Warwick, Rhode Island

# Neon Marketplace

*January 2021*
Revised October 2021

# TRAFFIC IMPACT STUDY


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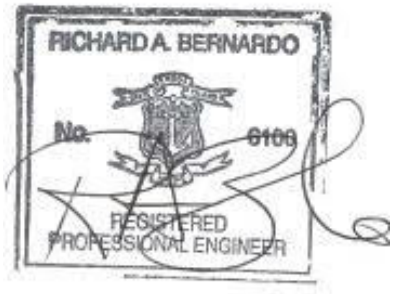
# Neon Marketplace
Warwick, Rhode Island

# TRAFFIC IMPACT STUDY

Prepared by: BETA GROUP, INC.

Prepared for: Mr. Nick Giacobbi
Director of Development
TPG Companies
1140 Reservoir Avenue
Cranston, Rhode Island 02920

January 2021
Revised October 2021



IMPROVING COMMUNITIES TOGETHER

January 28, 2020
Revised October 22, 2021

Mr. Nick Giacobbi
Director of Development
TPG Companies
1140 Reservoir Avenue
Cranston, Rhode Island 02920

Re: Proposed Commercial Redevelopment
*Neon Marketplace*
1149 Division Street (Route 401)
Warwick, Rhode Island 02886

Dear Mr. Giacobbi:

BETA Group, Inc., has completed an update to our original January 2021 Traffic Impact Study to address changes to the site redevelopment proposal that included modification to the right turn site access driveway and analysis of the morning peak period based on the RIDOT PAP review comments. The project is located on the northerly side of Division Street just west of Route 4. The parcel is presently developed with a single building and associated parking. The site was formerly occupied the *Eleven Forty Nine Restaurant* that operated on the property for many years but recently closed leaving the site vacant.

Based upon information provided by your office, and a review of the current site plan prepared by *DiPrete Engineering*, it is our understanding that the redevelopment project will include razing of an existing building, formerly a restaurant, to allow construction of a new 5,500 square foot convenience market/gasoline station. Access and egress to the new business will be provided from two existing driveways on Division Street, which will both be modified to accommodate the new use.

The study included herein, was conducted to determine the adequacy of the existing servicing roadways to accommodate anticipated traffic to be generated by the commercial redevelopment project. An analysis of potential impacts to the roadway capacity and safety has been completed and is discussed in the following report.

Very truly yours,
BETA Group, Inc.

Paul J. Bannon
Associate

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# 1.0 INTRODUCTION

The objective of the following study is to assess the potential traffic impacts associated with a proposed commercial redevelopment project in the City of Warwick. The property is situated on a parcel of land on the northerly side of Division Street between Route 2 and Route 4 adjacent to the Showcase Cinema plaza. Refer to the Figure 1, Project Vicinity Map, on the following page for the project location within the community.

The redevelopment proposal will consist of razing the existing commercial building, formerly utilized as a restaurant, to allow construction of a 5,500 square foot building to accommodate a convenience market with a gasoline station providing 16 vehicle fueling positions. Parking will be available for 46 vehicles. Main access and egress to the site will be provided from an existing signalized driveway intersection with Division Street and the Route 4 southbound ramps with secondary access just east of the main driveway, which will be restricted to a right turn enter-only driveway.

The study summarized herein focused on both traffic flow efficiency and safety along Division Street (Route 401) in the immediate vicinity of the subject property, and specifically at the site driveways. The impacts associated with the site related traffic have been defined and evaluated in accordance with standard traffic engineering guidelines and procedures.

The traffic engineering study completed for this project included the following:

- Traffic data collection to define the existing traffic patterns and operation characteristics along the servicing roadways. Due to the current business restrictions in place in Rhode Island and resultant traffic patterns not being consistent with typical daily traffic conditions, record data was obtained from the Rhode Island Department of Transportation (RIDOT) and from previous traffic studies completed in the vicinity of the project area.

- An inventory of the physical roadway characteristics of Division Street (Route 401) in the project area to determine the adequacy of the existing roadway geometric features in reference to safety and operations.

- An analysis of accident records obtained from the local police department to define potential safety issues along the immediate servicing roadways adjacent to the site.

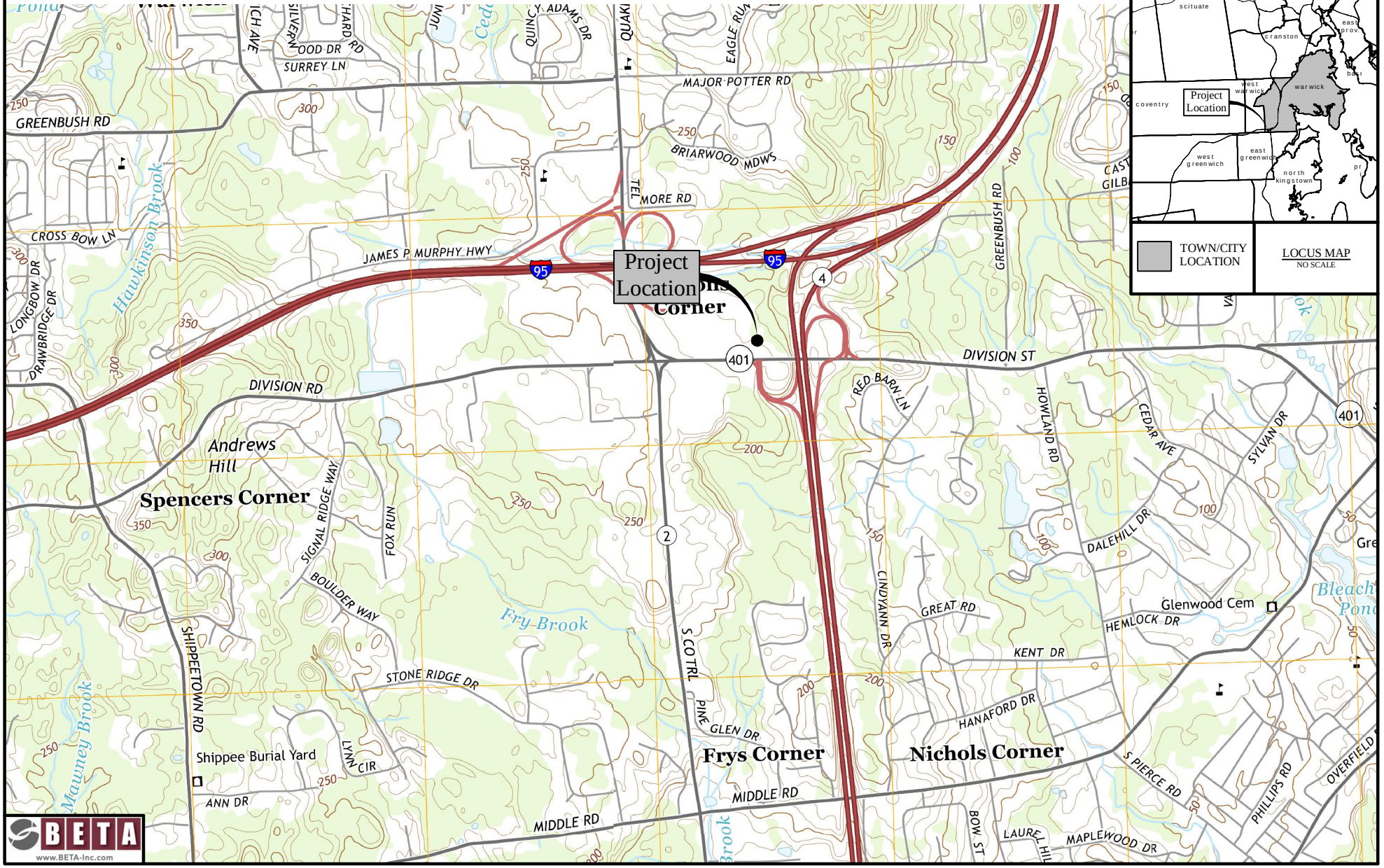
- An estimate of future traffic volumes for the proposed commercial redevelopment was calculated using data from the “Trip Generation” Manual, an informational report published by the Institute of Transportation Engineers (ITE).

- Evaluation and analysis of the traffic safety and operations for existing and future traffic conditions and development of recommendations if determined necessary, to maintain safe and adequate access to the redeveloped commercial property.

# Neon Marketplace

WARWICK, RHODE ISLAND

## Figure 1 - Project Vicinity Map



# 2.0 PROJECT AREA

As noted in the previous section, the subject property is situated on the northerly side of Division Street at the signalized junction of the Route 4 southbound on/off-ramps. The lot is defined by Assessor's Plat 215, Lot 008, which contains approximately 1.61 acres of partially developed land with a single commercial structure and associated paved parking lot that was most recently occupied by a restaurant, *Eleven Forty Nine.* Figure 2 on the following page depicts the general project area, and the boundary lines of the subject property.

Land use in the immediate project area is predominantly commercial in nature along Division Street. Immediately abutting the property to the north is a National Grid power transformer station, to the east is a vacant lot presently being utilized by the Rhode Island Department of Transportation for their bridge replacement project, and to the west is wooded and undeveloped National Grid land between the subject site and the *Showcase Cinemas* plaza. To the south, directly across Division Street, is the Route 4 southbound on/off-ramp interchange. Further north along Quaker Lane (Route 2) is a commercial corridor that includes large commercial plazas, gas stations, car dealerships, restaurants, and retail shops.

Division Street will serve as the primary access route to the redeveloped property. Based upon the operating characteristics along the servicing roadway, and the estimated volume and type of traffic associated with the commercial redevelopment, a study impact area was defined for the project. The limits of our analysis focused Division Street between Route 2 and the Route 4 corridors, specifically focusing on the intersection of Division Street (Route 401) with the Route 4 southbound interchange and the site driveways.

# 3.0 EXISTING CONDITIONS

## 3.1 ROADWAYS

*Division Street (Route 401)*

Division Street (Route 401) is an east/west principal arterial extending from Quaker Lane/S. County Trail (Route 2) to the west to First Avenue to the east. Division Street creates a boundary line between the City of Warwick and Town of East Greenwich, which is centered along the roadway with the City of Warwick on the north and the Town of East Greenwich on the south. Division Street provides immediate local access to abutting properties but also links to higher order facilities including Route 4 to the east and I-95 to the north.

In the project area, Division Street varies in width and section due to the Route 4 interchange and the large commercial plazas to the west where separate left turn and right turn lanes are provided at the signalized junctions, but typically provides two 11-foot travel lanes in each direction separated by a raised cement concrete median island as seen in the photograph on the following page.

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## Figure 2 - Project Area Map

The pavement surface can be classified as being in good condition with very minor pavement distress. Cement concrete curbing is provided on both sides of Division Street with no sidewalks. Cobra-head light fixtures on utility poles are located sporadically along the southerly side of the corridor for nighttime illumination. The speed limit is posted at 35 mph in the site vicinity.

It should be noted that the Division Street bridge over Route 4 replacement project is currently underway by the Rhode Island Department of Transportation and will continue through the 2021 calendar year.

## 3.2 INTERSECTIONS

*Division Street (Route 1) at Route 4 Southbound Ramps/Site Driveway*

Division Street (Route 401) intersects the Route 4 Southbound ramps and site driveway to form a signalized, four-way junction as depicted on the adjacent image. The Division Street eastbound approach provides a shared left turn/thru lane, a thru lane, and a channelized right turn lane. The Division Street westbound approach provides a separate left turn lane, a thru lane, and a shared thru/right turn lane. The Route 4 southbound exit ramp northbound approach provides a separate left turn lane, a shared left/thru/right lane, and a separate right turn lane. The site driveway southbound approach provides a single multiuse lane.

The traffic signal system appears to be in good working condition as some of the older equipment has been upgraded as part of regular maintenance projects. The layout of the equipment consists of mast arm mounted signal heads with in road vehicle loop detectors. In addition, no pedestrian accommodations are provided at the intersection.

The intersection was determined to operate in a fully actuated-coordinated mode with four phases. The Division Street eastbound and westbound movements are serviced in two phases including an advanced protected westbound left turn, followed by through/right turn concurrent movements. The Route 4

southbound exit ramp northbound and site driveway southbound approaches are serviced under the two remaining (split) phases.

### 3.3 Traffic Flow Data

Existing traffic flow characteristics for this area were obtained from record data available from RIDOT and from previous traffic studies in the vicinity of the project area. As mentioned previously, traffic count data obtained after March, 2020 is highly affected by the current business restrictions in place in Rhode Island due to the pandemic. This condition has resulted in traffic patterns not being consistent with typical daily traffic conditions experienced along the roadways in Rhode Island and therefore record information was utilized in accordance with current guidelines. As part of our effort, count data was obtained from the RIDOT as part of a State Traffic Commission Traffic Study prepared for the intersection of Division Street (Route 401) with the Route 4 Southbound Ramps/Commercial Driveway, dated September 2016, prepared by *Crossman Engineering*. The existing traffic data collected as part of the 2016 study has been utilized as a basis of analysis for this project.

Based upon review of the TMC data, which was adjusted to 2021 volumes using a conservative annual growth rate of 1%, Division Street (Route 401) along the property frontage, was found to service approximately 2,120 vehicles during the weekday morning peak hour between 7:30 and 8:30 AM with approximately 1,170 vehicles eastbound and 950 vehicles westbound. During the weekday afternoon peak hour between 4:00 and 5:00 PM, Division Street serviced 2,775 vehicles with approximately 1,630 vehicles eastbound and 1,145 vehicles westbound. Figure 3 on the following page depict the daily peak hour turning movement volumes at the study intersection. Complete count information can be found in the Appendix.

## 4.0 Safety Analysis

To determine if there are any limiting factors affecting safety relating to access to the proposed commercial project, the physical characteristics of Division Street (Route 401) in the project area and specifically at the site driveway location 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 exit the main site access driveway when turning right from the site driveway as all other movements are controlled (protected) movements at the traffic signal.

The horizontal and vertical alignment of Division Street (Route 401) in the project area can be described as relatively straight with a minor crest vertical curve just east of the main site access driveway. Based upon the existing roadway geometry as described, the available sight distance at the main site access driveway intersection is greater than 500 feet to the east. These values are greater than AASHTO's recommended minimum stopping sight distance of 250 feet based on the posted speed limit of 35 mph. It should be noted that speeds are highly variable due to the controlled Division Street (Route 401) and

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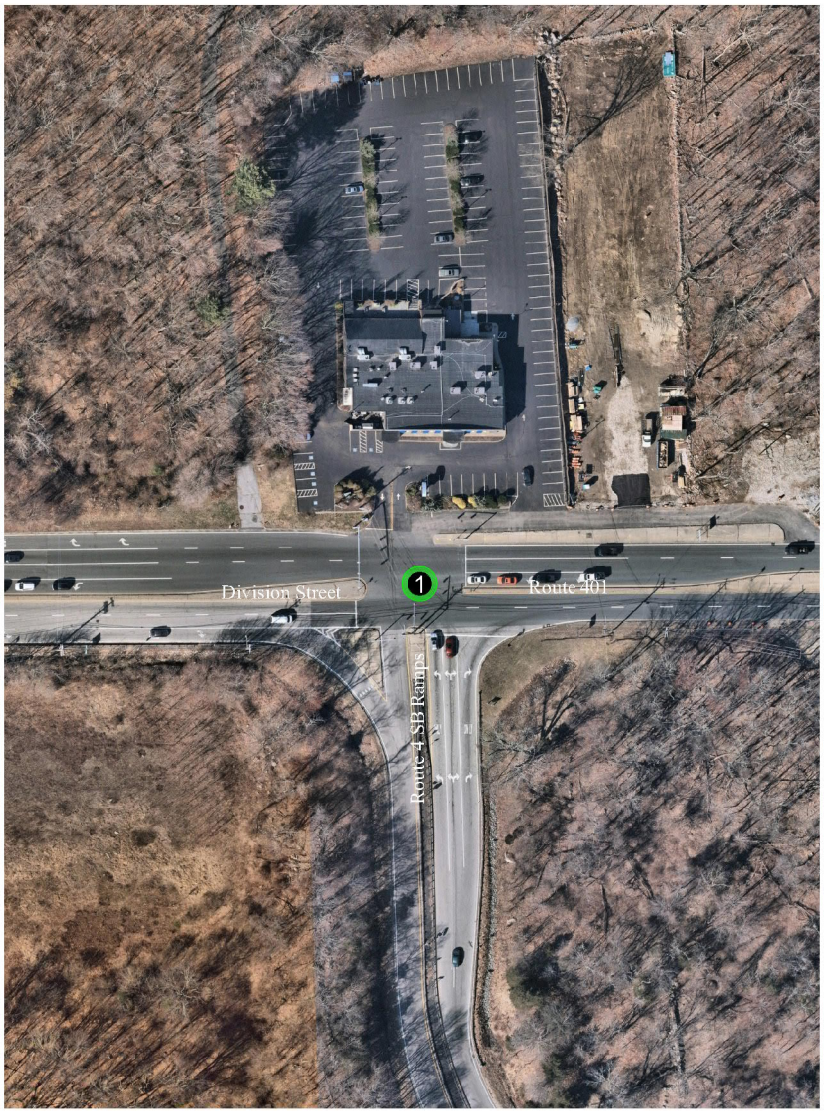
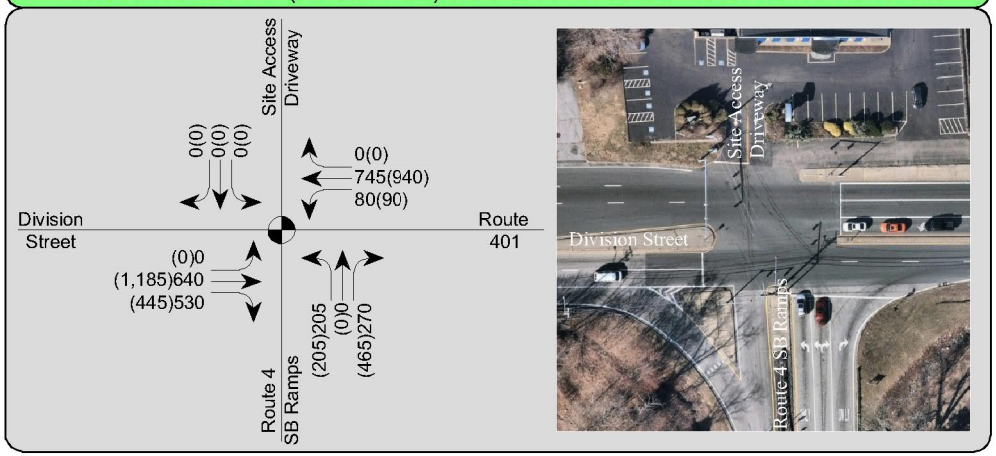
## Figure 3 - Existing Traffic Volumes




1 DIVISION STREET (ROUTE 401)/ROUTE 4 SB RAMPS/SITE ACCESS DWY.




LEGEND:

- TURN LANE
- XXX AM PEAK VOLUMES (7:30 TO 8:30)
- (XXX) PM PEAK VOLUMES (4:00 TO 5:00)
- 1 STUDY INTERSECTION
- TRAFFIC SIGNAL

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As a result of the preliminary evaluation of the existing roadway geometry and physical features, it does not appear that any significant physical roadway safety deficiencies exist within the defined study area. Also, as part of our analysis, a review of accident statistics was completed. Data was reviewed from the East Greenwich and Warwick Police Departments for the latest recorded full three-year period from January 2017 to December 2019 to determine if any location in the project area experienced a high frequency or pattern of crashes.

Summarizing the data, a total of 41 crashes (avg. 14 per year) occurred over the three-year study period, with nine involving an injury, at the signalized intersection of Division Street (Route 401) with the Route 4 Southbound ramps/Site Driveway. The majority of the crashes 33 (80%) at the study intersection were rear-end crashes, which is typical of signalized junctions where the majority are rear end crashes are due to the numerous starting and stopping movements required for the signal change intervals.

