtis Corner Road and Saugatucket Road are major and urban collectors, that intersect US Route 108 south of the Site. Curtis Corner Road begins at Route 110 and ends at the Route 108 intersection and Saugatucket Road begins at the Route 108 intersection and ends at Route 1. Both roads have one travel lane in both directions and the speed limit is 25 mph on both roads.

Intersection Characteristics

Two key intersections were reviewed in this study to determine if they would be impacted by the expected site traffic volumes. They are as follows:

Route 108 (Kingstown Road) at Route 138 (Kingstown Road/Mooresfield Road) –

At this signalized intersection, the Route 138 approaches have one travel lane in both directions. There is an exclusive right-turn on the eastbound Route 138 approach. The Route 138 (Mooresfield Road) westbound and Route 108 (Kingstown Road) northbound approaches both have one travel lane. The signal runs on a 45” cycle length analyzed for this study.

Route 138 (Kingstown Road/Mooresfield Road) – At this signalized intersection, the Route 108 approaches have one travel lanes in both directions. There are two exclusive left-turn lane on the northbound and southbound Route 138 approaches. The signal runs on a 95” cycle length analyzed for this study.

Crash Data Analysis

Crash data for the most recent two-year (2017-2019) period was obtained from the South Kingstown Police Department for the study area intersections. Thirty-nine (39) crashes in the study area were reviewed, the most common crashes were the front to rear at seventy-four percent (74%). Majority of crashes resulted in “No Apparent Injury” seventy-seven percent

(77%). There were no fatalities in the corridor for the two-year period; however, one crash between a pedestrian and vehicle at the intersection of Route 108 (Kingstown Road) and Curtis Corner Road and Saugatucket Road. Below **Table 1** summaries the crash data.

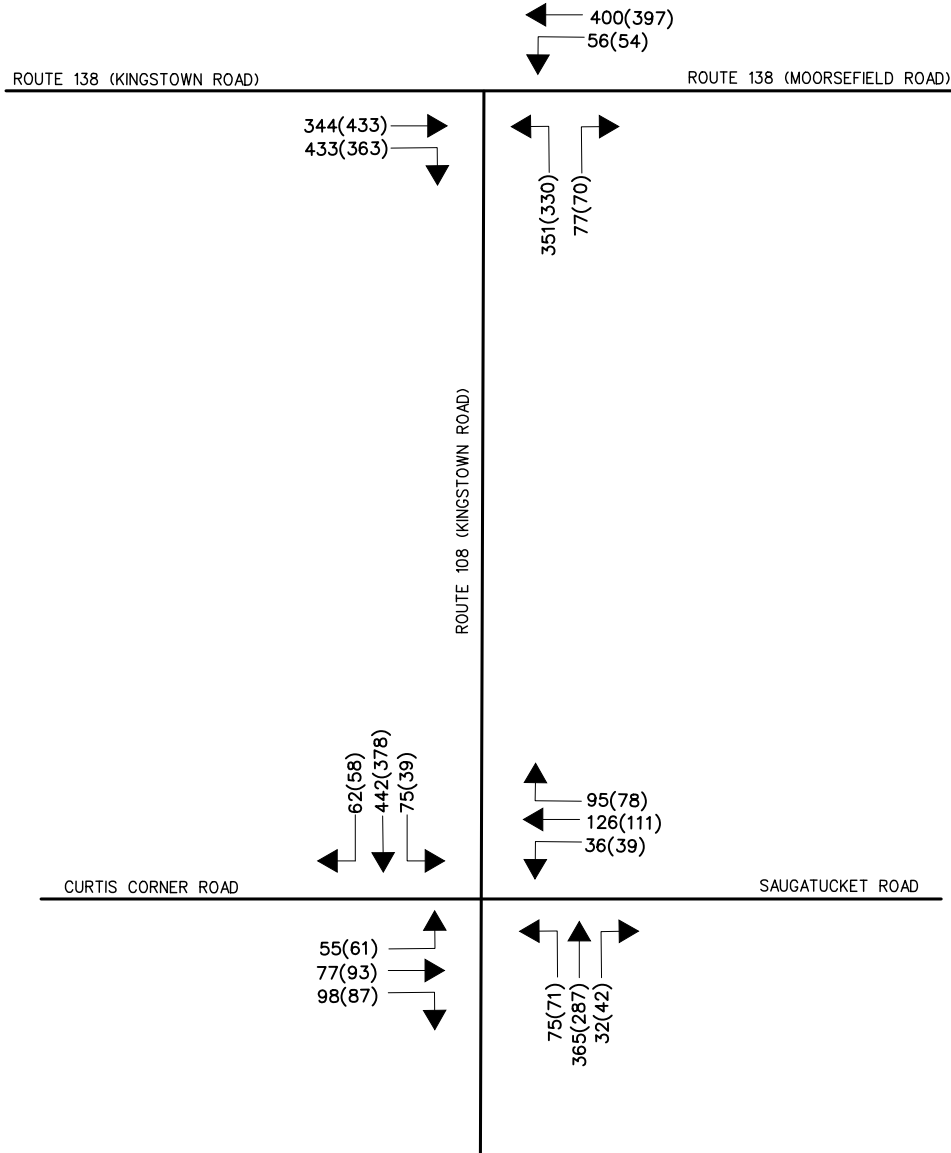
Table 1 – Crash Data Summary

Proposed Retail, South Kingstown Crash Data Summary		
	Route 108 (Kingstown Road) at Route 138 (Moosefield Road/Kingstown Road)	Route 108 (Kingstown Road) at Curtis Corner Road and Saugatucket Road
Year		
2017	5	5
2018	12	11
2019	3	3
Total	20	19
Collision Type		
Rear End	14	15
Angle (Opposite Direction)	3	1
Angle (Right Angle)		1
Road Departure (Stone Wall)	3	
Head On		1
Pedestrian		1
Total	20	19
Severity		
Fatal	0	0
Incapacitating	1	0
Injury Possible	5	3
Property Damage Only (N)	14	16
Total	20	19

Note: Data collected from the Records Department of the South Kingstown Police Department

Existing Traffic Volumes

Manual turning movement traffic counts were conducted during the weekday evening commuter peak period (4-6PM), and the Saturday mid-day peak period (11AM-1PM), in May of 2019 at the study intersections and at the proposed retail drive entrance. The current peak hour traffic volumes for the intersections are illustrated in **Figure 2**.



LEGEND

WEEKDAY PM PEAK HOUR: XXX
WEEKDAY SAT MID-DAY PEAK HOUR: (XXX)

MAY 2019



EXISTING (2019) TRAFFIC VOLUMES PROPOSED RETAIL DEVELOPMENT SOUTH KINGSTOWN, RHODE ISLAND

SCHEMATIC, NOT TO SCALE

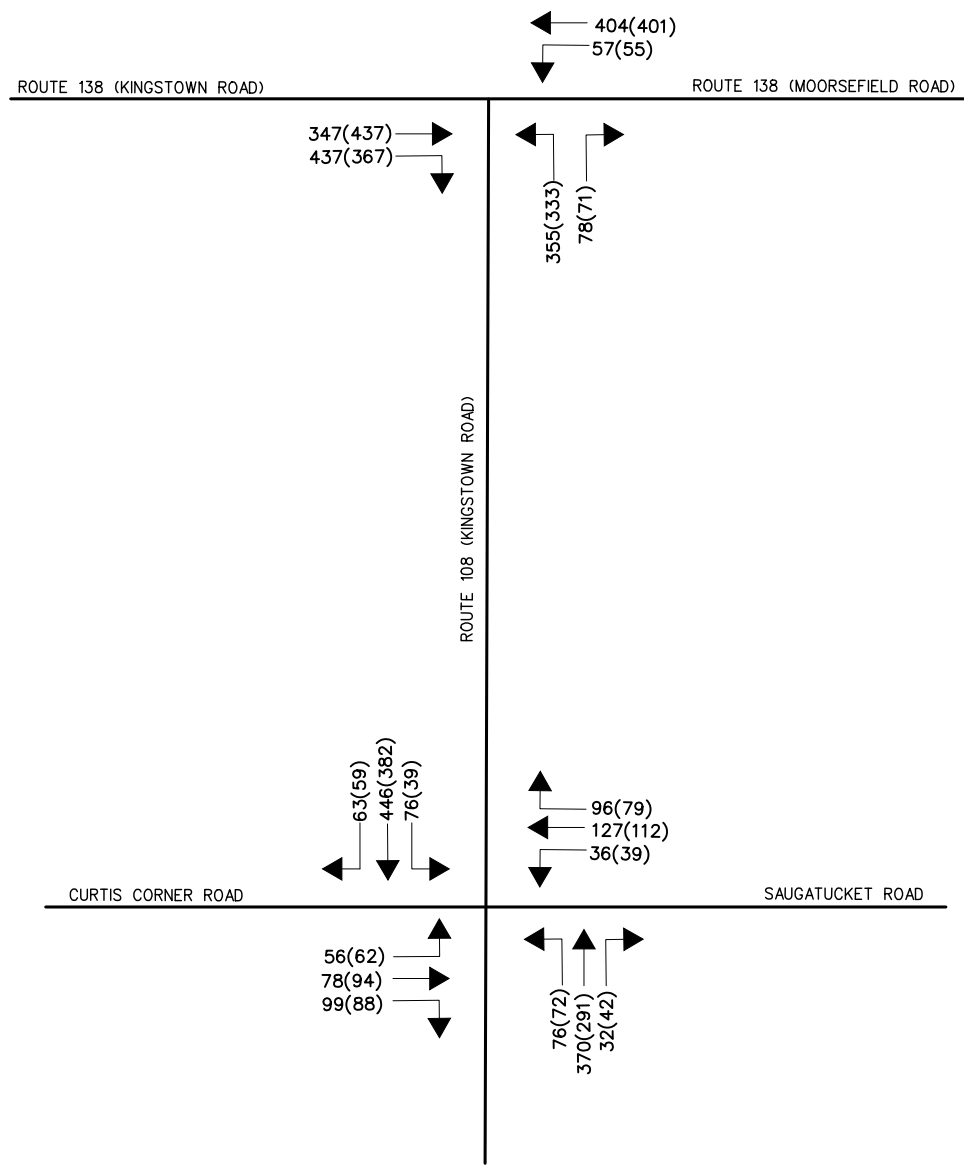
FIGURE 2

III. PROJECTED TRAFFIC CONDITIONS

Peak hour traffic volumes for the development were estimated, assigned to the roadway network, and superimposed onto background traffic volumes projected to the year 2020. This methodology provides a year of completion estimate for the analysis.

