



October 6, 2020

Mr. Patrick J. Casey, President  
Twin Oak Management, LLC  
72 Pine Street, 1<sup>st</sup> Floor  
Providence, Rhode Island 02903

Re: Proposed Land Development Project  
*The Winding Rhode Compassion Center*  
682 Kingstown Road  
Wakefield, Rhode Island 02879

Dear Mr. Casey:

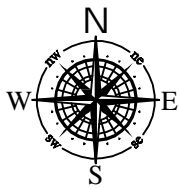
BETA Group, Inc., in accordance with our scope of services, has completed a planning level traffic assessment of existing and future operational and safety conditions of the immediate servicing roadways to a proposed compassion center on Kingstown Road (Route 108) in the Town of South Kingstown, Rhode Island. This study was completed for submission to the town as part of the local approval process and provides a summary of existing roadway conditions and an estimate of future traffic conditions if the project was to be approved and the new business was operating at this location.

Based upon our discussions and a review of the site plan prepared by *Joe Casali Engineering, Inc.*, it is our understanding that the current proposal includes the occupancy of an existing condominium unit within a 3-unit commercial building to accommodate a medical marijuana facility, *The Winding Rhode Compassion Center*. Access and egress to the property will be provided at the existing site driveways on Route 108, Dale Carlia Street, and Holley Street.

*The following is a summary of our investigation of the potential impacts and recommendations to provide safe and efficient access to the subject property;*

## PROJECT APPROACH

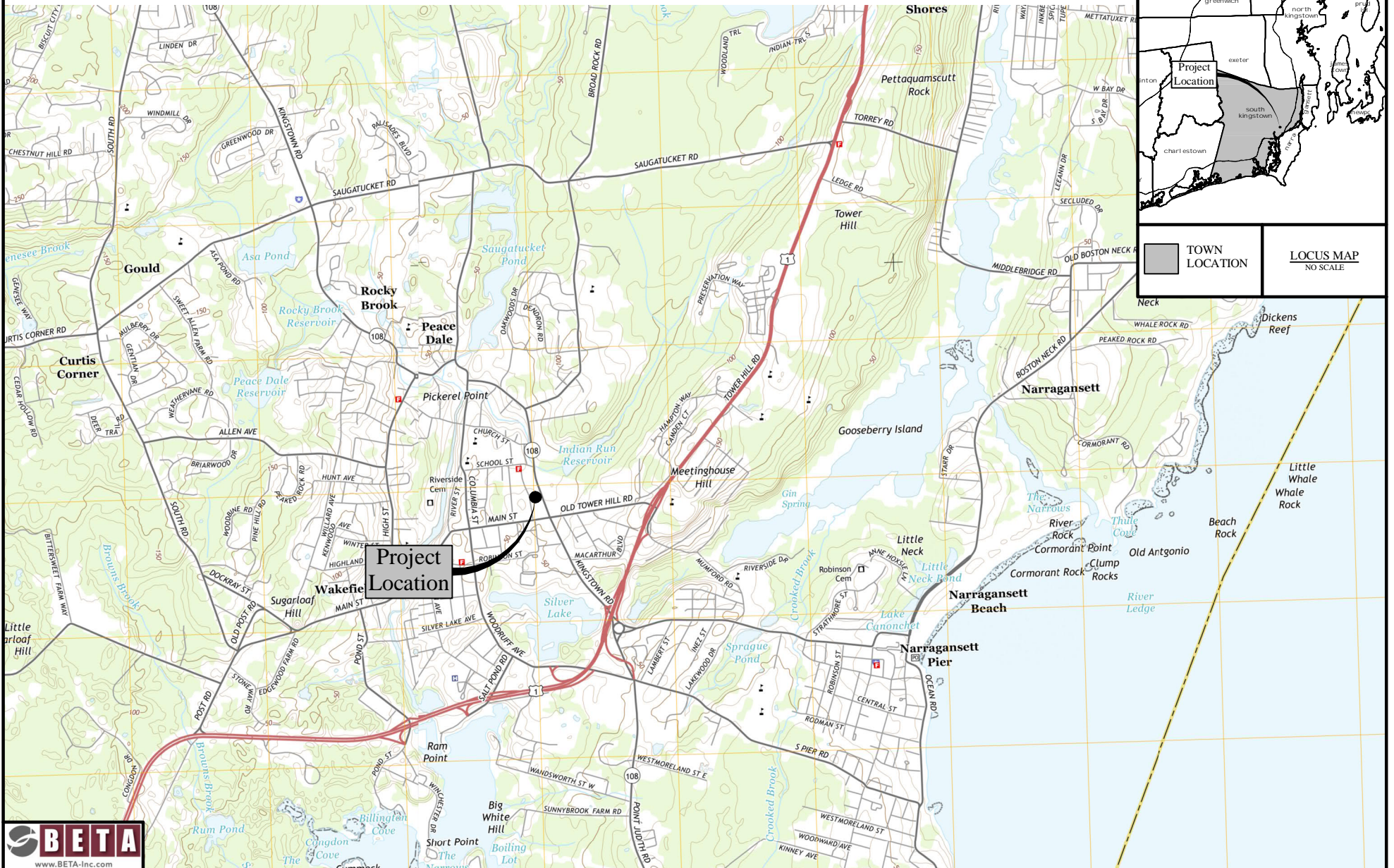
The objective of the following study is to determine if any operational and/or traffic safety concerns presently exist along the local servicing roadways, specifically Route 108, Dale Carlia Street, and Holley Street in the immediate site vicinity. The subject unit is situated within a small commercial plaza bounded by Route 108 to the east, Holley Street to the west, and Dale Carlia Street to the south. Refer to Figure 1, Project Vicinity Map, for the project location within the community. A review of the existing roadway features was completed to determine if any potential deficiencies presently warrant mitigation. In addition to existing conditions, the analysis also included the assessment of potential impacts resulting from the traffic generated by the proposed medical marijuana facility. The study focused on these issues and made recommendations for improvements if determined necessary, based upon the findings of the data collection and analysis phases of the study.



# Winding Rhode Compassion Center

SOUTH KINGSTOWN, RHODE ISLAND

## Figure 1 - Project Vicinity Map



In order to complete our analysis, the following scope of work was conducted for the project:

- An inventory of the physical roadway characteristics of Route 108, Dale Carlia Street, and Holley Street in the immediate site vicinity to determine the adequacy of the existing roadway geometric features in reference to safety and operations.
- Review of available traffic data from RIDOT in the vicinity of the project to define the existing traffic patterns and operation characteristics along the servicing roadways.
- Analysis of crash data obtained from the South Kingstown Police Department to determine if there are any safety concerns relative to the frequency, severity or pattern of crashes in the immediate site vicinity.
- A site plan for the proposed medical marijuana facility prepared by *Joe Casali Engineering, Inc.* was reviewed to define future roadway conditions at the access drive intersections to the new business.
- An analysis of the data collected, evaluation of the proposed design and development of recommendations if determined necessary to provide a safe and adequate access to the site.

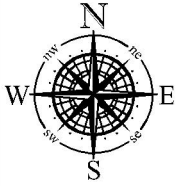
## PROJECT AREA

As noted in the previous section, the subject parcel is bounded by Route 108 to the east, Holley Street to the west, and Dale Carlia Street to the south and is defined by Assessor's Plat 57-1, Lot 96, which contains approximately 2.72 acres of fully developed land. The property currently has a single building with three units for retail/office use within a small commercial plaza. One of the units was the location of the former *Benny's* retail store operating on the site for decades. Currently an *Ocean State Job Lot* store occupies the unit. The center unit of the building contains a *Subway* and *The Boss* Thai restaurants and an appliance business.

The compassion center is proposed within the southernmost unit fronting Dale Carlia Street most recently occupied by the *Yankee* travel agency, that will be renovated to accommodate the new use. Access/egress to the site will be provided from the plaza's existing driveways on Route 108, Dale Carlia Street, and Holley Street. Figure 2 on the following page depicts the general project area, and the boundary lines of the subject property.

Land use in the immediate area can be defined as predominantly commercial in nature along Route 108 including the subject parcel. In the immediate area surrounding the property are commercial businesses including a *Washington Trust* bank branch to the north, to the south across Dale Carlia Street is a *CVS* pharmacy, to the east across Route 108 are several businesses including a medical office, a restaurant, a *Midas* auto repair shop, and a small commercial plaza, and to the west across Holley Street is a medical office and a vacant lot. Just south of the subject parcel along Old Tower Hill Road, properties are predominantly commercial in nature including small shopping plazas, restaurants, gas stations, banks, professional offices, a US Post Office, car dealerships, and the Wakefield Mall.

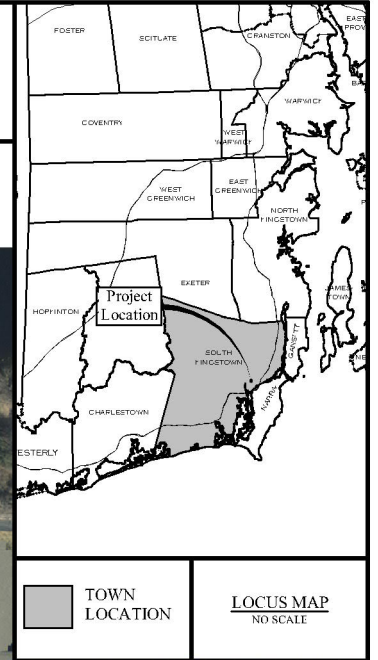
Kingstown Road (Route 108) will serve as the primary access route to the new business, with Dale Carlia Street and Holley Street providing immediate local access. Based upon the operating characteristics along the roadways adjacent to the site, and the estimated volume and type of traffic associated with the new commercial business, a study impact area was defined for the project. The limits of the analysis



# Winding Rhode Compassion Center

SOUTH KINGSTOWN, RHODE ISLAND

## Figure 2 - Project Area Map



focused on Route 108 between Schools Street to the north and Dale Carlia Street to the south, with a primary focus on the intersections of Route 108 with the Indian Run access road and Dale Carlia Street including at the site driveway intersections with Dale Carlia Street and Holley Street.

## EXISTING CONDITIONS

### ROADWAYS

#### Kingstown Road (Route 108)

Kingstown Road (Route 108) is a north/south principal arterial extending south from the Narragansett Town Line northerly to Mooresfield Road (Route 138). Route 108 provides immediate local access to abutting properties but also links to higher order facilities including US Route 1 to the south. In the project area, Kingstown Road is approximately 44 feet wide that transitions from a two-lane section including a center two-way left turn lane north of the site, to a four-lane section heading south to Old Tower Hill Road. The transition, approximately 75 feet in length, occurs along the subject property frontage as can be seen on the above photograph. North of the site, Kingstown Road consist of a



15-foot travel lane and 4-foot shoulder on the northbound direction and 12-foot travel lane and 1-foot shoulder on the southbound direction separated by a 12-foot two-way left turn center lane. South of the site, Kingstown Road consist of two 10.5-foot travel lanes and 1-foot shoulder in each direction.

The pavement surface can be classified as being in fair condition with visible block cracking. Cement concrete curbing and sidewalks are provided on both sides of Kingstown Road. Cobra-head light fixtures are located along the westerly side of the corridor on utility poles for nighttime illumination. The speed limit is posted at 25 MPH in the site vicinity.

#### Dale Carlia Street

Dale Carlia Street is a short, 300 foot long, east/west local road that extends from Route 108 to the east to Holley Street to the west. The local roadway services the subject plaza to the north and CVS pharmacy to the south. Dale Carlia Street is approximately 22 feet wide consisting of an 11-foot travel lane in each direction delineated by a double yellow center line. On-Street parking is available along the northerly side of the road including angled parking adjacent to the subject building and parallel parking further to the east along the parking lot.

The pavement surface can be classified as being in fair condition with visible minor alligator cracking. Cement concrete sidewalks and curbing is provided on the south side of the road. These features of the roadway can be seen in the adjacent photograph looking east with the subject property to the left.

There was no observed posted speed limit in the vicinity and was assumed to be 25 MPH due to the short length of the roadway and commercial nature of the area.



### Holley Street

Holley Street is a short, 1,300 foot long, north/south local road running parallel to Route 108 and extending between School Street to the north to Main Street to the south. The local roadway services the subject plaza, a pharmacy, a bank, a medical office, and other small commercial businesses including a bowling alley. Holley Street varies in width from 30 feet on the northerly section to approximately 40 feet on the southerly section.

The pavement surface can be classified as being in fair condition with visible minor alligator cracking. Cement concrete sidewalks with curbing is provided along the easterly side along the northern section of the road and then shifts to the westerly side along the southern half of the road. A very short segment of the roadway has no sidewalk as depicted in the adjacent photograph looking north with the subject site on the left.



There was no observed posted speed limit along its length and was assumed to be 25 MPH due to the commercial nature of the area. In

addition, one cobra-head light fixture on a utility pole is provided across the subject site for nighttime illumination.

## INTERSECTIONS

### Kingstown Road (Route 108) at Indian Run Village Access Road

Kingstown Road intersects the Indian Run Village access road to form a 3-way, "T"-type, signalized intersection. The Kingstown Road northbound approach provides a thru lane and a shared thru/right

lane. The Kingstown Road southbound approach provides a shared left/thru lane and a thru lane. The Indian Run Village access road westbound approach provides a single all-purpose lane.

Marked crosswalks with curb ramps are provided across the southbound and westbound approaches to the intersection. The traffic signal system appears to be in good working condition. The layout of the equipment consists of mast arm mounted signal heads with in-road vehicle loop detection. A combination of pedestal mounted, and pole bracket mounted pedestrian signal heads with pedestrian push buttons, though not ADA-compliant, are present for the southbound marked crosswalk only.

The intersection was determined to operate in a fully actuated mode consisting of two phases. The Kingstown Road northbound and southbound movements are serviced under a single permitted phase, followed by the Indian Run Village access road westbound approach.

#### Kingstown Road (Route 108) at Dale Carlia Street/Dale Carlia Shopping Center Driveway

Dale Carlia Street and the Dale Carlia Shopping Center driveway intersects Kingstown Road (Route 108) to form an unsignalized, minor offset, four-way junction with *Stop* control on the minor Dale Carlia Street and shopping center driveway approaches. The Kingstown Road northbound approach provides a shared left/thru lane and a shared thru/right turn lane. The Kingstown Road southbound approach provides a shared left turn/thru lane and a shared thru/right turn lane. The Dale Carlia Street eastbound and shopping center driveway westbound approaches each provide a single all-purpose lane.



Cement concrete sidewalks with curbing is provided at the intersection including curb ramps on the Dale Carlia eastbound approach, though no marked crosswalk is provided. The sidewalk is continuous across the shopping center driveway. In addition, cobra head light fixture on a utility pole is provided for nighttime illumination of the intersection. The above photograph depicts the typical characteristics of the intersection looking north on Kingstown Road with Dale Carlie Street on the left.

#### TRAFFIC FLOW DATA

Existing traffic flow characteristics for this area were obtained from available record data from RIDOT and from previous traffic studies completed in the immediate area. Traffic counts cannot be presently collected as a result of traffic patterns not being consistent with typical daily traffic conditions due to the current state of emergency in place in Rhode Island. Recent manual turning movement count data in the project area from RIDOT is available and has been utilized as a basis of analysis for this project. In addition, our office has completed recent studies in the downtown Wakefield area and have current traffic information along the servicing roadways.