In addition, both the angle collisions were attributed to vehicles running a red light. The sideswipe (same direction) collisions are attributed to vehicles changing lanes to avoid turning vehicles. The three collision with an object were single vehicle crashes that occurred along the Division Street eastbound to Route 4 southbound channelized right turn lane where motorists were traveling at high speeds and misjudged the turn and hit the median.

Based upon the historical accident data obtained from the local police, and a review of existing roadway geometry, physical features, and operations, roadway or traffic related safety improvements could be investigated to improve safety at the study signalized junction. The RIDOT could review the clearance intervals to determine if they require adjustment in an effort to reduce the number of rear-end collisions including investigating installation of traffic signal head backplates with retroreflective border to reduce the overall number of crashes.

# 5.0 Impact Analysis

## 5.1 Trip Generation

To determine the traffic impact of a proposed development, estimates of anticipated traffic to be generated by a particular land use must be calculated. As previously discussed, the redevelopment proposal consists of razing an existing structure to allow construction of a 5,500 square foot building to accommodate a convenience market with a gasoline station providing 16 vehicle fueling positions. Main access and egress to the site will be provided from an existing signalized driveway on Division Street with secondary access, which will be restricted to a right turn enter-only driveway, on Division Street just east of the main access driveway. Figure 4 on the following page depicts the site layout and access plan, prepared by *DiPrete Engineering.*

For this site, projected traffic volumes for the commercial project were based on 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

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## Figure 4 - Site Layout


Site Plan provided by DiPrete Engineering

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 future trips to new developments. For the proposed commercial redevelopment project, Land Use Code 960 Super Convenience Market/Gas Station was 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. Table 1 summarizes the estimate trip volumes calculated for this project for the daily AM and PM Peak Periods which would represent the peak traffic conditions associated with the land use in combination with the adjacent street traffic, representing a worse case traffic condition at the site driveways.

TABLE 1 – Trip Generation Estimate

| | Description | Enter | Exit | Total |
|---|---|---|---|---|
| *AM Peak Hour* | | | | |
| ITE Land Use Code 960 | Super Convenience Market/Gas Station | 225 | 225 | 450 |
| *PM Peak Hour* | | | | |
| ITE Land Use Code 960 | Super Convenience Market/Gas Station | 184 | 184 | 368 |

It should be noted that a trip is defined as a one-way vehicle movement, therefore driving to and from the site, for example is equivalent to two trips. In addition, for this type of service-oriented use, it is estimated that between 40% and 60% of trips generated by the proposed convenience market/gas station will not be new to the servicing roadways. The ITE manual provides information on what is referred to as "pass-by" trips, or those trips associated with the site that are already on the servicing roadways and turn into and out of a business and continue to their destination. Therefore, these pass-by vehicles would not be "added" to the adjacent servicing roadway but would be diverted vehicles in to and out of the new development. However, to be conservative, no reduction for pass-by trips was considered in our analysis.

## 5.2 Future Traffic Conditions

In order to properly assess the impacts of a development, future traffic conditions of area roadways should be estimated for the period when the development is constructed and fully occupied. Typically, the expansion of base traffic is calculated when a project is to be constructed over an extended period (+3 to 5 years). In all instances, area growth that may affect capacity results should be considered. For this project, a conservative annual growth rate of 1.0 percent was utilized for the future background traffic growth based on record traffic volumes in the project area where it has declined. This rate was applied to the existing volumes to establish a Future 2024 Build traffic condition on the servicing roadways. The Future 2024 Build condition included traffic generated by the new commercial development. Figure 5 on the following page depicts the estimated future traffic volumes at the study intersection.

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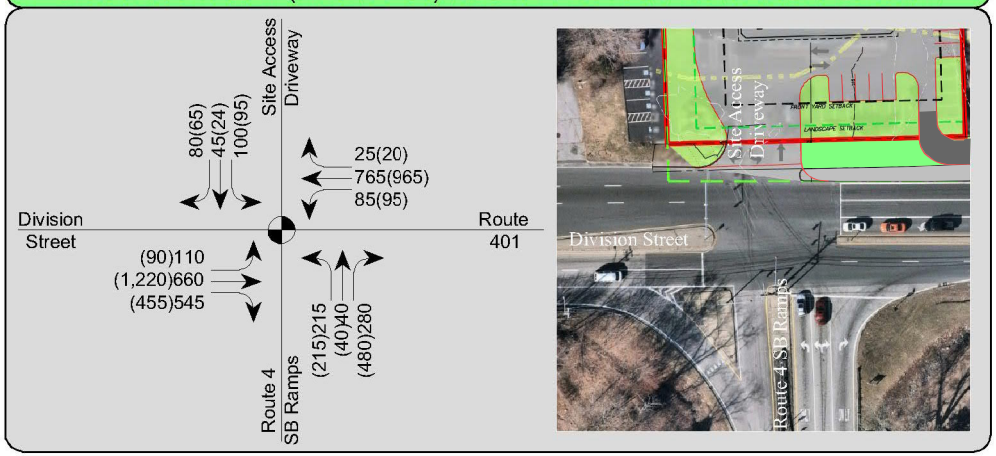
## Figure 5 - Future Traffic Volumes


1 DIVISION STREET (ROUTE 401)/ROUTE 4 SB RAMPS/SITE ACCESS DWY.




LEGEND:

- TURN LANE
- XXX AM PEAK VOLUMES (7:30 TO 8:30)
- (XXX) PM PEAK VOLUMES (4:00 TO 5:00)
- 1 STUDY INTERSECTION
- TRAFFIC SIGNAL

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It should be noted that a RIDOT project currently in the Environmental Permitting phase and scheduled for construction in the next five years will have a major impact to future traffic volumes along the Division Street corridor. The long delayed project will provide the missing links between the Route 4 and Route 95 freeways. Presently drivers are forced to use Route 2 and Division Street in this area to go from Route 95 north to Route 4 south, and from Route 4 north to Route 95 south. These missing movements generate unnecessary traffic along these local roads of Division Street and Route 2, which will be removed when the interchange project is complete, helping to reduce afternoon peak hour congestion along the corridor.

In developing the intersection volumes to be analyzed under build conditions, a directional distribution of the site traffic was estimated. The distribution was based on current traffic patterns in the area coupled with the service-oriented nature of the proposed convenience store/gas station where the site trips are anticipated to be pass-by trips, though new to the servicing roadway as indicated previously to be conservative in our analysis. Site distribution figures are also provided in the Appendix

## 5.3 Operation 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 record traffic data found that the weekday AM and PM peak hours would represent this worst-case combination of site-generated traffic with the servicing roadway peak traffic period.

The Highway Capacity Manual methodologies provide the most accurate means of evaluating traffic capacity and delays for roadways and intersections. The results of these procedures 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 below outlines the Level of Service delay criteria presented in the Highway Capacity Manual for signalized and unsignalized 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 Division Street (Route 4) intersection with the Route 4 Southbound Ramps/Site Access Driveway was analyzed for the weekday morning and afternoon peak hours, which as indicated would represent the worst-case operational condition along the servicing roadways. The capacity analysis worksheets are included in the Appendix and Table 3 on the following page summarizes the results of the Existing and Future Build conditions analyses at the study intersection.

As can be seen in the table below, the signalized junction of Division Street (Route 401) with the Route 4 Southbound Ramps/Site Access Driveway currently operates overall at an efficient Level of Service (LOS) A and good LOS B with the critical movements experiencing LOS D or better during the daily AM and PM peak hours, respectively.

TABLE 3 – Level of Service Summary (Existing Conditions)

| Location / Movement | 2021 EXISTING CONDITIONS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak Hour | | | | PM Peak Hour | | | |
| | LOS | Delay | 95th % Queue Length (veh.) | v/c | LOS | Delay | 95th % Queue Length (veh.) | v/c |
| *Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway (S)* | | | | | | | | |
| Division St. EB Left/Thru | A | 9.9 | 7 | 0.30 | B | 16.8 | 17 | 0.62 |
| Division St. EB Right | A | 0.6 | 1 | 0.35 | A | 2.8 | 2 | 0.43 |
| Division St. WB Left | D | 46.3 | 4 | 0.47 | D | 50.9 | 4 | 0.54 |
| Division St. WB Thru | A | 3.9 | 4 | 0.29 | A | 5.5 | 7 | 0.40 |
| Division St. WB Right | A | 0.0 | 0 | 0.0 | A | 0.0 | 0 | 0.0 |
| Route 4 SB Ramp NB Left | D | 43.6 | 6 | 0.61 | D | 45.2 | 7 | 0.65 |
| Route 4 SB Ramp NB Left/Thru/Right | B | 13.2 | 3 | 0.46 | B | 10.7 | 3 | 0.57 |
| Route 4 SB Ramp NB Right | A | 8.6 | 2 | 0.41 | A | 8.0 | 2 | 0.53 |
| Site Access Dwy. SB | A | 0.0 | 0 | 0.0 | A | 0.0 | 0 | 0.0 |
| OVERALL | A | 9.6 | - | - | B | 13.1 | - | - |

*(S) – Signalized*
*(U) – Unsignalized*

Table 4 on the following page presents the estimated future conditions at the study intersections where the analysis found that the estimated increase in traffic during the peak periods resulting from the proposed site redevelopment project, combined with the base traffic growth along the servicing roadways will not adversely impact overall traffic operations along Division Street (Route 401) with the proposed site access design. To increase capacity and reduce delays, the site access driveway will be designed with separate shared left/thru and right turn exiting lanes so right turning traffic can operate more efficiently with less delay as seen in the table. In addition, left turn entering traffic, which will be provided from a new exclusive left turn lane, will be serviced concurrently with the Division Street advanced westbound protected left turn phase and will operate in an acceptable manner at LOS D

during both the morning and afternoon peak hours. This conceptual design is shown in the Appendix for reference.

The signalized junction of Division Street (Route 401) with the Route 4 Southbound Ramps/Site Access Driveway with optimization will continue to operate overall at an acceptable LOS C during both the morning and afternoon peak hours. All critical movements will operate at LOS D or better except for the Route 4 Southbound Off-Ramp northbound left and the Site Access Driveway southbound left/thru movements where it operates with greater delays at LOS E during the PM peak period. The signal phasing and timing optimization will be coordinated with the Rhode Island Department of Transportation (RIDOT) through the Physical Alteration Permit process if future traffic conditions are realized and warrant the modification.

In addition, the secondary access driveway on Division Street (Route 401) will operate efficiently with minimal delays during the afternoon peak conditions due to the low site-related volumes for this movement, coupled with the restricted right turn enter-only movement, which does not require a delay analysis.

TABLE 4 – Level of Service Summary (Future Conditions)

| Location / Movement | 2024 BUILD CONDITIONS* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak Hour | | | | PM Peak Hour | | | |
| | LOS | Delay | 95th % Queue Length (veh.) | v/c | LOS | Delay | 95th % Queue Length (veh.) | v/c |
| *Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway (S)* | | | | | | | | |
| Division St. EB Left | D | 43.5 | 5 | 0.50 | D | 46.5 | 4 | 0.48 |
| Division St. EB Thru | B | 19.4 | 9 | 0.42 | C | 26.8 | 19 | 0.77 |
| Division St. EB Right | A | 0.6 | 1 | 0.36 | A | 3.4 | 2 | 0.49 |
| Division St. WB Left | D | 46.6 | 4 | 0.49 | D | 54.6 | 5 | 0.60 |
| Division St. WB Thru/Right | C | 20.8 | 11 | 0.51 | C | 20.7 | 14 | 0.62 |
| Route 4 SB Ramp NB Left | D | 48.7 | 7 | 0.69 | E | 57.4 | 9 | 0.78 |
| Route 4 SB Ramp NB Left/Thru/Right | C | 28.0 | 6 | 0.59 | D | 35.6 | 9 | 0.81 |
| Route 4 SB Ramp NB Right | A | 9.0 | 2 | 0.44 | B | 14.7 | 4 | 0.65 |
| Site Access Dwy. SB Left/Thru | D | 50.1 | 7 | 0.63 | E | 64.4 | 7 | 0.72 |
| Site Access Dwy. SB Right | A | 4.2 | 1 | 0.27 | A | 4.2 | 1 | 0.28 |
| OVERALL | C | 20.8 | - | - | C | 25.7 | - | - |

*(S) – Signalized*
*(U) – Unsignalized*
** – Optimized Timings*

# 6.0 CONCLUSIONS AND RECOMMENDATIONS

In summary, the study has shown that the proposed commercial project, *Neon Marketplace*, access and site circulation have been designed to provide a level of traffic safety and efficiency on the servicing roadway system and within the site. The safety of the servicing roadway and specifically the study intersection was also reviewed for geometry and sight distances. The review determined the intersection provides 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 or driveway location.

In reference to safety, as previously noted, a few minor measures were recommended to be considered at the signalized intersection of Division Street (Route 401) with the Route 4 Southbound ramps/Site Access driveway. The RIDOT could review the clearance intervals to determine if they require adjustment in an effort to reduce the number of rear-end collisions while also investigating installation of traffic signal head backplates with retroreflective borders to potentially help reduce the overall number of crashes at this intersection. These will be placed on any new heads that are proposed as part of the intersection improvements.

The findings of the operational analysis determined that the estimated increase in traffic during the peak periods resulting from the proposed commercial redevelopment project, *Neon Marketplace*, will have a minor effect on overall traffic operations along Division Street (Route 401), particularly during the daily afternoon peak hour when the site and adjacent roadway service their greatest daily volumes with the recommended driveway and phasing modifications depicted in the plan provided.

Therefore, based upon the data collected on the servicing roadways, the analysis completed as part of this study, along with the access design and recommendations proposed, the commercial redevelopment project was determined to have adequate and safe access to a public street, and will not have an adverse impact on public safety and welfare in the study area.

# APPENDIX

A. Traffic Volume Data

B. Traffic Crash Data

C. Trip Generation

D. Operational Analysis

E. Off-Site Improvement Concept Plan

# APPENDIX A – Traffic Volume Data

## Intersection Turning Movement Count

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

# A

## Intersection Turning Movement Count

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

(Source; *State Traffic Commission* Traffic Study Report, dated September 2016, by *Crossman Engineering*)

# *Transportation Data Corporation*

*Mario Perone, mperone1@verizon.net*
*tel (781) 587-0086 cell (781) 439-4999*


N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars & Peds

| | "1149" Restaurant Driveway From North | | | | Division Road (Route 401) From East | | | | Route 4 SB On/Off Ramps From South | | | | Division Road (Route 401) From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 11:00 AM | 1 | 0 | 0 | 0 | 0 | 168 | 16 | 0 | 62 | 2 | 36 | 0 | 99 | 216 | 0 | 0 | 600 |
| 11:15 AM | 0 | 0 | 1 | 0 | 1 | 146 | 12 | 0 | 46 | 0 | 32 | 0 | 94 | 222 | 0 | 0 | 554 |
| 11:30 AM | 1 | 0 | 0 | 0 | 1 | 143 | 18 | 0 | 44 | 0 | 38 | 0 | 81 | 201 | 0 | 0 | 527 |
| 11:45 AM | 0 | 0 | 1 | 0 | 1 | 163 | 11 | 0 | 37 | 2 | 28 | 0 | 91 | 217 | 1 | 0 | 552 |
| Total | 2 | 0 | 2 | 0 | 3 | 620 | 57 | 0 | 189 | 4 | 134 | 0 | 365 | 856 | 1 | 0 | 2233 |
| 12:00 PM | 0 | 0 | 1 | 0 | 0 | 182 | 23 | 0 | 63 | 1 | 23 | 0 | 105 | 210 | 8 | 0 | 616 |
| 12:15 PM | 0 | 0 | 0 | 0 | 2 | 167 | 12 | 0 | 58 | 1 | 39 | 0 | 78 | 228 | 2 | 0 | 587 |
| 12:30 PM | 0 | 0 | 0 | 0 | 0 | 157 | 22 | 0 | 84 | 0 | 52 | 0 | 112 | 190 | 1 | 0 | 618 |
| 12:45 PM | 0 | 0 | 1 | 0 | 1 | 179 | 17 | 0 | 79 | 1 | 66 | 0 | 92 | 202 | 0 | 0 | 638 |
| Total | 0 | 0 | 2 | 0 | 3 | 685 | 74 | 0 | 284 | 3 | 180 | 0 | 387 | 830 | 11 | 0 | 2459 |
| 01:00 PM | 0 | 1 | 1 | 0 | 1 | 147 | 19 | 0 | 57 | 1 | 50 | 0 | 92 | 189 | 0 | 0 | 558 |
| 01:15 PM | 0 | 0 | 0 | 0 | 4 | 146 | 24 | 0 | 55 | 3 | 44 | 0 | 84 | 188 | 1 | 0 | 549 |
| 01:30 PM | 1 | 1 | 0 | 0 | 0 | 168 | 13 | 0 | 50 | 0 | 27 | 0 | 91 | 180 | 0 | 0 | 531 |
| 01:45 PM | 0 | 0 | 4 | 0 | 0 | 181 | 17 | 0 | 57 | 2 | 35 | 0 | 87 | 193 | 3 | 0 | 579 |
| Total | 1 | 2 | 5 | 0 | 5 | 642 | 73 | 0 | 219 | 6 | 156 | 0 | 354 | 750 | 4 | 0 | 2217 |
| 02:00 PM | 0 | 1 | 0 | 0 | 0 | 149 | 19 | 0 | 59 | 1 | 39 | 0 | 91 | 210 | 0 | 0 | 569 |
| 02:15 PM | 1 | 0 | 1 | 0 | 0 | 175 | 13 | 0 | 85 | 0 | 53 | 0 | 115 | 247 | 0 | 0 | 690 |
| 02:30 PM | 2 | 0 | 2 | 0 | 2 | 218 | 24 | 0 | 93 | 2 | 56 | 0 | 119 | 227 | 5 | 0 | 750 |
| 02:45 PM | 2 | 3 | 3 | 0 | 1 | 208 | 17 | 0 | 83 | 1 | 48 | 0 | 95 | 213 | 1 | 0 | 675 |
| Total | 5 | 4 | 6 | 0 | 3 | 750 | 73 | 0 | 320 | 4 | 196 | 0 | 420 | 897 | 6 | 0 | 2684 |
| 03:00 PM | 0 | 1 | 3 | 0 | 0 | 238 | 25 | 0 | 66 | 0 | 43 | 0 | 115 | 251 | 1 | 0 | 743 |
| 03:15 PM | 1 | 0 | 2 | 0 | 0 | 311 | 23 | 0 | 95 | 1 | 49 | 0 | 92 | 251 | 2 | 0 | 827 |
| 03:30 PM | 0 | 1 | 1 | 0 | 0 | 191 | 13 | 0 | 97 | 1 | 48 | 0 | 93 | 256 | 0 | 0 | 701 |
| 03:45 PM | 0 | 0 | 1 | 0 | 1 | 191 | 17 | 0 | 116 | 0 | 62 | 0 | 94 | 217 | 1 | 0 | 700 |
| Total | 1 | 2 | 7 | 0 | 1 | 931 | 78 | 0 | 374 | 2 | 202 | 0 | 394 | 975 | 4 | 0 | 2971 |
| 04:00 PM | 0 | 0 | 1 | 0 | 0 | 218 | 16 | 0 | 94 | 2 | 52 | 0 | 100 | 274 | 2 | 0 | 759 |
| 04:15 PM | 0 | 0 | 1 | 0 | 1 | 245 | 26 | 0 | 89 | 0 | 57 | 0 | 108 | 272 | 5 | 0 | 804 |
| 04:30 PM | 0 | 0 | 1 | 0 | 1 | 218 | 17 | 0 | 126 | 0 | 38 | 0 | 98 | 311 | 0 | 0 | 810 |
| 04:45 PM | 1 | 0 | 2 | 0 | 0 | 198 | 21 | 0 | 128 | 1 | 44 | 0 | 106 | 263 | 2 | 0 | 766 |
| Total | 1 | 0 | 5 | 0 | 2 | 879 | 80 | 0 | 437 | 3 | 191 | 0 | 412 | 1120 | 9 | 0 | 3139 |
| 05:00 PM | 1 | 1 | 1 | 0 | 1 | 183 | 18 | 0 | 58 | 0 | 41 | 0 | 108 | 259 | 5 | 0 | 676 |
| 05:15 PM | 0 | 0 | 1 | 0 | 1 | 216 | 23 | 0 | 59 | 1 | 26 | 6 | 87 | 248 | 1 | 0 | 669 |
| 05:30 PM | 0 | 0 | 0 | 0 | 1 | 194 | 13 | 0 | 112 | 2 | 44 | 0 | 105 | 281 | 3 | 0 | 755 |
| 05:45 PM | 3 | 4 | 4 | 0 | 3 | 186 | 25 | 0 | 115 | 2 | 48 | 0 | 98 | 250 | 8 | 0 | 746 |
| Total | 4 | 5 | 6 | 0 | 6 | 779 | 79 | 0 | 344 | 5 | 159 | 6 | 398 | 1038 | 17 | 0 | 2846 |
| 06:00 PM | 1 | 0 | 2 | 0 | 1 | 180 | 28 | 0 | 107 | 1 | 44 | 0 | 77 | 208 | 1 | 1 | 651 |
| 06:15 PM | 1 | 0 | 0 | 0 | 2 | 141 | 15 | 0 | 78 | 2 | 41 | 4 | 108 | 201 | 9 | 0 | 602 |
| 06:30 PM | 1 | 1 | 2 | 0 | 2 | 160 | 9 | 0 | 89 | 3 | 44 | 0 | 76 | 175 | 2 | 0 | 564 |
| 06:45 PM | 1 | 0 | 1 | 0 | 1 | 131 | 10 | 0 | 75 | 1 | 29 | 0 | 63 | 150 | 0 | 1 | 463 |
| Total | 4 | 1 | 5 | 0 | 6 | 612 | 62 | 0 | 349 | 7 | 158 | 4 | 324 | 734 | 12 | 2 | 2280 |
| 07:00 PM | 1 | 1 | 2 | 0 | 1 | 135 | 11 | 0 | 81 | 0 | 32 | 0 | 67 | 164 | 9 | 0 | 504 |
| 07:15 PM | 0 | 2 | 1 | 0 | 1 | 132 | 8 | 0 | 58 | 1 | 19 | 0 | 79 | 152 | 0 | 0 | 453 |
| 07:30 PM | 1 | 0 | 1 | 0 | 0 | 136 | 10 | 0 | 57 | 2 | 13 | 0 | 53 | 113 | 0 | 0 | 386 |
| 07:45 PM | 3 | 7 | 4 | 0 | 0 | 114 | 11 | 0 | 44 | 3 | 15 | 0 | 51 | 96 | 1 | 0 | 349 |
| Total | 5 | 10 | 8 | 0 | 2 | 517 | 40 | 0 | 240 | 6 | 79 | 0 | 250 | 525 | 10 | 0 | 1692 |
| Grand Total | 23 | 24 | 46 | 0 | 31 | 6415 | 616 | 0 | 2756 | 40 | 1455 | 10 | 3304 | 7725 | 74 | 2 | 22521 |
| Apprch % | 24.7 | 25.8 | 49.5 | 0 | 0.4 | 90.8 | 8.7 | 0 | 64.7 | 0.9 | 34.1 | 0.2 | 29.8 | 69.6 | 0.7 | 0 | |
| Total % | 0.1 | 0.1 | 0.2 | 0 | 0.1 | 28.5 | 2.7 | 0 | 12.2 | 0.2 | 6.5 | 0 | 14.7 | 34.3 | 0.3 | 0 | |