Background Traffic Volumes

Normal growth was added to the existing peak hour through traffic volumes to estimate the year of project completion (2020) background traffic volumes. The background increase was based on a growth rate of 1 percent per year for one year. In addition, the Planning Department of South Kingstown was contacted regarding an approved proposed restaurant north of the site; however, the project has not moved forward in several years and were excluded from the background volumes. The resulting peak hour background traffic volumes are depicted in **Figure 3**.



LEGEND

WEEKDAY PM PEAK HOUR: XXX
WEEKDAY SAT MID-DAY PEAK HOUR: (XXX)

MAY 2019



BACKGROUND (2020) TRAFFIC VOLUMES PROPOSED RETAIL DEVELOPMENT SOUTH KINGSTOWN, RHODE ISLAND

SCHEMATIC, NOT TO SCALE

FIGURE 3

Trip Generation

As currently envisioned the proposed development will consist of one retail land use building.

The anticipated traffic volumes generated by the development proposal were projected based upon guidelines set forth by RIDOT and data provided by the ITE Trip Generation Manual 10th Edition. This widely used reference manual provided trip generation rates for various land used based on traffic count data collected at similar sites. The following table shows projected trip generation for a variety store (Land Use Code 814). Saturday peak hour data for 814-Variety Store is not available in the Trip Generation Manual and estimated to be 1.4 times the PM Peak. Due to the small retail nature of the use, a significant portion of site trips will come from the existing Route 108 (Kingstown Road) traffic stream, referred to as “pass-by” trips. Based on empirical studies of similar sized retail buildings by the ITE Trip Generation Manual 3rd Edition, a pass-by component of 30% was used.

Table 2 illustrates the trip generation for the proposed development scenarios. It is projected that the proposed development will generate approximately 37 trips in the PM peak hour and 51 trips in the Saturday mid-day peak hour.

**Table 2 -
Peak Hour Trip Generation**

Proposed Retail - South Kingstown, RI Trip Generation								
5/2019								
Land Use	ITE Land Use Code	Size	Trips					
			PM Peak Hour			SAT MID DAY Peak Hour		
			Total	In	Out	Total	In	Out
Retail	814-Variety Store	7.545	52	27	25	73	49	23
	Less Pass-By (30% Average)*		15	8	7	22	15	7
	Net New Trips		37	19	18	51	35	16
Ref: Trip Generation, 10th Edition								
*Table E.5 Pass-By and Non-Pass-By Trips, ITE Trip Generation Handbook, 3rd Edition - Used 30%								

Trip Distribution

The directional distribution of traffic is typically a function of population densities, competing shopping opportunities, existing travel patterns adjacent to the site, and the efficiency and limitations of the existing roadway system. The distribution of the anticipated traffic volumes was based on arrival/departure patterns shown in **Figure 4**. The directional distribution of traffic was estimated primarily on adjacent roadway volumes.

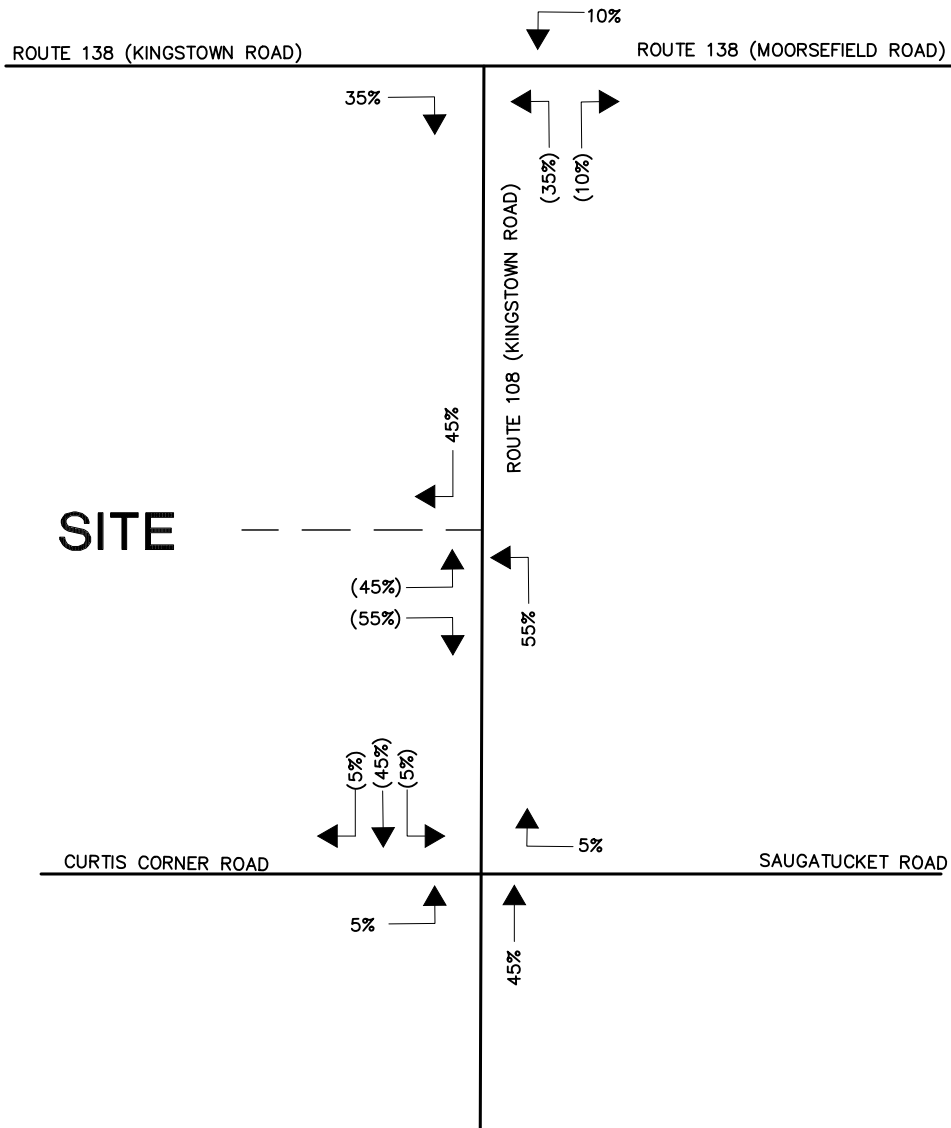
Assigned Site Generated and Pass-By Traffic Volumes

The generated trips are multiplied by the corresponding proportions to ascertain the site-generated traffic volumes. It should be noted that not all of the projected site traffic represents new vehicles on the adjacent roadway network. A portion of trips generated are classified as “pass-by” traffic. Pass-by traffic consists of vehicles already on the roadway that are attracted to site when passing through the area. The primary destination of this traffic is elsewhere, and the primary trip will be resumed following a stop at the proposed development. The Pass-By Traffic Volumes were assigned to the site driveway and are shown in **Table 2**.

Figure 5 shows the site generated peak hour traffic assigned to the nearby roadway network.

Build Traffic Volumes

The projected traffic volumes generated by the development were superimposed onto the background traffic volumes to establish the build traffic volumes, as depicted in **Figures 6**.



LEGEND

PERCENT ARRIVING: XXX%
PERCENT DEPARTING: (XXX%)