The turning movement count data found that Route 108 services approximately 1,810 vehicles during the weekday afternoon peak hour with approximately 850 vehicles northbound and 960 vehicles southbound. During the same time period, the Dale Carlia Street serviced approximately 215 vehicles with approximately 100 vehicles eastbound and 115 vehicles westbound.

## SAFETY ANALYSIS

To determine if there are any limiting factors affecting safety relating to access to the proposed commercial project, the physical characteristics of Kingstown Road (Route 108), Dale Carlia Street, and Holley Street in the project area, and specifically at the existing site driveway locations, were investigated. These limiting factors would potentially include horizontal or vertical alignment changes or roadside obstructions that limit sight distances for vehicles traveling along the road or entering the road from a side street or driveway location. In this instance, the sight distance standard is necessary to permit turning vehicles to safely enter and exit the site driveways and Dale Carlia Street.

The vertical and horizontal alignment of Route 108 in the project area can be described as generally level and relatively straight with a gradual horizontal curve north of the site. Based upon the existing roadway geometry as described, the available sight distance at Dale Carlia Street location on Route 108 are greater than 500 feet to the north through the signalized junction with the Indian Run Village access road and in excess of 500 to the south through the signalized junction with Main Street/Old Tower Hill Road. In addition, the available site distances at both site driveways on Route 108 are greater than 500 to the north and in excess of 500 feet to the south through the signalized junction with the Indian Run Village access road. These values are in excess of AASHTO's recommended minimum stopping sight distance of 155 feet based on the posted speed limit of 25 mph and the 250 feet for the observed travel speeds ranging from 30 to 35 mph. It should be noted that the speeds are highly variable due to the controlled junctions with both the Indian Run Village access road and Main Street/Old Tower Hill Road, where vehicles are turning off or onto Route 108 at a low speed, or slowing to the stop line at both traffic signals.

The vertical and horizontal alignment of Dale Carlia Street can be described as generally level and straight. These physical features provide sight distances at the existing site driveway in excess of 200 feet to the east through the stop-controlled junction with Route 108 and in excess of 175 feet to the west through the junction with Holley Street. These values are greater than the 155-foot minimum stopping sight distance required according to AASHTO design standards for the assumed speed limit of 25 mph and observed travel conditions. Speeds are very low (10-15 mph) along this short section of road due to the controlled Route 108 and Holley Street junctions, where vehicles are turning off of, or onto Dale Carlia Street at a low speed, or are slowing to the stop line at both terminal junctions.

It should be noted that angled parking along the subject building on the northerly side of Dale Carlia Street, could potentially restrict sight lines for vehicles exiting the site driveway based upon the type of vehicle that may be using these spaces. To provide improved sight lines at the existing site driveway on Dale Carlia Street, it is recommended that the first three parking spaces along the building closest to the site driveway be restricted or reconfigured. These parking spaces are within the town right-of-way and are considered on-street parking and are not associated with the subject property. In addition, it should be noted that no stop line or a *Stop* sign is provided on the minor Dale Carlia Street westbound approach to the intersection with Holley Street. In order to define and enforce the intersection control,

a stop line and *Stop* sign should be installed on the Dale Carlia Street westbound approach to the intersection with Holley Street.

The vertical and horizontal alignment of Holley Street in the site vicinity can be described as level with a gradual curve along the property frontage. These physical features provide sight distances at both existing site driveways on Holley Street in excess of 300 feet to the north and south. These values are greater than the 155-foot minimum stopping sight distance required according to AASHTO design standards for the assumed speed limit of 25 mph and observed travel conditions.

As a result of the preliminary evaluation of the existing roadway geometry and physical features, it does not appear that any substantive physical roadway safety deficiencies exist within the defined study area. Also, as part of our analysis, crash data was obtained from the South Kingstown Police Department for the latest three-year period from January, 2017 to December, 2019 to determine if Route 108 servicing the project experienced a high frequency or pattern of crashes requiring mitigation.

A total of 14 crashes (avg. 5 per year) occurred in the project area over the three-year study period, with two involving injuries. Summarizing the data, three crashes with one involving injury, occurred at the signalized intersection of Route 108 with the Indian Run Village access road; there were no recorded crashes at the unsignalized intersection of Route 108 with Dale Carlia Street; three crashes, with no injury, occurred at the unsignalized intersection of Route 108 with School Street; and eight crashes with one involving injury occurred along Route 108 between the Indian Run Village access road and School Street.

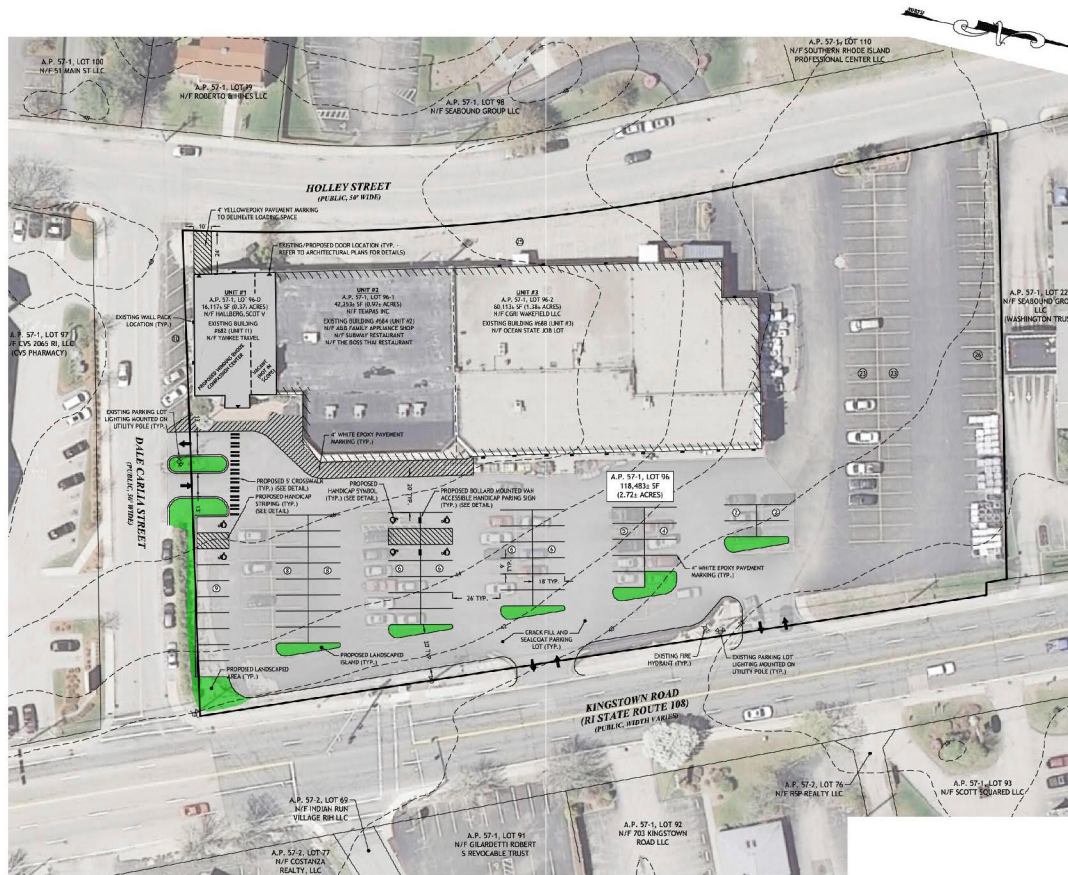
All three crashes at the signalized intersection of Route 108 with the Indian Village Run access road were rear-end collisions, which is typical of signalized junctions due to the numerous starting and stopping movements required for the signal change intervals. At the unsignalized intersection of Route 108 with School Street, two crashes were rear end collisions, and one was an angle crash attributed to a vehicle not yielding the right of way. In addition, four of the crashes that occurred along the section of Route 108 between the Indian Run Village access road and School Street were sideswiped (same direction) collisions, two were angle crashes, and two were rear end collisions. Two of the sideswipe collisions were attributed to vehicles changing lanes to avoid turning vehicles and the other two were attributed to the merge from two lanes to one lane. Both angle crashes involved vehicles turning left onto the former *Benny's* store driveway and both rear-end collisions involved turning vehicles being rear-ended.

Based upon the historical crash data obtained from the local police department, and a review of existing roadway geometry and operations, minor traffic related safety improvements could be investigated to improve safety along Dale Carlia Street. As previously mentioned, it is recommended that a minimum of three parking spaces along the subject building on the northerly side of Dale Carlie Street be restricted or reconfigured to maintain sight lines for vehicles exiting the existing site driveway, which would also improve visibility of the site driveway while travelling along Dale Carlia Street. The safety of the intersection of Holley Street with Dale Carlia Street could also be improved with installation of a stop line and a *Stop* sign on the Dale Carlia Street minor westbound approach to define and enforce the intersection control.

# Winding Rhode Compassion Center

SOUTH KINGSTOWN, RHODE ISLAND

## Figure 3 - Site Layout



## TRIP GENERATION

To understand the potential traffic impact of the new business, an estimate of anticipated traffic to be generated by the proposed land use has been calculated for reference. As previously discussed, the proposal consists of reoccupying the southernmost unit of a three-unit building within a small commercial plaza along Route 108 to accommodate a medical marijuana compassion center business. Access and egress to the site is provided from the existing site driveways on Route 108, Dale Carlia Street, and Holley Street. Figure 3 on the following page depicts the site layout and access plan, provided by *Joe Casali Engineering, Inc.*

For this site, projected traffic volumes for the proposed *The Winding Rhode Compassion Center* were based on operational data provided by the owner and studies completed by BETA at all three existing compassion centers in Rhode Island; *Greenleaf Compassion Center* in the Town of Portsmouth, *Summit Medical Compassion Center* in the City of Warwick, and the *Thomas C. Slater Compassion Center* in the City of Providence, and the use of trip generation factors. These factors are taken from the "Trip Generation" Manual, an informational report published by the Institute of Transportation Engineers (ITE), a national professional organization for traffic and transportation engineers. The data provided in the ITE report are based on extensive traffic studies for various types of land uses (residential, commercial, industrial, etc.). This data has been found to be very reliable and provides a sound basis for estimating vehicle trips for new development projects.

The focus of *The Winding Rhode Compassion Center* is to provide medical marijuana to eligible prescription patients in the State of Rhode Island. Based on data provided by the facility operator, in addition to the existing three centers, the state will license an additional six (6) compassion centers in Rhode Island. Starting in 2021 a total of nine (9) centers will be geographically located in designated zones across the state to service the statewide demand for an estimated 22,000 patients with prescriptions by 2021. It is anticipated that all six (6) new licenses will open their medical prescription marijuana facility soon after being selected by the state, thus dividing the projected 22,000 patients between the new facilities and the existing facilities based on geographical locations. Several factors may impact the number of daily patients serviced at *The Winding Rhode Compassion Center*, which is anticipated to be less than 12% of the statewide projected patients based on the population of the servicing towns within Zone 5, where the site is located, though to be conservative in our analysis, the full 12% was utilized.

The new business is anticipated to be open seven (7) days a week from 10 AM to 7 PM. As can be seen, it will not be open until late morning, therefore the morning commuter peak would not be impacted by the facility. The operating characteristics of this business are generally consistent where patient visits are typically low during the late morning and into the early afternoon hours. The busiest period occurs between 3:00 PM and closing where more than 60 percent of the customer base is serviced.

Traffic count data was obtained at the existing *Greenleaf Compassion Center* on West Main Road in Portsmouth, the *Summit Medical Compassion Center* on Jefferson Boulevard in Warwick, and *Thomas C. Slater Compassion Center* on Corliss Street in Providence. Data was obtained during the peak afternoon periods at each of these facilities. The Rhode Island information was reviewed for a comparison of trip volumes for this particular medical marijuana land use in the local community. The ITE manual suggests that if a similar or like land use is available in the region of study, data could be obtained to confirm ITE rates, or to use the independent study rates if they are more appropriate. The ITE rates include

recreational use dispensaries and would not be applicable to the limited medical use proposed. The trip estimate information is summarized in Table 1 where the projected volumes are based upon the trip rates calculated from the existing compassion centers in the state. The count data and trip rate calculations are included in the Appendix.

TABLE 1 - Trip Generation Estimate

Description		Enter	Exit	Total
<i>PM Peak Hour Estimated</i>				
Independent Study Rate	Wakefield Location	45	55	100

## TRAFFIC CAPACITY ANALYSIS

The key to any traffic impact analysis is the evaluation of roadway operations during peak traffic periods on the servicing roadway system. This situation would occur when the site-generated traffic, combined with the traffic volumes on the main roadway, result in the highest one-hour volume serviced along a roadway segment, or through an intersection. Review of the traffic data found that weekday afternoon peak hour would represent this worst-case combination of site-generated traffic with the servicing roadway peak traffic period.

The Highway Capacity Manual methodology provides the most accurate means of evaluating traffic capacity and delays for roadways and intersections. The results of this procedure are expressed in terms of Level of Service (LOS). Level of Service is a qualitative measure of traffic flow efficiency based on anticipated vehicle delays. For example, LOS "A" represents the best condition with little or no delay, while LOS "F" indicates that the roadway/intersection is at full capacity resulting in extended vehicle delays and potential queuing. Table 2 outlines the Level of Service delay criteria presented in the Highway Capacity Manual for unsignalized and signalized intersections.

TABLE 2: Highway Capacity Manual Criteria

Level of Service	Unsignalized Delay Per Vehicle (sec)	Signalized Delay Per Vehicle (sec)
A	<10	<10
B	>10 and <15	>10 and <20
C	>15 and <25	>20 and <35
D	>25 and <35	>35 and <55
E	>35 and <50	>55 and <80
F	>50	>80

The Route 108 intersections with Dale Carlia Street and with the Indian Run Village access road were analyzed for the weekday PM peak hour, which would represent the period of the greatest impact of site related traffic on the servicing roadways. It is anticipated that the small commercial project is to be fully operational within a 6-month period where traffic volumes along the servicing roadways will be

substantially the same. Therefore, for this project, base traffic was not expanded further for the build condition other than site related traffic in order to assess existing versus proposed conditions. The capacity analysis worksheets are included in the Appendix and Table 3 below summarizes the results of the analyses.

TABLE 3: Level of Service Summary

Location / Movement	PM PEAK HOUR							
	Existing				Future Build			
	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 Indian Run Village Access Road (S)</i>								
Route 108 NB	A	1.9	2	0.28	A	1.9	2	0.28
Route 108 SB	A	2.2	3	0.36	A	2.2	3	0.36
Indian Run Village WB	B	10.9	1	0.17	B	10.9	1	0.17
OVERALL	A	2.3	-	-	A	2.3	-	-
<i>Kingstown Road (Route 108) at Dale Carlia Street/Dale Carlia Shopping Center Driveway (U)</i>								
Dale Carlia Street EB	F	*	7	0.99	F	*	13	1.58
Wakefield Liquors Driveway WB	F	*	3	0.61	F	*	4	0.87
Route 108 NB Left	B	11	1	0.09	B	11.4	1	0.15
Route 108 SB Left	A	10.0	1	0.04	A	10.0	1	0.04

(S) – Signalized

(U) – Unsignalized

\* Delay greater than 50 Seconds

Table 3 depicts both the current operating conditions at the study intersection of Route 108 with the Indian Run Village access road. As can be seen in the table, the signalized junction currently operates overall at an efficient Level of Service (LOS) A with the critical movements experiencing minor delays of under 11 seconds representing LOS B or better during the daily PM peak period.