**_Transportation Data Corporation_**
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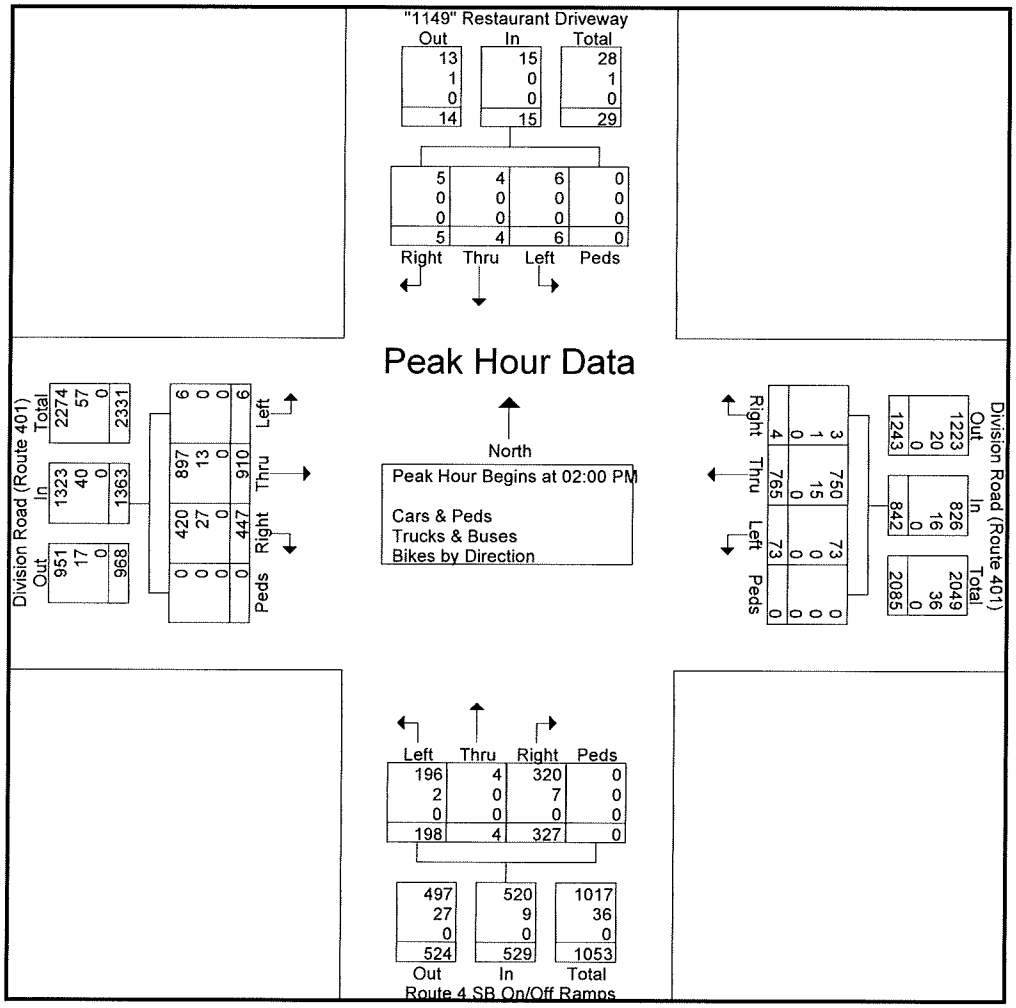
N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 1

| | "1149" Restaurant Driveway From North | | | | | Division Road (Route 401) From East | | | | | Route 4 SB On/Off Ramps From South | | | | | Division Road (Route 401) From West | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 02:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 02:00 PM | 0 | 1 | 0 | 0 | 1 | 0 | 151 | 19 | 0 | 170 | 63 | 1 | 41 | 0 | 105 | 101 | 212 | 0 | 0 | 313 | 589 |
| 02:15 PM | 1 | 0 | 1 | 0 | 2 | 0 | 178 | 13 | 0 | 191 | 86 | 0 | 53 | 0 | 139 | 120 | **253** | 0 | 0 | **373** | 705 |
| 02:30 PM | **2** | 0 | 2 | 0 | 4 | **2** | **221** | **24** | 0 | **247** | **95** | **2** | **56** | 0 | **153** | **123** | 230 | **5** | 0 | 358 | **762** |
| 02:45 PM | 2 | **3** | **3** | 0 | **8** | 2 | 215 | 17 | 0 | 234 | 83 | 1 | 48 | 0 | 132 | 103 | 215 | 1 | 0 | 319 | 693 |
| Total Volume | 5 | 4 | 6 | 0 | 15 | 4 | 765 | 73 | 0 | 842 | 327 | 4 | 198 | 0 | 529 | 447 | 910 | 6 | 0 | 1363 | 2749 |
| % App. Total | 33.3 | 26.7 | 40 | 0 | | 0.5 | 90.9 | 8.7 | 0 | | 61.8 | 0.8 | 37.4 | 0 | | 32.8 | 66.8 | 0.4 | 0 | | |
| PHF | .625 | .333 | .500 | .000 | .469 | .500 | .865 | .760 | .000 | .852 | .861 | .500 | .884 | .000 | .864 | .909 | .899 | .300 | .000 | .914 | .902 |
| Cars & Peds | 5 | 4 | 6 | 0 | 15 | 3 | 750 | 73 | 0 | 826 | 320 | 4 | 196 | 0 | 520 | 420 | 897 | 6 | 0 | 1323 | 2684 |
| % Cars & Peds | 100 | 100 | 100 | 0 | 100 | 75.0 | 98.0 | 100 | 0 | 98.1 | 97.9 | 100 | 99.0 | 0 | 98.3 | 94.0 | 98.6 | 100 | 0 | 97.1 | 97.6 |
| Trucks & Buses | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 0 | 16 | 7 | 0 | 2 | 0 | 9 | 27 | 13 | 0 | 0 | 40 | 65 |
| % Trucks & Buses | 0 | 0 | 0 | 0 | 0 | 25.0 | 2.0 | 0 | 0 | 1.9 | 2.1 | 0 | 1.0 | 0 | 1.7 | 6.0 | 1.4 | 0 | 0 | 2.9 | 2.4 |
| Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |



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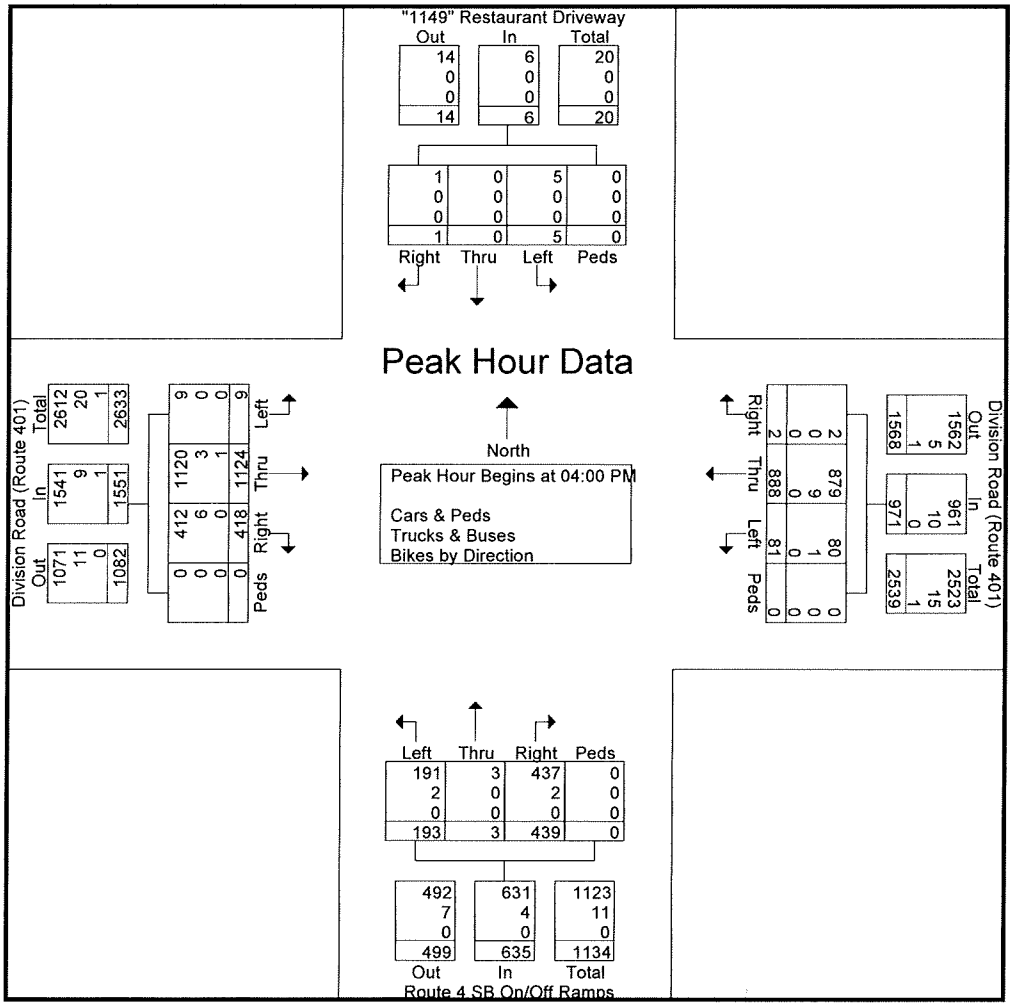
N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 2

| | "1149" Restaurant Driveway From North | | | | | Division Road (Route 401) From East | | | | | Route 4 SB On/Off Ramps From South | | | | | Division Road (Route 401) From West | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 03:00 PM to 07:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:00 PM | 0 | 0 | 1 | 0 | 1 | 0 | 219 | 16 | 0 | 235 | 94 | **2** | 54 | 0 | 150 | 100 | 276 | 2 | 0 | 378 | 764 |
| 04:15 PM | 0 | 0 | 1 | 0 | 1 | **1** | **247** | **26** | 0 | **274** | 90 | 0 | **57** | 0 | 147 | **109** | 274 | **5** | 0 | 388 | 810 |
| 04:30 PM | 0 | 0 | 1 | 0 | 1 | 1 | 222 | 18 | 0 | 241 | 126 | 0 | 38 | 0 | 164 | 102 | **311** | 0 | 0 | **413** | **819** |
| 04:45 PM | **1** | 0 | **2** | 0 | **3** | 0 | 200 | 21 | 0 | 221 | **129** | 1 | 44 | 0 | **174** | 107 | 263 | 2 | 0 | 372 | 770 |
| Total Volume | 1 | 0 | 5 | 0 | 6 | 2 | 888 | 81 | 0 | 971 | 439 | 3 | 193 | 0 | 635 | 418 | 1124 | 9 | 0 | 1551 | 3163 |
| % App. Total | 16.7 | 0 | 83.3 | 0 | | 0.2 | 91.5 | 8.3 | 0 | | 69.1 | 0.5 | 30.4 | 0 | | 27 | 72.5 | 0.6 | 0 | | |
| PHF | .250 | .000 | .625 | .000 | .500 | .500 | .899 | .779 | .000 | .886 | .851 | .375 | .846 | .000 | .912 | .959 | .904 | .450 | .000 | .939 | .966 |
| Cars & Peds | 1 | 0 | 5 | 0 | 6 | 2 | 879 | 80 | 0 | 961 | 437 | 3 | 191 | 0 | 631 | 412 | 1120 | 9 | 0 | 1541 | 3139 |
| % Cars & Peds | 100 | 0 | 100 | 0 | 100 | 100 | 99.0 | 98.8 | 0 | 99.0 | 99.5 | 100 | 99.0 | 0 | 99.4 | 98.6 | 99.6 | 100 | 0 | 99.4 | 99.2 |
| Trucks & Buses | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 10 | 2 | 0 | 2 | 0 | 4 | 6 | 3 | 0 | 0 | 9 | 23 |
| % Trucks & Buses | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 1.2 | 0 | 1.0 | 0.5 | 0 | 1.0 | 0 | 0.6 | 1.4 | 0.3 | 0 | 0 | 0.6 | 0.7 |
| Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| % Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0.0 |



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N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 2

| | "1149" Restaurant Driveway From North | | | | | Division Road (Route 401) From East | | | | | Route 4 SB On/Off Ramps From South | | | | | Division Road (Route 401) From West | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 02:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 02:00 PM | 0 | 1 | 0 | 0 | 1 | 0 | 149 | 19 | 0 | 168 | 59 | 1 | 39 | 0 | 99 | 91 | 210 | 0 | 0 | 301 | 569 |
| 02:15 PM | 1 | 0 | 1 | 0 | 2 | 0 | 175 | 13 | 0 | 188 | 85 | 0 | 53 | 0 | 138 | 115 | **247** | 0 | 0 | **362** | 690 |
| 02:30 PM | **2** | 0 | 2 | 0 | 4 | **2** | **218** | **24** | 0 | **244** | **93** | **2** | **56** | 0 | **151** | **119** | 227 | **5** | 0 | 351 | **750** |
| 02:45 PM | 2 | **3** | **3** | 0 | **8** | 1 | 208 | 17 | 0 | 226 | 83 | 1 | 48 | 0 | 132 | 95 | 213 | 1 | 0 | 309 | 675 |
| Total Volume | 5 | 4 | 6 | 0 | 15 | 3 | 750 | 73 | 0 | 826 | 320 | 4 | 196 | 0 | 520 | 420 | 897 | 6 | 0 | 1323 | 2684 |
| % App. Total | 33.3 | 26.7 | 40 | 0 | | 0.4 | 90.8 | 8.8 | 0 | | 61.5 | 0.8 | 37.7 | 0 | | 31.7 | 67.8 | 0.5 | 0 | | |
| PHF | .625 | .333 | .500 | .000 | .469 | .375 | .860 | .760 | .000 | .846 | .860 | .500 | .875 | .000 | .861 | .882 | .908 | .300 | .000 | .914 | .895 |
| Peak Hour Analysis From 03:00 PM to 07:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:00 PM | 0 | 0 | 1 | 0 | 1 | 0 | 218 | 16 | 0 | 234 | 94 | **2** | 52 | 0 | 148 | 100 | 274 | 2 | 0 | 376 | 759 |
| 04:15 PM | 0 | 0 | 1 | 0 | 1 | **1** | **245** | **26** | 0 | **272** | 89 | 0 | **57** | 0 | 146 | **108** | 272 | **5** | 0 | 385 | 804 |
| 04:30 PM | 0 | 0 | 1 | 0 | 1 | 1 | 218 | 17 | 0 | 236 | 126 | 0 | 38 | 0 | 164 | 98 | **311** | 0 | 0 | **409** | **810** |
| 04:45 PM | **1** | 0 | **2** | 0 | **3** | 0 | 198 | 21 | 0 | 219 | **128** | 1 | 44 | 0 | **173** | 106 | 263 | 2 | 0 | 371 | 766 |
| Total Volume | 1 | 0 | 5 | 0 | 6 | 2 | 879 | 80 | 0 | 961 | 437 | 3 | 191 | 0 | 631 | 412 | 1120 | 9 | 0 | 1541 | 3139 |
| % App. Total | 16.7 | 0 | 83.3 | 0 | | 0.2 | 91.5 | 8.3 | 0 | | 69.3 | 0.5 | 30.3 | 0 | | 26.7 | 72.7 | 0.6 | 0 | | |
| PHF | .250 | .000 | .625 | .000 | .500 | .500 | .897 | .769 | .000 | .883 | .854 | .375 | .838 | .000 | .912 | .954 | .900 | .450 | .000 | .942 | .969 |

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N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 1

