



December 22, 2020

Mr. Alex Petrucci  
5A Builders, LLC  
15 Robertson Road  
Narragansett, Rhode Island 02882

Re: Proposed Land Development Project  
*The Village at Curtis Corner*  
Curtis Corner Road, South Kingstown, RI  
Supplemental Traffic Information

Dear Mr. Petrucci:

BETA Group, Inc., has prepared this letter to supplement the Traffic Impact Study prepared by our office in February, 2020 as part of the Village at Curtis Corner residential development project. A recent Planning Board meeting was held on December 1, 2020 to review the project and several questions on existing and future traffic conditions were raised by the Board. In an effort to address these questions, BETA completed additional review and analysis to help define the future operational conditions of the servicing roadways including expanding our study to review the Curtis Corner Road intersection with Kingstown Road in the immediate site vicinity.

Based upon the small scope of the development project which includes a 32 unit residential neighborhood with low anticipated daily and peak hour vehicular trip volumes, the initial study focused on the regulatory requirement to demonstrate that a development project has adequate and safe access to a public street for both vehicular and pedestrian traffic. The initial study reviewed the existing physical characteristics of the servicing roadways including roadway widths, horizontal and vertical geometry and regulatory control. The presence of sidewalks, lighting and other features conducive of safe vehicular and pedestrian access were documented. In addition, traffic accident data was obtained from the South Kingstown Police Department to determine if there was a history of a high occurrence or severity of crashes in the project area that warranted mitigation.

The study found that there were no limiting physical conditions on Curtis Corner Road in the immediate site vicinity that would hinder safe and adequate access for vehicular traffic to the new neighborhood. The only concern found in our review of the existing infrastructure was overgrown vegetation along the property frontage which was recommended to be cleared and trimmed as necessary to maintain sight lines at the proposed subdivision road intersection with Curtis Corner Road.

In an effort to document the vehicular traffic conditions at the adjacent signalized intersection as requested by the Board, BETA obtained record count data available from a recent study completed in this area of the town. The data included daily and peak hour turning movement counts during the periods of both local schools and the University of Rhode Island being in session in November of 2019. A summary of the traffic data and an operational analysis of the signalized intersection is provided in the following sections.

**Traffic Data**

The most recent data was obtained in November, 2019 during the school calendar year where both automatic traffic recorder (ATR) and manual turning movement counts (TMC) were completed. This data would represent peak seasonal traffic conditions in this area of the town as there is an adjacent middle school and a major contributor to traffic along the Route 108 corridor, URI, was in session.

Curtis Corner Road is heavily influenced by the *Curtis Corner Middle School* during the school year, creating peak hour traffic conditions along this segment of Curtis Corner Road during the arrival and dismissal periods of the school. Based upon the ATR data obtained, Curtis Corner Road west of Route 108 was found to service a low Average Daily Traffic (ADT) volume of approximately 4,800 vehicles per day. On a typical weekday along Curtis Corner Road, traffic volumes begin to increase at 5:00 AM, with the morning commuter/school peak hour occurring between 7:00 and 8:00 AM. During this hour, an average of approximately 550 vehicles were recorded. After 9:00 AM, volumes decreased substantially and remained consistent to between 200 and 300 vehicles per hour until the early afternoon peak of approximately 450 serviced between 2:00 and 3:00 PM associated with the school dismissal period. Volumes then decreased until the afternoon commuter peak where a similar volume of 450 is serviced between 4:00 and 5:00 PM. Complete count information can be found in the Attachment.

In addition to automatic recorder vehicle counts, the turning movement data was also collected at the Curtis Corner Road intersection with Route 108. This data was found to be consistent with the hourly volumes obtained from the automatic count program and can be found in the Attachment.

**Trip Generation and Analysis**

To understand the potential traffic impact of the proposed development, an estimate of anticipated traffic to be generated by the proposed land use was calculated. As previously discussed, this residential development proposal includes construction of 16 single family homes and 8 duplex units on an undeveloped 28.1-acre lot on the northerly side of Curtis Corner Road west of Kingstown Road (Route 108). Access to the new homes will be provided via a new cul-de-sac residential road containing 22 separate lots with the required frontage and size per current zoning regulations. In addition, two separate lots will have a shared access driveway along Curtis Corner Road just west of the new residential street.

For the proposed residential neighborhood, Land Use Code 210 Single-Family Detached Housing and Land Use Code 220 Multifamily Housing (Low-Rise) were reviewed for applicability in developing an estimate of site related vehicle trips. The appropriate worksheets from the manual are included in the Appendix along with the trip estimate calculations. The table below summarizes the estimated trip volumes calculated for this project

Trip Generation Estimate

	Description	Enter	Exit	Total
<u>AM PEAK HOUR</u>				
ITE Land Use Code 210	Single-Family Detached Housing	3	9	12
ITE Land Use Code 220	Multifamily Housing (Low-Rise)	1	3	4
	Total	4	12	16



PM PEAK HOUR

ITE Land Use Code 210	Single-Family Detached Housing	10	6	16
ITE Land Use Code 220	Multifamily Housing (Low-Rise)	<u>3</u>	<u>2</u>	<u>5</u>
	Total	13	8	21

As can be seen in the table, the residential development will add a minor hourly volume of additional traffic on the servicing roadways, specifically Curtis Corner Road at the new site access road intersection. This new intersection, as demonstrated in the original TIS will have all critical movements operate at a good Level of Service B or better during the daily peak hours as identified. Noting these low hourly volumes which would contribute less than one additional vehicle per signal cycle at the Curtis Corner Road intersection with Route 108, a detailed analysis was not determined necessary at this location in the original TIS. As requested in the Planning Board hearing earlier this month, we have completed a review of the intersection including an analysis to demonstrate that the intersection presently, and in the future, operates at an acceptable Level of Service.

Curtis Corner Road and Saugatucket Road intersect Route 108 to form a 4-Way, signalized intersection. The Route 108 northbound and southbound approaches provide a separate left turn lane and a shared thru/right turn lane. The Curtis Corner Road eastbound and Saugatucket Road westbound approaches provide a single all-purpose lane. Marked crosswalks with curb ramps are provided across all approaches to the intersection.