The adjacent unsignalized intersection of Route 108 with Dale Carlia Street and the *Dale Carlia Shopping Center* driveway was also reviewed for operations where it was determined that the critical through and turning movements along Route 108 operate efficiently at LOS B or better during the daily PM Peak period. The movements that experience greater delays are the left turning movements on the minor street Dale Carlia Street eastbound and *Dale Carlia Shopping Center* driveway westbound approaches where delays have been estimated to be in excess of 50 seconds, typical of all unsignalized intersections or driveways along this section of Route 108. This is a function of the peak hourly volume on the main roadway Route 108. It is important to note that there are multiple points of access to the plaza on including; Route 108, Dale Carlia Street, and on Holley Street to distribute site related traffic. The driveways on the minor side streets currently operate efficiently due to the combination of low volumes on these side streets and low entering and exiting volumes to the plaza, and do not require analysis to document this good condition.

Under the future build conditions, the analysis found that the estimated increase in traffic during the afternoon peak period resulting from the proposed medical marijuana facility will have no discernable impact on overall traffic operations at the intersections reviewed for this project and the adjacent servicing roadways. The signalized intersection of Route 108 with the Indian Run Village access road will continue to operate at an efficient LOS A with critical movements experiencing minor delays of less than 11 seconds representing LOS B or better during the PM peak period. In addition, the critical movements along Route 108 at the unsignalized intersection with Dale Carlia Street and the *Dale Carlia Shopping Center* driveway will continue to operate efficiently at LOS B or better. The Dale Carlia Street and *Dale Carlia Shopping Center* driveway left turn exiting movements will continue to operate with delays in excess of 50 seconds during the future afternoon peak period.

One condition that does have a positive impact on the available gaps in Route 108 traffic are the adjacent signalized intersections at the Indian Run Village access road to the north and Main Street/Old Tower Hill Road to the south. The traffic signals help create gaps in Route 108 traffic during the change intervals that driveway and side street traffic can utilize to access the main road. The positive effect of the adjacent signals cannot be adequately modeled into the HCS analysis to show the reduced delays.

The unsignalized capacity analysis results indicating prolonged minor approach delays is consistent with most unsignalized driveways or side street intersections along the corridor. Any amount of side street and/or driveway traffic would yield the delay results found in our study due to the high main street volumes and limitations of the unsignalized analysis. Of concern is whether the side street and/or driveway has the stacking distance to accommodate potential queuing based upon the volume, and that favorable intersection geometry exists. In this instance both concerns are satisfied in addition to the previously mentioned signalization factor, which promotes sufficient gaps to yield better operations than the analysis indicates. It is anticipated that Dale Carlia Street and *Dale Carlia Shopping Center* driveway will operate with acceptable delays and average queuing of one to two vehicles resulting in no congestion.

Specifically relating to vehicles entering and exiting the subject site on Dale Carlia Street, the left turn entering movement at the unsignalized intersection of the site driveway with Dale Carlia Street will operate efficiently with minimal delays during the afternoon peak conditions due to the low volumes for this movement, coupled with the low volumes serviced along Dale Carlia Street, which does not require analysis. In addition, both existing site driveways on Route 108 and on Holley Street will operate efficiently with minimal delays during the afternoon peak conditions due to the low volumes experienced at both access driveways.

## CONCLUSIONS AND RECOMMENDATIONS

In summary, the study has shown that the proposed site access and circulation plan has been designed to maintain a desirable level of safety and efficiency on the servicing roadway system. The safety of the intersections of Route 108 with the site driveways and with Dale Carlia Street, and the site driveways with Dale Carlia Street and with Holley Street were reviewed for geometry and sight distances. The study intersections were determined to provide sufficient sight distances in accordance with AASHTO criteria for visibility and decision making of drivers attempting to enter/exit main street traffic from a side street and/or driveway.

In reference to safety, as previously noted, it is recommend that the first three parking spaces along the site building on the northerly side of Dale Carlia Street be restricted or reconfigured to enhance both sight lines for vehicles exiting the site driveway and the visibility of the site driveway for vehicles travelling along the roadway. In addition, it is recommended that a stop line and *Stop* sign be installed on the Dale Carlia westbound approach to the intersection with Holley Street to define and enforce the intersection control.

The results of the operational analysis determined that the estimated minor increase in traffic during the daily peak period resulting from the proposed medical marijuana prescription business, *The Winding Rhode Compassion Center*, will have a negligible effect on overall traffic operations along the servicing roadways, particularly during the daily afternoon peak hour when the new medical marijuana facility was estimated to generate its highest daily traffic volumes.

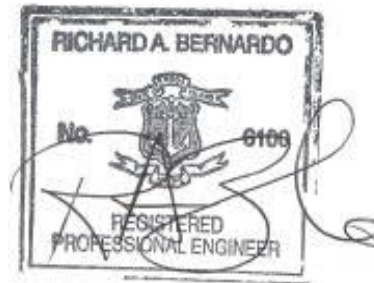
Therefore, based upon the data collected on the servicing roadways and the analysis completed as part of this study, it can be concluded that the future traffic conditions resulting from the proposed medical marijuana facility will provide for adequate and safe access to a public street, and will not have a detrimental effect on public safety and welfare in the study area.

We trust this letter sufficiently addresses the requirements of the Town of South Kingstown to obtain your local approvals. If you should have any questions or require any additional information, please do not hesitate to contact our office.

Very truly yours,  
BETA Group, Inc.



Paul J. Bannon  
Associate



Richard A. Bernardo, PE  
Vice President

# APPENDIX

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- A. Traffic Volume Data
  - B. Traffic Crash Data
  - C. Trip Generation
  - D. Operational Analysis

# APPENDIX A – Traffic Volume Data

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## **Intersection Turning Movement Count**

Kingstown Road (Route 108) at Indian Run Village

Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway

## **Compassion Center Counts**

Greenleaf Compassion Center – Portsmouth, RI

Summit Medical Compassion Center – Warwick, RI

Thomas C. Slate Compassion Center – Providence, RI

A

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**Intersection Turning Movement Count**

Kingstown Road (Route 108) at Indian Run Village  
Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway

Kingstown Road (Route 108) at Indian Run Village

Cataldo Associates Inc.  
Civil Engineers  
(401) 453-3300

Recorder: JD/PM/JM  
Day: TUESDAY  
Time Period: 7:00AM-7:00PM  
Weather: CLEAR

File Name : KINGSTOWN & INDIAN RUN VILLAGE  
Site Code : 00012406  
Start Date : 01/24/2006  
Page No : 1

Groups Printed- AUTOS & LIGHT TRUCKS - HEAVY VEHICLES

Start Time	KINGSTOWN ROAD Southbound					INDIAN RUN VILLAGE Westbound					KINGSTOWN ROAD Northbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	94	0	1	95	0	0	0	0	0	0	115	0	1	116	211
07:15 AM	2	126	0	0	128	0	0	0	3	3	0	222	0	1	223	354
07:30 AM	0	127	0	0	127	1	0	3	3	7	0	160	1	0	161	295
07:45 AM	1	118	0	0	119	0	0	3	0	3	0	131	0	2	133	255
Total	3	465	0	1	469	1	0	6	6	13	0	628	1	4	633	1115
08:00 AM	3	118	0	1	122	0	0	3	1	4	0	125	0	0	125	251
08:15 AM	1	117	0	3	121	1	0	2	0	3	0	148	1	1	150	274
08:30 AM	2	121	0	1	124	2	0	3	1	6	0	215	5	0	220	350
08:45 AM	5	126	0	0	131	1	0	5	1	7	0	307	4	1	312	450
Total	11	482	0	5	498	4	0	13	3	20	0	795	10	2	807	1325
09:00 AM	2	142	0	1	145	4	0	1	2	7	0	292	2	0	294	446
09:15 AM	3	132	0	0	135	1	0	3	0	4	0	141	2	1	144	283
09:30 AM	0	71	0	0	71	2	0	0	6	8	0	69	0	6	75	154
09:45 AM	6	107	0	2	115	1	0	4	2	7	0	146	2	0	148	270
Total	11	452	0	3	466	8	0	8	10	26	0	648	6	7	661	1153
10:00 AM	5	103	0	0	108	2	0	4	0	6	0	168	1	0	169	283
10:15 AM	11	135	0	1	147	0	0	3	1	4	0	234	3	0	237	388
10:30 AM	2	149	0	0	151	1	0	1	6	8	0	203	1	2	206	365
10:45 AM	4	245	0	1	250	3	0	6	2	11	0	146	3	0	149	410
Total	22	632	0	2	656	6	0	14	9	29	0	751	8	2	761	1446
11:00 AM	1	252	0	0	253	3	0	6	0	9	0	147	1	0	148	410
11:15 AM	5	183	0	0	188	1	0	4	6	11	0	168	2	0	170	369
11:30 AM	5	161	0	0	166	1	0	4	0	5	0	113	0	0	113	284
11:45 AM	8	161	0	4	173	1	0	6	1	8	0	182	4	1	187	368
Total	19	757	0	4	780	6	0	20	7	33	0	610	7	1	618	1431
12:00 PM	9	174	0	6	189	2	0	5	1	8	0	159	1	0	160	357
12:15 PM	3	182	0	1	186	2	0	5	3	10	0	160	0	1	161	357
12:30 PM	10	194	0	0	204	2	0	4	8	14	0	175	9	0	184	402
12:45 PM	10	187	0	3	200	2	0	5	0	7	0	149	7	1	157	364
Total	32	737	0	10	779	8	0	19	12	39	0	643	17	2	662	1480
01:00 PM	7	185	0	2	194	2	0	10	3	15	0	197	3	1	201	410
01:15 PM	11	178	0	0	189	1	0	9	3	13	0	178	3	1	182	384
01:30 PM	9	173	0	0	182	4	0	4	2	10	0	187	7	1	195	387
01:45 PM	10	189	0	2	201	2	0	12	2	16	0	168	2	1	171	388
Total	37	725	0	4	766	9	0	35	10	54	0	730	15	4	749	1569
02:00 PM	8	236	0	0	244	3	0	4	1	8	0	126	3	0	129	381
02:15 PM	5	207	0	1	213	4	0	1	1	6	0	145	6	1	152	371
02:30 PM	7	200	0	0	207	3	0	6	0	9	0	189	3	0	192	408
02:45 PM	6	195	0	0	201	3	0	9	2	14	0	178	5	0	183	398
Total	26	838	0	1	865	13	0	20	4	37	0	638	17	1	656	1558
03:00 PM	7	218	0	1	226	1	0	10	2	13	0	147	2	0	149	388
03:15 PM	8	227	0	5	240	5	0	5	4	14	0	161	3	1	165	419
03:30 PM	4	239	0	0	243	1	0	5	10	16	0	139	4	0	143	402
03:45 PM	12	222	0	0	234	4	0	11	1	16	0	141	5	0	146	396
Total	31	906	0	6	943	11	0	31	17	59	0	588	14	1	603	1605
04:00 PM	4	200	0	1	205	2	0	5	2	9	0	137	4	1	142	356
04:15 PM	6	214	0	1	221	1	0	4	1	6	0	174	2	0	176	403
04:30 PM	6	251	0	0	257	2	0	9	2	13	0	170	3	1	174	444
04:45 PM	6	211	0	2	219	1	0	6	4	11	0	165	3	1	169	399
Total	22	876	0	4	902	6	0	24	9	39	0	646	12	3	661	1602

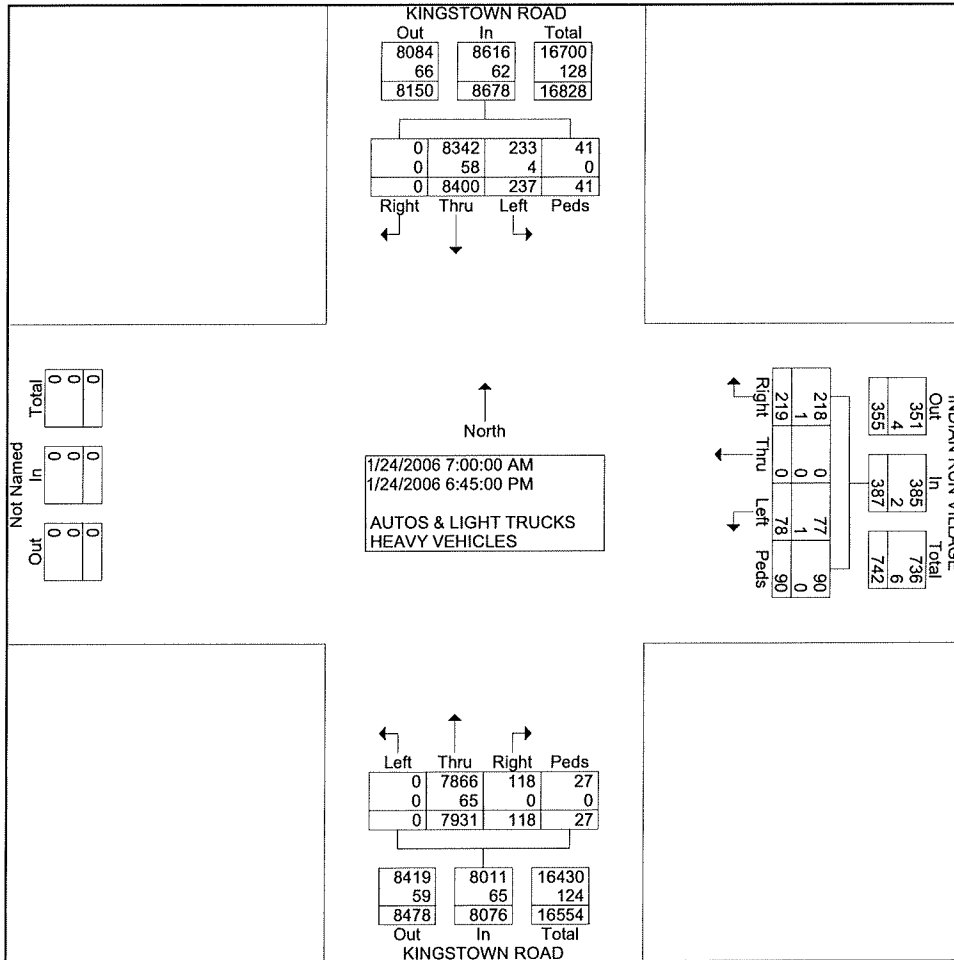
Cataldo Associates Inc.  
Civil Engineers  
(401) 453-3300