Groups Printed- Trucks & Buses

| | "1149" Restaurant Driveway From North | | | | Division Road (Route 401) From East | | | | Route 4 SB On/Off Ramps From South | | | | Division Road (Route 401) From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 11:00 AM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 2 | 0 | 0 | 8 |
| 11:15 AM | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 2 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 10 |
| 11:30 AM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 6 |
| 11:45 AM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 8 |
| Total | 0 | 0 | 0 | 0 | 0 | 10 | 2 | 0 | 3 | 0 | 0 | 0 | 10 | 7 | 0 | 0 | 32 |
| 12:00 PM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 0 | 0 | 12 |
| 12:15 PM | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 12 |
| 12:30 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 1 | 0 | 5 | 3 | 0 | 0 | 15 |
| 12:45 PM | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 5 | 0 | 0 | 18 |
| Total | 0 | 0 | 0 | 0 | 0 | 20 | 1 | 0 | 2 | 0 | 1 | 0 | 20 | 13 | 0 | 0 | 57 |
| 01:00 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 10 |
| 01:15 PM | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 1 | 0 | 3 | 2 | 0 | 0 | 11 |
| 01:30 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 |
| 01:45 PM | 1 | 0 | 0 | 0 | 0 | 5 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 1 | 0 | 13 |
| Total | 1 | 0 | 0 | 0 | 0 | 16 | 2 | 0 | 1 | 0 | 2 | 0 | 6 | 8 | 1 | 0 | 37 |
| 02:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 0 | 2 | 0 | 10 | 2 | 0 | 0 | 20 |
| 02:15 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 6 | 0 | 0 | 15 |
| 02:30 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 12 |
| 02:45 PM | 0 | 0 | 0 | 0 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 2 | 0 | 0 | 18 |
| Total | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 0 | 7 | 0 | 2 | 0 | 27 | 13 | 0 | 0 | 65 |
| 03:00 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 1 | 0 | 0 | 11 |
| 03:15 PM | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 11 |
| 03:30 PM | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 10 |
| 03:45 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 10 |
| Total | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 2 | 0 | 0 | 0 | 15 | 6 | 0 | 0 | 42 |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 5 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 5 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 9 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 |
| Total | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 2 | 0 | 2 | 0 | 6 | 3 | 0 | 0 | 23 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 7 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 5 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 4 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 4 | 0 | 0 | 13 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 4 |
| Total | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 2 | 0 | 1 | 0 | 6 | 9 | 1 | 0 | 29 |
| 06:00 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 5 |
| 06:15 PM | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 5 | 2 | 0 | 0 | 13 |
| 06:30 PM | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 6 |
| 06:45 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 5 |
| Total | 0 | 0 | 0 | 0 | 0 | 12 | 1 | 0 | 1 | 0 | 0 | 0 | 10 | 5 | 0 | 0 | 29 |
| 07:00 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 |
| 07:15 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 5 |
| 07:30 PM | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 0 | 0 | 8 |
| 07:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 3 |
| Total | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 1 | 0 | 1 | 0 | 9 | 3 | 0 | 0 | 21 |
| Grand Total | 1 | 0 | 0 | 0 | 1 | 117 | 8 | 0 | 21 | 0 | 9 | 0 | 109 | 67 | 2 | 0 | 335 |
| Apprch % | 100 | 0 | 0 | 0 | 0.8 | 92.9 | 6.3 | 0 | 70 | 0 | 30 | 0 | 61.2 | 37.6 | 1.1 | 0 | |
| Total % | 0.3 | 0 | 0 | 0 | 0.3 | 34.9 | 2.4 | 0 | 6.3 | 0 | 2.7 | 0 | 32.5 | 20 | 0.6 | 0 | |

**_Transportation Data Corporation_**
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*tel (781) 587-0086 cell (781) 439-4999*

N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 2

| | "1149" Restaurant Driveway From North | | | | | Division Road (Route 401) From East | | | | | Route 4 SB On/Off Ramps From South | | | | | Division Road (Route 401) From West | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 02:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 02:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | **4** | 0 | **2** | 0 | **6** | **10** | 2 | 0 | 0 | **12** | **20** |
| 02:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 5 | **6** | 0 | 0 | 11 | 15 |
| 02:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 2 | 4 | 3 | 0 | 0 | 7 | 12 |
| 02:45 PM | 0 | 0 | 0 | 0 | 0 | **1** | **7** | 0 | 0 | **8** | 0 | 0 | 0 | 0 | 0 | 8 | 2 | 0 | 0 | 10 | 18 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 0 | 16 | 7 | 0 | 2 | 0 | 9 | 27 | 13 | 0 | 0 | 40 | 65 |
| % App. Total | 0 | 0 | 0 | 0 | | 6.2 | 93.8 | 0 | 0 | | 77.8 | 0 | 22.2 | 0 | | 67.5 | 32.5 | 0 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .000 | .250 | .536 | .000 | .000 | .500 | .438 | .000 | .250 | .000 | .375 | .675 | .542 | .000 | .000 | .833 | .813 |
| Peak Hour Analysis From 03:00 PM to 07:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 03:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 03:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | **1** | 0 | 0 | 0 | **1** | **6** | 1 | 0 | 0 | **7** | **11** |
| 03:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | **7** | 0 | 0 | **7** | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 4 | 11 |
| 03:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 4 | 10 |
| 03:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 2 | **4** | 0 | 0 | 6 | 10 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 19 | 0 | 0 | 19 | 2 | 0 | 0 | 0 | 2 | 15 | 6 | 0 | 0 | 21 | 42 |
| % App. Total | 0 | 0 | 0 | 0 | | 0 | 100 | 0 | 0 | | 100 | 0 | 0 | 0 | | 71.4 | 28.6 | 0 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .000 | .000 | .679 | .000 | .000 | .679 | .500 | .000 | .000 | .000 | .500 | .625 | .375 | .000 | .000 | .750 | .955 |

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N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 1

Groups Printed- Bikes by Direction

| | "1149" Restaurant Driveway From North | | | | Division Road (Route 401) From East | | | | Route 4 SB On/Off Ramps From South | | | | Division Road (Route 401) From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 11:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 01:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 02:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 03:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 03:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 03:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 03:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 04:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 05:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 05:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 06:45 PM | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 07:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 07:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Grand Total | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| Apprch % | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 100 | 0 | 0 | |
| Total % | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 50 | 0 | 0 | |

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N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 2

| | "1149" Restaurant Driveway From North | | | | | Division Road (Route 401) From East | | | | | Route 4 SB On/Off Ramps From South | | | | | Division Road (Route 401) From West | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 11:00 AM | | | | | | | | | | | | | | | | | | | | | |
| 11:00 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:15 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:30 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11:45 AM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % App. Total | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 |
| Peak Hour Analysis From 03:00 PM to 07:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 03:30 PM | | | | | | | | | | | | | | | | | | | | | |
| 03:30 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 03:45 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:00 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 04:15 PM | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| Total Volume | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| % App. Total | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | | 0 | 100 | 0 | 0 | | |
| PHF | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .250 | .000 | .000 | .250 | .250 |

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N/S: 1149 Drive/Route 4 SB Ramps
E/W: Division Road (Route 401)
City, State: E. Greenwich, RI
Client: Crossman/J. Cronan

File Name : 04760D
Site Code : 04760
Start Date : 6/16/2016
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

| | "1149" Restaurant Driveway From North | | | | Division Road (Route 401) From East | | | | Route 4 SB On/Off Ramps From South | | | | Division Road (Route 401) From West | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Right | Thru | Left | Peds | Int. Total |
| 11:00 AM | 1 | 0 | 0 | 0 | 0 | 169 | 16 | 0 | 63 | 2 | 36 | 0 | 103 | 218 | 0 | 0 | 608 |
| 11:15 AM | 0 | 0 | 1 | 0 | 1 | 148 | 13 | 0 | 48 | 0 | 32 | 0 | 99 | 222 | 0 | 0 | 564 |
| 11:30 AM | 1 | 0 | 0 | 0 | 1 | 147 | 18 | 0 | 44 | 0 | 38 | 0 | 81 | 203 | 0 | 0 | 533 |
| 11:45 AM | 0 | 0 | 1 | 0 | 1 | 166 | 12 | 0 | 37 | 2 | 28 | 0 | 92 | 220 | 1 | 0 | 560 |
| Total | 2 | 0 | 2 | 0 | 3 | 630 | 59 | 0 | 192 | 4 | 134 | 0 | 375 | 863 | 1 | 0 | 2265 |
| 12:00 PM | 0 | 0 | 1 | 0 | 0 | 185 | 24 | 0 | 63 | 1 | 23 | 0 | 112 | 211 | 8 | 0 | 628 |
| 12:15 PM | 0 | 0 | 0 | 0 | 2 | 171 | 12 | 0 | 58 | 1 | 39 | 0 | 82 | 232 | 2 | 0 | 599 |
| 12:30 PM | 0 | 0 | 0 | 0 | 0 | 162 | 22 | 0 | 85 | 0 | 53 | 0 | 117 | 193 | 1 | 0 | 633 |
| 12:45 PM | 0 | 0 | 1 | 0 | 1 | 187 | 17 | 0 | 80 | 1 | 66 | 0 | 96 | 207 | 0 | 0 | 656 |
| Total | 0 | 0 | 2 | 0 | 3 | 705 | 75 | 0 | 286 | 3 | 181 | 0 | 407 | 843 | 11 | 0 | 2516 |
| 01:00 PM | 0 | 1 | 1 | 0 | 1 | 152 | 19 | 0 | 57 | 1 | 50 | 0 | 93 | 193 | 0 | 0 | 568 |
| 01:15 PM | 0 | 0 | 0 | 0 | 4 | 150 | 25 | 0 | 55 | 3 | 45 | 0 | 87 | 190 | 1 | 0 | 560 |
| 01:30 PM | 1 | 1 | 0 | 0 | 0 | 170 | 13 | 0 | 50 | 0 | 27 | 0 | 92 | 180 | 0 | 0 | 534 |
| 01:45 PM | 1 | 0 | 4 | 0 | 0 | 186 | 18 | 0 | 58 | 2 | 36 | 0 | 88 | 195 | 4 | 0 | 592 |
| Total | 2 | 2 | 5 | 0 | 5 | 658 | 75 | 0 | 220 | 6 | 158 | 0 | 360 | 758 | 5 | 0 | 2254 |
| 02:00 PM | 0 | 1 | 0 | 0 | 0 | 151 | 19 | 0 | 63 | 1 | 41 | 0 | 101 | 212 | 0 | 0 | 589 |
| 02:15 PM | 1 | 0 | 1 | 0 | 0 | 178 | 13 | 0 | 86 | 0 | 53 | 0 | 120 | 253 | 0 | 0 | 705 |
| 02:30 PM | 2 | 0 | 2 | 0 | 2 | 221 | 24 | 0 | 95 | 2 | 56 | 0 | 123 | 230 | 5 | 0 | 762 |
| 02:45 PM | 2 | 3 | 3 | 0 | 2 | 215 | 17 | 0 | 83 | 1 | 48 | 0 | 103 | 215 | 1 | 0 | 693 |
| Total | 5 | 4 | 6 | 0 | 4 | 765 | 73 | 0 | 327 | 4 | 198 | 0 | 447 | 910 | 6 | 0 | 2749 |
| 03:00 PM | 0 | 1 | 3 | 0 | 0 | 241 | 25 | 0 | 67 | 0 | 43 | 0 | 121 | 252 | 1 | 0 | 754 |
| 03:15 PM | 1 | 0 | 2 | 0 | 0 | 318 | 23 | 0 | 95 | 1 | 49 | 0 | 96 | 251 | 2 | 0 | 838 |
| 03:30 PM | 0 | 1 | 1 | 0 | 0 | 197 | 13 | 0 | 97 | 1 | 48 | 0 | 96 | 257 | 0 | 0 | 711 |
| 03:45 PM | 0 | 0 | 1 | 0 | 1 | 194 | 17 | 0 | 117 | 0 | 62 | 0 | 96 | 221 | 1 | 0 | 710 |
| Total | 1 | 2 | 7 | 0 | 1 | 950 | 78 | 0 | 376 | 2 | 202 | 0 | 409 | 981 | 4 | 0 | 3013 |
| 04:00 PM | 0 | 0 | 1 | 0 | 0 | 219 | 16 | 0 | 94 | 2 | 54 | 0 | 100 | 276 | 2 | 0 | 764 |
| 04:15 PM | 0 | 0 | 1 | 0 | 1 | 247 | 26 | 0 | 90 | 0 | 57 | 0 | 109 | 274 | 5 | 0 | 810 |
| 04:30 PM | 0 | 0 | 1 | 0 | 1 | 222 | 18 | 0 | 126 | 0 | 38 | 0 | 102 | 311 | 0 | 0 | 819 |
| 04:45 PM | 1 | 0 | 2 | 0 | 0 | 200 | 21 | 0 | 129 | 1 | 44 | 0 | 107 | 263 | 2 | 0 | 770 |
| Total | 1 | 0 | 5 | 0 | 2 | 888 | 81 | 0 | 439 | 3 | 193 | 0 | 418 | 1124 | 9 | 0 | 3163 |
| 05:00 PM | 1 | 1 | 1 | 0 | 1 | 185 | 18 | 0 | 59 | 0 | 41 | 0 | 109 | 261 | 6 | 0 | 683 |
| 05:15 PM | 0 | 0 | 1 | 0 | 1 | 218 | 23 | 0 | 59 | 1 | 26 | 6 | 89 | 249 | 1 | 0 | 674 |
| 05:30 PM | 0 | 0 | 0 | 0 | 1 | 198 | 14 | 0 | 113 | 2 | 45 | 0 | 107 | 285 | 3 | 0 | 768 |
| 05:45 PM | 3 | 4 | 4 | 0 | 3 | 187 | 25 | 0 | 115 | 2 | 48 | 0 | 99 | 252 | 8 | 0 | 750 |
| Total | 4 | 5 | 6 | 0 | 6 | 788 | 80 | 0 | 346 | 5 | 160 | 6 | 404 | 1047 | 18 | 0 | 2875 |
| 06:00 PM | 1 | 0 | 2 | 0 | 1 | 181 | 28 | 0 | 107 | 1 | 44 | 0 | 79 | 210 | 1 | 1 | 656 |
| 06:15 PM | 1 | 0 | 0 | 0 | 2 | 146 | 15 | 0 | 79 | 2 | 41 | 4 | 113 | 203 | 9 | 0 | 615 |
| 06:30 PM | 1 | 1 | 2 | 0 | 2 | 163 | 10 | 0 | 89 | 3 | 44 | 0 | 78 | 175 | 2 | 0 | 570 |
| 06:45 PM | 1 | 0 | 1 | 0 | 1 | 135 | 10 | 0 | 75 | 1 | 29 | 0 | 64 | 151 | 0 | 1 | 469 |
| Total | 4 | 1 | 5 | 0 | 6 | 625 | 63 | 0 | 350 | 7 | 158 | 4 | 334 | 739 | 12 | 2 | 2310 |
| 07:00 PM | 1 | 1 | 2 | 0 | 1 | 138 | 11 | 0 | 82 | 0 | 32 | 0 | 68 | 164 | 9 | 0 | 509 |
| 07:15 PM | 0 | 2 | 1 | 0 | 1 | 133 | 8 | 0 | 58 | 1 | 19 | 0 | 83 | 152 | 0 | 0 | 458 |
| 07:30 PM | 1 | 0 | 1 | 0 | 0 | 139 | 10 | 0 | 57 | 2 | 14 | 0 | 56 | 114 | 0 | 0 | 394 |
| 07:45 PM | 3 | 7 | 4 | 0 | 0 | 114 | 11 | 0 | 44 | 3 | 15 | 0 | 52 | 98 | 1 | 0 | 352 |
| Total | 5 | 10 | 8 | 0 | 2 | 524 | 40 | 0 | 241 | 6 | 80 | 0 | 259 | 528 | 10 | 0 | 1713 |
| Grand Total | 24 | 24 | 46 | 0 | 32 | 6533 | 624 | 0 | 2777 | 40 | 1464 | 10 | 3413 | 7793 | 76 | 2 | 22858 |
| Apprch % | 25.5 | 25.5 | 48.9 | 0 | 0.4 | 90.9 | 8.7 | 0 | 64.7 | 0.9 | 34.1 | 0.2 | 30.2 | 69.1 | 0.7 | 0 | |
| Total % | 0.1 | 0.1 | 0.2 | 0 | 0.1 | 28.6 | 2.7 | 0 | 12.1 | 0.2 | 6.4 | 0 | 14.9 | 34.1 | 0.3 | 0 | |
| Cars & Peds | 23 | 24 | 46 | 0 | 31 | 6415 | 616 | 0 | 2756 | 40 | 1455 | 10 | 3304 | 7725 | 74 | 2 | 22521 |
| % Cars & Peds | 95.8 | 100 | 100 | 0 | 96.9 | 98.2 | 98.7 | 0 | 99.2 | 100 | 99.4 | 100 | 96.8 | 99.1 | 97.4 | 100 | 98.5 |
| Trucks & Buses | 1 | 0 | 0 | 0 | 1 | 117 | 8 | 0 | 21 | 0 | 9 | 0 | 109 | 67 | 2 | 0 | 335 |
| % Trucks & Buses | 4.2 | 0 | 0 | 0 | 3.1 | 1.8 | 1.3 | 0 | 0.8 | 0 | 0.6 | 0 | 3.2 | 0.9 | 2.6 | 0 | 1.5 |
| Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 |
| % Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# *Transportation Data Corporation*