The adjacent photograph depicts the typical characteristics of the intersection looking west approaching from Saugatucket Road. The traffic signal system is in good condition as it was reconstructed within the last two years with new equipment and the addition of separate left turn lanes and phasing on Route 108 that has greatly improved operations and safety. The layout of the equipment consists of mast arm mounted signal heads with in-road vehicle loop detection. A combination of pole and pedestal mounted pedestrian signal heads with countdown timers and pedestrian push buttons are present at the intersection for pedestrian accommodations.

The intersection was determined to operate in a fully actuated mode consisting of three phases. Route 108 northbound and southbound movements are serviced in two phases including an advanced protected left, followed by left/through/right concurrent movements. The Curtis Corner Road eastbound and Saugatucket Road westbound approaches are serviced under a single permitted phase.

The intersection was analyzed for the existing and future build conditions during the daily morning and afternoon peak hours. The site traffic was added to the existing base traffic conditions as previously identified

after existing volumes were expanded including the potential relocation of the high school to the location of the existing Curtis Corner Middle School situated to the west of the subject property. This future estimated condition would yield a conservative analysis of future intersection operations.

Existing Level of Service Summary

Location / Movement	EXISTING CONDITIONS							
	AM Peak Hour				PM Peak Hour			
	LOS	Delay	95 <sup>th</sup> % Queue Length (veh.)	v/c	LOS	Delay	95 <sup>th</sup> % Queue Length (veh.)	v/c
<i>Kingstown Road (Route 108) at Curtis Corner Road/Saugatucket Road (S)</i>								
Curtis Corner Rd EB	C	29.2	10	0.68	C	22.9	6	0.57
Saugatucket Rd WB	B	19.7	8	0.43	B	18.7	7	0.48
Route 108 NB Left	A	9.7	2	0.25	B	10.3	1	0.15
Route 108 NB Thru/Right	C	32.1	13	0.83	C	33.2	9	0.72
Route 108 SB Left	B	10.8	2	0.30	B	15.4	5	0.61
Route 108 SB Thru/Right	C	20.9	10	0.56	B	18.6	6	0.49
OVERALL	C	24.9	-	-	C	21.4	-	-

The above table depicts the current operating conditions at the study intersection. As can be seen in the table, the signalized intersection of Route 108 with Curtis Corner Road/Saugatucket Road operates efficiently at an overall LOS C during both the morning and afternoon peak periods. All critical movements operate at LOS C or better, with no movement experiencing excessive delays or queueing.

Future Level of Service Summary

Location / Movement	BUILD CONDITIONS							
	AM Peak Hour				PM Peak Hour			
	LOS	Delay	95 <sup>th</sup> % Queue Length (veh.)	v/c	LOS	Delay	95 <sup>th</sup> % Queue Length (veh.)	v/c
<i>Kingstown Road (Route 108) at Curtis Corner Road/Saugatucket Road (S)</i>								
Curtis Corner Rd EB	C	33.9	10	0.77	C	31.4	9	0.81
Saugatucket Rd WB	C	22.5	9	0.54	B	17.1	8	0.47
Route 108 NB Left	B	14.6	2	0.48	B	15.4	2	0.19
Route 108 NB Thru/Right	C	32.1	11	0.80	C	34.6	10	0.68
Route 108 SB Left	B	12.7	2	0.31	C	31.1	6	0.76
Route 108 SB Thru/Right	C	30.4	10	0.74	C	29.1	9	0.62
OVERALL	C	28.1	-	-	C	28.4	-	-

The above table presents the estimated future build conditions at the study intersection including the residential development project and factoring in the relocated high school. The signalized intersection of Route 108 with Curtis Corner Road/Saugatucket Road will continue to operate in an acceptable manner at

overall LOS C during both the morning and afternoon peak periods. All critical movements operate at an acceptable LOS C or better, with no movement experiencing excessive delays or queuing. During peak periods of the day around the school arrival and dismissal periods, the intersection can operate in a restricted manner for a short period of time due to the peaking characteristics associated with the adjacent school, but typically approach queues are accommodated in a single phase. During all other periods of the day, the intersection operates efficiently with minimal delays and acceptable operations.

This intersection was greatly improved with the upgrade recently completed by the RIDOT that included both safety and operational enhancements with the introduction of left turn lanes on Route 108 along with protected phasing for this left turn movement. Removing left turning traffic out of the traffic stream now allows through traffic on Route 108 unimpeded access through the intersection during the northbound/southbound phases where previously left turning traffic blocked through movements in the single lane approaches. The safety was also enhanced with the dedicated protected phase that allows left turns in advance of conflicting through traffic, reducing this potential conflict.

It was also our understanding that one other concern was raised regarding the Public Safety Complex and the ability of emergency vehicles to traverse the intersection during peak periods. It should be noted that public safety vehicles have the right-of-way when travelling along a road or through an intersection where drivers are required to yield the right of way. If the local police and fire officials were having access issues at this location, either exiting their driveways or maneuvering through the signal, the recent intersection improvement project completed by the RIDOT would have easily addressed this matter. If it was a safety concern, the local officials would have requested that a pre-emption system be installed at the signal to allow easier or unimpeded access through the junction. This could have been accomplished through a hardwire connection to the station, or installation of an optical emergency pre-emption detection system. These methods of emergency control were not pursued by the public safety officials so it can be concluded that this is not an issue at this facility.

## Summary

In summary, the study has shown that the proposed development project access and circulation plan has been designed to maintain a desirable level of traffic safety and efficiency on the servicing roadway system in the project area. Based upon our analysis of the existing roadway conditions on Curtis Corner Road and its intersections, there appear to be no traffic safety or operational issues that require mitigation other than the recommended vegetative clearing to maintain sight lines in the vicinity of the proposed access road.

We trust that this letter sufficiently addresses the request for additional traffic information relating the development project. If you should have any questions, please do not hesitate to contact our office.

Very truly yours,  
BETA Group, Inc.