Recorder: JD/PM/JM  
Day: TUESDAY  
Time Period: 7:00AM-7:00PM  
Weather: CLEAR

File Name : KINGSTOWN & INDIAN RUN VILLAGE  
Site Code : 00012406  
Start Date : 01/24/2006  
Page No : 2

Groups Printed- AUTOS & LIGHT TRUCKS - HEAVY VEHICLES

Start Time	KINGSTOWN ROAD Southbound					INDIAN RUN VILLAGE Westbound					KINGSTOWN ROAD Northbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
05:00 PM	3	251	0	1	255	1	0	4	1	6	0	153	3	0	156	417
05:15 PM	3	215	0	0	218	1	0	8	1	10	0	181	0	0	181	409
05:30 PM	2	174	0	0	176	0	0	2	0	2	0	172	1	0	173	351
05:45 PM	2	177	0	0	179	1	0	2	0	3	0	149	0	0	149	331
Total	10	817	0	1	828	3	0	16	2	21	0	655	4	0	659	1508
06:00 PM	3	158	0	0	161	0	0	5	1	6	0	159	3	0	162	329
06:15 PM	4	190	0	0	194	1	0	4	0	5	0	152	0	0	152	351
06:30 PM	4	186	0	0	190	0	0	2	0	2	0	159	2	0	161	353
06:45 PM	2	179	0	0	181	2	0	2	0	4	0	129	2	0	131	316
Total	13	713	0	0	726	3	0	13	1	17	0	599	7	0	606	1349
Grand Total	237	8400	0	41	8678	78	0	219	90	387	0	7931	118	27	8076	17141
Apprch %	2.7	96.8	0.0	0.5		20.2	0.0	56.6	23.3		0.0	98.2	1.5	0.3		
Total %	1.4	49.0	0.0	0.2	50.6	0.5	0.0	1.3	0.5	2.3	0.0	46.3	0.7	0.2	47.1	

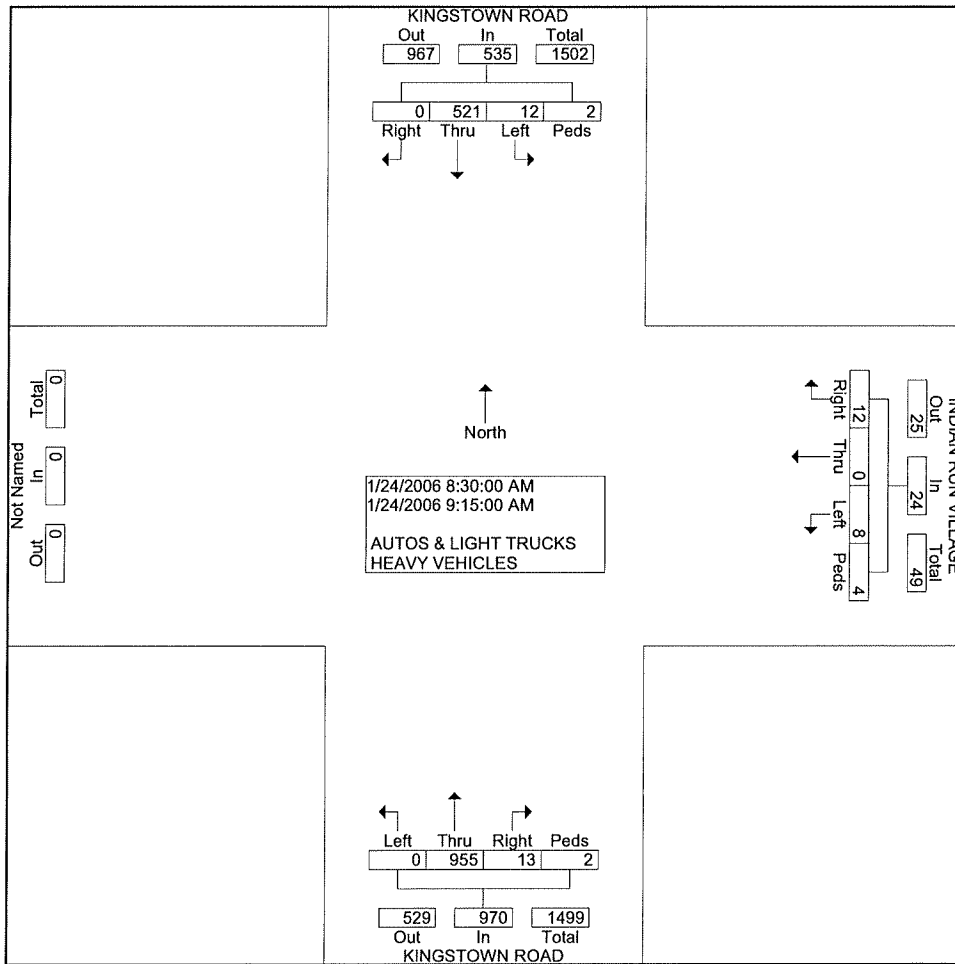


Cataldo Associates Inc.  
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Recorder: JD/PM/JM  
Day: TUESDAY  
Time Period: 7:00AM-7:00PM  
Weather: CLEAR

File Name : KINGSTOWN & INDIAN RUN VILLAGE  
Site Code : 00012406  
Start Date : 01/24/2006  
Page No : 3

Start Time	KINGSTOWN ROAD Southbound					INDIAN RUN VILLAGE Westbound					KINGSTOWN ROAD Northbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 07:00 AM to 09:45 AM - Peak 1 of 1																
Intersection	08:30 AM															
Volume	12	521	0	2	535	8	0	12	4	24	0	955	13	2	970	1529
Percent	2.2	97.4	0.0	0.4		33.3	0.0	50.0	16.7		0.0	98.5	1.3	0.2		
08:45 Volume	5	126	0	0	131	1	0	5	1	7	0	307	4	1	312	450
Peak Factor																0.849
High Int.	09:00 AM					08:45 AM					08:45 AM					
Volume	2	142	0	1	145	1	0	5	1	7	0	307	4	1	312	
Peak Factor	0.922										0.857					

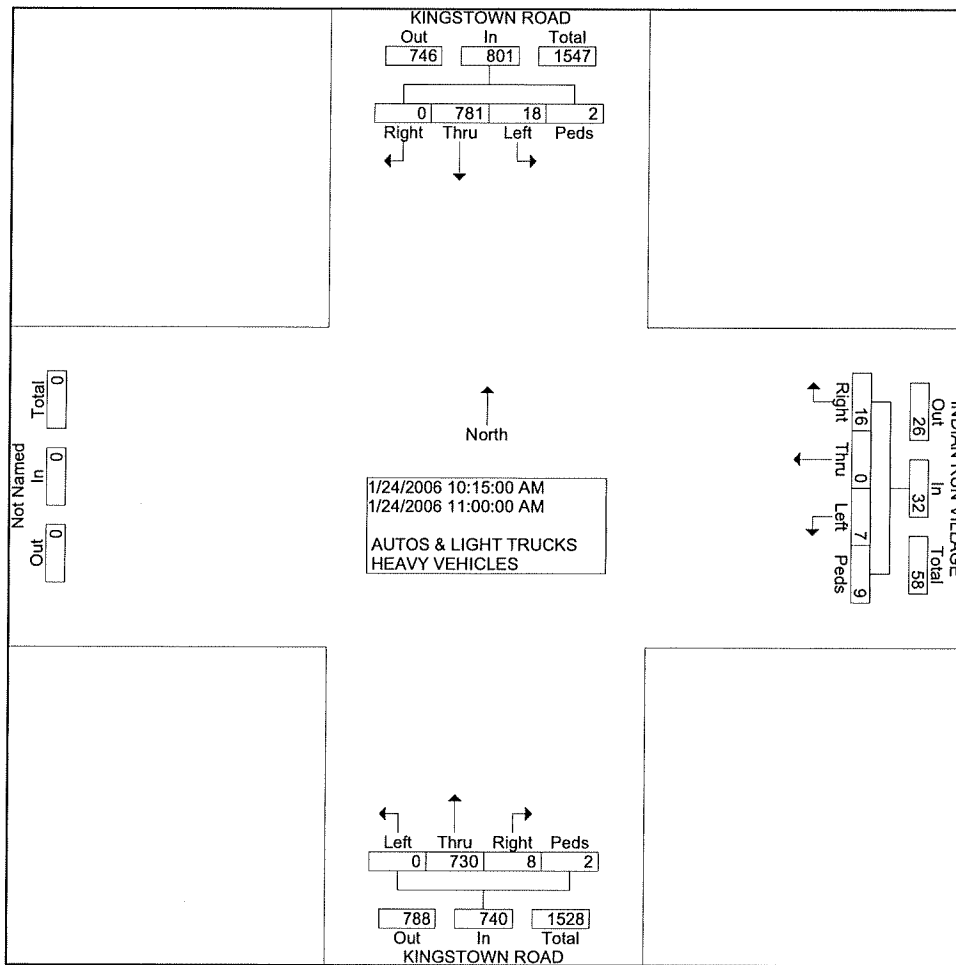


Cataldo Associates Inc.  
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Recorder: JD/PM/JM  
Day: TUESDAY  
Time Period: 7:00AM-7:00PM  
Weather: CLEAR

File Name : KINGSTOWN & INDIAN RUN VILLAGE  
Site Code : 00012406  
Start Date : 01/24/2006  
Page No : 4

Start Time	KINGSTOWN ROAD Southbound					INDIAN RUN VILLAGE Westbound					KINGSTOWN ROAD Northbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 10:00 AM to 01:45 PM - Peak 1 of 1																
Intersection	10:15 AM															
Volume	18	781	0	2	801	7	0	16	9	32	0	730	8	2	740	1573
Percent	2.2	97.5	0.0	0.2		21.9	0.0	50.0	28.1		0.0	98.6	1.1	0.3		
11:00 Volume	1	252	0	0	253	3	0	6	0	9	0	147	1	0	148	410
Peak Factor																0.959
High Int.	11:00 AM					10:45 AM					10:15 AM					
Volume	1	252	0	0	253	3	0	6	2	11	0	234	3	0	237	
Peak Factor	0.792										0.727					0.781

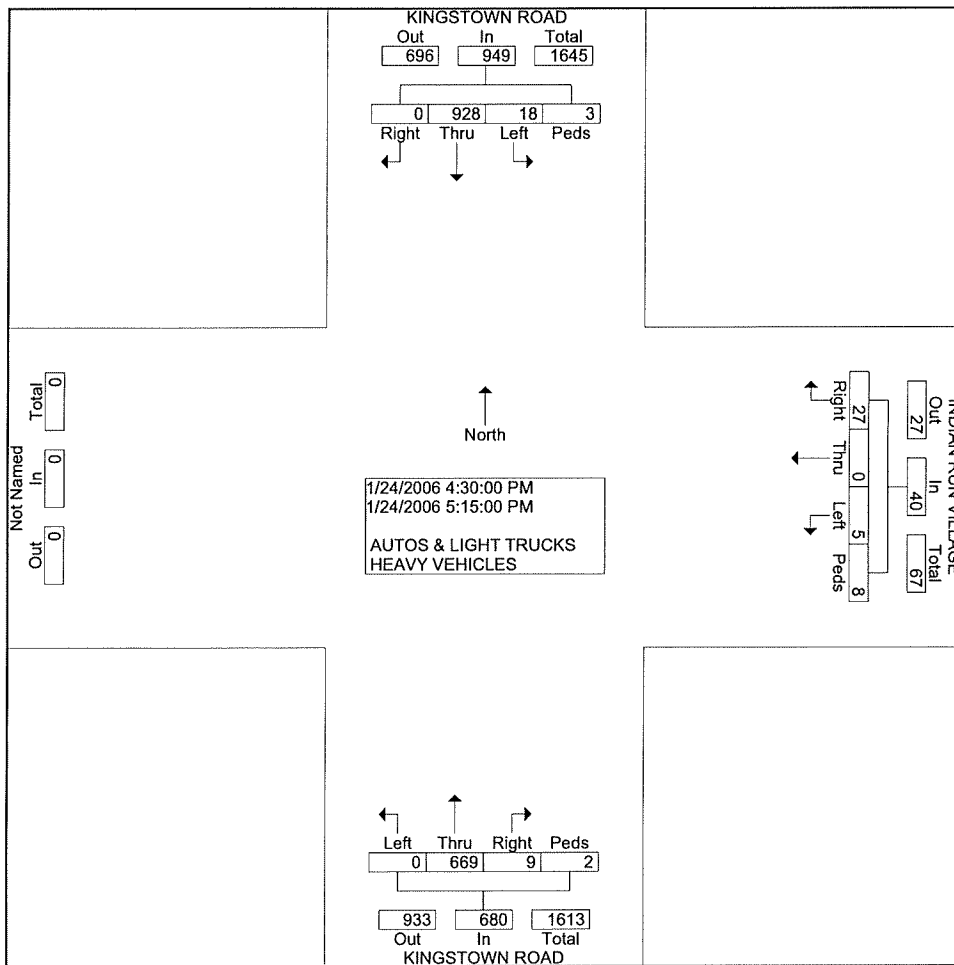


Cataldo Associates Inc.  
Civil Engineers  
(401) 453-3300

Recorder: JD/PM/JM  
Day: TUESDAY  
Time Period: 7:00AM-7:00PM  
Weather: CLEAR

File Name : KINGSTOWN & INDIAN RUN VILLAGE  
Site Code : 00012406  
Start Date : 01/24/2006  
Page No : 5

Start Time	KINGSTOWN ROAD Southbound					INDIAN RUN VILLAGE Westbound					KINGSTOWN ROAD Northbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
Peak Hour From 02:00 PM to 06:45 PM - Peak 1 of 1																
Intersection	04:30 PM															
Volume	18	928	0	3	949	5	0	27	8	40	0	669	9	2	680	1669
Percent	1.9	97.8	0.0	0.3		12.5	0.0	67.5	20.0		0.0	98.4	1.3	0.3		
04:30 Volume	6	251	0	0	257	2	0	9	2	13	0	170	3	1	174	444
Peak Factor																0.940
High Int.	04:30 PM					04:30 PM					05:15 PM					
Volume	6	251	0	0	257	2	0	9	2	13	0	181	0	0	181	
Peak Factor	0.923					0.769					0.939					



Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway

# Pare Corporation

8 Blackstone Valley Place  
Lincoln, RI, 02865

[www.parecorp.com](http://www.parecorp.com)

Intersection: Wakefield & Dale Carlia  
PARE Project No: 10209.26  
Recorded By: BS  
Weather: Sunny, Dry, Cold

File Name : Kingstown Road & Dale Carlia- modified  
Site Code : 00000000  
Start Date : 11/15/2012  
Page No : 1