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| | "1149" Restaurant Driveway From North | | | | | Division Road (Route 401) From East | | | | | Route 4 SB On/Off Ramps From South | | | | | Division Road (Route 401) From West | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Start Time | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Right | Thru | Left | Peds | App. Total | Int. Total |
| Peak Hour Analysis From 11:00 AM to 02:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 02:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 02:00 PM | 0 | 1 | 0 | 0 | 1 | 0 | 151 | 19 | 0 | 170 | 63 | 1 | 41 | 0 | 105 | 101 | 212 | 0 | 0 | 313 | 589 |
| 02:15 PM | 1 | 0 | 1 | 0 | 2 | 0 | 178 | 13 | 0 | 191 | 86 | 0 | 53 | 0 | 139 | 120 | **253** | 0 | 0 | **373** | 705 |
| 02:30 PM | **2** | 0 | 2 | 0 | 4 | **2** | **221** | **24** | 0 | **247** | **95** | **2** | **56** | 0 | **153** | **123** | 230 | **5** | 0 | 358 | **762** |
| 02:45 PM | 2 | **3** | **3** | 0 | **8** | 2 | 215 | 17 | 0 | 234 | 83 | 1 | 48 | 0 | 132 | 103 | 215 | 1 | 0 | 319 | 693 |
| Total Volume | 5 | 4 | 6 | 0 | 15 | 4 | 765 | 73 | 0 | 842 | 327 | 4 | 198 | 0 | 529 | 447 | 910 | 6 | 0 | 1363 | 2749 |
| % App. Total | 33.3 | 26.7 | 40 | 0 | | 0.5 | 90.9 | 8.7 | 0 | | 61.8 | 0.8 | 37.4 | 0 | | 32.8 | 66.8 | 0.4 | 0 | | |
| PHF | .625 | .333 | .500 | .000 | .469 | .500 | .865 | .760 | .000 | .852 | .861 | .500 | .884 | .000 | .864 | .909 | .899 | .300 | .000 | .914 | .902 |
| Cars & Peds | 5 | 4 | 6 | 0 | 15 | 3 | 750 | 73 | 0 | 826 | 320 | 4 | 196 | 0 | 520 | 420 | 897 | 6 | 0 | 1323 | 2684 |
| % Cars & Peds | 100 | 100 | 100 | 0 | 100 | 75.0 | 98.0 | 100 | 0 | 98.1 | 97.9 | 100 | 99.0 | 0 | 98.3 | 94.0 | 98.6 | 100 | 0 | 97.1 | 97.6 |
| Trucks & Buses | 0 | 0 | 0 | 0 | 0 | 1 | 15 | 0 | 0 | 16 | 7 | 0 | 2 | 0 | 9 | 27 | 13 | 0 | 0 | 40 | 65 |
| % Trucks & Buses | 0 | 0 | 0 | 0 | 0 | 25.0 | 2.0 | 0 | 0 | 1.9 | 2.1 | 0 | 1.0 | 0 | 1.7 | 6.0 | 1.4 | 0 | 0 | 2.9 | 2.4 |
| Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Peak Hour Analysis From 03:00 PM to 07:45 PM - Peak 1 of 1 | | | | | | | | | | | | | | | | | | | | | |
| Peak Hour for Entire Intersection Begins at 04:00 PM | | | | | | | | | | | | | | | | | | | | | |
| 04:00 PM | 0 | 0 | 1 | 0 | 1 | 0 | 219 | 16 | 0 | 235 | 94 | **2** | 54 | 0 | 150 | 100 | 276 | 2 | 0 | 378 | 764 |
| 04:15 PM | 0 | 0 | 1 | 0 | 1 | **1** | **247** | **26** | 0 | **274** | 90 | 0 | **57** | 0 | 147 | **109** | 274 | **5** | 0 | 388 | 810 |
| 04:30 PM | 0 | 0 | 1 | 0 | 1 | 1 | 222 | 18 | 0 | 241 | 126 | 0 | 38 | 0 | 164 | 102 | **311** | 0 | 0 | **413** | **819** |
| 04:45 PM | **1** | 0 | **2** | 0 | **3** | 0 | 200 | 21 | 0 | 221 | **129** | 1 | 44 | 0 | **174** | 107 | 263 | 2 | 0 | 372 | 770 |
| Total Volume | 1 | 0 | 5 | 0 | 6 | 2 | 888 | 81 | 0 | 971 | 439 | 3 | 193 | 0 | 635 | 418 | 1124 | 9 | 0 | 1551 | 3163 |
| % App. Total | 16.7 | 0 | 83.3 | 0 | | 0.2 | 91.5 | 8.3 | 0 | | 69.1 | 0.5 | 30.4 | 0 | | 27 | 72.5 | 0.6 | 0 | | |
| PHF | .250 | .000 | .625 | .000 | .500 | .500 | .899 | .779 | .000 | .886 | .851 | .375 | .846 | .000 | .912 | .959 | .904 | .450 | .000 | .939 | .966 |
| Cars & Peds | 1 | 0 | 5 | 0 | 6 | 2 | 879 | 80 | 0 | 961 | 437 | 3 | 191 | 0 | 631 | 412 | 1120 | 9 | 0 | 1541 | 3139 |
| % Cars & Peds | 100 | 0 | 100 | 0 | 100 | 100 | 99.0 | 98.8 | 0 | 99.0 | 99.5 | 100 | 99.0 | 0 | 99.4 | 98.6 | 99.6 | 100 | 0 | 99.4 | 99.2 |
| Trucks & Buses | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 | 10 | 2 | 0 | 2 | 0 | 4 | 6 | 3 | 0 | 0 | 9 | 23 |
| % Trucks & Buses | 0 | 0 | 0 | 0 | 0 | 0 | 1.0 | 1.2 | 0 | 1.0 | 0.5 | 0 | 1.0 | 0 | 0.6 | 1.4 | 0.3 | 0 | 0 | 0.6 | 0.7 |
| Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| % Bikes by Direction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0.0 |

# APPENDIX B – Traffic Crash Data

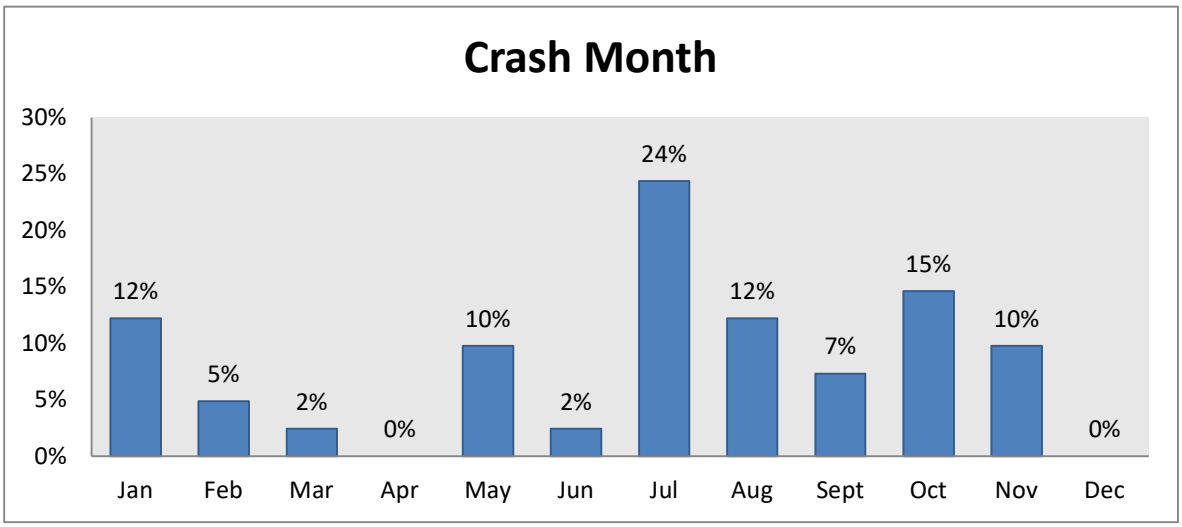
**January 2017 through December 2019**

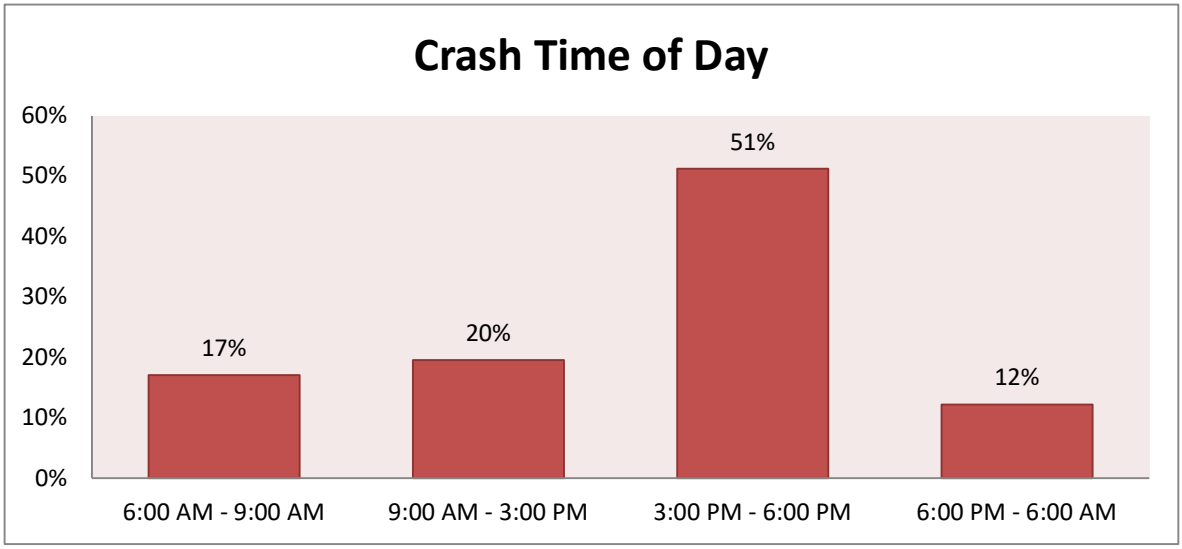
Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

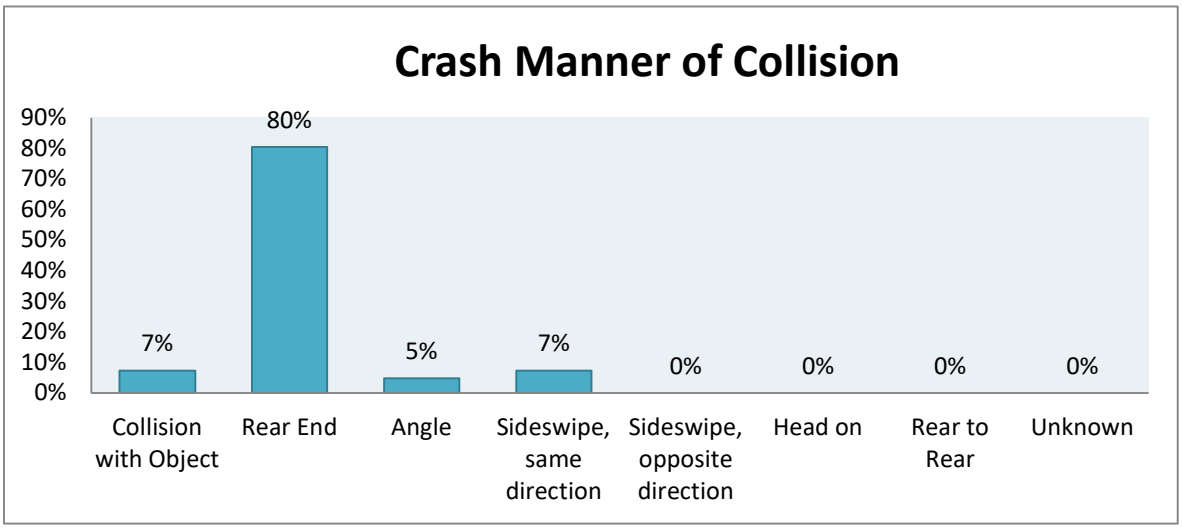
## Division Street (Route 401) at Route 4 Southbound Ramps/Site Driveway

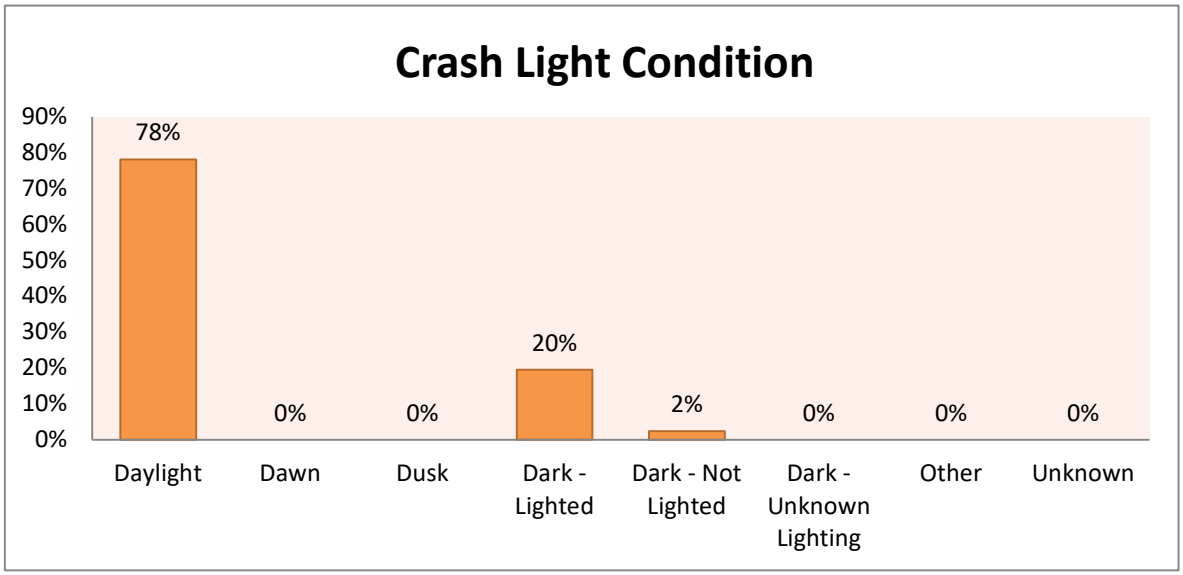
| | | 2017 | 2018 | 2019 | Total | Percent |
|---|---|---|---|---|---|---|
| **Collision Type** | | | | | | |
| | Rear End | 12 | 12 | 9 | **33** | 80% |
| | Angle | 0 | 1 | 1 | **2** | 5% |
| | Head-On | 0 | 0 | 0 | **0** | 0% |
| | Pedestrian | 0 | 0 | 0 | **0** | 0% |
| | Sideswipe, Same Direction | 0 | 1 | 2 | **3** | 7% |
| | Sideswipe, Opposite Direction | 0 | 0 | 0 | **0** | 0% |
| | Collision with Object | 1 | 2 | 0 | **3** | 7% |
| | Collision with Deer | 0 | 0 | 0 | **0** | 0% |
| | Other | 0 | 0 | 0 | **0** | 0% |
| | Unknown | 0 | 0 | 0 | **0** | 0% |
| **Crash Severity** | | | | | | |
| | Property | 10 | 14 | 8 | **32** | 78% |
| | Injury | 3 | 2 | 4 | **9** | 22% |
| **Light Condition** | | | | | | |
| | Daylight | 9 | 14 | 9 | **32** | 78% |
| | Dawn | 0 | 0 | 0 | **0** | 0% |
| | Dusk | 0 | 0 | 0 | **0** | 0% |
| | Dark - Lighted | 4 | 2 | 2 | **8** | 20% |
| | Dark - Not Lighted | 0 | 0 | 1 | **1** | 2% |
| | Dark - Unknown Lighting | 0 | 0 | 0 | **0** | 0% |
| **Road Condition** | | | | | | |
| | Dry | 10 | 15 | 8 | **33** | 80% |
| | Wet | 3 | 1 | 4 | **8** | 20% |
| | Snow | 0 | 0 | 0 | **0** | 0% |
| | Slush | 0 | 0 | 0 | **0** | 0% |
| | Ice/Frost | 0 | 0 | 0 | **0** | 0% |
| | Other | 0 | 0 | 0 | **0** | 0% |
| | Unknown | 0 | 0 | 0 | **0** | 0% |
| **Hour of Day** | | | | | | |
| | 6:00 AM - 9:00 AM | 0 | 4 | 3 | **7** | 17% |
| | 9:00 AM - 3:00 PM | 4 | 3 | 1 | **8** | 20% |
| | 3:00 PM - 6:00 PM | 7 | 8 | 6 | **21** | 51% |
| | 6:00 PM - 6:00 AM | 2 | 1 | 2 | **5** | 12% |
| | Total Crashes: | **13** | **16** | **12** | **41** | |

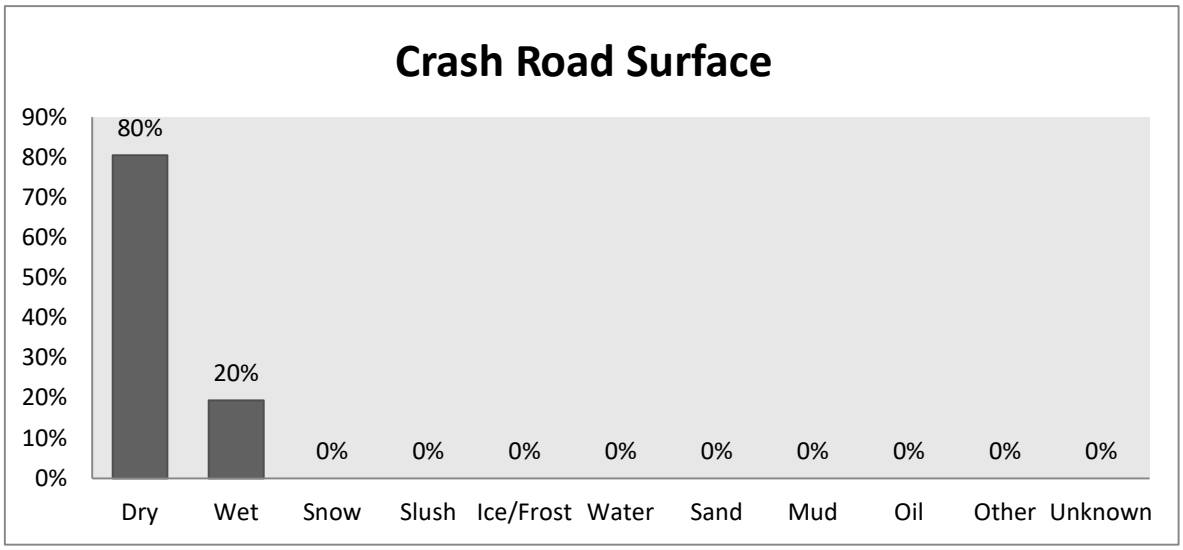
## Crash Data Summary Charts




Crash Light Condition
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
78%
0%
0%
20%
2%
0%
0%
0%
Daylight
Dawn
Dusk
Dark - Lighted
Dark - Not Lighted
Dark - Unknown Lighting
Other
Unknown


Crash Road Surface
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
80%
20%
0%
0%
0%
0%
0%
0%
0%
0%
0%
Dry
Wet
Snow
Slush
Ice/Frost
Water
Sand
Mud
Oil
Other
Unknown

# APPENDIX C – Trip Generation

## ITE Trip Generation Summary

## Site Trip Distribution

## ITE Land Use Code

ITE Land Use Code 960 – Super Convenience Market/Gas Station

C

## ITE Trip Generation Summary

# Trip Generation Summary

## Summary;

| Description | | Enter | Exit | Total |
|---|---|---|---|---|
| *AM Peak Hour* | | | | |
| ITE Land Use Code 960 | Super Convenience Market/Gas Station | 225 | 225 | 450 |
| *PM Peak Hour* | | | | |
| ITE Land Use Code 960 | Super Convenience Market/Gas Station | 184 | 184 | 368 |