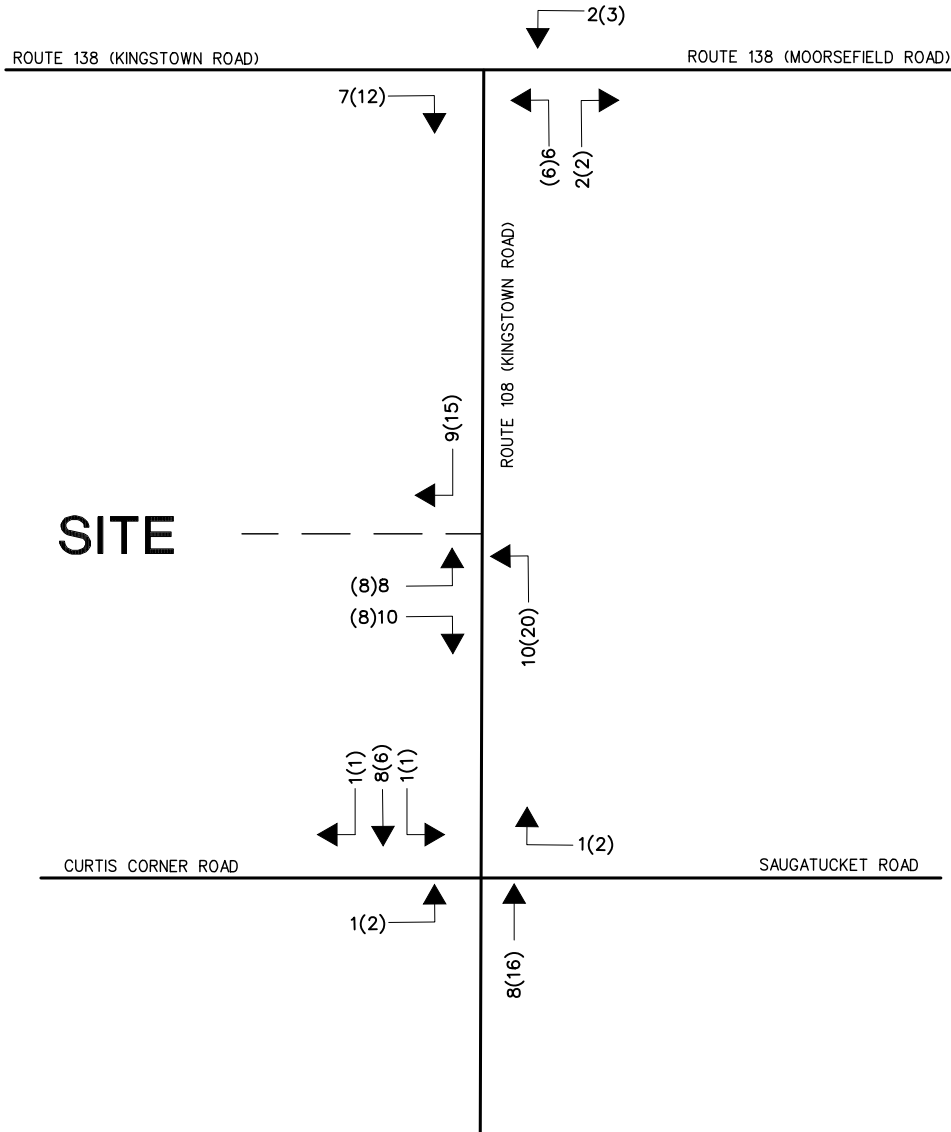
MAY 2019



TRIP DISTRIBUTION PROPOSED RETAIL DEVELOPMENT SOUTH KINGSTOWN, RHODE ISLAND

SCHEMATIC, NOT TO SCALE

FIGURE 4



LEGEND

WEEKDAY PM PEAK HOUR: XXX
WEEKDAY SAT MID-DAY PEAK HOUR: (XXX)

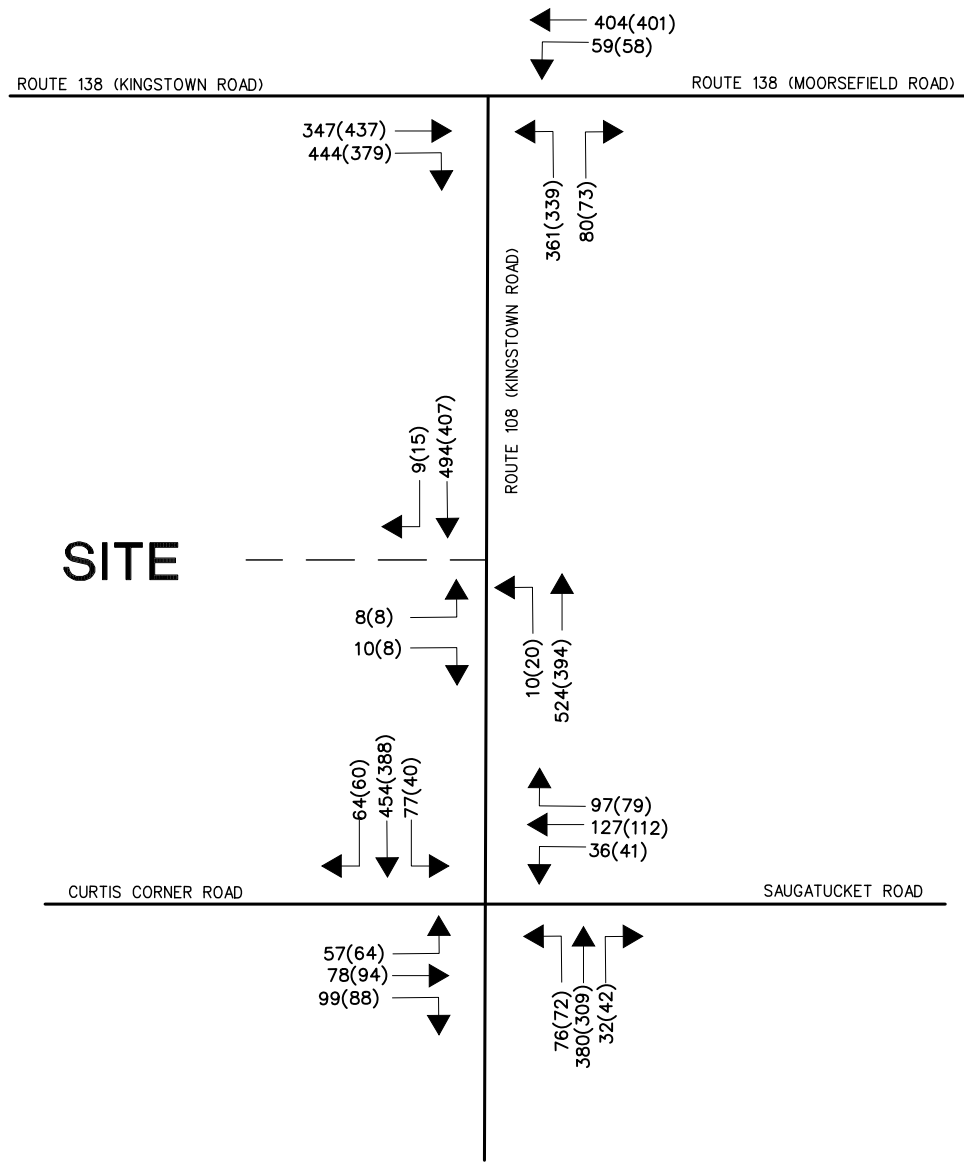
MAY 2019



SITE GENERATED TRAFFIC VOLUMES PROPOSED RETAIL DEVELOPMENT SOUTH KINGSTOWN, RHODE ISLAND

SCHEMATIC, NOT TO SCALE

FIGURE 5



LEGEND

WEEKDAY PM PEAK HOUR: XXX
 WEEKDAY SAT MID-DAY PEAK HOUR: (XXX)

MAY 2019



**BUILD (2020) TRAFFIC VOLUMES
 PROPOSED RETAIL DEVELOPMENT
 SOUTH KINGSTOWN, RHODE ISLAND**

SCHEMATIC, NOT TO SCALE

FIGURE 6

IV. ROADWAY ADEQUACY

The intersection capacity analyses were prepared using the methodology described in the Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB) for the existing and build traffic volume scenarios to simulate the traffic impact of a proposed Mixed-Use Development on the adjacent roadway network. As documented in the HCM, intersection performance is influenced by a number of factors, including: traffic demand; lane configurations; lane widths; turning restrictions; roadway grades; and signal phasing. The existing physical roadway characteristics and signal phasing and timing settings were determined by observing conditions in the field and reviewing the current traffic control signal plans provided by the Rhode Island Department of Transportation.

Synchro™ software (Version 9) was used to model the study intersections based on the parameters mentioned above. The Synchro software is widely utilized by the traffic engineering industry and is consistent with the procedures in the HCM.

Signalized Intersections

Signalized intersections are analyzed in terms of vehicle capacity and motorist delay. Capacity is the maximum rate of vehicle flow through an intersection given typical operating conditions. The number of vehicles traveling through an intersection is divided by the capacity of the intersection to determine an overall volume to capacity ratio (v/c). A v/c value under 1.00 indicates that the number of vehicles traveling through an intersection is less than capacity.

As stated in the HCM, level of service for signalized intersections is defined in terms of control delay. Control delay measures the increase in delay a motorist experiences while encountering a traffic control signal. These factors include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. This delay is measured per vehicle for a 15-minute analysis period and is associated with the levels of service, which are summarized in **Table 3** below:

**Table 3 -
Signalized Intersection - Level of Service**

<u>Level of Service</u>	<u>Control Delay per Vehicle (seconds)</u>
A	< 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Level of service A represents the optimum level where most motorists arrive at the subject intersection during the green phase and thus experience virtually no delay. Conversely, level of service F indicates that motorists are delayed over 80 seconds while traveling through the intersection, and can often imply a complete breakdown of that location. Level of service D is generally considered the limit of acceptable motorist delay.

Unsignalized Intersections

Unsignalized intersections are generally evaluated in terms of average side street delay, as well as the capacity of the roadway approach. This analysis is based on the random arrival of vehicles and the associated gaps generated by this random arrival within the traffic stream. There is no overall level of service for unsignalized intersections. The relationship between levels of service and average side street delay are summarized in **Table 4** below:

**Table 4 -
Unsignalized Intersection – Level of Service**

<u>Level of Service</u>	<u>Delay Range (seconds)</u>
A	< 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

It should be noted that unsignalized levels of service do not correspond to those for signalized intersections, nor do they constitute warrants for the installation of traffic control signals. It is also recognized that the methodology is overly conservative and that computations can indicate operations at poor levels of service (E or F) with even very low side street volumes, although they often function without serious problems in the real world.

Tables 5 and 6 show the levels of service (LOS) at the subject intersections.