Paul J. Bannon  
Associate

# ATTACHMENT

- 
- A. Traffic Volume Data
  - B. Operational Analysis

# APPENDIX A – Traffic Volume Data

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Automatic Traffic Recorder Count

Curtis Corner Road

Intersection Turning Movement Count

Kingstown Road (Route 108) at Curtis Corner Road/Saugatucket Road

A

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Automatic Traffic Recorder Count

Curtis Corner Road



**BETA Group, Inc.**  
 701 George Washington Highway  
 Lincoln, Rhode Island 02865  
 401.333.2382

Project Name: School Development  
 Town/City: South Kingstown, RI  
 Roadway: Curtis Corner Road  
 Location: 1,400 Feet East of Middle School

Start Date: 11/15/2019  
 End Date: 11/22/2019

Time	11/11/19 Mon	11/12/19 Tue	11/13/19 Wed	11/14/19 Thu	11/15/19 Fri	Weekday Average	11/16/19 Sat	11/17/19 Sun
12:00 AM	*	*	*	*	*	*	20	10
01:00	*	*	*	*	*	*	19	11
02:00	*	*	*	*	*	*	8	9
03:00	*	*	*	*	*	*	1	3
04:00	*	*	*	*	*	*	4	3
05:00	*	*	*	*	*	*	24	17
06:00	*	*	*	*	*	*	50	39
07:00	*	*	*	*	*	*	126	52
08:00	*	*	*	*	*	*	187	132
09:00	*	*	*	*	*	*	274	176
10:00	*	*	*	*	*	*	277	209
11:00	*	*	*	*	*	*	330	247
12:00 PM	*	*	*	*	*	*	352	251
01:00	*	*	*	*	*	*	284	232
02:00	*	*	*	*	*	*	288	233
03:00	*	*	*	*	397	397	268	223
04:00	*	*	*	*	422	422	232	192
05:00	*	*	*	*	343	343	218	101
06:00	*	*	*	*	229	229	136	73
07:00	*	*	*	*	153	153	102	95
08:00	*	*	*	*	99	99	78	99
09:00	*	*	*	*	83	83	71	56
10:00	*	*	*	*	80	80	67	20
11:00	*	*	*	*	51	51	37	7
Total	0	0	0	0	1857	1857	3453	2490
Percent	0.0%	0.0%	0.0%	0.0%	100.0%		185.9%	134.1%
AM Peak							12:00 PM	12:00 PM
Volume	0	0	0	0	0	0	352	251
PM Peak					04:00	04:00	12:00 PM	12:00 PM
Volume	0	0	0	0	422	422	352	251

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Time	11/18/19 Mon	11/19/19 Tue	11/20/19 Wed	11/21/19 Thu	11/22/19 Fri	Weekday Average	11/23/19 Sat	11/24/19 Sun
12:00 AM	6	8	9	21	18	12	*	*
01:00	3	7	7	3	4	5	*	*
02:00	1	3	4	2	5	3	*	*
03:00	1	2	5	1	4	3	*	*
04:00	12	18	12	14	14	14	*	*
05:00	39	40	39	37	42	39	*	*
06:00	152	158	164	178	127	156	*	*
07:00	527	556	519	521	541	533	*	*
08:00	388	375	434	376	397	394	*	*
09:00	245	257	257	270	304	267	*	*
10:00	220	259	247	233	262	244	*	*
11:00	257	247	222	240	284	250	*	*
12:00 PM	244	298	283	274	*	275	*	*
01:00	298	325	244	333	*	300	*	*
02:00	452	449	470	428	*	450	*	*
03:00	372	423	394	365	*	388	*	*
04:00	409	484	447	433	*	443	*	*
05:00	293	384	312	329	*	330	*	*
06:00	227	344	253	237	*	265	*	*
07:00	141	150	162	179	*	158	*	*
08:00	91	128	109	129	*	114	*	*
09:00	54	88	78	73	*	73	*	*
10:00	39	49	51	44	*	46	*	*
11:00	22	28	15	27	*	23	*	*
Total	4493	5080	4737	4747	2002	4785	0	0
Percent	93.9%	106.2%	99.0%	99.2%	41.8%		0.0%	0.0%
AM Peak	07:00	07:00	07:00	07:00	07:00	07:00		
Volume	527	556	519	521	541	533	0	0
PM Peak	02:00	04:00	02:00	04:00		02:00		
Volume	452	484	470	433	0	450	0	0

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11/11/2019	11/11/2019		11/12/2019		11/13/2019		11/14/2019		11/15/2019		Weekday Average		11/16/2019		11/17/2019	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	*	*	*	*	*	*	*	*	*	*	*	*	8	12	3	7
1:00	*	*	*	*	*	*	*	*	*	*	*	*	5	14	3	8
2:00	*	*	*	*	*	*	*	*	*	*	*	*	4	4	5	4
3:00	*	*	*	*	*	*	*	*	*	*	*	*	0	1	0	3
4:00	*	*	*	*	*	*	*	*	*	*	*	*	2	2	3	0
5:00	*	*	*	*	*	*	*	*	*	*	*	*	19	5	8	9
6:00	*	*	*	*	*	*	*	*	*	*	*	*	34	16	24	15
7:00	*	*	*	*	*	*	*	*	*	*	*	*	78	48	31	21
8:00	*	*	*	*	*	*	*	*	*	*	*	*	114	73	65	67
9:00	*	*	*	*	*	*	*	*	*	*	*	*	169	105	97	79
10:00	*	*	*	*	*	*	*	*	*	*	*	*	146	131	105	104
11:00	*	*	*	*	*	*	*	*	*	*	*	*	179	151	123	124
12:00 PM	*	*	*	*	*	*	*	*	*	*	*	*	157	195	136	115
1:00	*	*	*	*	*	*	*	*	*	*	*	*	140	144	114	118
2:00	*	*	*	*	*	*	*	*	*	*	*	*	130	158	104	129
3:00	*	*	*	*	*	*	*	*	182	215	182	215	108	160	101	122
4:00	*	*	*	*	*	*	*	*	198	224	198	224	121	111	80	112
5:00	*	*	*	*	*	*	*	*	161	182	161	182	108	110	56	45
6:00	*	*	*	*	*	*	*	*	106	123	106	123	60	76	26	47
7:00	*	*	*	*	*	*	*	*	68	85	68	85	48	54	44	51
8:00	*	*	*	*	*	*	*	*	31	68	31	68	33	45	50	49
9:00	*	*	*	*	*	*	*	*	40	43	40	43	19	52	22	34
10:00	*	*	*	*	*	*	*	*	44	36	44	36	26	41	12	8
11:00	*	*	*	*	*	*	*	*	13	38	13	38	14	23	2	5
Total	0	0	0	0	0	0	0	0	843	1014	843	1014	1722	1731	1214	1276
Day	0	0	0	0	0	0	0	0	1857	1857	1857	1857	3453	3453	2490	2490
AM Peak													11:00	12:00 PM	12:00 PM	11:00
Volume	0	0	0	0	0	0	0	0	0	0	0	0	179	195	136	124
PM Peak									4:00	4:00	4:00	4:00	12:00 PM	12:00 PM	12:00 PM	2:00
Volume	0	0	0	0	0	0	0	0	198	224	198	224	157	195	136	129