### Groups Printed- Autos Total - Heavy Vehicles

Start Time	Kingstown Road Southbound						Wakefield Liquors Driveway Westbound						Kingstown Road Northbound						CVS Driveway Northeastbound						Dale Carlia Street Eastbound						
	Onto Dale Carlia Street	Into CVS	Thru	Left	Peds	App. Total	Right	Into CVS	Onto Dale Carlia Street	Left	Peds	App. Total	Right	Thru	Into CVS	Onto Dale Carlia Street	Peds	App. Total	Onto Dale Carlia Street	Right	Thru to Wakefield Liquors	Left	Peds	App. Total	Into CVS	Right	Thru	Left	Peds	App. Total	Int. Total
03:00 PM	2	11	225	6	0	244	4	1	1	2	0	8	5	190	6	4	0	205	3	12	0	12	0	27	8	4	1	0	0	13	497
03:15 PM	5	7	204	5	0	221	8	0	0	1	0	9	8	173	8	0	0	189	8	17	0	2	0	27	2	3	2	0	0	7	453
03:30 PM	7	11	239	7	0	264	8	0	1	4	0	13	5	232	10	2	0	249	7	22	0	6	0	35	5	1	2	0	0	8	569
03:45 PM	2	14	204	7	0	227	9	0	0	5	0	14	5	177	13	3	0	198	8	9	0	3	0	20	5	2	0	0	0	7	466
<b>Total</b>	<b>16</b>	<b>43</b>	<b>872</b>	<b>25</b>	<b>0</b>	<b>956</b>	<b>29</b>	<b>1</b>	<b>2</b>	<b>12</b>	<b>0</b>	<b>44</b>	<b>23</b>	<b>772</b>	<b>37</b>	<b>9</b>	<b>0</b>	<b>841</b>	<b>26</b>	<b>60</b>	<b>0</b>	<b>23</b>	<b>0</b>	<b>109</b>	<b>20</b>	<b>10</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>35</b>	<b>1985</b>
04:00 PM	1	10	197	6	0	214	12	1	0	2	0	15	13	147	13	3	0	176	12	9	0	6	0	27	4	0	3	0	0	7	439
04:15 PM	1	12	189	9	0	211	12	1	1	2	0	16	10	157	5	0	0	172	2	23	2	4	0	31	3	1	0	0	0	4	434
04:30 PM	3	17	165	6	0	191	6	0	0	2	0	8	4	172	7	2	0	185	13	15	0	3	0	31	5	4	0	1	0	10	425
04:45 PM	5	14	194	5	0	218	9	0	0	6	0	15	10	188	12	2	0	212	4	10	1	3	0	18	3	3	1	0	0	7	470
<b>Total</b>	<b>10</b>	<b>53</b>	<b>745</b>	<b>26</b>	<b>0</b>	<b>834</b>	<b>39</b>	<b>2</b>	<b>1</b>	<b>12</b>	<b>0</b>	<b>54</b>	<b>37</b>	<b>664</b>	<b>37</b>	<b>7</b>	<b>0</b>	<b>745</b>	<b>31</b>	<b>57</b>	<b>3</b>	<b>16</b>	<b>0</b>	<b>107</b>	<b>15</b>	<b>8</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>28</b>	<b>1768</b>
05:00 PM	4	13	233	8	0	258	3	0	0	4	0	7	6	179	10	4	0	199	4	13	0	6	0	23	4	1	0	0	0	5	492
05:15 PM	2	11	198	4	0	215	15	2	3	3	0	23	7	152	10	0	0	169	3	13	2	3	0	21	4	1	1	0	0	6	434
05:30 PM	3	20	156	3	1	183	5	4	0	2	0	11	6	168	8	1	0	183	3	14	3	6	0	26	1	0	0	0	0	1	404
05:45 PM	0	14	167	8	0	189	6	1	1	4	0	12	4	160	9	1	0	174	6	21	0	2	0	29	4	0	0	1	0	5	409
<b>Total</b>	<b>9</b>	<b>58</b>	<b>754</b>	<b>23</b>	<b>1</b>	<b>845</b>	<b>29</b>	<b>7</b>	<b>4</b>	<b>13</b>	<b>0</b>	<b>53</b>	<b>23</b>	<b>659</b>	<b>37</b>	<b>6</b>	<b>0</b>	<b>725</b>	<b>16</b>	<b>61</b>	<b>5</b>	<b>17</b>	<b>0</b>	<b>99</b>	<b>13</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>17</b>	<b>1739</b>
Grand Total	35	154	2371	74	1	2635	97	10	7	37	0	151	83	2095	111	22	0	2311	73	178	8	56	0	315	48	20	10	2	0	80	5492
Approch %	1.3	5.8	90	2.8	0		64.2	6.6	4.6	24.5	0		3.6	90.7	4.8	1	0		23.2	56.5	2.5	17.8	0		60	25	12.5	2.5	0		
Total %	0.6	2.8	43.2	1.3	0	48	1.8	0.2	0.1	0.7	0	2.7	1.5	38.1	2	0.4	0	42.1	1.3	3.2	0.1	1	0	5.7	0.9	0.4	0.2	0	0	1.5	
Autos Total	35	154	2365	74	1	2629	97	10	7	37	0	151	83	2090	111	22	0	2306	73	178	8	56	0	315	48	19	10	2	0	79	5480
% Autos Total	100	100	99.7	100	100	99.8	100	100	100	100	0	100	100	99.8	100	100	0	99.8	100	100	100	100	0	100	100	95	100	100	0	98.8	99.8
Heavy Vehicles	0	0	6	0	0	6	0	0	0	0	0	0	0	5	0	0	0	5	0	0	0	0	0	0	0	1	0	0	0	1	12
% Heavy Vehicles	0	0	0.3	0	0	0.2	0	0	0	0	0	0	0	0.2	0	0	0	0.2	0	0	0	0	0	0	0	5	0	0	0	1.2	0.2

Start Time	Kingstown Road Southbound						Wakefield Liquors Driveway Westbound						Kingstown Road Northbound						CVS Driveway Northeastbound						Dale Carlia Street Eastbound					
	Onto Dale Carlia Street	Into CVS	Thru	Left	Peds	App. Total	Right	Into CVS	Onto Dale Carlia Street	Left	Peds	App. Total	Right	Thru	Into CVS	Onto Dale Carlia Street	Peds	App. Total	Onto Dale Carlia Street	Right	Thru to Wakefield Liquors	Left	Peds	App. Total	Into CVS	Right	Thru	Left	Peds	App. Total

Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Entire Intersection Begins at 03:00 PM

03:00 PM	2	11	225	6	0	244	4	1	1	2	0	8	5	190	6	4	0	205	3	12	0	12	0	27	8	4	1	0	0	13	497
03:15 PM	5	7	204	5	0	221	8	0	0	1	0	9	8	173	8	0	0	189	8	17	0	2	0	27	2	3	2	0	0	7	453
03:30 PM	7	11	239	7	0	264	8	0	1	4	0	13	5	232	10	2	0	249	7	22	0	6	0	35	5	1	2	0	0	8	569
03:45 PM	2	14	204	7	0	227	9	0	0	5	0	14	5	177	13	3	0	198	8	9	0	3	0	20	5	2	0	0	0	7	466
Total Volume	16	43	872	25	0	956	29	1	2	12	0	44	23	772	37	9	0	841	26	60	0	23	0	109	20	10	5	0	0	35	1985
% App. Total	1.7	4.5	91.2	2.6	0		65.9	2.3	4.5	27.3	0		2.7	91.8	4.4	1.1	0		23.9	55	0	21.1	0		57.1	28.6	14.3	0	0		
PHF	.571	.768	.912	.893	.000	.905	.806	.250	.500	.600	.000	.786	.719	.832	.712	.563	.000	.844	.813	.682	.000	.479	.000	.779	.625	.625	.625	.000	.000	.673	.872

**A**

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**Compassion Center Counts**

Greenleaf Compassion Center – Portsmouth, RI  
Summit Medical Compassion Center – Warwick, RI  
Thomas C. Slate Compassion Center – Providence, RI

Greenleaf Compassion Center – Portsmouth, RI

Greenleaf Compassion Center					
May 29, 2020				Portsmouth, RI	
Time	Enter	Exit	Total		No. of Cars Parked
3:30 - 3:45 PM	17	9	26		6
3:45 - 4:00 PM	17	16	33		11
4:00 - 4:15 PM	8	17	25		12
4:15 - 4:30 PM	14	15	29		7
4:30 - 4:45 PM	20	20	40		7
4:45 - 5:00 PM	21	20	41		8
5:00 - 5:15 PM	12	8	20		5
5:15 - 5:30 PM	11	15	26		8

Notes:

1. A few customers (less than 5 per 15 minute segment) were curbside pickup. Curbside pickup occurred on the side of the building along John St.
2. A security guard was present outside to direct line of people.
3. Parking were observed on-site and at the adjacent commercial plaza.
4. Max. queue observed was 7 costumers.

Summit Medical Compassion Center – Warwick, RI

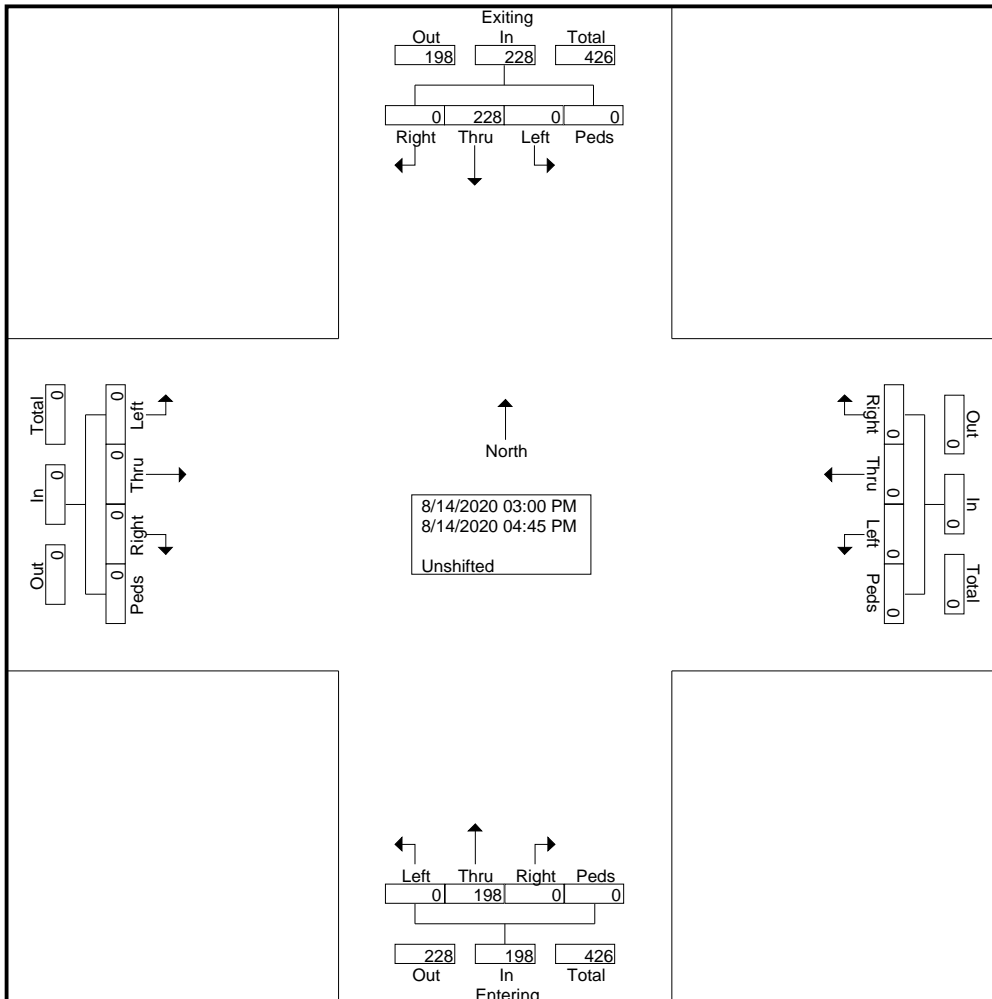
**BETA Group, Inc.**  
 701 George Washington Highway  
 Lincoln, Rhode Island, 02865  
 P:401.333.2382

Project: RI Dispensaries  
 Town/City: Warwick, RI  
 Location: Summit M.C.C  
 Weather: Sunny, 80s

File Name : 715403 - Summit M.C.C -PM  
 Site Code : 08142020  
 Start Date : 8/14/2020  
 Page No : 1

**Groups Printed- Unshifted**

Start Time	Exiting From North				From East				Entering From South				From West				Int. Total	
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds		
03:00 PM	0	26	0	0	0	0	0	0	0	30	0	0	0	0	0	0	0	56
03:15 PM	0	22	0	0	0	0	0	0	0	26	0	0	0	0	0	0	0	48
03:30 PM	0	37	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	69
03:45 PM	0	38	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	58
Total	0	123	0	0	0	0	0	0	0	108	0	0	0	0	0	0	0	231
04:00 PM	0	22	0	0	0	0	0	0	0	14	0	0	0	0	0	0	0	36
04:15 PM	0	29	0	0	0	0	0	0	0	29	0	0	0	0	0	0	0	58
04:30 PM	0	28	0	0	0	0	0	0	0	27	0	0	0	0	0	0	0	55
04:45 PM	0	26	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	46
Total	0	105	0	0	0	0	0	0	0	90	0	0	0	0	0	0	0	195
Grand Total	0	228	0	0	0	0	0	0	0	198	0	0	0	0	0	0	0	426
Apprch %	0	100	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	
Total %	0	53.5	0	0	0	0	0	0	0	46.5	0	0	0	0	0	0	0	

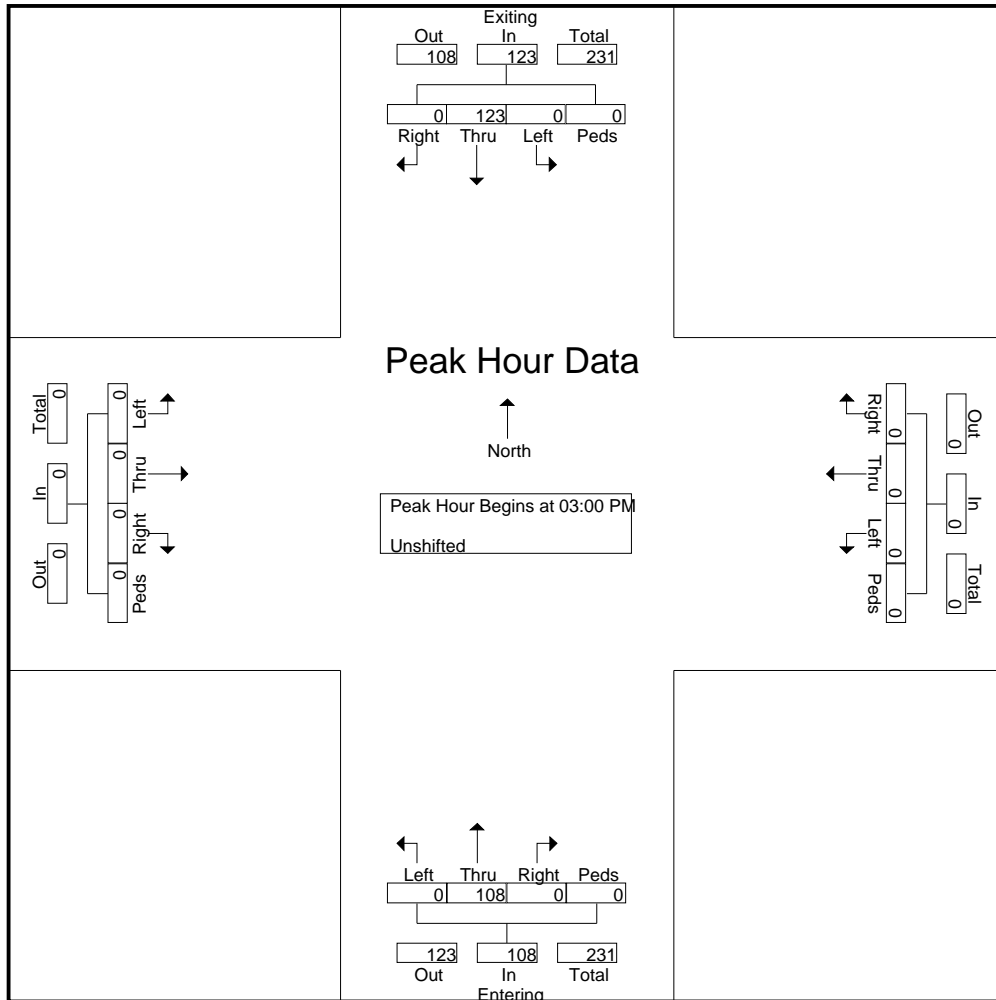


**BETA Group, Inc.**  
 701 George Washington Highway  
 Lincoln, Rhode Island, 02865  
 P:401.333.2382

Project: RI Dispensaries  
 Town/City: Warwick, RI  
 Location: Summit M.C.C  
 Weather: Sunny, 80s