Table 5 - Peak Hour Traffic Operations Summary- Weekday PM

	Current	Background	Build
Route 108 (Kingstown Rd) & Route 138 (Kingstown Rd/Mooresfield Rd)¹	B (14" delay)	B (14" delay)	B (14" delay)
Route 138 (Kingstown Road) EB Right	A/.51/60	A/.51/50	A/.49/55
Route 138 (Kingstown Road) EB Through	B/.49/165	B/.49/170	B/.52/170
Route 138 (Mooresfield Road) WB Through	C/.72/290	C/.72/295	C/.72/295
Route 108 (Kingstown Road) NB Left	B/.70/170	B/.71/175	B/.72/180
Route 108 (Kingstown Road) at site driveway²	-	-	C/.06/25
Route 108 (Kingstown Road) at Curtis Corner Road/Saugatucket Road	B (20" delay)	C (20" delay)	C (20" delay)
Curtis Corner Road EB Through	C/.56/170	C/.57/170	C/.57/180
Saugatucket Road WB Through	C/.56/190	C/.57/190	C/.57/195
Route 108 (Kingstown Road) NB Left	A/.19/35	A/.20/35	A/.20/35
Route 108 (Kingstown Road) NB Through	B/.57/240	B/.57/240	B/.58/250
Route 108 (Kingstown Road) SB Left	A/.16/35	A/.17/35	A/.17/35
Route 108 (Kingstown Road) SB Through	C/.74/330	C/.74/330	C/.75/345

Notes: X/0.0/00 - Level of Service/V/C ratio/95% Q length in feet

¹ – Signalized intersection

² – Unsignalized, controlled movement

Table 6 - Peak Hour Traffic Operations Summary- Saturday Mid-Day

	Current	Background	Build
Route 108 (Kingstown Rd) & Route 138 (Kingstown Rd/Mooresfield Rd)¹	B (14" delay)	B (14" delay)	B (14" delay)
Route 138 (Kingstown Road) EB Right	A/.42/45	A/.43/45	A/.45/45
Route 138 (Kingstown Road) EB Through	B/.56/205	B/.57/210	B/.57/210
Route 138 (Mooresfield Road) WB Through	B/.65/270	B/.66/275	B/.67/280
Route 108 (Kingstown Road) NB Left	B/.71/160	B/.72/160	B/.72/165
Route 108 (Kingstown Road) at site driveway²	-	-	B/.04/25
Route 108 (Kingstown Road) at Curtis Corner Road/Saugatucket Road	B (17" delay)	B (18" delay)	B (20" delay)
Curtis Corner Road EB Through	C/.52/165	C/.56/170	C/.55/175
Saugatucket Road WB Through	B/.46/155	C/.49/160	C/.57/175
Route 108 (Kingstown Road) NB Left	A/.16/35	A/.17/35	A/.18/35
Route 108 (Kingstown Road) NB Through	B/.44/185	B/.42/190	B/.48/210
Route 108 (Kingstown Road) SB Left	A/.07/20	A/.07/20	A/.08/25
Route 108 (Kingstown Road) SB Through	B/.65/275	C/.70/280	C/.70/295

Notes: X/0.0/00 - Level of Service/V/C ratio/95% Q length in feet

¹ – Signalized intersection

² – Unsignalized, controlled movement

V. CONCLUSIONS AND RECOMMENDATIONS

This study investigated the traffic operational changes associated with the proposed retail development at 1860 Kingstown Road during the weekday evening and Saturday mid-day peak traffic periods. For this study, the project is conservatively projected to generate approximately 37 and 51 new vehicular trips during those peak hours, respectively. From a capacity perspective, the adjacent roadway network can readily absorb this small traffic increase; therefore, no modifications to accommodate traffic impacts are proposed for the Physical Alteration Permit submitted to RIDOT.

Projected levels of service for egress from the site driveway is good (C) during the evening peak hour and (B) during the Saturday mid-day peak hour. Capacity is available to accommodate the traffic.

The following is recommended to enhance traffic operations and safety:

1. Site Driveways

Provide the appropriate painted white stop line and double yellow centerline, along with a 30 inch "Stop" sign (R1-1) for the site driveway. Insure that landscaping does not obstruct the sightlines.

2. Site Frontage Sidewalk

Pedestrian counts were conducted at the proposed driveway location during the PM and SAT study hours. The counts conclude two (2) pedestrians/bicyclists in the SAT peak hour and four (4) total in the 2 hours counted (4 PM - 6 PM). There were three (3) pedestrians/bicyclists in the SAT peak hour and thirteen (13) total in the 3 hours counted (11 AM -2 PM). While there are no standards for installing sidewalks, it is being coordinated through RIDOT for a detached sidewalk to be installed along the project frontage of the proposed retail site.

As is evidenced from the table, the existing roadway network can readily absorb the small increase in traffic expected from the retail development with little perceptible change

in traffic operations. The only noticeable change might be during the Saturday mid-day peak hour for those vehicles at the Route 108 (Kingstown Road) at Curtis Corner/Saugatucket Road where the average delay is anticipated to increase about 3" per vehicle. The result will remain well within the acceptable range.

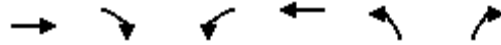
APPENDIX





Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

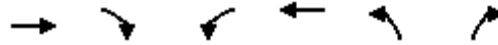
Existing
 Timing Plan: PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	344	433	56	400	351	77
Future Volume (vph)	344	433	56	400	351	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		125	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.976	
Flt Protected				0.994	0.961	
Satd. Flow (prot)	1863	1583	0	1852	1747	0
Flt Permitted				0.915	0.961	
Satd. Flow (perm)	1863	1583	0	1704	1747	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		471			27	
Link Speed (mph)	25			25	25	
Link Distance (ft)	306			634	738	
Travel Time (s)	8.3			17.3	20.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	374	471	61	435	382	84
Shared Lane Traffic (%)						
Lane Group Flow (vph)	374	471	0	496	466	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	1			1	2	
Permitted Phases		1	1			
Detector Phase	1	1	1	1	2	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	9.5	9.5	9.5	9.8	
Total Split (s)	24.5	24.5	24.5	24.5	30.8	
Total Split (%)	44.3%	44.3%	44.3%	44.3%	55.7%	
Maximum Green (s)	20.0	20.0	20.0	20.0	26.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.8	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.8	
Lead/Lag	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.6	2.6	2.6	2.6	2.6	
Recall Mode	Min	Min	Min	Min	None	
Act Effct Green (s)	17.8	17.8		17.8	16.2	
Actuated g/C Ratio	0.41	0.41		0.41	0.37	
v/c Ratio	0.49	0.51		0.72	0.70	
Control Delay	13.6	3.8		20.5	17.4	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	13.6	3.8		20.5	17.4	
LOS	B	A		C	B	
Approach Delay	8.1			20.5	17.4	
Approach LOS	A			C	B	

Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

Existing
 Timing Plan: PM Peak

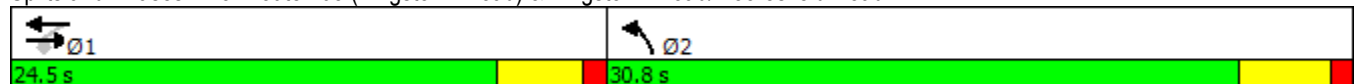


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	63	0		94	96	
Queue Length 95th (ft)	166	50		#289	170	
Internal Link Dist (ft)	226			554	658	
Turn Bay Length (ft)		125				
Base Capacity (vph)	889	1001		813	1094	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.42	0.47		0.61	0.43	

Intersection Summary

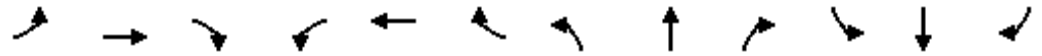
Area Type: Other
 Cycle Length: 55.3
 Actuated Cycle Length: 43.7
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 13.9
 Intersection LOS: B
 Intersection Capacity Utilization 77.9%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road



Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

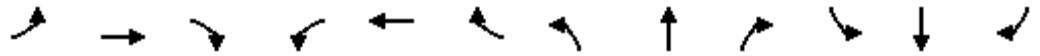
Existing
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	55	77	98	36	126	95	75	365	32	75	442	62
Future Volume (vph)	55	77	98	36	126	95	75	365	32	75	442	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	200		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.942			0.950			0.988			0.982	
Fl _t Protected		0.988			0.993		0.950			0.950		
Satd. Flow (prot)	0	1965	0	0	1992	0	1770	1840	0	1770	1829	0
Fl _t Permitted		0.834			0.934		0.262			0.394		
Satd. Flow (perm)	0	1659	0	0	1873	0	488	1840	0	734	1829	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			30			6			9	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		329			446			364			316	
Travel Time (s)		11.2			15.2			9.9			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	60	84	107	39	137	103	82	397	35	82	480	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	251	0	0	279	0	82	432	0	82	547	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	23.5	23.5		23.5	23.5		10.5	27.0		10.5	27.0	
Total Split (s)	29.5	29.5		29.5	29.5		19.5	46.0		19.5	46.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		20.5%	48.4%		20.5%	48.4%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.0	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.4	2.4		2.4	2.4		2.4	2.7		2.4	2.7	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0			15.0			15.0	
Pedestrian Calls (#/hr)	1	1		1	1			1			1	
Act Effct Green (s)		14.5			14.5		29.2	23.3		28.7	23.1	
Actuated g/C Ratio		0.25			0.25		0.51	0.41		0.50	0.40	
v/c Ratio		0.56			0.56		0.19	0.57		0.16	0.74	
Control Delay		24.0			24.3		6.8	17.2		6.5	22.0	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

Existing
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		24.0			24.3		6.8	17.2		6.5	22.0	
LOS		C			C		A	B		A	C	
Approach Delay		24.0			24.3			15.5			20.0	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		62			73		10	107		10	149	
Queue Length 95th (ft)		170			189		33	237		33	327	
Internal Link Dist (ft)		249			366			284			236	
Turn Bay Length (ft)							200			150		
Base Capacity (vph)		853			956		676	1352		747	1344	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.29			0.29		0.12	0.32		0.11	0.41	

Intersection Summary

Area Type:	Other
Cycle Length:	95
Actuated Cycle Length:	57.1
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.74
Intersection Signal Delay:	19.9
Intersection LOS:	B
Intersection Capacity Utilization:	65.3%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

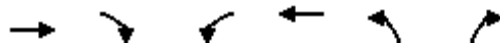
19.5 s	46 s	29.5 s
19.5 s	46 s	29.5 s





Proposed Retail Site- South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

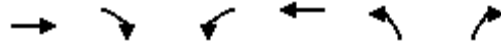
Existing
 Timing Plan: SAT Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	433	363	54	397	330	70
Future Volume (vph)	433	363	54	397	330	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		125	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.976	
Flt Protected				0.994	0.960	
Satd. Flow (prot)	1863	1583	0	1852	1745	0
Flt Permitted				0.906	0.960	
Satd. Flow (perm)	1863	1583	0	1688	1745	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		395			26	
Link Speed (mph)	25			25	25	
Link Distance (ft)	306			634	738	
Travel Time (s)	8.3			17.3	20.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	471	395	59	432	359	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	471	395	0	491	435	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	1			1	2	
Permitted Phases		1	1			
Detector Phase	1	1	1	1	2	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	9.5	9.5	9.5	9.8	
Total Split (s)	24.5	24.5	24.5	24.5	30.8	
Total Split (%)	44.3%	44.3%	44.3%	44.3%	55.7%	
Maximum Green (s)	20.0	20.0	20.0	20.0	26.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.8	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.8	
Lead/Lag	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.6	2.6	2.6	2.6	2.6	
Recall Mode	Min	Min	Min	Min	None	
Act Effct Green (s)	20.3	20.3		20.3	15.3	
Actuated g/C Ratio	0.45	0.45		0.45	0.34	
v/c Ratio	0.56	0.42		0.65	0.71	
Control Delay	13.8	3.2		17.2	18.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	13.8	3.2		17.2	18.9	
LOS	B	A		B	B	
Approach Delay	8.9			17.2	18.9	
Approach LOS	A			B	B	