## Calculations;

**ITE Land Use Code 960 Super Convenience Market/Gas Station (16 VFP)**

Independent Variable (X) = Vehicle Fueling Positions (VFP) X = 16

AM Peak *Directional Distribution: 50% Entering 50% Exiting*

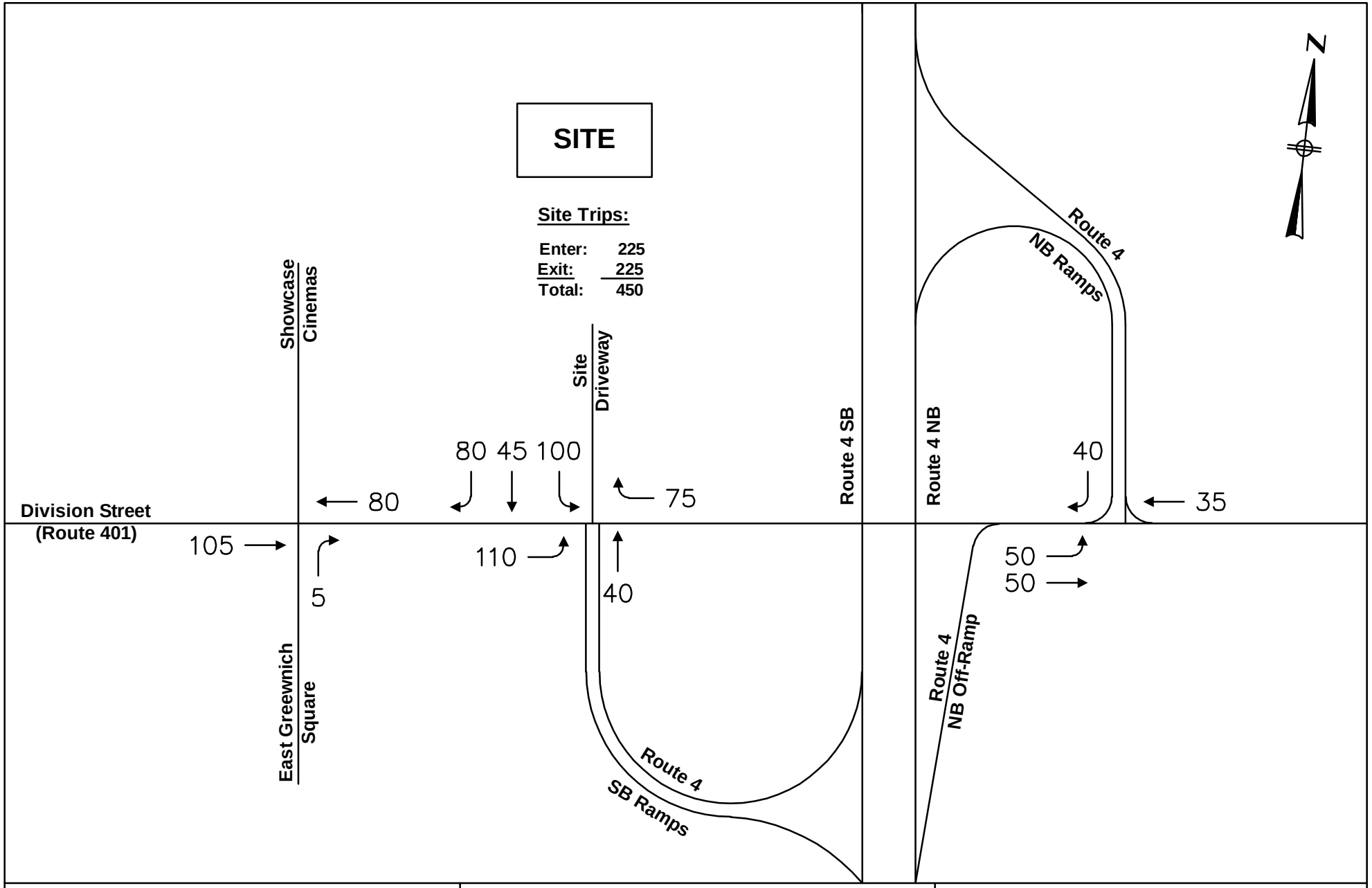
T = 28.08 x (X) Enter: 225
T = 28.08 x 16 Exit: 225
T = 450 Total: 450

PM Peak *Directional Distribution: 50% Entering 50% Exiting*

T = 22.96 x (X) Enter: 184
T = 22.96 x 16 Exit: 184
T = 368 Total: 368

C

## Site Trip Distribution

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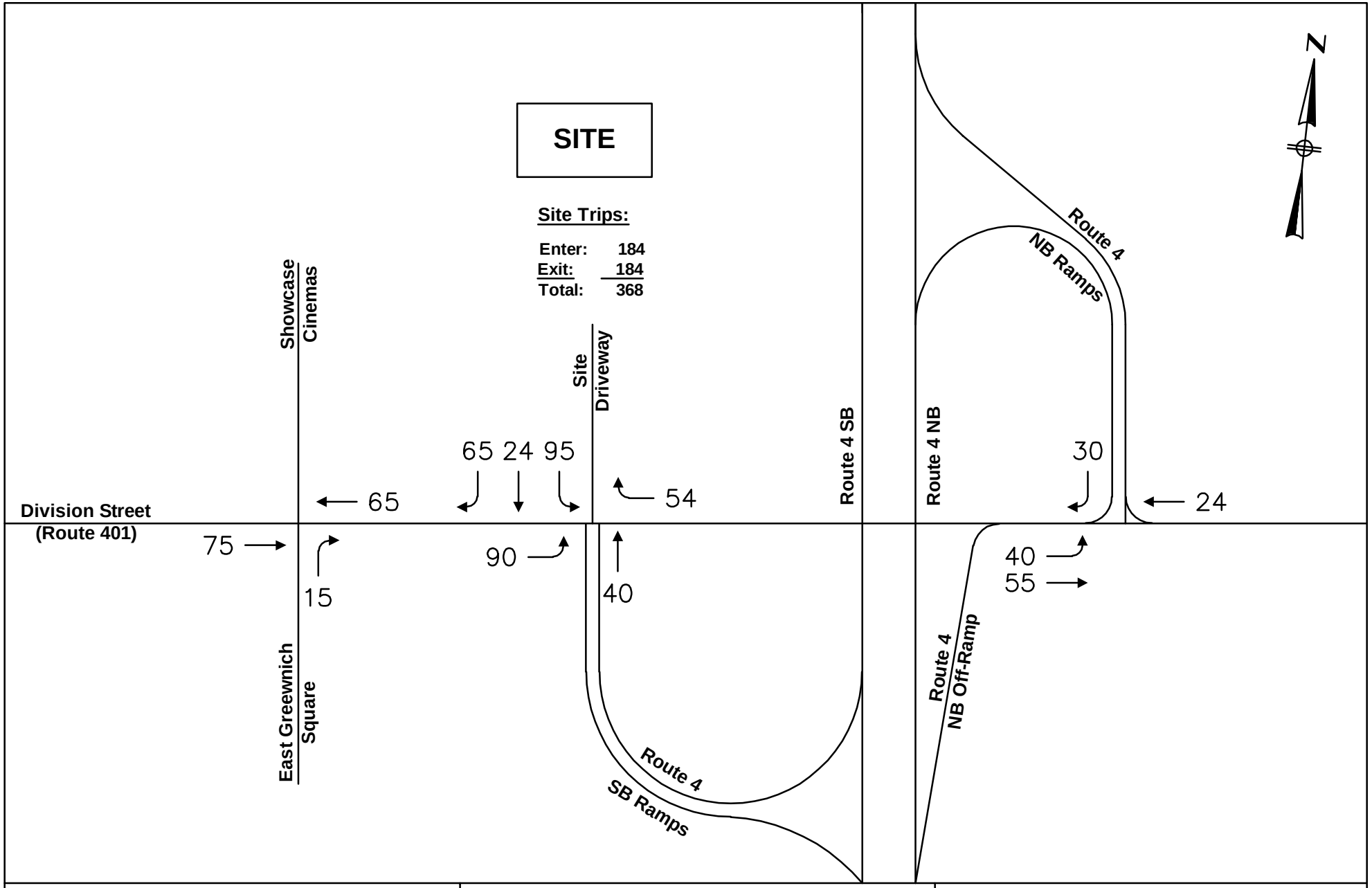
**WEEKDAY TRAFFIC DISTRIBUTION**
**AM PEAK HOUR**

**NEON MARKETPLACE**
**WARWICK, RHODE ISLAND**

**2024 Build Condition**

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**WEEKDAY TRAFFIC DISTRIBUTION**
**PM PEAK HOUR**

**NEON MARKETPLACE**
**WARWICK, RHODE ISLAND**

**2024 Build Condition**

# C

## ITE Land Use Code

ITE Land Use Code 960 – Super Convenience Market/Gas Station

# Land Use: 960
# Super Convenience Market/Gas Station

### Description

This land use includes gasoline/service stations with convenience markets where there is significant business related to the sale of convenience items and the fueling of motor vehicles. Some commonly sold convenience items include newspapers, freshly brewed coffee, daily-made donuts, bakery items, hot and cold beverages, breakfast items, dairy items, fresh fruits, soups, light meals, ready-to-go and freshly made sandwiches and wraps, and ready-to-go salads. Stores typically also had automated teller machines (ATMs), and public restrooms. The sites included in this land use category have the following two specific characteristics:

- The gross floor area of the convenience market is at least 3,000 gross square feet
- The number of vehicle fueling positions is at least 10

Convenience market with gasoline pumps (Land Use 853) and gasoline/service station with convenience market (Land Use 945) are related uses.

### Additional Data

To reflect changing characteristics of the convenience market component of this land use, only data from the past two decades have been included in this land use.

The independent variable, vehicle fueling positions, is defined as the maximum number of vehicles that can be fueled simultaneously. Gasoline/service stations in this land use include “pay-at-the-pump” and traditional fueling stations.

A multi-variable regression analysis based on both the convenience market gross floor area (GFA) and the number of vehicle fueling positions (VFP) produced a series of fitted curve equations. The equations are in the form of:

Vehicle Trips = [(VFP Factor) x (Number of VFP)] + [(GFA Factor) x (GFA)] + (Constant)

The values for the VFP factor, GFA factor, and constant are presented in the following table for each time period for which a fitted curve equation could produce an $R^2$ value of at least 0.50.

| Time Period | VFP Factor | GFA Factor | Constant | $R^2$ |
|---|---|---|---|---|
| Weekday, AM Peak Hour of Generator | 10.3 | 105 | -290 | 0.62 |
| Weekday, PM Peak Hour of Generator | 6.91 | 76.0 | -133 | 0.68 |
| Weekday, AM Peak Hour of Adjacent Street | 16.1 | 135 | -483 | 0.66 |
| Weekday, PM Peak Hour of Adjacent Street | 11.5 | 82.9 | -226 | 0.51 |

The sites were surveyed in the late 1990’s, 2000s and the 2010s in Florida, Iowa, Maryland, Minnesota, New Hampshire, New Jersey, Pennsylvania, Texas, Utah, and Wisconsin.

### Source Numbers

617, 813, 844, 850, 864, 865, 867, 869, 882, 888, 904, 938, 954, 960, 962

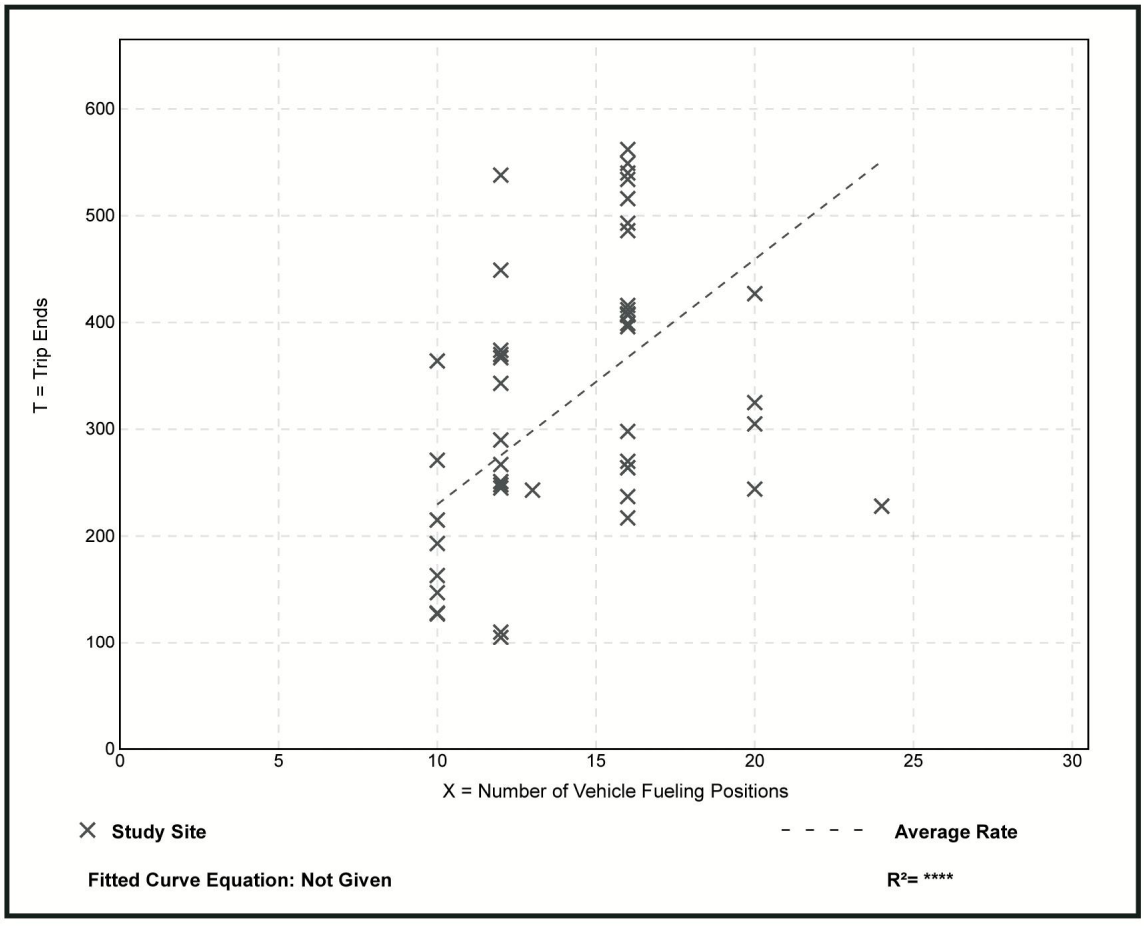
# Super Convenience Market/Gas Station
(960)

**Vehicle Trip Ends vs:** **Vehicle Fueling Positions**
**On a:** **Weekday,**
**Peak Hour of Adjacent Street Traffic,**
**One Hour Between 4 and 6 p.m.**
**Setting/Location:** **General Urban/Suburban**
Number of Studies: 48
Avg. Num. of Vehicle Fueling Positions: 14
Directional Distribution: 50% entering, 50% exiting

## Vehicle Trip Generation per Vehicle Fueling Position

| Average Rate | Range of Rates | Standard Deviation |
|---|---|---|
| 22.96 | 8.75 - 44.83 | 8.34 |

## Data Plot and Equation



# APPENDIX D – Operational Analysis

## Existing Conditions

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

## Future Build Conditions

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

# D

## Existing Weekday AM / PM Peak Hour

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

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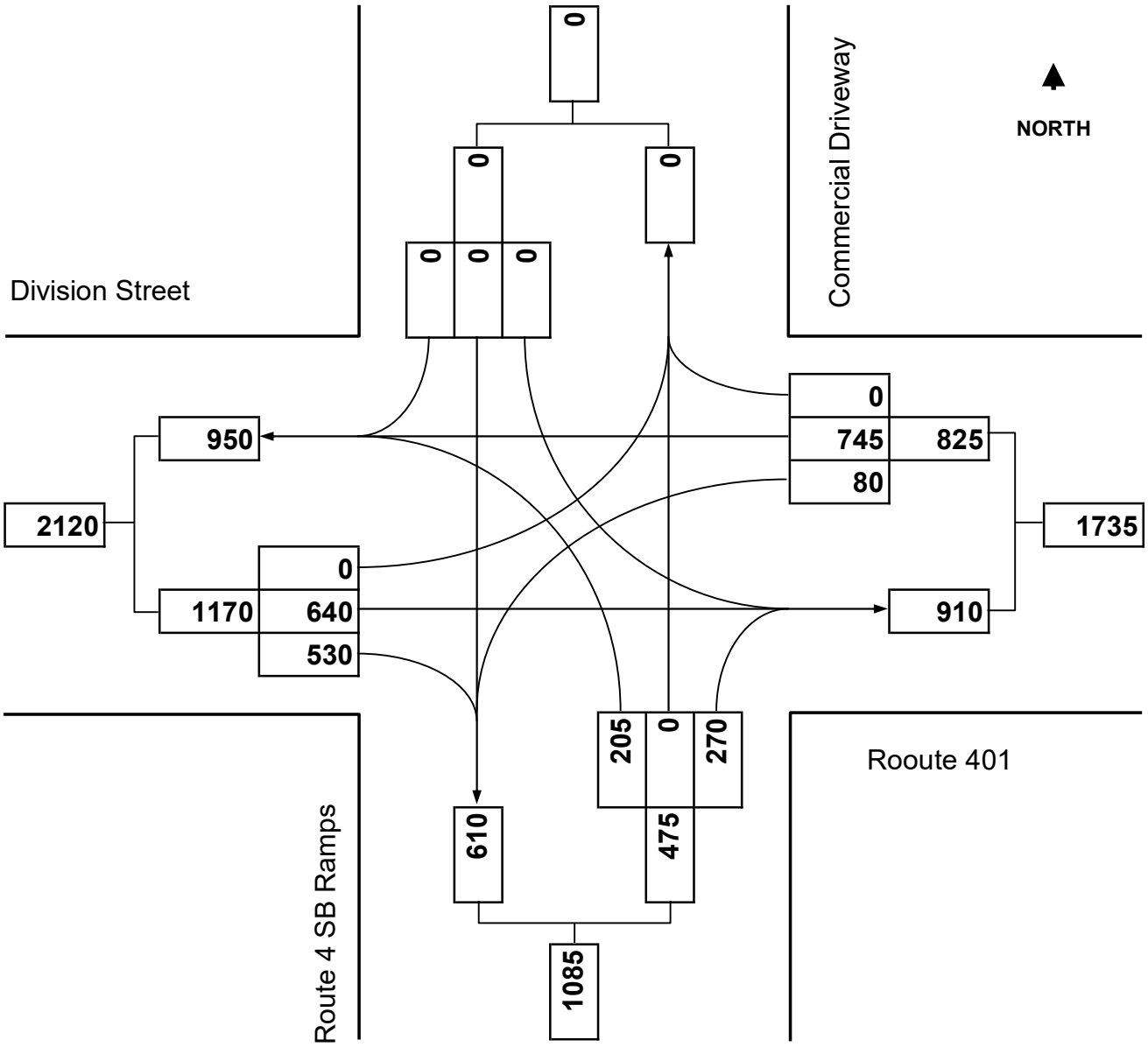
# *Turning Movement Diagram*

| | | | |
|---|---|---|---|
| **Major Street**: | Division Street (Rt. 401) | **Minor Street**: | Route 4 SB Ramps/Com. Dwy. |
| **City/Town**: | Warwick, RI | **Day of Week**: | Weekday |
| **Reference No.**: | 7365 | **Peak Period**: | 7:30 AM - 8:30 AM |
| **Existing**: | AM Peak Hour | **Future**: | n/a |