File Name : 715403 - Summit M.C.C -PM  
 Site Code : 08142020  
 Start Date : 8/14/2020  
 Page No : 2

Start Time	Exiting From North					From East					Entering From South					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 03:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	26	0	0	26	0	0	0	0	0	0	30	0	0	30	0	0	0	0	0	56
03:15 PM	0	22	0	0	22	0	0	0	0	0	0	26	0	0	26	0	0	0	0	0	48
03:30 PM	0	37	0	0	37	0	0	0	0	0	0	32	0	0	32	0	0	0	0	0	69
03:45 PM	0	38	0	0	38	0	0	0	0	0	0	20	0	0	20	0	0	0	0	0	58
Total Volume	0	123	0	0	123	0	0	0	0	0	0	108	0	0	108	0	0	0	0	0	231
% App. Total	0	100	0	0		0	0	0	0		0	100	0	0		0	0	0	0		
PHF	.000	.809	.000	.000	.809	.000	.000	.000	.000	.000	.000	.844	.000	.000	.844	.000	.000	.000	.000	.000	.837



Thomas C. Slate Compassion Center – Providence, RI

## BETA Group, Inc.

701 George Washington Highway  
Lincoln, Rhode Island, 02865  
P:401.333.2382

Project: RI Dispensaries  
Town/City: Providence, RI  
Location: Thomas C Slater C.C  
Weather: Cloudy, 80s

File Name : 715401 - Thomas C. Slater C.C Combined - PM  
Site Code : 00007154  
Start Date : 8/13/2020  
Page No : 1

### Groups Printed- Unshifted

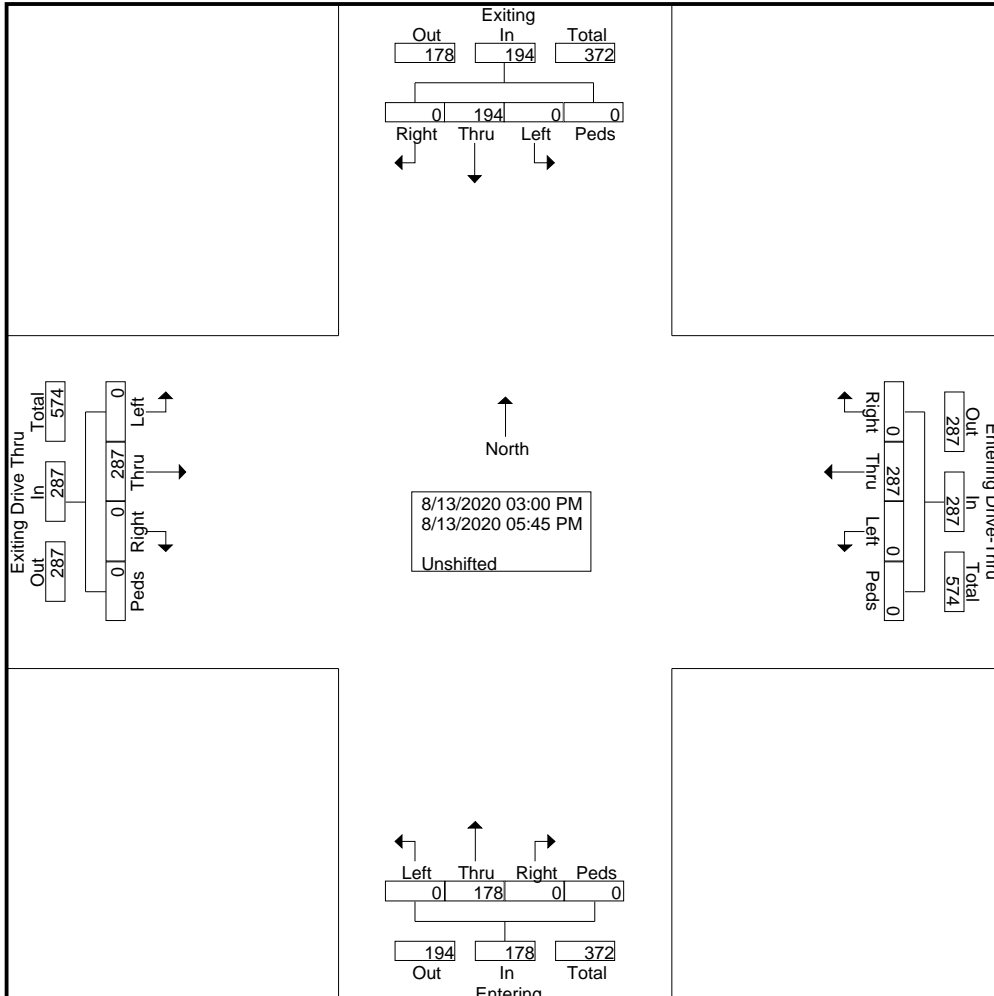
Start Time	Exiting From North				Entering Drive-Thru From East				Entering From South				Exiting Drive Thru From West				Int. Total
	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	
03:00 PM	0	17	0	0	0	15	0	0	0	15	0	0	0	15	0	0	62
03:15 PM	0	13	0	0	0	13	0	0	0	11	0	0	0	13	0	0	50
03:30 PM	0	19	0	0	0	22	0	0	0	20	0	0	0	22	0	0	83
03:45 PM	0	12	0	0	0	26	0	0	0	13	0	0	0	26	0	0	77
Total	0	61	0	0	0	76	0	0	0	59	0	0	0	76	0	0	272
04:00 PM	0	17	0	0	0	31	0	0	0	16	0	0	0	31	0	0	95
04:15 PM	0	16	0	0	0	27	0	0	0	17	0	0	0	27	0	0	87
04:30 PM	0	19	0	0	0	20	0	0	0	13	0	0	0	20	0	0	72
04:45 PM	0	13	0	0	0	23	0	0	0	13	0	0	0	23	0	0	72
Total	0	65	0	0	0	101	0	0	0	59	0	0	0	101	0	0	326
05:00 PM	0	18	0	0	0	30	0	0	0	14	0	0	0	30	0	0	92
05:15 PM	0	16	0	0	0	27	0	0	0	12	0	0	0	27	0	0	82
05:30 PM	0	16	0	0	0	25	0	0	0	18	0	0	0	25	0	0	84
05:45 PM	0	18	0	0	0	28	0	0	0	16	0	0	0	28	0	0	90
Total	0	68	0	0	0	110	0	0	0	60	0	0	0	110	0	0	348
Grand Total	0	194	0	0	0	287	0	0	0	178	0	0	0	287	0	0	946
Apprch %	0	100	0	0	0	100	0	0	0	100	0	0	0	100	0	0	
Total %	0	20.5	0	0	0	30.3	0	0	0	18.8	0	0	0	30.3	0	0	

# BETA Group, Inc.

701 George Washington Highway  
 Lincoln, Rhode Island, 02865  
 P:401.333.2382

Project: RI Dispensaries  
 Town/City: Providence, RI  
 Location: Thomas C Slater C.C  
 Weather: Cloudy, 80s

File Name : 715401 - Thomas C. Slater C.C Combined - PM  
 Site Code : 00007154  
 Start Date : 8/13/2020  
 Page No : 2



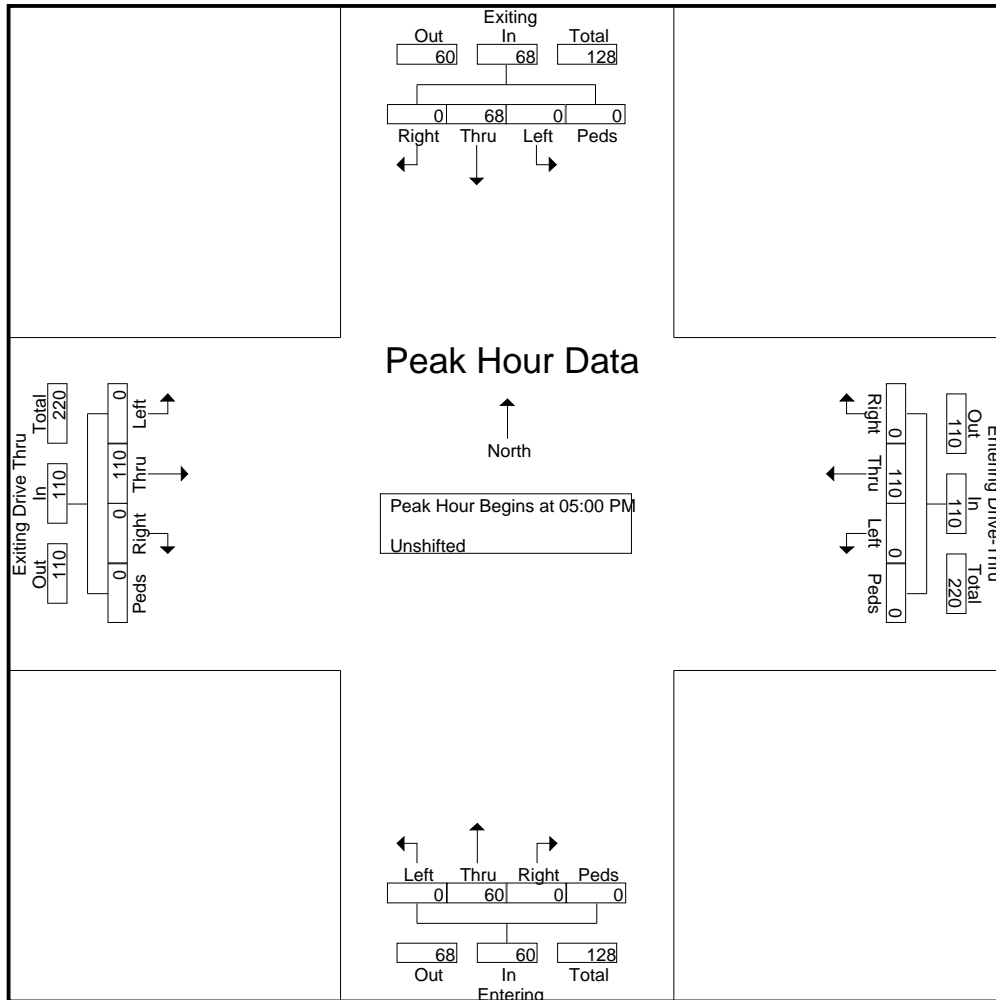
# BETA Group, Inc.

701 George Washington Highway  
Lincoln, Rhode Island, 02865  
P:401.333.2382

Project: RI Dispensaries  
Town/City: Providence, RI  
Location: Thomas C Slater C.C  
Weather: Cloudy, 80s

File Name : 715401 - Thomas C. Slater C.C Combined - PM  
Site Code : 00007154  
Start Date : 8/13/2020  
Page No : 3

Start Time	Exiting From North					Entering Drive-Thru From East					Entering From South					Exiting Drive Thru 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 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	18	0	0	18	0	30	0	0	30	0	14	0	0	14	0	30	0	0	30	92
05:15 PM	0	16	0	0	16	0	27	0	0	27	0	12	0	0	12	0	27	0	0	27	82
05:30 PM	0	16	0	0	16	0	25	0	0	25	0	18	0	0	18	0	25	0	0	25	84
05:45 PM	0	18	0	0	18	0	28	0	0	28	0	16	0	0	16	0	28	0	0	28	90
Total Volume	0	68	0	0	68	0	110	0	0	110	0	60	0	0	60	0	110	0	0	110	348
% App. Total	0	100	0	0		0	100	0	0		0	100	0	0		0	100	0	0		
PHF	.000	.944	.000	.000	.944	.000	.917	.000	.000	.917	.000	.833	.000	.000	.833	.000	.917	.000	.000	.917	.946



# APPENDIX B – Traffic Crash Data

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**January 2017 through December 2019**

Kingstown Road (Route 108) – School Street to Dale Carlia Street

Accident Data Summary

	Year			Total	Average per Year
	2017	2018	2019		
Corridor					
Kingstown Road (Route 108) - Indian Run Village Access Road to School Street	3	3	2	8	3
Intersection					
Kingstown Road (Route 108) at Dale Carlia Street	0	0	0	0	0
Kingstown Road (Route 108) at Indian Run Village Access Road	2	1	0	3	1
Kingstown Road (Route 108) at School Street	2	0	1	3	1
Total	7	4	3	14	5

## Kingstown Road (Route 108) - Indian Run Village Access Road to School Street

	2017	2018	2019	Total	Percent
<b>Collision Type</b>					
Rear End	0	2	0	2	25%
Angle	2	0	0	2	25%
Head-On	0	0	0	0	0%
Pedestrian	0	0	0	0	0%
Sideswipe, Same Direction	1	1	2	4	50%
Sideswipe, Opposite Direction	0	0	0	0	0%
Collision with Object	0	0	0	0	0%
Collision with Deer	0	0	0	0	0%
Other	0	0	0	0	0%
Unknown	0	0	0	0	0%
<b>Accident Severity</b>					
Property	2	3	2	7	88%
Injury	1	0	0	1	13%
Unknown	0	0	0	0	0%
<b>Light Condition</b>					
Daylight	3	3	2	8	100%
Dawn	0	0	0	0	0%
Dusk	0	0	0	0	0%
Dark - Lighted	0	0	0	0	0%
Dark - Not Lighted	0	0	0	0	0%
Dark - Unknown Lighting	0	0	0	0	0%
<b>Road Condition</b>					
Dry	3	2	2	7	88%
Wet	0	1	0	1	13%
Snow	0	0	0	0	0%
Slush	0	0	0	0	0%
Ice/Frost	0	0	0	0	0%
Water	0	0	0	0	0%
Sand, Mud, Dirt, Oil, Gravel	0	0	0	0	0%
Other	0	0	0	0	0%
Unknown	0	0	0	0	0%
<b>Hour of Day</b>					
6:00 AM - 9:00 AM	0	0	0	0	0%
9:00 AM - 3:00 PM	3	3	1	7	88%
3:00 PM - 6:00 PM	0	0	0	0	0%
6:00 PM - 6:00 AM	0	0	1	1	13%
<b>Total Accidents:</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>8</b>	