Proposed Retail Site- South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

Existing
 Timing Plan: SAT Peak

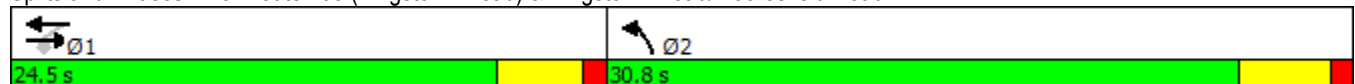


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	81	0		89	87	
Queue Length 95th (ft)	202	43		#266	158	
Internal Link Dist (ft)	226			554	658	
Turn Bay Length (ft)		125				
Base Capacity (vph)	841	931		761	1028	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.56	0.42		0.65	0.42	

Intersection Summary

Area Type: Other
 Cycle Length: 55.3
 Actuated Cycle Length: 45
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 13.6
 Intersection LOS: B
 Intersection Capacity Utilization 80.7%
 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.

Splits and Phases: 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road



Proposed Retail Site- South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

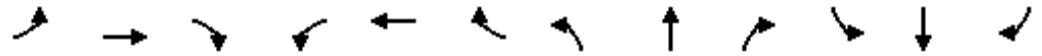
Existing
 Timing Plan: SAT Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	61	93	87	39	111	78	71	287	42	39	378	58
Future Volume (vph)	61	93	87	39	111	78	71	287	42	39	378	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	200		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr _t		0.951			0.954			0.981			0.980	
Fl _t Protected		0.988			0.992		0.950			0.950		
Satd. Flow (prot)	0	1984	0	0	1998	0	1770	1827	0	1770	1825	0
Fl _t Permitted		0.862			0.921		0.313			0.532		
Satd. Flow (perm)	0	1731	0	0	1855	0	583	1827	0	991	1825	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			27			10			10	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		329			446			364			316	
Travel Time (s)		11.2			15.2			9.9			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	66	101	95	42	121	85	77	312	46	42	411	63
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	262	0	0	248	0	77	358	0	42	474	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	23.5	23.5		23.5	23.5		10.5	27.0		10.5	27.0	
Total Split (s)	29.5	29.5		29.5	29.5		19.5	46.0		19.5	46.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		20.5%	48.4%		20.5%	48.4%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.0	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.4	2.4		2.4	2.4		2.4	2.7		2.4	2.7	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0			15.0			15.0	
Pedestrian Calls (#/hr)	5	5		5	5			5			5	
Act Effct Green (s)		14.3			14.3		26.0	23.0		23.9	20.3	
Actuated g/C Ratio		0.28			0.28		0.50	0.45		0.46	0.39	
v/c Ratio		0.52			0.46		0.16	0.44		0.07	0.65	
Control Delay		21.2			19.9		6.8	12.9		6.5	19.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Proposed Retail Site- South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

Existing
 Timing Plan: SAT Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		21.2			19.9		6.8	12.9		6.5	19.3	
LOS		C			B		A	B		A	B	
Approach Delay		21.2			19.9			11.8			18.2	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)		64			60		9	50		5	122	
Queue Length 95th (ft)		165			154		31	183		20	273	
Internal Link Dist (ft)		249			366			284			236	
Turn Bay Length (ft)							200			150		
Base Capacity (vph)		981			1050		721	1445		810	1443	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.27			0.24		0.11	0.25		0.05	0.33	

Intersection Summary

Area Type:	Other
Cycle Length:	95
Actuated Cycle Length:	51.5
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.65
Intersection Signal Delay:	17.1
Intersection LOS:	B
Intersection Capacity Utilization:	61.3%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

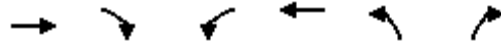
19.5 s	46 s	29.5 s
19.5 s	46 s	29.5 s





Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

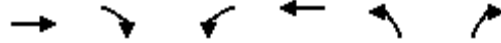
Background
 Timing Plan: PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	347	437	57	404	355	78
Future Volume (vph)	347	437	57	404	355	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		125	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.976	
Flt Protected				0.994	0.961	
Satd. Flow (prot)	1863	1583	0	1852	1747	0
Flt Permitted				0.914	0.961	
Satd. Flow (perm)	1863	1583	0	1703	1747	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		475			27	
Link Speed (mph)	25			25	25	
Link Distance (ft)	306			634	738	
Travel Time (s)	8.3			17.3	20.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	377	475	62	439	386	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	475	0	501	471	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	1			1	2	
Permitted Phases		1	1			
Detector Phase	1	1	1	1	2	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	9.5	9.5	9.5	9.8	
Total Split (s)	24.5	24.5	24.5	24.5	30.8	
Total Split (%)	44.3%	44.3%	44.3%	44.3%	55.7%	
Maximum Green (s)	20.0	20.0	20.0	20.0	26.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.8	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.8	
Lead/Lag	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.6	2.6	2.6	2.6	2.6	
Recall Mode	Min	Min	Min	Min	None	
Act Effct Green (s)	18.1	18.1		18.1	16.4	
Actuated g/C Ratio	0.41	0.41		0.41	0.37	
v/c Ratio	0.49	0.51		0.72	0.71	
Control Delay	13.7	3.8		20.8	17.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	13.7	3.8		20.8	17.7	
LOS	B	A		C	B	
Approach Delay	8.2			20.8	17.7	
Approach LOS	A			C	B	

Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

Background
 Timing Plan: PM Peak

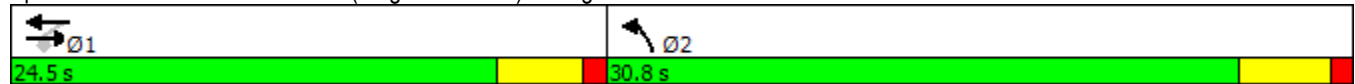


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	64	0		96	97	
Queue Length 95th (ft)	168	50		#292	173	
Internal Link Dist (ft)	226			554	658	
Turn Bay Length (ft)		125				
Base Capacity (vph)	878	997		803	1135	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.43	0.48		0.62	0.41	

Intersection Summary

Area Type: Other
 Cycle Length: 55.3
 Actuated Cycle Length: 44.1
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 14.1
 Intersection LOS: B
 Intersection Capacity Utilization 78.6%
 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.

Splits and Phases: 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road



Proposed Retail Site - South Kingstown RI

Background

7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

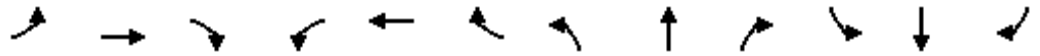
Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	56	78	99	36	127	96	76	370	32	76	446	63
Future Volume (vph)	56	78	99	36	127	96	76	370	32	76	446	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	200		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.943			0.950			0.988			0.982	
Flt Protected		0.988			0.993		0.950			0.950		
Satd. Flow (prot)	0	1967	0	0	1992	0	1770	1840	0	1770	1829	0
Flt Permitted		0.831			0.934		0.257			0.389		
Satd. Flow (perm)	0	1654	0	0	1873	0	479	1840	0	725	1829	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			30			6			9	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		329			446			364			316	
Travel Time (s)		11.2			15.2			9.9			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	85	108	39	138	104	83	402	35	83	485	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	254	0	0	281	0	83	437	0	83	553	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	23.5	23.5		23.5	23.5		10.5	27.0		10.5	27.0	
Total Split (s)	29.5	29.5		29.5	29.5		19.5	46.0		19.5	46.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		20.5%	48.4%		20.5%	48.4%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.0	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.4	2.4		2.4	2.4		2.4	2.7		2.4	2.7	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0			15.0			15.0	
Pedestrian Calls (#/hr)	1	1		1	1			1			1	
Act Effct Green (s)		14.7			14.7		29.6	23.7		29.1	23.4	
Actuated g/C Ratio		0.25			0.25		0.51	0.41		0.50	0.41	
v/c Ratio		0.57			0.57		0.20	0.57		0.17	0.74	
Control Delay		24.4			24.5		6.9	17.3		6.6	22.3	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

Background
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		24.4			24.5		6.9	17.3		6.6	22.3	
LOS		C			C		A	B		A	C	
Approach Delay		24.4			24.5			15.6			20.2	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		64			75		10	110		10	152	
Queue Length 95th (ft)		174			193		33	242		33	335	
Internal Link Dist (ft)		249			366			284			236	
Turn Bay Length (ft)							200			150		
Base Capacity (vph)		843			949		670	1341		742	1334	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.30			0.30		0.12	0.33		0.11	0.41	