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 End Date: 11/22/2019

11/18/2019	11/18/2019		11/19/2019		11/20/2019		11/21/2019		11/22/2019		Weekday Average		11/23/2019		11/24/2019	
Time	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM	4	2	3	5	1	8	4	17	4	14	3	9	*	*	*	*
1:00	1	2	4	3	3	4	1	2	3	1	2	2	*	*	*	*
2:00	0	1	1	2	3	1	1	1	1	4	1	2	*	*	*	*
3:00	1	0	2	0	4	1	1	0	3	1	2	0	*	*	*	*
4:00	9	3	12	6	10	2	10	4	9	5	10	4	*	*	*	*
5:00	30	9	33	7	31	8	30	7	36	6	32	7	*	*	*	*
6:00	96	56	97	61	95	69	102	76	72	55	92	63	*	*	*	*
7:00	281	246	303	253	289	230	276	245	276	265	285	248	*	*	*	*
8:00	215	173	204	171	231	203	193	183	211	186	211	183	*	*	*	*
9:00	129	116	148	109	145	112	159	111	181	123	152	114	*	*	*	*
10:00	119	101	131	128	128	119	129	104	138	124	129	115	*	*	*	*
11:00	132	125	115	132	112	110	117	123	138	146	123	127	*	*	*	*
12:00 PM	123	121	142	156	153	130	142	132	*	*	140	135	*	*	*	*
1:00	134	164	138	187	108	136	154	179	*	*	134	166	*	*	*	*
2:00	241	211	238	211	244	226	222	206	*	*	236	214	*	*	*	*
3:00	165	207	203	220	200	194	153	212	*	*	180	208	*	*	*	*
4:00	204	205	244	240	188	259	211	222	*	*	212	232	*	*	*	*
5:00	105	188	153	231	132	180	135	194	*	*	131	198	*	*	*	*
6:00	93	134	167	177	109	144	109	128	*	*	120	146	*	*	*	*
7:00	57	84	66	84	54	108	69	110	*	*	62	96	*	*	*	*
8:00	29	62	53	75	32	77	44	85	*	*	40	75	*	*	*	*
9:00	19	35	38	50	42	36	28	45	*	*	32	42	*	*	*	*
10:00	19	20	25	24	26	25	17	27	*	*	22	24	*	*	*	*
11:00	7	15	10	18	3	12	7	20	*	*	7	16	*	*	*	*
Total Day	2213	2280	2530	2550	2343	2394	2314	2433	1072	930	2358	2426	0	0	0	0
AM Peak	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	7:00	0	0	0	0
Volume	281	246	303	253	289	230	276	245	276	265	285	248	0	0	0	0
PM Peak	2:00	2:00	4:00	4:00	2:00	4:00	2:00	4:00			2:00	4:00	0	0	0	0
Volume	241	211	244	240	244	259	222	222	0	0	236	232	0	0	0	0
Comb Total ADT	4493		5080		4737		4747		3859		6641		3453		2490	

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## Intersection Turning Movement Count