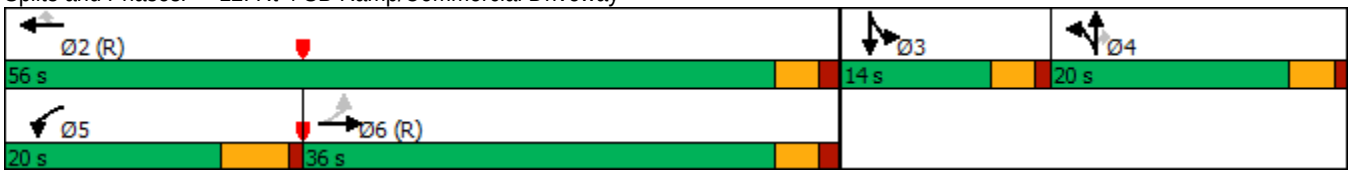


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 640 | 530 | 80 | 745 | 0 | 205 | 0 | 270 | 0 | 0 | 0 |
| Future Volume (vph) | 0 | 640 | 530 | 80 | 745 | 0 | 205 | 0 | 270 | 0 | 0 | 0 |
| Satd. Flow (prot) | 0 | 3539 | 1583 | 1770 | 3539 | 1900 | 1717 | 1498 | 1551 | 0 | 1900 | 0 |
| Flt Permitted | | | | 0.950 | | | 0.950 | 0.987 | | | | |
| Satd. Flow (perm) | 0 | 3539 | 1583 | 1770 | 3539 | 1900 | 1717 | 1498 | 1551 | 0 | 1900 | 0 |
| Satd. Flow (RTOR) | | | 552 | | | | | 133 | 160 | | | |
| Lane Group Flow (vph) | 0 | 667 | 552 | 83 | 776 | 0 | 171 | 164 | 160 | 0 | 0 | 0 |
| Turn Type | | NA | Free | Prot | NA | Perm | Split | NA | Perm | | | |
| Protected Phases | | 6 | | 5 | 2 | | 4 | 4 | | 3 | 3 | |
| Permitted Phases | 6 | | Free | | | 2 | | | 4 | | | |
| Total Split (s) | 36.0 | 36.0 | | 20.0 | 56.0 | 56.0 | 20.0 | 20.0 | 20.0 | 14.0 | 14.0 | |
| Total Lost Time (s) | | 3.5 | | 5.5 | 3.5 | 4.5 | 3.0 | 3.0 | 3.0 | | 3.0 | |
| Act Effct Green (s) | | 56.4 | 90.0 | 9.0 | 68.8 | | 14.7 | 14.7 | 14.7 | | | |
| Actuated g/C Ratio | | 0.63 | 1.00 | 0.10 | 0.76 | | 0.16 | 0.16 | 0.16 | | | |
| v/c Ratio | | 0.30 | 0.35 | 0.47 | 0.29 | | 0.61 | 0.46 | 0.41 | | | |
| Control Delay | | 9.9 | 0.6 | 46.3 | 3.9 | | 43.6 | 13.2 | 8.6 | | | |
| Queue Delay | | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | | |
| Total Delay | | 9.9 | 0.6 | 46.3 | 3.9 | | 43.6 | 13.2 | 8.6 | | | |
| LOS | | A | A | D | A | | D | B | A | | | |
| Approach Delay | | 5.7 | | | 8.0 | | | 22.2 | | | | |
| Approach LOS | | A | | | A | | | C | | | | |
| Queue Length 50th (ft) | | 88 | 0 | 45 | 54 | | 94 | 16 | 0 | | | |
| Queue Length 95th (ft) | | 158 | 0 | 87 | 102 | | 149 | 71 | 50 | | | |
| Internal Link Dist (ft) | | 400 | | | 1142 | | | 508 | | | 178 | |
| Turn Bay Length (ft) | | | | 100 | | | 300 | | 250 | | | |
| Base Capacity (vph) | | 2219 | 1583 | 285 | 2703 | | 338 | 401 | 433 | | | |
| Starvation Cap Reductn | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | |
| Spillback Cap Reductn | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | |
| Storage Cap Reductn | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | |
| Reduced v/c Ratio | | 0.30 | 0.35 | 0.29 | 0.29 | | 0.51 | 0.41 | 0.37 | | | |

**Intersection Summary**

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 60 (67%), Referenced to phase 2:WBT and 6:EBTL, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 9.6 Intersection LOS: A
Intersection Capacity Utilization 56.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 12: Rt 4 SB Ramp/Commercial Driveway



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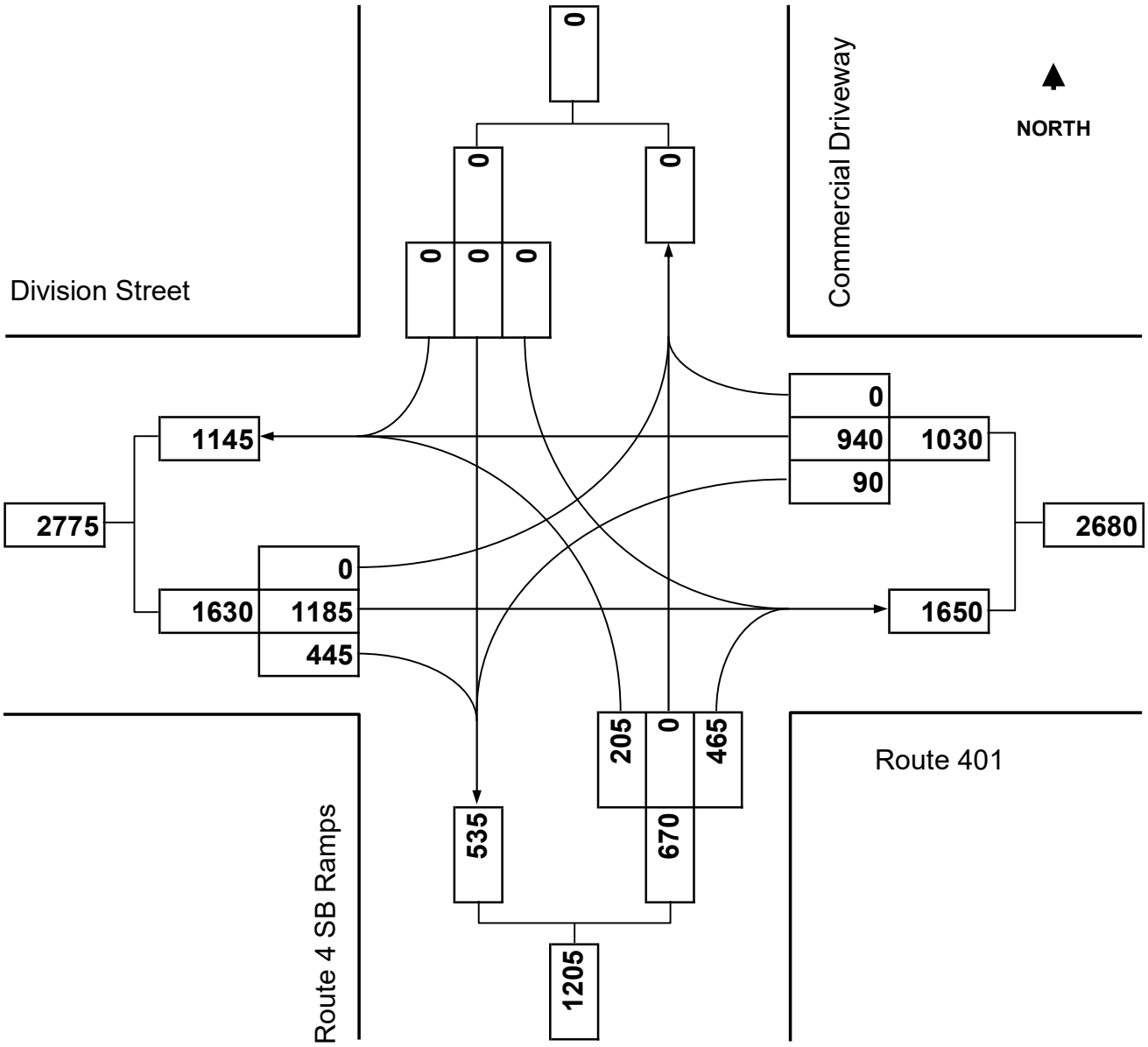
# *Turning Movement Diagram*

| | | | |
|---|---|---|---|
| **Major Street**: | Division Street (Rt. 401) | **Minor Street**: | Route 4 SB Ramps/Com. Dwy. |
| **City/Town**: | Warwick, RI | **Day of Week**: | Weekday |
| **Reference No.**: | 7365 | **Peak Period**: | 4:00 PM - 5:00 PM |
| **Existing**: | PM Peak Hour | **Future**: | n/a |



| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 0 | 1185 | 445 | 90 | 940 | 0 | 205 | 0 | 465 | 0 | 0 | 0 |
| Future Volume (vph) | 0 | 1185 | 445 | 90 | 940 | 0 | 205 | 0 | 465 | 0 | 0 | 0 |
| Satd. Flow (prot) | 0 | 3539 | 1583 | 1770 | 3539 | 1900 | 1717 | 1470 | 1551 | 0 | 1900 | 0 |
| Flt Permitted | | | | 0.950 | | | 0.950 | 0.996 | | | | |
| Satd. Flow (perm) | 0 | 3539 | 1583 | 1770 | 3539 | 1900 | 1717 | 1470 | 1551 | 0 | 1900 | 0 |
| Satd. Flow (RTOR) | | | 500 | | | | | 251 | 271 | | | |
| Lane Group Flow (vph) | 0 | 1331 | 500 | 101 | 1056 | 0 | 207 | 274 | 271 | 0 | 0 | 0 |
| Turn Type | | NA | Perm | Prot | NA | Perm | Split | NA | Perm | | | |
| Protected Phases | | 2 | | 1 | 6 | | 8 | 8 | | 4 | 4 | |
| Permitted Phases | 2 | | 2 | | | 6 | | | 8 | | | |
| Total Split (s) | 45.5 | 45.5 | 45.5 | 17.0 | 62.5 | 62.5 | 20.0 | 20.0 | 20.0 | 14.0 | 14.0 | |
| Total Lost Time (s) | | 3.5 | 3.5 | 5.5 | 3.5 | 4.5 | 3.0 | 3.0 | 3.0 | | 3.0 | |
| Act Effct Green (s) | | 58.6 | 58.6 | 10.2 | 72.0 | | 18.0 | 18.0 | 18.0 | | | |
| Actuated g/C Ratio | | 0.61 | 0.61 | 0.11 | 0.75 | | 0.19 | 0.19 | 0.19 | | | |
| v/c Ratio | | 0.62 | 0.43 | 0.54 | 0.40 | | 0.65 | 0.57 | 0.53 | | | |
| Control Delay | | 16.1 | 2.6 | 50.9 | 5.5 | | 45.2 | 10.7 | 8.0 | | | |
| Queue Delay | | 0.7 | 0.2 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | | |
| Total Delay | | 16.8 | 2.8 | 50.9 | 5.5 | | 45.2 | 10.7 | 8.0 | | | |
| LOS | | B | A | D | A | | D | B | A | | | |
| Approach Delay | | 13.0 | | | 9.5 | | | 19.2 | | | | |
| Approach LOS | | B | | | A | | | B | | | | |
| Queue Length 50th (ft) | | 269 | 0 | 60 | 103 | | 121 | 13 | 0 | | | |
| Queue Length 95th (ft) | | 433 | 50 | 106 | 173 | | 180 | 81 | 59 | | | |
| Internal Link Dist (ft) | | 400 | | | 1142 | | | 508 | | | 178 | |
| Turn Bay Length (ft) | | | | 100 | | | 300 | | 250 | | | |
| Base Capacity (vph) | | 2149 | 1157 | 222 | 2641 | | 347 | 497 | 529 | | | |
| Starvation Cap Reductn | | 443 | 175 | 0 | 0 | | 0 | 0 | 0 | | | |
| Spillback Cap Reductn | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | |
| Storage Cap Reductn | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | | |
| Reduced v/c Ratio | | 0.78 | 0.51 | 0.45 | 0.40 | | 0.60 | 0.55 | 0.51 | | | |

**Intersection Summary**

Cycle Length: 96.5
Actuated Cycle Length: 96.5
Offset: 15 (16%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 13.1 Intersection LOS: B
Intersection Capacity Utilization 79.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 12: Rt 4 SB Ramp/Restaurant

# D

## Future 2024 Weekday AM / PM Peak Hour

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway

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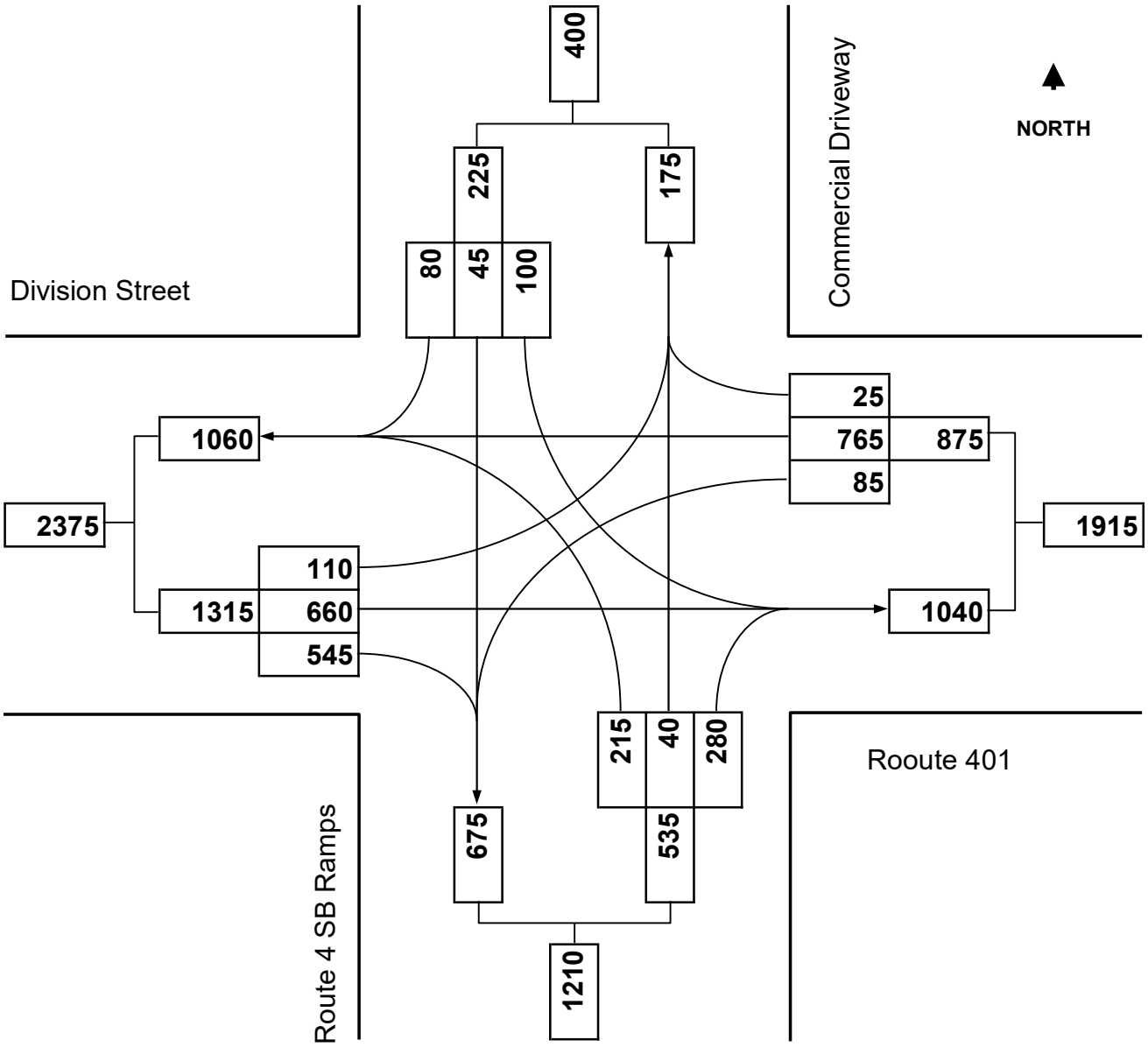
# *Turning Movement Diagram*

| | | | |
|---|---|---|---|
| **Major Street**: | Division Street (Rt. 401) | **Minor Street**: | Route 4 SB Ramps/Com. Dwy. |
| **City/Town**: | Warwick, RI | **Day of Week**: | Weekday |
| **Reference No.**: | 7365 | **Peak Period**: | AM Peak Hour |
| **Existing**: | n/a | **Future**: | 2024 Build |

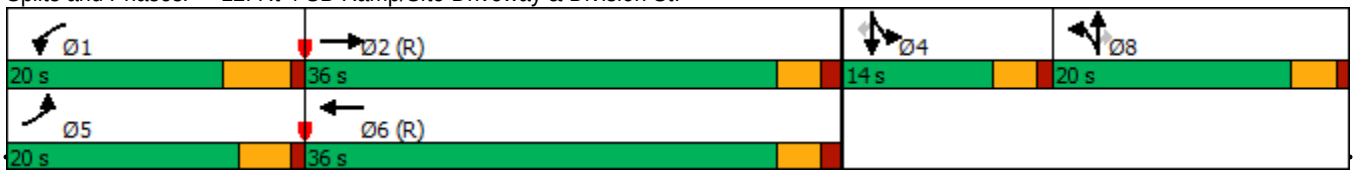


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 110 | 660 | 545 | 85 | 765 | 25 | 215 | 40 | 280 | 100 | 45 | 80 |
| Future Volume (vph) | 110 | 660 | 545 | 85 | 765 | 25 | 215 | 40 | 280 | 100 | 45 | 80 |
| Satd. Flow (prot) | 1805 | 3539 | 1583 | 1770 | 3524 | 0 | 1717 | 1545 | 1551 | 0 | 1837 | 1615 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | 0.992 | | | 0.967 | |
| Satd. Flow (perm) | 1805 | 3539 | 1583 | 1770 | 3524 | 0 | 1717 | 1545 | 1551 | 0 | 1837 | 1615 |
| Satd. Flow (RTOR) | | | 568 | | 4 | | | 77 | 178 | | | 133 |
| Lane Group Flow (vph) | 115 | 688 | 568 | 89 | 823 | 0 | 193 | 187 | 178 | 0 | 151 | 83 |
| Turn Type | Prot | NA | Free | Prot | NA | | Split | NA | Perm | Split | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 8 | 8 | | 4 | 4 | |
| Permitted Phases | | | Free | | | | | | 8 | | | 4 |
| Total Split (s) | 20.0 | 36.0 | | 20.0 | 36.0 | | 20.0 | 20.0 | 20.0 | 14.0 | 14.0 | 14.0 |
| Total Lost Time (s) | 3.5 | 3.5 | | 5.5 | 3.5 | | 3.0 | 3.0 | 3.0 | | 3.0 | 4.0 |
| Act Effct Green (s) | 11.5 | 41.6 | 90.0 | 9.3 | 41.4 | | 14.6 | 14.6 | 14.6 | | 11.7 | 10.7 |
| Actuated g/C Ratio | 0.13 | 0.46 | 1.00 | 0.10 | 0.46 | | 0.16 | 0.16 | 0.16 | | 0.13 | 0.12 |
| v/c Ratio | 0.50 | 0.42 | 0.36 | 0.49 | 0.51 | | 0.69 | 0.59 | 0.44 | | 0.63 | 0.27 |
| Control Delay | 43.5 | 19.4 | 0.6 | 46.6 | 20.8 | | 48.7 | 28.0 | 9.0 | | 50.1 | 4.2 |
| Queue Delay | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 |
| Total Delay | 43.5 | 19.4 | 0.6 | 46.6 | 20.8 | | 48.7 | 28.0 | 9.0 | | 50.1 | 4.2 |
| LOS | D | B | A | D | C | | D | C | A | | D | A |
| Approach Delay | | 13.6 | | | 23.3 | | | 29.1 | | | 33.8 | |
| Approach LOS | | B | | | C | | | C | | | C | |
| Queue Length 50th (ft) | 62 | 147 | 0 | 49 | 185 | | 106 | 61 | 0 | | 81 | 0 |
| Queue Length 95th (ft) | 109 | 209 | 0 | 92 | 261 | | 177 | 134 | 54 | | #166 | 14 |
| Internal Link Dist (ft) | | 400 | | | 1142 | | | 508 | | | 178 | |
| Turn Bay Length (ft) | 50 | | | 100 | | | 300 | | 250 | | | |
| Base Capacity (vph) | 330 | 1636 | 1583 | 285 | 1621 | | 324 | 354 | 437 | | 248 | 317 |
| Starvation Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Reduced v/c Ratio | 0.35 | 0.42 | 0.36 | 0.31 | 0.51 | | 0.60 | 0.53 | 0.41 | | 0.61 | 0.26 |

**Intersection Summary**

Cycle Length: 90
Actuated Cycle Length: 90
Offset: 60 (67%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 20.8 Intersection LOS: C
Intersection Capacity Utilization 59.1% ICU Level of Service B
Analysis Period (min) 15
# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: Rt 4 SB Ramp/Site Driveway & Division St.