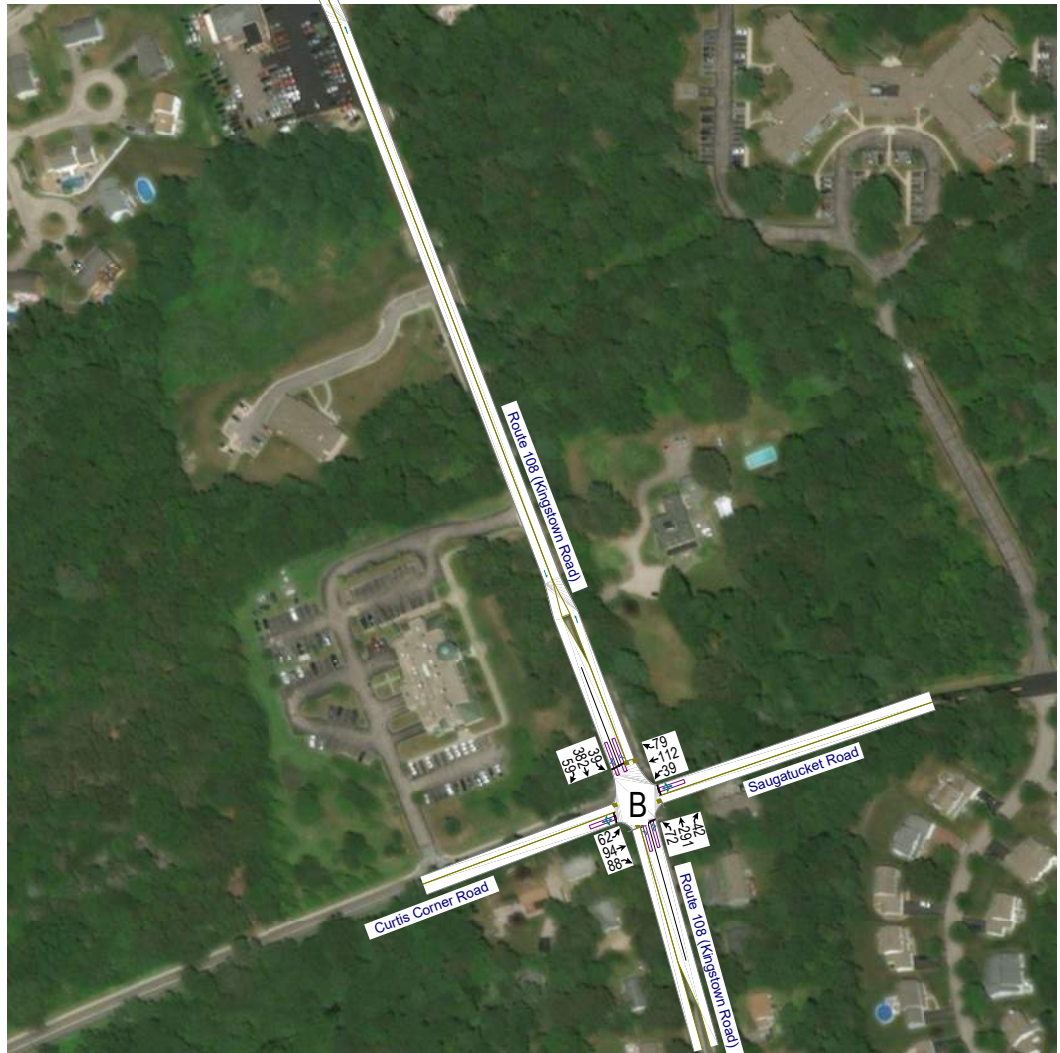
Intersection Summary

Area Type:	Other
Cycle Length:	95
Actuated Cycle Length:	57.7
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.74
Intersection Signal Delay:	20.1
Intersection LOS:	C
Intersection Capacity Utilization:	66.0%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

19.5 s	46 s	29.5 s
19.5 s	46 s	29.5 s





Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

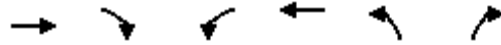
Background
 Timing Plan: SAT Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	437	367	55	401	333	71
Future Volume (vph)	437	367	55	401	333	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		125	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.976	
Flt Protected				0.994	0.960	
Satd. Flow (prot)	1863	1583	0	1852	1745	0
Flt Permitted				0.904	0.960	
Satd. Flow (perm)	1863	1583	0	1684	1745	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		399			26	
Link Speed (mph)	25			25	25	
Link Distance (ft)	306			634	738	
Travel Time (s)	8.3			17.3	20.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	475	399	60	436	362	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	475	399	0	496	439	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	1			1	2	
Permitted Phases		1	1			
Detector Phase	1	1	1	1	2	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	9.5	9.5	9.5	9.8	
Total Split (s)	24.5	24.5	24.5	24.5	30.8	
Total Split (%)	44.3%	44.3%	44.3%	44.3%	55.7%	
Maximum Green (s)	20.0	20.0	20.0	20.0	26.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.8	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.8	
Lead/Lag	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.6	2.6	2.6	2.6	2.6	
Recall Mode	Min	Min	Min	Min	None	
Act Effct Green (s)	20.3	20.3		20.3	15.4	
Actuated g/C Ratio	0.45	0.45		0.45	0.34	
v/c Ratio	0.57	0.43		0.66	0.72	
Control Delay	14.0	3.2		17.6	19.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	14.0	3.2		17.6	19.0	
LOS	B	A		B	B	
Approach Delay	9.1			17.6	19.0	
Approach LOS	A			B	B	

Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

Background
 Timing Plan: SAT Peak

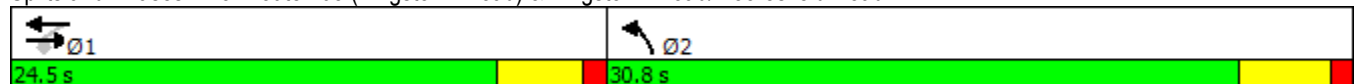


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	82	0		90	88	
Queue Length 95th (ft)	206	44		#271	160	
Internal Link Dist (ft)	226			554	658	
Turn Bay Length (ft)		125				
Base Capacity (vph)	837	931		757	1027	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.57	0.43		0.66	0.43	

Intersection Summary

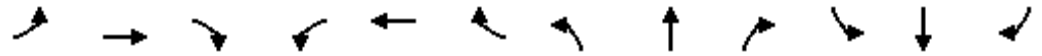
Area Type: Other
 Cycle Length: 55.3
 Actuated Cycle Length: 45.1
 Natural Cycle: 40
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 13.8
 Intersection LOS: B
 Intersection Capacity Utilization 81.4%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road



Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

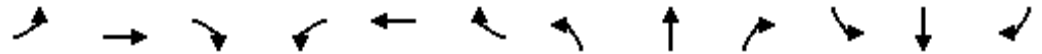
Background
 Timing Plan: SAT Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	62	94	88	39	112	79	72	291	42	39	382	59
Future Volume (vph)	62	94	88	39	112	79	72	291	42	39	382	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	200		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.951			0.954			0.981			0.980	
Flt Protected		0.988			0.992		0.950			0.950		
Satd. Flow (prot)	0	1984	0	0	1998	0	1770	1827	0	1770	1825	0
Flt Permitted		0.845			0.915		0.286			0.545		
Satd. Flow (perm)	0	1696	0	0	1843	0	533	1827	0	1015	1825	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			27			10			10	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		329			446			364			316	
Travel Time (s)		11.2			15.2			9.9			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	67	102	96	42	122	86	78	316	46	42	415	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	250	0	78	362	0	42	479	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	23.5	23.5		23.5	23.5		10.5	27.0		10.5	27.0	
Total Split (s)	29.5	29.5		29.5	29.5		19.5	46.0		19.5	46.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		20.5%	48.4%		20.5%	48.4%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.0	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.4	2.4		2.4	2.4		2.4	2.7		2.4	2.7	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0			15.0			15.0	
Pedestrian Calls (#/hr)	1	1		1	1			1			1	
Act Effct Green (s)		14.4			14.4		28.8	25.6		25.5	20.3	
Actuated g/C Ratio		0.27			0.27		0.53	0.47		0.47	0.37	
v/c Ratio		0.56			0.49		0.17	0.42		0.07	0.70	
Control Delay		23.0			21.2		6.8	12.5		6.5	21.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

Background
 Timing Plan: SAT Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		23.0			21.2		6.8	12.5		6.5	21.5	
LOS		C			C		A	B		A	C	
Approach Delay		23.0			21.2			11.5			20.3	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		66			61		9	51		5	125	
Queue Length 95th (ft)		170			157		32	188		20	280	
Internal Link Dist (ft)		249			366			284			236	
Turn Bay Length (ft)							200			150		
Base Capacity (vph)		902			978		697	1393		825	1391	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.29			0.26		0.11	0.26		0.05	0.34	