Kingstown Road (Route 108) at Curtis Corner Road/Saugatucket Road

# Connecticut Counts LLC

Kensington, Connecticut 06037

(860) 828-1693

Kingstown at Curtis Corner/Saugatucket  
S. Kingstown, Rhode Island

File Name : 19823  
Site Code : 19823  
Start Date : 11/21/2019  
Page No : 1

Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Crosswalk - Pedestrians

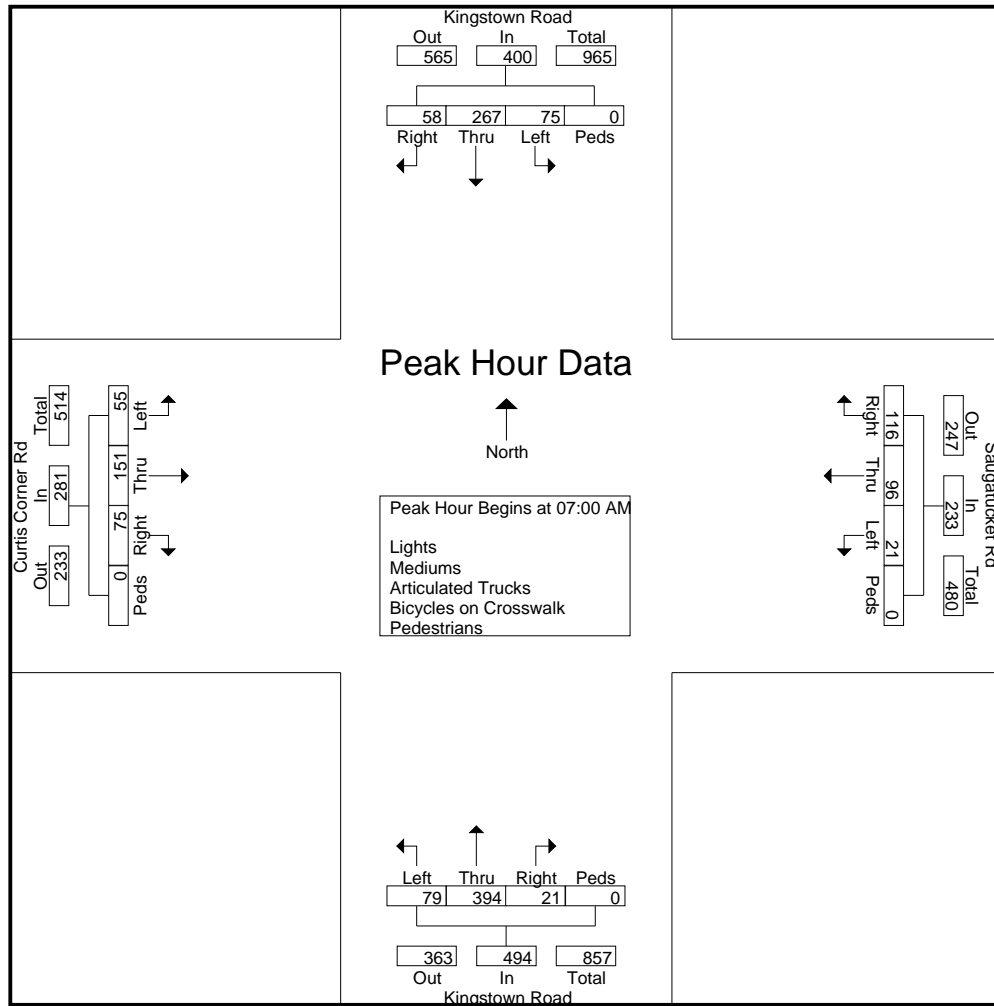
Start Time	Kingstown Road From North					Saugatucket Rd From East					Kingstown Road From South					Curtis Corner Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
06:30 AM	5	26	7	0	38	9	10	4	0	23	10	36	7	0	53	7	14	4	0	25	139
06:45 AM	9	53	16	1	79	9	17	4	0	30	6	40	17	0	63	11	21	5	0	37	209
<b>Total</b>	<b>14</b>	<b>79</b>	<b>23</b>	<b>1</b>	<b>117</b>	<b>18</b>	<b>27</b>	<b>8</b>	<b>0</b>	<b>53</b>	<b>16</b>	<b>76</b>	<b>24</b>	<b>0</b>	<b>116</b>	<b>18</b>	<b>35</b>	<b>9</b>	<b>0</b>	<b>62</b>	<b>348</b>
07:00 AM	22	79	14	0	115	17	33	6	0	56	5	66	27	0	98	22	38	12	0	72	341
07:15 AM	16	83	20	0	119	25	32	4	0	61	4	126	40	0	170	32	56	15	0	103	453
07:30 AM	11	52	25	0	88	44	22	5	0	71	8	126	6	0	140	8	32	14	0	54	353
07:45 AM	9	53	16	0	78	30	9	6	0	45	4	76	6	0	86	13	25	14	0	52	261
<b>Total</b>	<b>58</b>	<b>267</b>	<b>75</b>	<b>0</b>	<b>400</b>	<b>116</b>	<b>96</b>	<b>21</b>	<b>0</b>	<b>233</b>	<b>21</b>	<b>394</b>	<b>79</b>	<b>0</b>	<b>494</b>	<b>75</b>	<b>151</b>	<b>55</b>	<b>0</b>	<b>281</b>	<b>1408</b>
08:00 AM	12	50	25	0	87	25	22	4	0	51	13	86	13	0	112	13	16	19	0	48	298
08:15 AM	17	42	20	0	79	35	27	7	0	69	9	71	10	0	90	19	21	11	0	51	289
08:30 AM	13	64	17	0	94	30	31	5	0	66	7	75	7	0	89	19	20	14	0	53	302
08:45 AM	9	51	23	0	83	78	21	9	0	108	8	59	1	0	68	14	21	18	1	54	313
<b>Total</b>	<b>51</b>	<b>207</b>	<b>85</b>	<b>0</b>	<b>343</b>	<b>168</b>	<b>101</b>	<b>25</b>	<b>0</b>	<b>294</b>	<b>37</b>	<b>291</b>	<b>31</b>	<b>0</b>	<b>359</b>	<b>65</b>	<b>78</b>	<b>62</b>	<b>1</b>	<b>206</b>	<b>1202</b>
09:00 AM	9	59	16	0	84	57	22	7	0	86	6	87	3	0	96	9	18	22	0	49	315
09:15 AM	10	69	9	0	88	58	14	4	0	76	13	86	7	0	106	6	18	11	0	35	305
Grand Total	142	681	208	1	1032	417	260	65	0	742	93	934	144	0	1171	173	300	159	1	633	3578
Apprch %	13.8	66	20.2	0.1		56.2	35	8.8	0		7.9	79.8	12.3	0		27.3	47.4	25.1	0.2		
Total %	4	19	5.8	0	28.8	11.7	7.3	1.8	0	20.7	2.6	26.1	4	0	32.7	4.8	8.4	4.4	0	17.7	
Lights	125	645	192	0	962	388	233	58	0	679	81	908	135	0	1124	162	269	146	0	577	3342
% Lights	88	94.7	92.3	0	93.2	93	89.6	89.2	0	91.5	87.1	97.2	93.8	0	96	93.6	89.7	91.8	0	91.2	93.4
Mediums	17	34	16	0	67	29	25	5	0	59	12	24	9	0	45	11	30	10	0	51	222
% Mediums																					
Articulated Trucks	0	2	0	0	2	0	2	2	0	4	0	2	0	0	2	0	1	3	0	4	12
% Articulated Trucks	0	0.3	0	0	0.2	0	0.8	3.1	0	0.5	0	0.2	0	0	0.2	0	0.3	1.9	0	0.6	0.3
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
% Pedestrians	0	0	0	100	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0.2	0.1

# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

File Name : 19823  
Site Code : 19823  
Start Date : 11/21/2019  
Page No : 2

Start Time	Kingstown Road From North					Saugatucket Rd From East					Kingstown Road From South					Curtis Corner Rd 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 06:30 AM to 09:15 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	22	79	14	0	115	17	33	6	0	56	5	66	27	0	98	22	38	12	0	72	341
07:15 AM	16	83	20	0	119	25	32	4	0	61	4	126	40	0	170	32	56	15	0	103	453
07:30 AM	11	52	25	0	88	44	22	5	0	71	8	126	6	0	140	8	32	14	0	54	353
07:45 AM	9	53	16	0	78	30	9	6	0	45	4	76	6	0	86	13	25	14	0	52	261
Total Volume	58	267	75	0	400	116	96	21	0	233	21	394	79	0	494	75	151	55	0	281	1408
% App. Total	14.5	66.8	18.8	0		49.8	41.2	9	0		4.3	79.8	16	0		26.7	53.7	19.6	0		
PHF	.659	.804	.750	.000	.840	.659	.727	.875	.000	.820	.656	.782	.494	.000	.726	.586	.674	.917	.000	.682	.777



# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

Kingstown at Curtis Corner/Saugatucket  
S. Kingstown, Rhode Island

File Name : 19824  
Site Code : 19824  
Start Date : 11/21/2019  
Page No : 1

## Groups Printed- Lights - Mediums - Articulated Trucks - Bicycles on Crosswalk - Pedestrians

Start Time	Kingstown Road From North					Saugatucket Road From East					Kingstown Road From South					Curtis Corner Road 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	
01:00 PM	3	68	25	0	96	25	19	6	0	50	8	74	5	0	87	9	10	8	0	27	260
01:15 PM	7	76	23	0	106	30	21	5	0	56	3	71	7	0	81	7	22	6	0	35	278
01:30 PM	16	50	32	0	98	22	18	3	0	43	4	85	13	0	102	9	18	7	2	36	279
01:45 PM	19	75	29	0	123	33	26	5	0	64	9	52	7	0	68	11	21	19	0	51	306
<b>Total</b>	<b>45</b>	<b>269</b>	<b>109</b>	<b>0</b>	<b>423</b>	<b>110</b>	<b>84</b>	<b>19</b>	<b>0</b>	<b>213</b>	<b>24</b>	<b>282</b>	<b>32</b>	<b>0</b>	<b>338</b>	<b>36</b>	<b>71</b>	<b>40</b>	<b>2</b>	<b>149</b>	<b>1123</b>
02:00 PM	12	68	32	0	112	24	22	5	0	51	9	56	20	0	85	22	60	7	0	89	337
02:15 PM	5	82	28	0	115	35	28	3	0	66	12	69	9	0	90	13	21	9	1	44	315
02:30 PM	12	85	77	0	174	32	37	8	0	77	7	60	15	0	82	6	20	8	0	34	367
02:45 PM	9	1	95	0	105	39	33	2	1	75	12	73	13	0	98	2	42	10	0	54	332
<b>Total</b>	<b>38</b>	<b>236</b>	<b>232</b>	<b>0</b>	<b>506</b>	<b>130</b>	<b>120</b>	<b>18</b>	<b>1</b>	<b>269</b>	<b>40</b>	<b>258</b>	<b>57</b>	<b>0</b>	<b>355</b>	<b>43</b>	<b>143</b>	<b>34</b>	<b>1</b>	<b>221</b>	<b>1351</b>
03:00 PM	25	0	106	0	131	25	10	2	0	37	7	81	6	0	94	0	26	7	0	33	295
03:15 PM	6	0	109	0	115	32	42	0	0	74	6	61	11	0	78	0	32	18	0	50	317
03:30 PM	19	0	132	1	152	26	32	0	0	58	8	78	3	0	89	0	26	5	0	31	330
03:45 PM	4	51	23	1	79	15	10	3	0	28	10	88	12	0	110	9	9	5	0	23	240
<b>Total</b>	<b>54</b>	<b>51</b>	<b>370</b>	<b>2</b>	<b>477</b>	<b>98</b>	<b>94</b>	<b>5</b>	<b>0</b>	<b>197</b>	<b>31</b>	<b>308</b>	<b>32</b>	<b>0</b>	<b>371</b>	<b>9</b>	<b>93</b>	<b>35</b>	<b>0</b>	<b>137</b>	<b>1182</b>
<b>Grand Total</b>	<b>137</b>	<b>556</b>	<b>711</b>	<b>2</b>	<b>1406</b>	<b>338</b>	<b>298</b>	<b>42</b>	<b>1</b>	<b>679</b>	<b>95</b>	<b>848</b>	<b>121</b>	<b>0</b>	<b>1064</b>	<b>88</b>	<b>307</b>	<b>109</b>	<b>3</b>	<b>507</b>	<b>3656</b>
Apprch %	9.7	39.5	50.6	0.1		49.8	43.9	6.2	0.1		8.9	79.7	11.4	0		17.4	60.6	21.5	0.6		
Total %	3.7	15.2	19.4	0.1	38.5	9.2	8.2	1.1	0	18.6	2.6	23.2	3.3	0	29.1	2.4	8.4	3	0.1	13.9	
Lights	124	547	690	0	1361	325	275	37	0	637	81	815	117	0	1013	85	267	99	0	451	3462
% Lights	90.5	98.4	97	0	96.8	96.2	92.3	88.1	0	93.8	85.3	96.1	96.7	0	95.2	96.6	87	90.8	0	89	94.7
Mediums	10	7	19	0	36	13	20	5	0	38	14	31	4	0	49	2	36	10	0	48	171
% Mediums																					
Articulated Trucks	3	2	2	0	7	0	3	0	0	3	0	2	0	0	2	1	4	0	0	5	17
% Articulated Trucks	2.2	0.4	0.3	0	0.5	0	1	0	0	0.4	0	0.2	0	0	0.2	1.1	1.3	0	0	1	0.5
Bicycles on Crosswalk	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0
Pedestrians	0	0	0	2	2	0	0	0	1	1	0	0	0	0	0	0	0	0	3	3	6
% Pedestrians	0	0	0	100	0.1	0	0	0	100	0.1	0	0	0	0	0	0	0	0	100	0.6	0.2