## Kingstown Road (Route 108) at Indian Run Village Access Road

	2017	2018	2019	Total	Percent
<b>Collision Type</b>					
Rear End	2	1	0	3	100%
Angle	0	0	0	0	0%
Head-On	0	0	0	0	0%
Pedestrian	0	0	0	0	0%
Sideswipe, Same Direction	0	0	0	0	0%
Sideswipe, Opposite Direction	0	0	0	0	0%
Collision with Object	0	0	0	0	0%
Collision with Deer	0	0	0	0	0%
Other	0	0	0	0	0%
Unknown	0	0	0	0	0%
<b>Accident Severity</b>					
Property	2	0	0	2	67%
Injury	0	1	0	1	33%
Unknown	0	0	0	0	0%
<b>Light Condition</b>					
Daylight	2	0	0	2	67%
Dawn	0	0	0	0	0%
Dusk	0	0	0	0	0%
Dark - Lighted	0	1	0	1	33%
Dark - Not Lighted	0	0	0	0	0%
Dark - Unknown Lighting	0	0	0	0	0%
<b>Road Condition</b>					
Dry	2	0	0	2	67%
Wet	0	1	0	1	33%
Snow	0	0	0	0	0%
Slush	0	0	0	0	0%
Ice/Frost	0	0	0	0	0%
Water	0	0	0	0	0%
Sand, Mud, Dirt, Oil, Gravel	0	0	0	0	0%
Other	0	0	0	0	0%
Unknown	0	0	0	0	0%
<b>Hour of Day</b>					
6:00 AM - 9:00 AM	0	0	0	0	0%
9:00 AM - 3:00 PM	2	0	0	2	67%
3:00 PM - 6:00 PM	0	1	0	1	33%
6:00 PM - 6:00 AM	0	0	0	0	0%
Total Accidents:	2	1	0	3	

Kingstown Road (Route 108) at School Street

	2017	2018	2019	Total	Percent
<b>Collision Type</b>					
Rear End	1	0	1	2	67%
Angle	1	0	0	1	33%
Head-On	0	0	0	0	0%
Pedestrian	0	0	0	0	0%
Sideswipe, Same Direction	0	0	0	0	0%
Sideswipe, Opposite Direction	0	0	0	0	0%
Collision with Object	0	0	0	0	0%
Collision with Deer	0	0	0	0	0%
Other	0	0	0	0	0%
Unknown	0	0	0	0	0%
<b>Accident Severity</b>					
Property	2	0	1	3	100%
Injury	0	0	0	0	0%
<b>Light Condition</b>					
Daylight	2	0	1	3	100%
Dawn	0	0	0	0	0%
Dusk	0	0	0	0	0%
Dark - Lighted	0	0	0	0	0%
Dark - Not Lighted	0	0	0	0	0%
Dark - Unknown Lighting	0	0	0	0	0%
<b>Road Condition</b>					
Dry	1	0	1	2	67%
Wet	1	0	0	1	33%
Snow	0	0	0	0	0%
Slush	0	0	0	0	0%
Ice/Frost	0	0	0	0	0%
Water	0	0	0	0	0%
Sand, Mud Dirt, Oil, Gravel	0	0	0	0	0%
Other	0	0	0	0	0%
Unknown	0	0	0	0	0%
<b>Hour of Day</b>					
6:00 AM - 9:00 AM	0	0	0	0	0%
9:00 AM - 3:00 PM	0	0	0	0	0%
3:00 PM - 6:00 PM	1	0	0	1	33%
6:00 PM - 6:00 AM	1	0	1	2	67%
Total Accidents:	2	0	1	3	

# APPENDIX C – Trip Generation

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**ITE Trip Generation Summary**

**Site Trip Distribution**

C

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**ITE Trip Generation Summary**

## Trip Generation Summary

Summary;

	<u>Description</u>	<u>Enter</u>	<u>Exit</u>	<u>Total</u>
<u>PM Peak</u>				
Independent Study Rate	Winding Rhode Compassion Center	45	55	100

Calculations;

Independent Study

Medical Marijuana Dispensary;

- There are currently 3 medical marijuana (compassion centers) licenses issued with 6 additional new licenses offered by the State of Rhode Island.
  - Each new license application is assigned within a geographical area of zone of Rhode Island.
  - The applicable license for the Wakefield location falls under Zone 5, which covers the Towns of South Kingstown, Exeter, Hopkinton, Richmond, Narragansett, Charlestown, and Westerly, which is designated to allow only 1 medical marijuana dispensary license within this zone.
  - It is anticipated that all 6 new licenses (compassion centers) will be operational soon after the license has been granted.
  - There are approximately 20,000 patients serviced by the 3 existing compassion centers.
- The Wakefield facility is anticipated to operate daily between late morning and early evening similar to the Portsmouth Compassion Center facility (10 AM – 7 PM).
- Patients are typically serviced in less than 15 minutes.

Trip Rate Calculations

Trip Rate was calculated utilizing population, trip data at the 3 existing compassion centers, and total number of patients;

Population;

Zone 5 Approx. Population = 31,000 (South Kingstown) + 7,000 (Exeter) + 8,000 (Hopkinton) + 8,000 (Richmond) + 7,000 (Narragansett) + 8,000 (Charlestown) + 23,000 (Westerly)  
 = 92,000 + 27,000 (North Kingstown) = 119,000  
 say = 120,000

Rhode Island Population = 1,060,000

Trips;

<u>PM Peak Hour</u>	<u>ENTER</u>	<u>EXIT</u>	<u>TOTAL</u>
Greenleaf Compassion Center (Portsmouth, RI) – Zone 6	65	70	135
Summit Medical Compassion Center (Warwick, RI) – Zone 4	110	125	235
Thomas C. Slater Compassion Center (Providence, RI) – Zone 2	170	180	350
TOTAL	345	375	720

Patients;

Fiscal Year 2020 (July 2019 to June 2020) = 20,000 patients

Vehicle Trips at West Greenwich Facility;

- 1 License offered in Zone 5 and was assumed that all patients within Zone 5 will be serviced at the Wakefield Facility (Winding Rhode Compassion Center)
- Rhode Island population has seen very little growth in the past 10 years
- To be conservative, total patients will increase by 10% to approximately 22,000 patients under future conditions

Total PM Peak Hour Trips under future conditions = 720 x 1.10 = 800 Trips

Rate = 800 Trips ÷ 1,060,000 Residents  
 = 0.76 Trips per 1,000 Residents

Zone 5 Population (includes adjacent Town of North Kingstown) = 120,000

Trips (T) = 0.76 x 120 = 100 Trips

Vehicle Distribution 45% Enter/55% Exit

Enter	45
Exit	55
Total	100 trips

C

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**Site Trip Distribution**



**SITE**

**Site Trips:**  
Enter: 45  
Exit: 55  
Total: 100

Indian Run Village

5

5 50

35 Dale Carlia Street

5

5

5

5  
45

35

Holley Street

Kingstown Road  
(Route 108)

Main Street

Old Tower Hill Road

5



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WEEKDAY TRAFFIC DISTRIBUTION  
PM PEAK HOUR BUILD

WINDING RHODE COMPASSION CENTER  
SOUTH KINGSTOWN, RHODE ISLAND

# APPENDIX D – Operational Analysis

---

## **Existing Conditions**

Kingstown Road (Route 108) at Indian Run Village

Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway

## **Future Build Conditions**

Kingstown Road (Route 108) at Indian Run Village

Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway

D

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**Existing Weekday PM Peak Hour**

Kingstown Road (Route 108) at Indian Run Village  
Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway

Kingstown Road (Route 108) at Indian Run Village



ENGINEERING SUCCESS TOGETHER

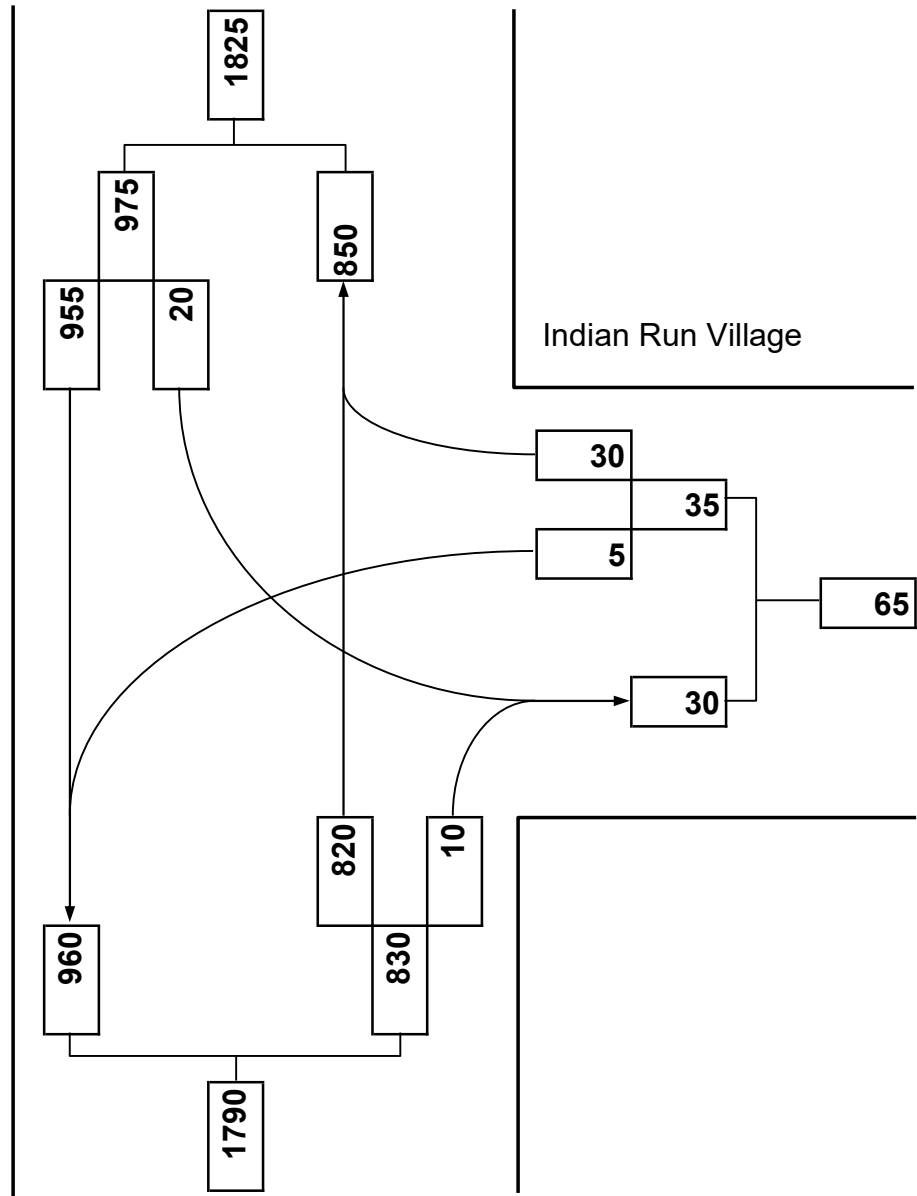
### Turning Movement Diagram

**Major Street:** Kingstown Rd. (Rte. 108)  
**City/Town:** S. Kingstown, RI  
**Reference No.:** 7278  
**Existing:** PM Peak Hour

**Minor Street:** Indian Run Village  
**Day of Week:** Weekday  
**Peak Period:** 4:00 PM - 5:00 PM  
**Future:** n/a



Kingstown Road (Route 108)



Winding Rhode Compassion Center  
Kingstown Road (Route 108) at Indian Run Village

South Kingstown, RI

10/02/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕↔			↕↔
Traffic Volume (vph)	5	30	820	10	20	955
Future Volume (vph)	5	30	820	10	20	955
Satd. Flow (prot)	1666	0	3568	0	0	3571
Flt Permitted	0.993					0.934
Satd. Flow (perm)	1666	0	3568	0	0	3339
Satd. Flow (RTOR)	32		4			
Lane Group Flow (vph)	37	0	883	0	0	1037
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Total Split (s)	19.0		34.5		34.5	34.5
Total Lost Time (s)	4.0		4.5			4.5
Act Effct Green (s)	5.4		42.2			42.2
Actuated g/C Ratio	0.11		0.88			0.88
v/c Ratio	0.17		0.28			0.36
Control Delay	10.9		1.9			2.2
Queue Delay	0.0		0.0			0.0
Total Delay	10.9		1.9			2.2
LOS	B		A			A
Approach Delay	10.9		1.9			2.2
Approach LOS	B		A			A
Queue Length 50th (ft)	1		0			0
Queue Length 95th (ft)	19		58			75
Internal Link Dist (ft)	286		27			608
Turn Bay Length (ft)						
Base Capacity (vph)	541		3121			2920
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.07		0.28			0.36

Intersection Summary

Cycle Length: 53.5

Actuated Cycle Length: 48.2

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 2.3

Intersection LOS: A

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 3:



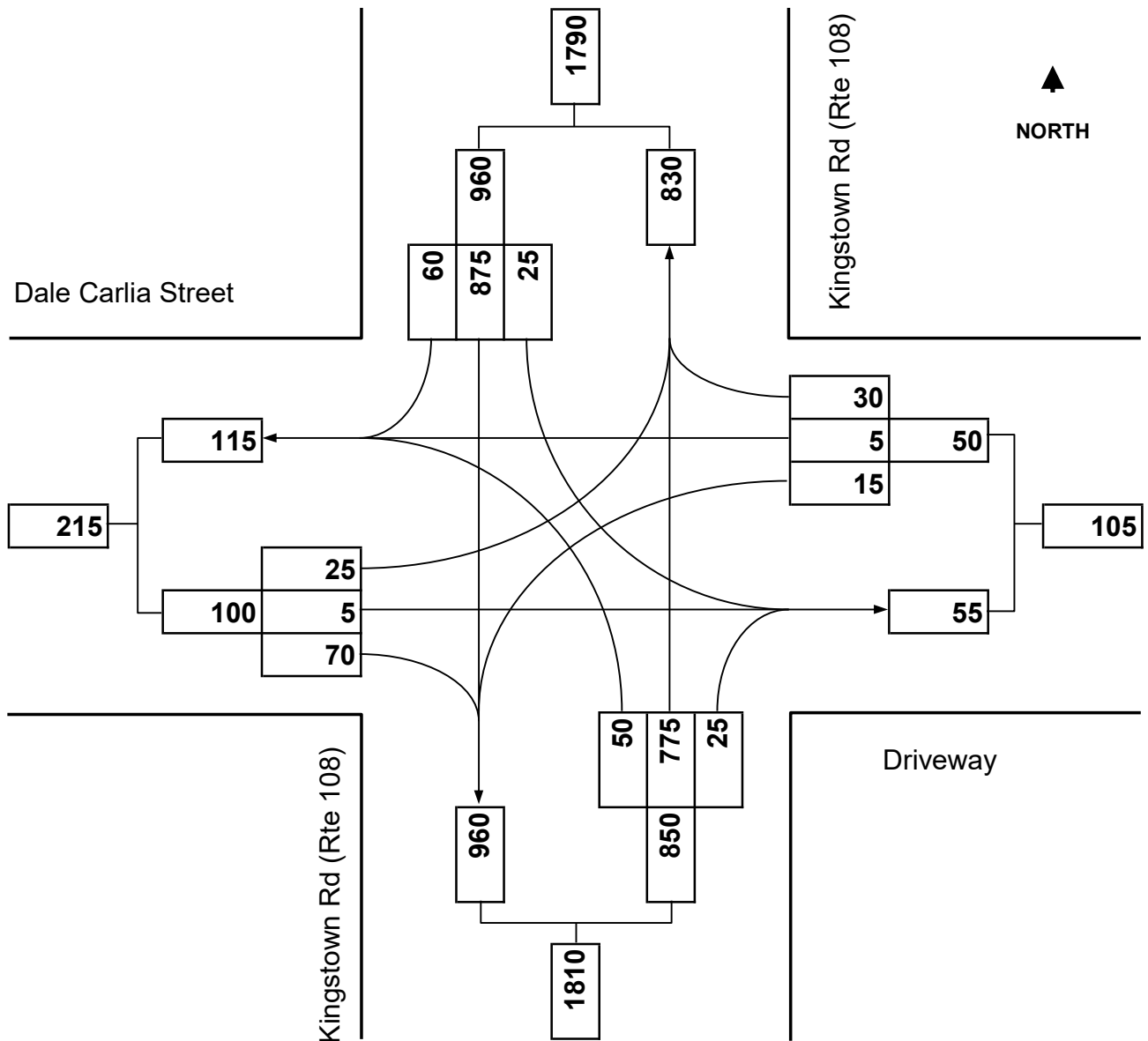
Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway



ENGINEERING SUCCESS TOGETHER

### Turning Movement Diagram

<b>Major Street:</b>	Kingstown Rd. (Rte. 108)	<b>Minor Street:</b>	Dale Carlia St./Driveway
<b>City/Town:</b>	S. Kingstown, RI	<b>Day of Week:</b>	Weekday
<b>Reference No.:</b>	7278	<b>Peak Period:</b>	4:00 PM - 5:00 PM
<b>Existing:</b>	PM Peak Hour	<b>Future:</b>	n/a



Intersection												
Int Delay, s/veh	11											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	25	5	70	15	5	30	50	775	25	25	875	60
Future Vol, veh/h	25	5	70	15	5	30	50	775	25	25	875	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	29	6	80	17	6	34	57	891	29	29	1006	69

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1662	2133	538	1584	2153	460	1075	0	0	920	0	0
Stage 1	1099	1099	-	1020	1020	-	-	-	-	-	-	-
Stage 2	563	1034	-	564	1133	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	65	50	493	74	49	554	656	-	-	750	-	-
Stage 1	230	291	-	257	317	-	-	-	-	-	-	-
Stage 2	483	312	-	483	280	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	43	37	493	44	36	554	656	-	-	750	-	-
Mov Cap-2 Maneuver	43	37	-	44	36	-	-	-	-	-	-	-
Stage 1	189	262	-	211	260	-	-	-	-	-	-	-
Stage 2	364	256	-	357	253	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	151.6		90.7		1.5		0.7	
HCM LOS	F		F					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	656	-	-	116	94	750	-
HCM Lane V/C Ratio	0.088	-	-	0.991	0.611	0.038	-
HCM Control Delay (s)	11	0.9	-	151.6	90.7	10	0.5
HCM Lane LOS	B	A	-	F	F	A	A
HCM 95th %tile Q(veh)	0.3	-	-	6.5	2.9	0.1	-

D

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**Future Build Weekday PM Peak Hour**

Kingstown Road (Route 108) at Indian Run Village  
Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway

Kingstown Road (Route 108) at Indian Run Village



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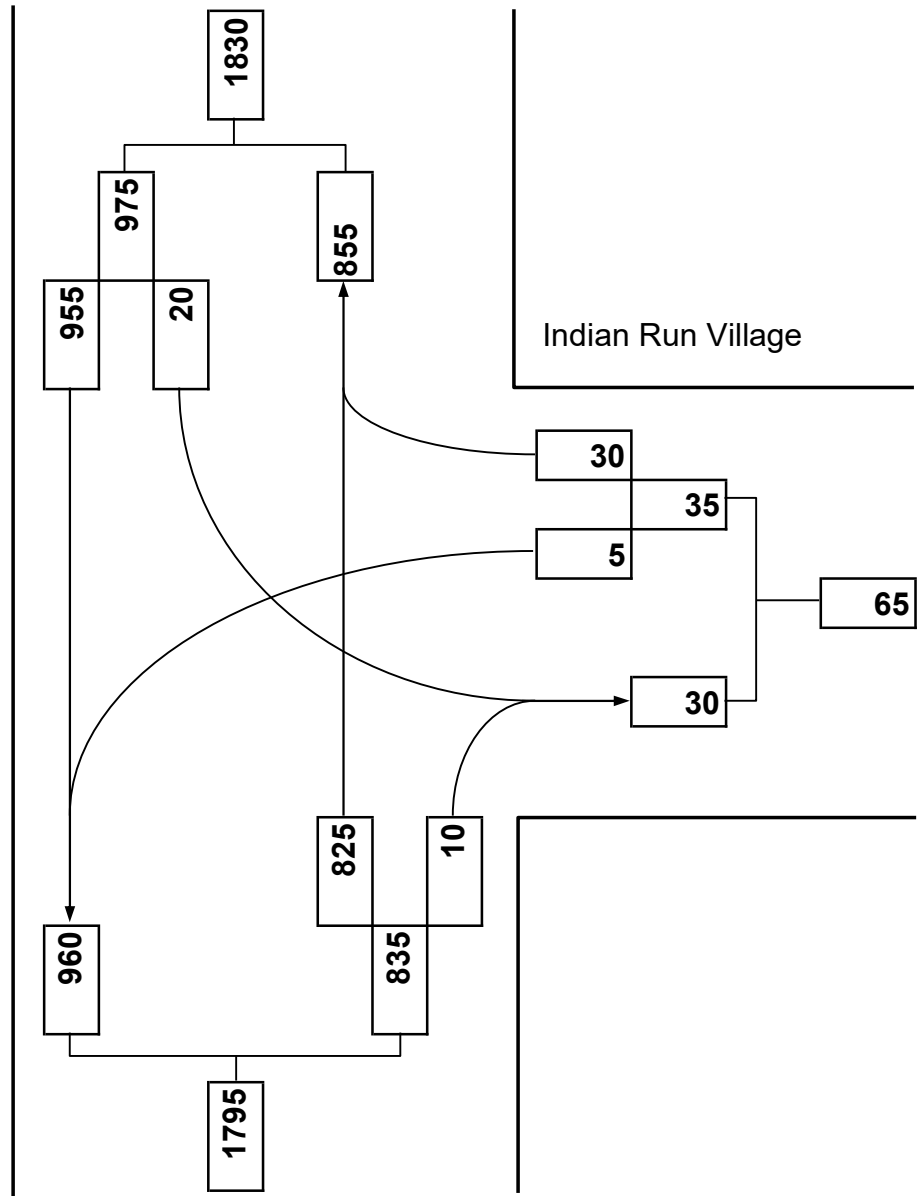
### Turning Movement Diagram

**Major Street:** Kingstown Rd. (Rte. 108)  
**City/Town:** S. Kingstown, RI  
**Reference No.:** 7278  
**Existing:** n/a

**Minor Street:** Indian Run Village  
**Day of Week:** Weekday  
**Peak Period:** PM Peak Hour  
**Future:** Build



Kingstown Road (Route 108)



Winding Rhode Compassion Center  
Kingstown Road (Route 108) at Indian Run Village

South Kingstown, RI  
10/02/2020



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕			↕
Traffic Volume (vph)	5	30	825	10	20	955
Future Volume (vph)	5	30	825	10	20	955
Satd. Flow (prot)	1666	0	3568	0	0	3571
Flt Permitted	0.993					0.933
Satd. Flow (perm)	1666	0	3568	0	0	3335
Satd. Flow (RTOR)	32		4			
Lane Group Flow (vph)	37	0	889	0	0	1037
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Total Split (s)	19.0		34.5		34.5	34.5
Total Lost Time (s)	4.0		4.5			4.5
Act Effct Green (s)	5.4		42.2			42.2
Actuated g/C Ratio	0.11		0.88			0.88
v/c Ratio	0.17		0.28			0.36
Control Delay	10.9		1.9			2.2
Queue Delay	0.0		0.0			0.0
Total Delay	10.9		1.9			2.2
LOS	B		A			A
Approach Delay	10.9		1.9			2.2
Approach LOS	B		A			A
Queue Length 50th (ft)	1		0			0
Queue Length 95th (ft)	19		58			75
Internal Link Dist (ft)	286		27			608
Turn Bay Length (ft)						
Base Capacity (vph)	541		3121			2916
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.07		0.28			0.36

Intersection Summary

Cycle Length: 53.5  
 Actuated Cycle Length: 48.2  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.36  
 Intersection Signal Delay: 2.3  
 Intersection LOS: A  
 Intersection Capacity Utilization 51.9%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 3:



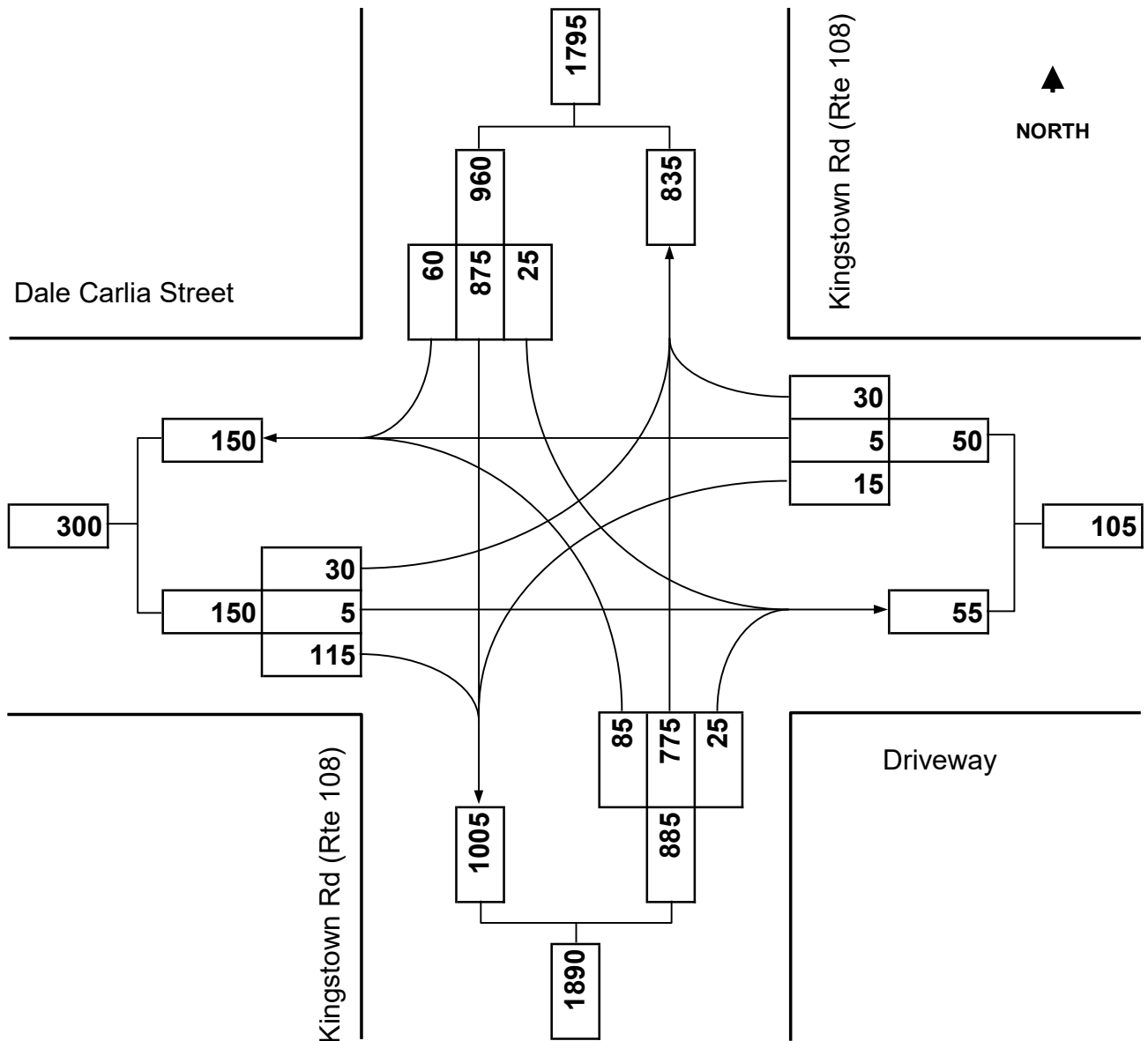
Kingstown Road (Route 108) at Dale Carlia Street/Wakefield Liquors Driveway



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### Turning Movement Diagram

<b>Major Street:</b>	Kingstown Rd. (Rte. 108)	<b>Minor Street:</b>	Dale Carlia St./Driveway
<b>City/Town:</b>	S. Kingstown, RI	<b>Day of Week:</b>	Weekday
<b>Reference No.:</b>	7278	<b>Peak Period:</b>	PM Peak Hour
<b>Existing:</b>	n/a	<b>Future:</b>	Build



Intersection												
Int Delay, s/veh	32.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	5	115	15	5	30	85	775	25	25	875	60
Future Vol, veh/h	30	5	115	15	5	30	85	775	25	25	875	60
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	34	6	132	17	6	34	98	891	29	29	1006	69

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1744	2215	538	1666	2235	460	1075	0	0	920	0	0
Stage 1	1099	1099	-	1102	1102	-	-	-	-	-	-	-
Stage 2	645	1116	-	564	1133	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	56	44	493	65	43	554	656	-	-	750	-	-
Stage 1	230	291	-	229	290	-	-	-	-	-	-	-
Stage 2	432	285	-	483	280	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	~ 31	28	493	29	27	554	656	-	-	750	-	-
Mov Cap-2 Maneuver	~ 31	28	-	29	27	-	-	-	-	-	-	-
Stage 1	159	262	-	159	201	-	-	-	-	-	-	-
Stage 2	273	198	-	312	253	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, \$	370.5	179.5	2.3	0.7
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	656	-	-	109	66	750	-
HCM Lane V/C Ratio	0.149	-	-	1.582	0.871	0.038	-
HCM Control Delay (s)	11.4	1.4	-	\$ 370.5	179.5	10	0.5
HCM Lane LOS	B	A	-	F	F	A	A
HCM 95th %tile Q(veh)	0.5	-	-	12.9	4.1	0.1	-

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