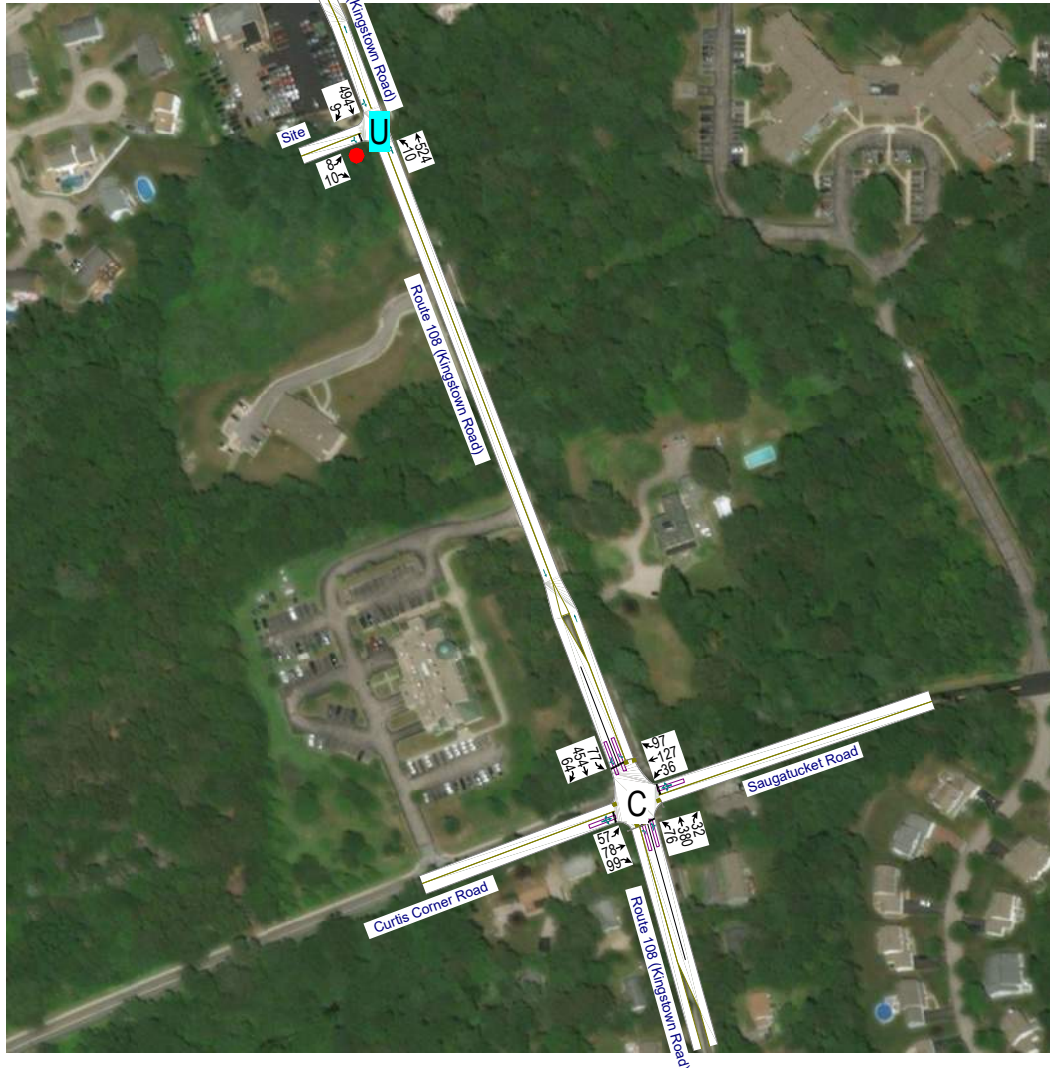
Intersection Summary

Area Type:	Other
Cycle Length:	95
Actuated Cycle Length:	54.2
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	18.3
Intersection LOS:	B
Intersection Capacity Utilization	61.9%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

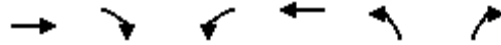
Ø1 19.5 s	Ø2 46 s	Ø4 29.5 s
Ø5 19.5 s	Ø6 46 s	Ø8 29.5 s





Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

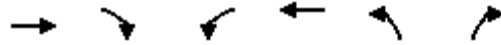
Build
 Timing Plan: PM Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	347	444	59	404	361	80
Future Volume (vph)	347	444	59	404	361	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		125	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.975	
Flt Protected				0.994	0.961	
Satd. Flow (prot)	1863	1583	0	1852	1745	0
Flt Permitted				0.911	0.961	
Satd. Flow (perm)	1863	1583	0	1697	1745	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		483			27	
Link Speed (mph)	25			25	25	
Link Distance (ft)	306			634	738	
Travel Time (s)	8.3			17.3	20.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	377	483	64	439	392	87
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	483	0	503	479	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	1			1	2	
Permitted Phases		1	1			
Detector Phase	1	1	1	1	2	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	9.5	9.5	9.5	9.8	
Total Split (s)	24.5	24.5	24.5	24.5	30.8	
Total Split (%)	44.3%	44.3%	44.3%	44.3%	55.7%	
Maximum Green (s)	20.0	20.0	20.0	20.0	26.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.8	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.8	
Lead/Lag	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.6	2.6	2.6	2.6	2.6	
Recall Mode	Min	Min	Min	Min	None	
Act Effct Green (s)	18.3	18.3		18.3	16.6	
Actuated g/C Ratio	0.41	0.41		0.41	0.37	
v/c Ratio	0.49	0.52		0.72	0.72	
Control Delay	13.8	3.8		21.1	18.1	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	13.8	3.8		21.1	18.1	
LOS	B	A		C	B	
Approach Delay	8.2			21.1	18.1	
Approach LOS	A			C	B	

Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

Build
 Timing Plan: PM Peak

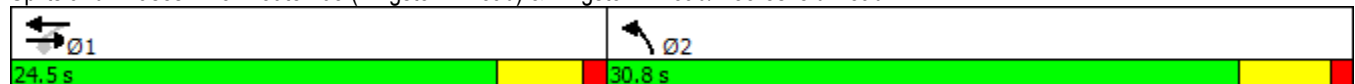


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	65	0		98	99	
Queue Length 95th (ft)	168	51		#295	177	
Internal Link Dist (ft)	226			554	658	
Turn Bay Length (ft)		125				
Base Capacity (vph)	868	995		791	1068	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.43	0.49		0.64	0.45	

Intersection Summary

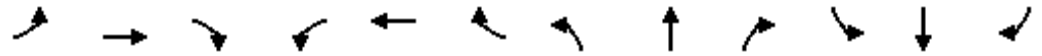
Area Type: Other
 Cycle Length: 55.3
 Actuated Cycle Length: 44.5
 Natural Cycle: 45
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 14.3
 Intersection LOS: B
 Intersection Capacity Utilization 79.2%
 ICU Level of Service D
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road



Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

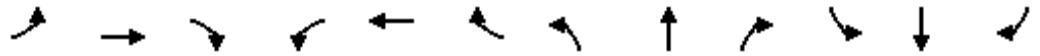
Build
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	57	78	99	36	127	97	76	380	32	77	454	64
Future Volume (vph)	57	78	99	36	127	97	76	380	32	77	454	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	200		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.943			0.950			0.988			0.981	
Flt Protected		0.988			0.993		0.950			0.950		
Satd. Flow (prot)	0	1967	0	0	1992	0	1770	1840	0	1770	1827	0
Flt Permitted		0.824			0.933		0.252			0.377		
Satd. Flow (perm)	0	1640	0	0	1871	0	469	1840	0	702	1827	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			31			6			9	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		329			446			364			316	
Travel Time (s)		11.2			15.2			9.9			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	62	85	108	39	138	105	83	413	35	84	493	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	255	0	0	282	0	83	448	0	84	563	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	23.5	23.5		23.5	23.5		10.5	27.0		10.5	27.0	
Total Split (s)	29.5	29.5		29.5	29.5		19.5	46.0		19.5	46.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		20.5%	48.4%		20.5%	48.4%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.0	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.4	2.4		2.4	2.4		2.4	2.7		2.4	2.7	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0			15.0			15.0	
Pedestrian Calls (#/hr)	1	1		1	1			1			1	
Act Effct Green (s)		14.8			14.8		30.1	24.2		29.6	24.0	
Actuated g/C Ratio		0.25			0.25		0.52	0.41		0.51	0.41	
v/c Ratio		0.57			0.57		0.20	0.58		0.17	0.75	
Control Delay		24.9			24.7		6.9	17.5		6.7	22.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

Build
 Timing Plan: PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		24.9			24.7		6.9	17.5		6.7	22.5	
LOS		C			C		A	B		A	C	
Approach Delay		24.9			24.7			15.8			20.4	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		66			76		10	114		10	158	
Queue Length 95th (ft)		177			195		33	250		34	344	
Internal Link Dist (ft)		249			366			284			236	
Turn Bay Length (ft)							200			150		
Base Capacity (vph)		828			939		663	1330		732	1321	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.31			0.30		0.13	0.34		0.11	0.43	

Intersection Summary

Area Type:	Other
Cycle Length:	95
Actuated Cycle Length:	58.4
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	20.4
Intersection LOS:	C
Intersection Capacity Utilization:	66.7%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

19.5 s	46 s	29.5 s
19.5 s	46 s	29.5 s

Proposed Retail Site - South Kingstown RI
 12: Route 108 (Kingstown Road) & Site

Build
 Timing Plan: PM Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	10	10	524	494	9
Future Volume (vph)	8	10	10	524	494	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.926				0.998	
Flt Protected	0.978			0.999		
Satd. Flow (prot)	1687	0	0	1861	1859	0
Flt Permitted	0.978			0.999		
Satd. Flow (perm)	1687	0	0	1861	1859	0
Link Speed (mph)	30			25	25	
Link Distance (ft)	118			715	191	
Travel Time (s)	2.7			19.5	5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	11	11	570	537	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	0	581	547	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	45.6%
Analysis Period (min)	15
	ICU Level of Service A

Proposed Retail Site - South Kingstown RI
 12: Route 108 (Kingstown Road) & Site

Build
 Timing Plan: PM Peak

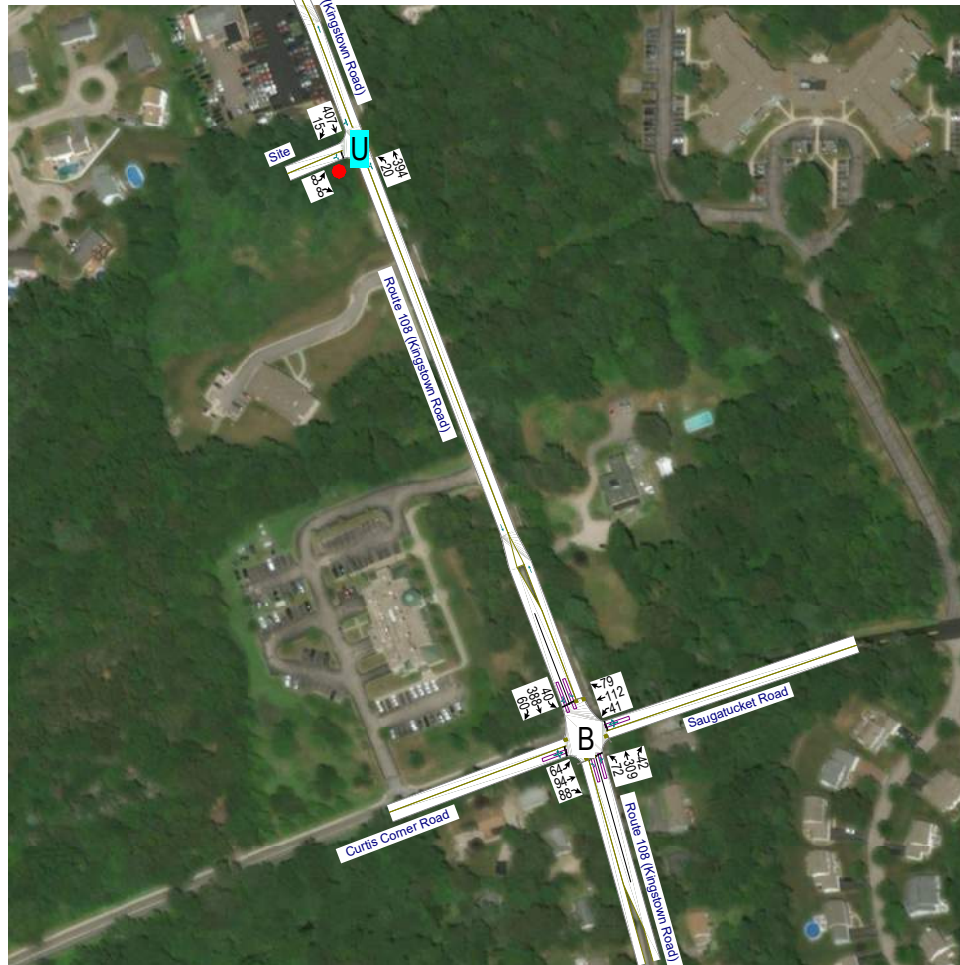
Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	8	10	10	524	494	9
Future Vol, veh/h	8	10	10	524	494	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	11	11	570	537	10