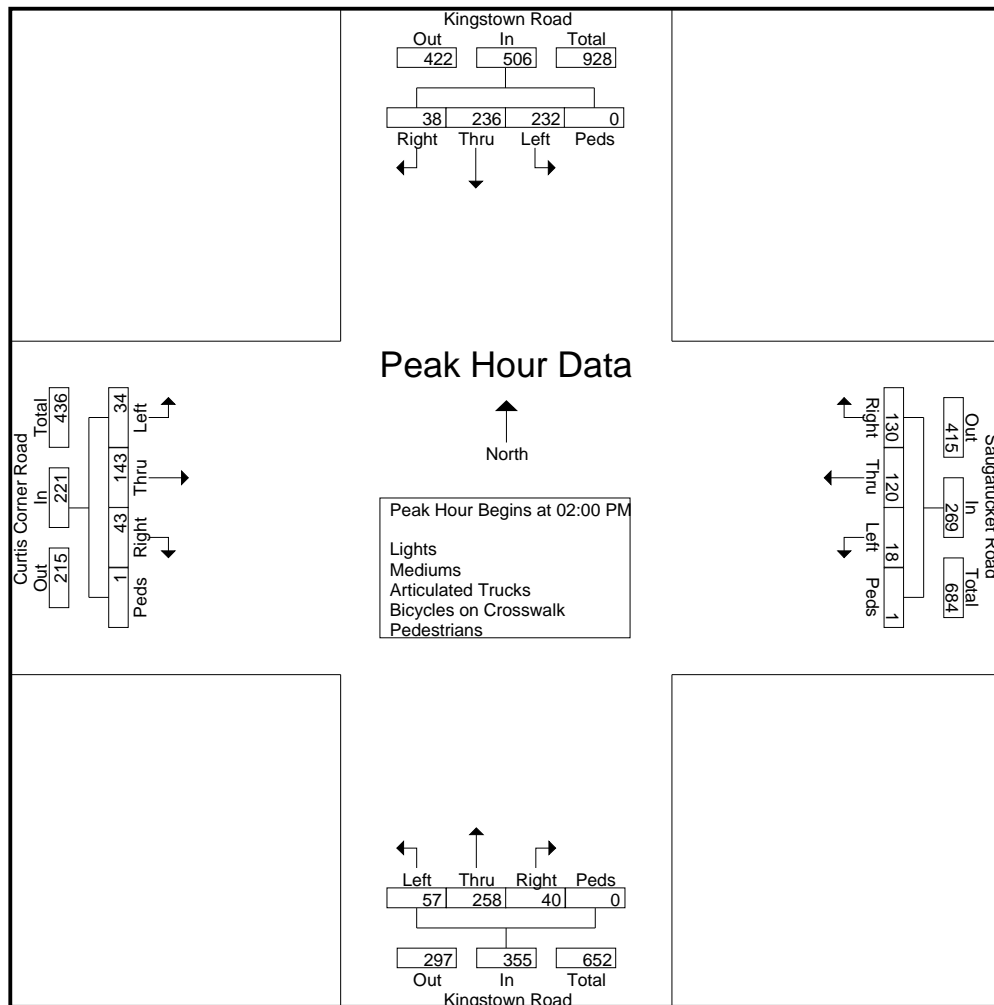


# Connecticut Counts LLC

Kensington, Connecticut 06037  
(860) 828-1693

File Name : 19824  
Site Code : 19824  
Start Date : 11/21/2019  
Page No : 2

Start Time	Kingstown Road From North					Saugatucket Road From East					Kingstown Road From South					Curtis Corner Road 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 01:00 PM to 03:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 02:00 PM																					
02:00 PM	12	68	32	0	112	24	22	5	0	51	9	56	20	0	85	22	60	7	0	89	337
02:15 PM	5	82	28	0	115	35	28	3	0	66	12	69	9	0	90	13	21	9	1	44	315
02:30 PM	12	85	77	0	174	32	37	8	0	77	7	60	15	0	82	6	20	8	0	34	367
02:45 PM	9	1	95	0	105	39	33	2	1	75	12	73	13	0	98	2	42	10	0	54	332
Total Volume	38	236	232	0	506	130	120	18	1	269	40	258	57	0	355	43	143	34	1	221	1351
% App. Total	7.5	46.6	45.8	0		48.3	44.6	6.7	0.4		11.3	72.7	16.1	0		19.5	64.7	15.4	0.5		
PHF	.792	.694	.611	.000	.727	.833	.811	.563	.250	.873	.833	.884	.713	.000	.906	.489	.596	.850	.250	.621	.920



# APPENDIX B – Operational Analysis

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## Existing Conditions

Kingstown Road (Route 108) at Curtis Corner Road/Saugatucket Road

## Future Build Conditions

Kingstown Road (Route 108) at Curtis Corner Road/Saugatucket Road

B

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Existing Weekday AM/PM Peak Hour

Kingstown Road (Route 108) at Curtis Corner Road/Saugatucket Road

Village at Curtis Corner

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	151	75	21	96	116	79	394	21	75	267	58
Future Volume (vph)	55	151	75	21	96	116	79	394	21	75	267	58
Satd. Flow (prot)	0	1813	0	0	1764	0	1805	1885	0	1805	1849	0
Flt Permitted		0.883			0.946		0.380			0.164		
Satd. Flow (perm)	0	1617	0	0	1677	0	722	1885	0	312	1849	0
Satd. Flow (RTOR)		19			51			4			14	
Lane Group Flow (vph)	0	413	0	0	284	0	108	569	0	89	387	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		3			3		1	6		5	2	
Permitted Phases	3			3			6			2		
Total Split (s)	30.0	30.0		30.0	30.0		19.0	46.0		19.0	46.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Act Effct Green (s)		26.5			26.5		32.0	25.9		32.4	26.1	
Actuated g/C Ratio		0.37			0.37		0.45	0.36		0.45	0.37	
v/c Ratio		0.68			0.43		0.25	0.83		0.30	0.56	
Control Delay		29.2			19.7		9.7	32.1		10.8	20.9	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		29.2			19.7		9.7	32.1		10.8	20.9	
LOS		C			B		A	C		B	C	
Approach Delay		29.2			19.7			28.5			19.0	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)		151			78		23	229		19	132	
Queue Length 95th (ft)		219			165		34	260		34	194	
Internal Link Dist (ft)		1043			396			297			263	
Turn Bay Length (ft)							100			75		
Base Capacity (vph)		611			653		588	1125		470	1108	
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		0.68			0.43		0.18	0.51		0.19	0.35	

Intersection Summary

Cycle Length: 95  
 Actuated Cycle Length: 71.4  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.83  
 Intersection Signal Delay: 24.9  
 Intersection Capacity Utilization 66.3%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service C

Splits and Phases: 6:



Existing Conditions  
 Timing Plan: AM Peak Hour

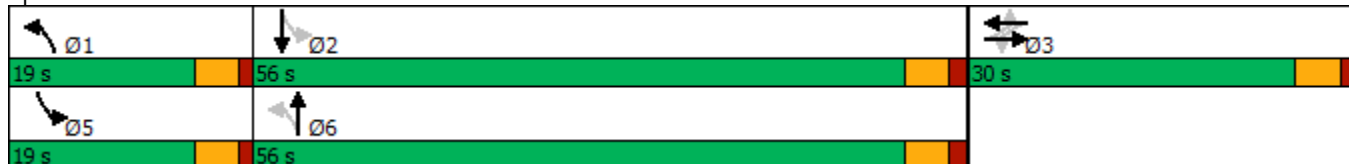
Village at Curtis Corner

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	143	43	18	120	130	57	258	40	232	236	38
Future Volume (vph)	34	143	43	18	120	130	57	258	40	232	236	38
Satd. Flow (prot)	0	1836	0	0	1771	0	1805	1862	0	1805	1860	0
Flt Permitted		0.915			0.964		0.539			0.292		
Satd. Flow (perm)	0	1693	0	0	1713	0	1024	1862	0	555	1860	0
Satd. Flow (RTOR)		11			42			10			11	
Lane Group Flow (vph)	0	355	0	0	308	0	63	328	0	318	375	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		3			3		1	6		5	2	
Permitted Phases	3			3			6			2		
Total Split (s)	30.0	30.0		30.0	30.0		19.0	56.0		19.0	56.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Act Effct Green (s)		24.8			24.8		23.4	16.5		34.7	28.0	
Actuated g/C Ratio		0.36			0.36		0.34	0.24		0.51	0.41	
v/c Ratio		0.57			0.48		0.15	0.72		0.61	0.49	
Control Delay		22.9			18.7		10.3	33.2		15.4	18.6	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		22.9			18.7		10.3	33.2		15.4	18.6	
LOS		C			B		B	C		B	B	
Approach Delay		22.9			18.7			29.5			17.2	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)		114			83		13	125		76	125	
Queue Length 95th (ft)		137			169		29	210		95	155	
Internal Link Dist (ft)		1575			396			297			263	
Turn Bay Length (ft)							100			75		
Base Capacity (vph)		643			669		638	1401		548	1400	
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		0.55			0.46		0.10	0.23		0.58	0.27	

Intersection Summary

Cycle Length: 105  
 Actuated Cycle Length: 68.6  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 21.4  
 Intersection Capacity Utilization 61.5%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service B

Splits and Phases: 6:



Existing Conditions  
 Timing Plan: PM Peak Hour

B

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Future Build Weekday AM/PM Peak Hour

Kingstown Road (Route 108) at Curtis Corner Road/Saugatucket Road

Village at Curtis Corner

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	165	71	20	166	115	130	395	20	75	270	101
Future Volume (vph)	66	165	71	20	166	115	130	395	20	75	270	101
Satd. Flow (prot)	0	1819	0	0	1796	0	1805	1887	0	1805	1822	0
Flt Permitted		0.802			0.958		0.239			0.197		
Satd. Flow (perm)	0	1475	0	0	1726	0	454	1887	0	374	1822	0
Satd. Flow (RTOR)		17			34			3			23	
Lane Group Flow (vph)	0	444	0	0	366	0	178	568	0	89	441	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		3			3		1	6		5	2	
Permitted Phases	3			3			6			2		
Total Split (s)	34.0	34.0		34.0	34.0		19.0	42.0		19.0	42.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Act Effct Green (s)		29.9			29.9		37.2	29.3		32.7	24.9	
Actuated g/C Ratio		0.38			0.38		0.48	0.38		0.42	0.32	
v/c Ratio		0.77			0.54		0.48	0.80		0.31	0.74	
Control Delay		33.9			22.5		14.6	32.1		12.7	30.4	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		33.9			22.5		14.6	32.1		12.7	30.4	
LOS		C			C		B	C		B	C	
Approach Delay		33.9			22.5			27.9			27.4	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)		183			125		45	251		21	177	
Queue Length 95th (ft)		234			219		60	279		39	261	
Internal Link Dist (ft)		1575			396			297			263	
Turn Bay Length (ft)							100			75		
Base Capacity (vph)		575			682		481	909		454	887	
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		0.77			0.54		0.37	0.62		0.20	0.50	

Intersection Summary

Cycle Length: 95  
 Actuated Cycle Length: 78.1  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 28.1  
 Intersection Capacity Utilization 74.7%  
 Analysis Period (min) 15

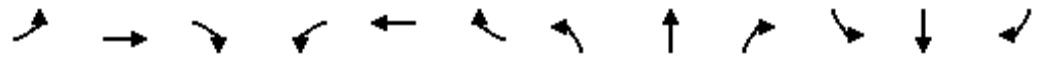
Intersection LOS: C  
 ICU Level of Service D

Splits and Phases: 6:



Future Build Conditions  
 Timing Plan: AM Peak Hour

# South Kingstown Schools



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↗	↘		↗	↘	
Traffic Volume (vph)	61	213	66	20	149	130	67	260	40	235	235	52
Future Volume (vph)	61	213	66	20	149	130	67	260	40	235	235	52
Satd. Flow (prot)	0	1834	0	0	1783	0	1805	1862	0	1805	1849	0
Flt Permitted		0.862			0.951		0.425			0.291		
Satd. Flow (perm)	0	1595	0	0	1700	0	808	1862	0	553	1849	0
Satd. Flow (RTOR)		14			45			8			12	
Lane Group Flow (vph)	0	548	0	0	343	0	74	330	0	322	393	0
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		3			3		1	6		5	2	
Permitted Phases	3			3			6			2		
Total Split (s)	48.0	48.0		48.0	48.0		15.0	42.0		15.0	42.0	
Total Lost Time (s)		4.5			4.5		4.5	5.0		4.5	5.0	
Act Effct Green (s)		32.7			32.7		28.0	20.1		35.3	26.7	
Actuated g/C Ratio		0.42			0.42		0.36	0.26		0.45	0.34	
v/c Ratio		0.81			0.47		0.19	0.68		0.76	0.62	
Control Delay		31.4			17.1		15.4	34.6		31.1	29.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		31.4			17.1		15.4	34.6		31.1	29.1	
LOS		C			B		B	C		C	C	
Approach Delay		31.4			17.1			31.1			30.0	
Approach LOS		C			B			C			C	
Queue Length 50th (ft)		216			97		20	141		99	163	
Queue Length 95th (ft)		239			199		50	256		147	228	
Internal Link Dist (ft)		1575			396			297			263	
Turn Bay Length (ft)							100			75		
Base Capacity (vph)		932			1006		465	924		424	919	
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		0.59			0.34		0.16	0.36		0.76	0.43	

## Intersection Summary

Cycle Length: 105

Actuated Cycle Length: 78.5

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 28.4

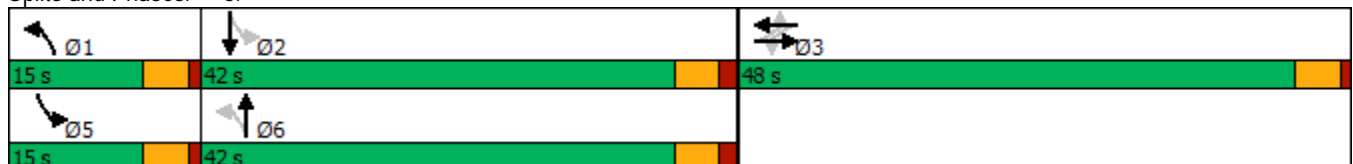
Intersection LOS: C

Intersection Capacity Utilization 76.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 6:



Future Build Conditions

Timing Plan: PM Peak Hour