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	1134	542	547	0	-	0
Stage 1	542	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	224	540	1022	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	553	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	220	540	1022	-	-	-
Mov Cap-2 Maneuver	220	-	-	-	-	-
Stage 1	574	-	-	-	-	-
Stage 2	553	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.7	0.2	0
HCM LOS	C		

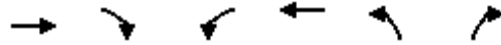
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1022	-	328	-	-
HCM Lane V/C Ratio	0.011	-	0.06	-	-
HCM Control Delay (s)	8.6	0	16.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-





Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

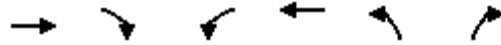
Build
 Timing Plan: SAT Peak



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↑		↑	↑	
Traffic Volume (vph)	437	379	58	401	339	73
Future Volume (vph)	437	379	58	401	339	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		125	0		0	0
Storage Lanes		1	0		1	0
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.976	
Flt Protected				0.994	0.960	
Satd. Flow (prot)	1863	1583	0	1852	1745	0
Flt Permitted				0.899	0.960	
Satd. Flow (perm)	1863	1583	0	1675	1745	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		412			26	
Link Speed (mph)	25			25	25	
Link Distance (ft)	306			634	738	
Travel Time (s)	8.3			17.3	20.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	475	412	63	436	368	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	475	412	0	499	447	0
Turn Type	NA	Perm	Perm	NA	Prot	
Protected Phases	1			1	2	
Permitted Phases		1	1			
Detector Phase	1	1	1	1	2	
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	9.5	9.5	9.5	9.5	9.8	
Total Split (s)	24.5	24.5	24.5	24.5	30.8	
Total Split (%)	44.3%	44.3%	44.3%	44.3%	55.7%	
Maximum Green (s)	20.0	20.0	20.0	20.0	26.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.8	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.8	
Lead/Lag	Lead	Lead	Lead	Lead	Lag	
Lead-Lag Optimize?						
Vehicle Extension (s)	2.6	2.6	2.6	2.6	2.6	
Recall Mode	Min	Min	Min	Min	None	
Act Effct Green (s)	20.2	20.2		20.2	15.7	
Actuated g/C Ratio	0.45	0.45		0.45	0.35	
v/c Ratio	0.57	0.44		0.67	0.72	
Control Delay	14.3	3.3		18.3	19.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	14.3	3.3		18.3	19.0	
LOS	B	A		B	B	
Approach Delay	9.2			18.3	19.0	
Approach LOS	A			B	B	

Proposed Retail Site - South Kingstown RI
 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road

Build
 Timing Plan: SAT Peak

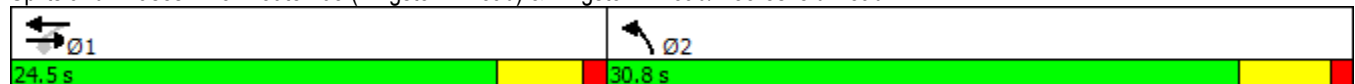


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Queue Length 50th (ft)	83	0		93	90	
Queue Length 95th (ft)	210	45		#279	164	
Internal Link Dist (ft)	226			554	658	
Turn Bay Length (ft)		125				
Base Capacity (vph)	831	934		747	1023	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.57	0.44		0.67	0.44	

Intersection Summary

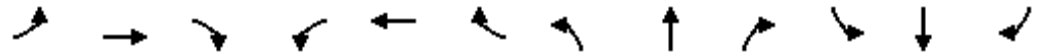
Area Type:	Other
Cycle Length:	55.3
Actuated Cycle Length:	45.3
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	14.1
Intersection LOS:	B
Intersection Capacity Utilization	82.0%
ICU Level of Service	E
Analysis Period (min)	15
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.	

Splits and Phases: 3: Route 108 (Kingstown Road) & Kingstown Road/Mooresfield Road



Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

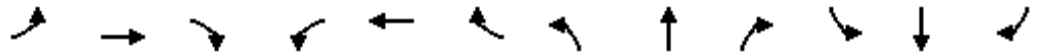
Build
 Timing Plan: SAT Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	64	94	88	41	112	79	72	309	42	40	388	60
Future Volume (vph)	64	94	88	41	112	79	72	309	42	40	388	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	0		0	0		0	200		0	150		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	25			25			75			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.952			0.954			0.982			0.980	
Flt Protected		0.987			0.991		0.950			0.950		
Satd. Flow (prot)	0	1984	0	0	1996	0	1770	1829	0	1770	1825	0
Flt Permitted		0.840			0.909		0.290			0.495		
Satd. Flow (perm)	0	1688	0	0	1831	0	540	1829	0	922	1825	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29			26			9			10	
Link Speed (mph)		20			20			25			25	
Link Distance (ft)		329			446			364			316	
Travel Time (s)		11.2			15.2			9.9			8.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	102	96	45	122	86	78	336	46	43	422	65
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	268	0	0	253	0	78	382	0	43	487	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		6.0	10.0		6.0	10.0	
Minimum Split (s)	23.5	23.5		23.5	23.5		10.5	27.0		10.5	27.0	
Total Split (s)	29.5	29.5		29.5	29.5		19.5	46.0		19.5	46.0	
Total Split (%)	31.1%	31.1%		31.1%	31.1%		20.5%	48.4%		20.5%	48.4%	
Maximum Green (s)	25.0	25.0		25.0	25.0		15.0	41.0		15.0	41.0	
Yellow Time (s)	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.5		1.0	1.5	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	2.4	2.4		2.4	2.4		2.4	2.7		2.4	2.7	
Recall Mode	None	None		None	None		None	Min		None	Min	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	12.0	12.0		12.0	12.0			15.0			15.0	
Pedestrian Calls (#/hr)	1	1		1	1			1			1	
Act Effct Green (s)		14.7			14.7		28.2	23.8		25.9	20.7	
Actuated g/C Ratio		0.27			0.27		0.51	0.43		0.47	0.38	
v/c Ratio		0.57			0.50		0.17	0.48		0.08	0.70	
Control Delay		23.1			21.4		7.0	14.9		6.6	21.8	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	

Proposed Retail Site - South Kingstown RI
 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

Build
 Timing Plan: SAT Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay		23.1			21.4		7.0	14.9		6.6	21.8	
LOS		C			C		A	B		A	C	
Approach Delay		23.1			21.4			13.6			20.5	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)		67			62		10	90		5	127	
Queue Length 95th (ft)		173			160		33	204		21	289	
Internal Link Dist (ft)		249			366			284			236	
Turn Bay Length (ft)							200			150		
Base Capacity (vph)		890			963		695	1380		796	1378	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.30			0.26		0.11	0.28		0.05	0.35	

Intersection Summary

Area Type:	Other
Cycle Length:	95
Actuated Cycle Length:	54.9
Natural Cycle:	65
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.70
Intersection Signal Delay:	19.0
Intersection LOS:	B
Intersection Capacity Utilization:	62.3%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 7: Route 108 (Kingstown Road) & Curtis Corner Road/Saugatucket Road

19.5 s	46 s	29.5 s
19.5 s	46 s	29.5 s

Proposed Retail Site - South Kingstown RI
 11: Route 108 (Kingstown Road) & Site

Build
 Timing Plan: SAT Peak



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	8	20	394	407	15
Future Volume (vph)	8	8	20	394	407	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.932				0.995	
Flt Protected	0.976			0.998		
Satd. Flow (prot)	1694	0	0	1859	1853	0
Flt Permitted	0.976			0.998		
Satd. Flow (perm)	1694	0	0	1859	1853	0
Link Speed (mph)	30			25	25	
Link Distance (ft)	120			673	233	
Travel Time (s)	2.7			18.4	6.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	9	22	428	442	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	18	0	0	450	458	0
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	47.0% ICU Level of Service A
Analysis Period (min)	15

Proposed Retail Site - South Kingstown RI
 11: Route 108 (Kingstown Road) & Site

Build
 Timing Plan: SAT Peak

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		T
Traffic Vol, veh/h	8	8	20	394	407	15
Future Vol, veh/h	8	8	20	394	407	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	9	22	428	442	16

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	922	450	458	0	-	0
Stage 1	450	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	300	609	1103	-	-	-
Stage 1	642	-	-	-	-	-
Stage 2	628	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	292	609	1103	-	-	-
Mov Cap-2 Maneuver	292	-	-	-	-	-
Stage 1	625	-	-	-	-	-
Stage 2	628	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.5	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1103	-	395	-	-
HCM Lane V/C Ratio	0.02	-	0.044	-	-
HCM Control Delay (s)	8.3	0	14.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-