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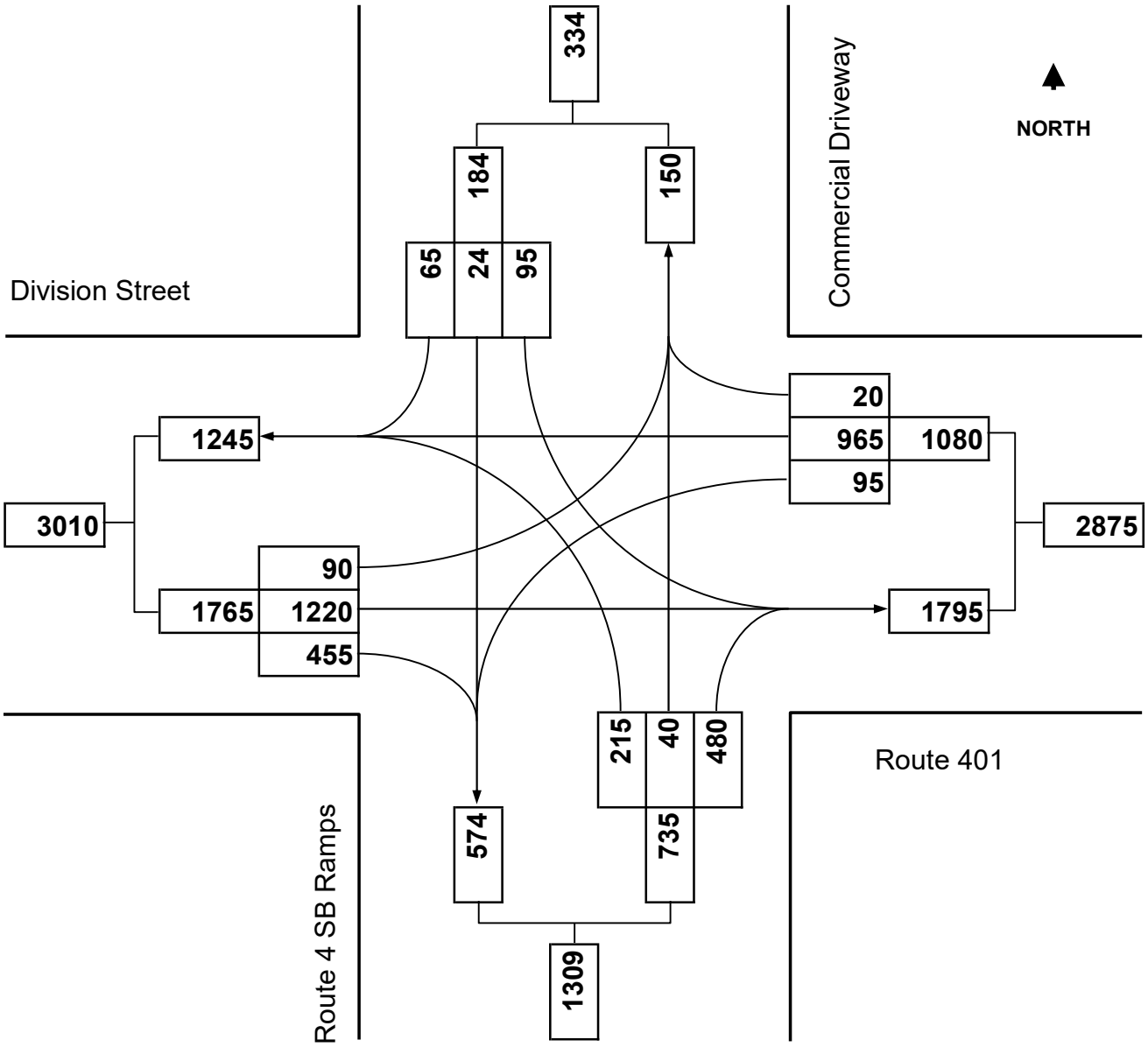
# *Turning Movement Diagram*

| | | | |
|---|---|---|---|
| **Major Street**: | Division Street (Rt. 401) | **Minor Street**: | Route 4 SB Ramps/Com. Dwy. |
| **City/Town**: | Warwick, RI | **Day of Week**: | Weekday |
| **Reference No.**: | 7365 | **Peak Period**: | PM Peak Hour |
| **Existing**: | n/a | **Future**: | 2024 Build |

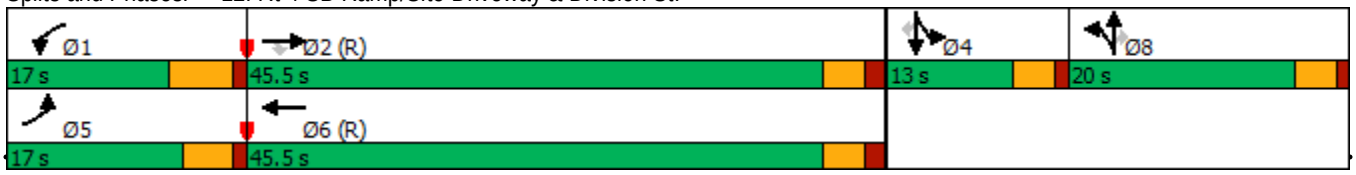


| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lane Configurations | | | | | | | | | | | | |
| Traffic Volume (vph) | 90 | 1220 | 455 | 95 | 965 | 20 | 215 | 40 | 480 | 95 | 24 | 65 |
| Future Volume (vph) | 90 | 1220 | 455 | 95 | 965 | 20 | 215 | 40 | 480 | 95 | 24 | 65 |
| Satd. Flow (prot) | 1805 | 3539 | 1583 | 1770 | 3530 | 0 | 1717 | 1508 | 1551 | 0 | 1828 | 1615 |
| Flt Permitted | 0.950 | | | 0.950 | | | 0.950 | 0.996 | | | 0.962 | |
| Satd. Flow (perm) | 1805 | 3539 | 1583 | 1770 | 3530 | 0 | 1717 | 1508 | 1551 | 0 | 1828 | 1615 |
| Satd. Flow (RTOR) | | | 511 | | 3 | | | 158 | 256 | | | 126 |
| Lane Group Flow (vph) | 101 | 1371 | 511 | 107 | 1106 | 0 | 218 | 306 | 302 | 0 | 134 | 73 |
| Turn Type | Prot | NA | Perm | Prot | NA | | Split | NA | Perm | Split | NA | Perm |
| Protected Phases | 5 | 2 | | 1 | 6 | | 8 | 8 | | 4 | 4 | |
| Permitted Phases | | | 2 | | | | | | 8 | | | 4 |
| Total Split (s) | 17.0 | 45.5 | 45.5 | 17.0 | 45.5 | | 20.0 | 20.0 | 20.0 | 13.0 | 13.0 | 13.0 |
| Total Lost Time (s) | 3.5 | 3.5 | 3.5 | 5.5 | 3.5 | | 3.0 | 3.0 | 3.0 | | 3.0 | 4.0 |
| Act Effct Green (s) | 11.2 | 47.8 | 47.8 | 9.7 | 48.2 | | 15.7 | 15.7 | 15.7 | | 9.7 | 8.7 |
| Actuated g/C Ratio | 0.12 | 0.50 | 0.50 | 0.10 | 0.50 | | 0.16 | 0.16 | 0.16 | | 0.10 | 0.09 |
| v/c Ratio | 0.48 | 0.77 | 0.49 | 0.60 | 0.62 | | 0.78 | 0.81 | 0.65 | | 0.72 | 0.28 |
| Control Delay | 46.5 | 25.3 | 3.3 | 54.6 | 20.7 | | 57.4 | 35.6 | 14.7 | | 64.4 | 4.2 |
| Queue Delay | 0.0 | 1.5 | 0.1 | 0.0 | 0.0 | | 0.0 | 0.0 | 0.0 | | 0.0 | 0.0 |
| Total Delay | 46.5 | 26.8 | 3.4 | 54.6 | 20.7 | | 57.4 | 35.6 | 14.7 | | 64.4 | 4.2 |
| LOS | D | C | A | D | C | | E | D | B | | E | A |
| Approach Delay | | 21.8 | | | 23.7 | | | 33.7 | | | 43.1 | |
| Approach LOS | | C | | | C | | | C | | | D | |
| Queue Length 50th (ft) | 58 | 380 | 0 | 63 | 267 | | 129 | 93 | 24 | | 80 | 0 |
| Queue Length 95th (ft) | 106 | 481 | 54 | 114 | 348 | | #228 | #228 | 106 | | #162 | 9 |
| Internal Link Dist (ft) | | 400 | | | 1142 | | | 508 | | | 178 | |
| Turn Bay Length (ft) | 50 | | | 100 | | | 300 | | 250 | | | |
| Base Capacity (vph) | 255 | 1770 | 1047 | 213 | 1781 | | 305 | 398 | 486 | | 191 | 266 |
| Starvation Cap Reductn | 0 | 219 | 67 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Spillback Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Storage Cap Reductn | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | | 0 | 0 |
| Reduced v/c Ratio | 0.40 | 0.88 | 0.52 | 0.50 | 0.62 | | 0.71 | 0.77 | 0.62 | | 0.70 | 0.27 |

**Intersection Summary**

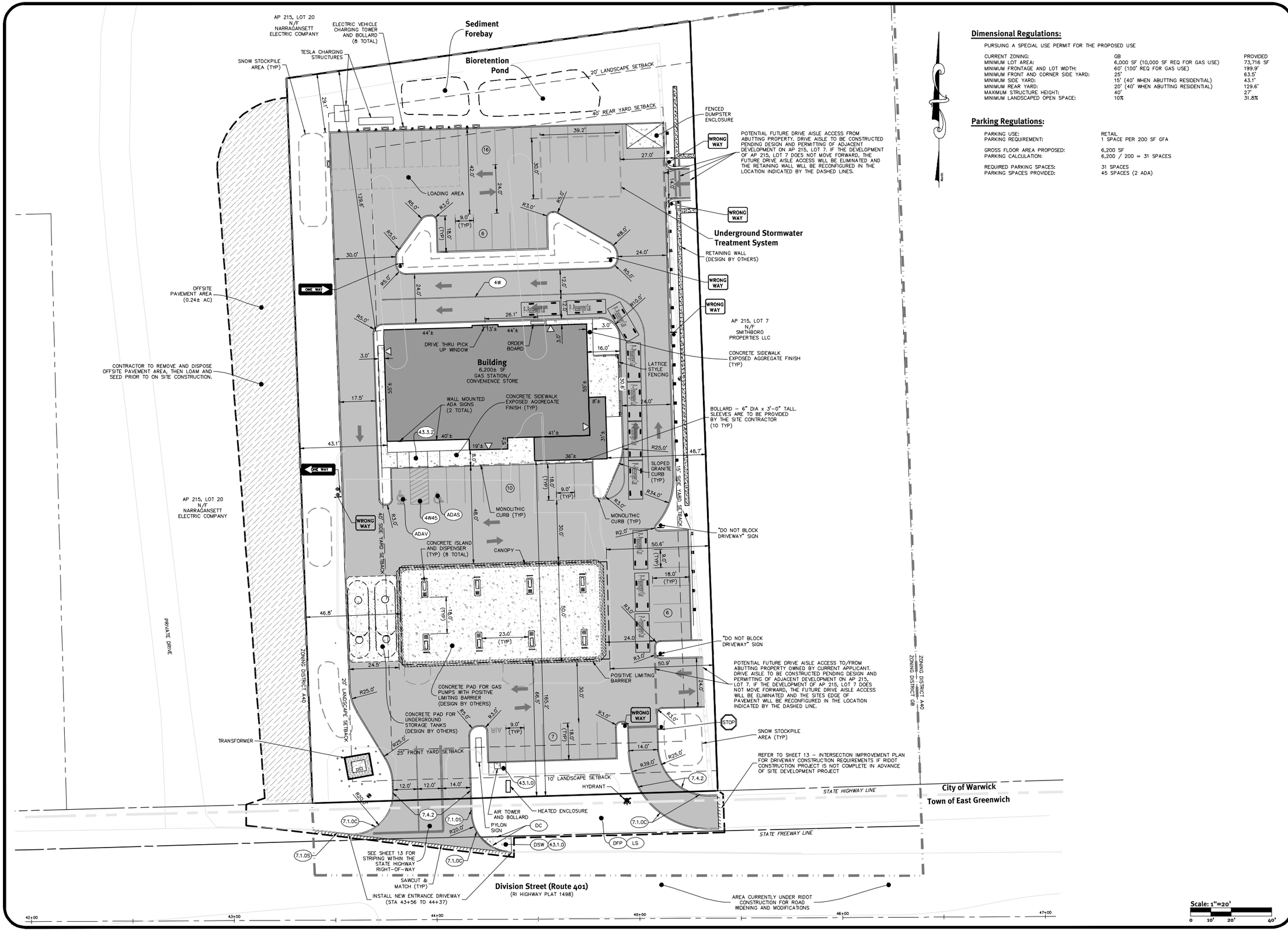
Cycle Length: 95.5
Actuated Cycle Length: 95.5
Offset: 15 (16%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 25.7 Intersection LOS: C
Intersection Capacity Utilization 72.0% ICU Level of Service C
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 12: Rt 4 SB Ramp/Site Driveway & Division St.



# APPENDIX E – Off-Site Improvement Concept Plan

**Division Street (Route 401) at Route 4 Southbound Ramps/Site Access Driveway**




## Dimensional Regulations:

PURSUING A SPECIAL USE PERMIT FOR THE PROPOSED USE

| | | |
|---|---|---|
| CURRENT ZONING: | GB | PROVIDED |
| MINIMUM LOT AREA: | 6,000 SF (10,000 SF REQ FOR GAS USE) | 73,716 SF |
| MINIMUM FRONTAGE AND LOT WIDTH: | 60' (100' REQ FOR GAS USE) | 199.9' |
| MINIMUM FRONT AND CORNER SIDE YARD: | 25' | 63.5' |
| MINIMUM SIDE YARD: | 15' (40' WHEN ABUTTING RESIDENTIAL) | 43.1' |
| MINIMUM REAR YARD: | 20' (40' WHEN ABUTTING RESIDENTIAL) | 129.6' |
| MAXIMUM STRUCTURE HEIGHT: | 40' | 27' |
| MINIMUM LANDSCAPED OPEN SPACE: | 10% | 31.8% |

## Parking Regulations:

| | |
|---|---|
| PARKING USE: | RETAIL |
| PARKING REQUIREMENT: | 1 SPACE PER 200 SF GFA |
| GROSS FLOOR AREA PROPOSED: | 6,200 SF |
| PARKING CALCULATION: | 6,200 / 200 = 31 SPACES |
| REQUIRED PARKING SPACES: | 31 SPACES |
| PARKING SPACES PROVIDED: | 45 SPACES (2 ADA) |

Scale: 1"=20'
0 10' 20' 40'

DiPrete Engineering
Two Stafford Court Cranston, RI 02920
tel 401-943-1000 fax 401-464-6006 www.dipreteeng.com
Boston • Providence • Newport

JASON P. CLOUGH
No. 21670
REGISTERED
PROFESSIONAL ENGINEER
CIVIL
10/19/21



| No. | Date | Description | By |
|---|---|---|---|
| 1 | 10-04-2021 | RIDOT PER PC Submission | J.A.R. |
| 2 | 8-24-2021 | RIDOT PER PC Submission | N.D.K. |
| 3 | 6-25-2021 | RIDOT PER PC Submission | J.A.R. |

Drawn By: N.D.K. | Design By: N.D.K.

# Site Layout Plan
## 1149 Division Street
Assessor's Plat 215 Lot 8
Warwick, Rhode Island

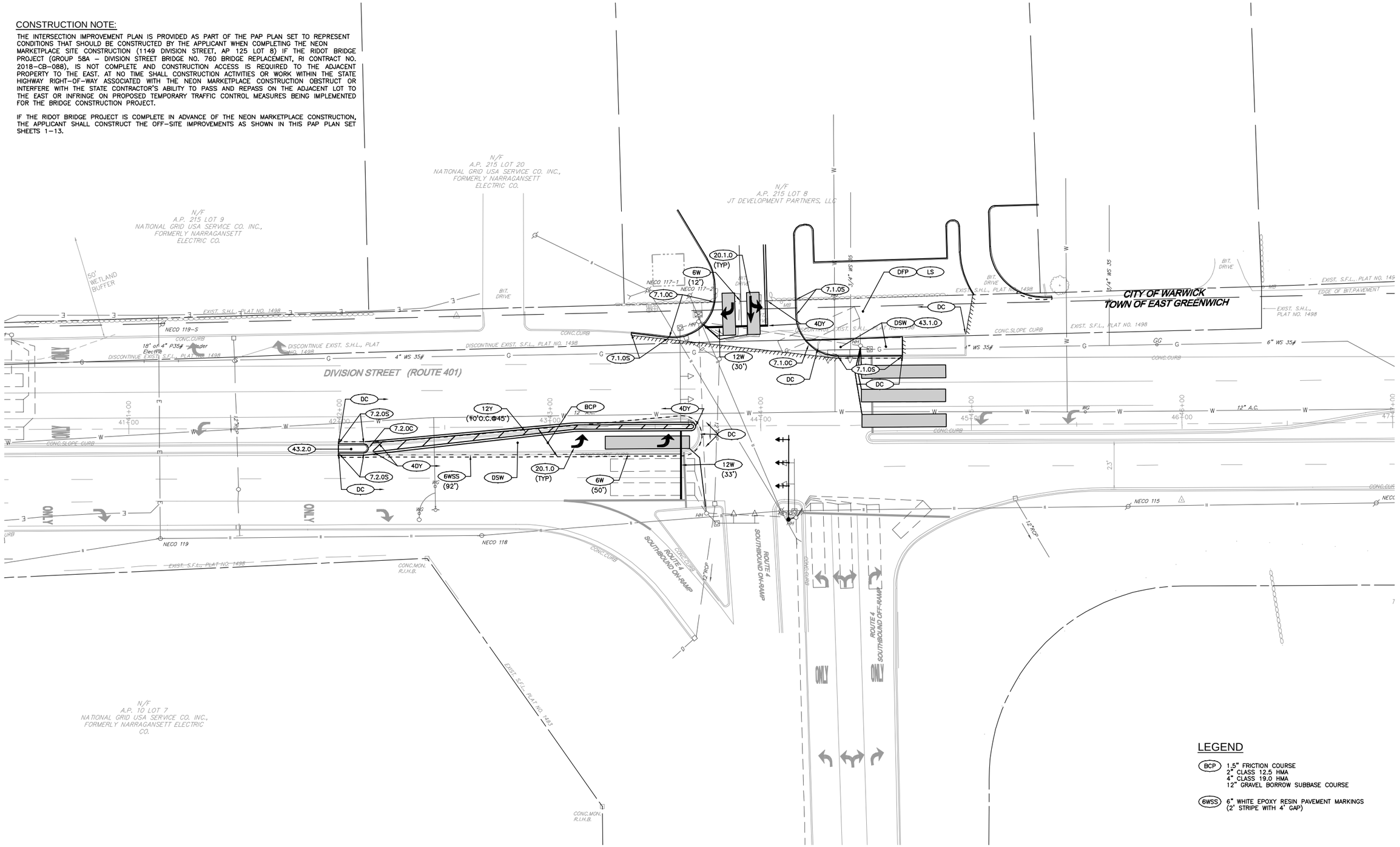
**Prepared For**
**TPG Dev Con**
1140 Reservoir Avenue
Cranston, Rhode Island 02920

SHEET 6 OF 15

## CONSTRUCTION NOTE:

THE INTERSECTION IMPROVEMENT PLAN IS PROVIDED AS PART OF THE PAP PLAN SET TO REPRESENT CONDITIONS THAT SHOULD BE CONSTRUCTED BY THE APPLICANT WHEN COMPLETING THE NEON MARKETPLACE SITE CONSTRUCTION (1149 DIVISION STREET, AP 125 LOT 8) IF THE RIDOT BRIDGE PROJECT (GROUP 58A – DIVISION STREET BRIDGE NO. 760 BRIDGE REPLACEMENT, RI CONTRACT NO. 2018–CB–088), IS NOT COMPLETE AND CONSTRUCTION ACCESS IS REQUIRED TO THE ADJACENT PROPERTY TO THE EAST. AT NO TIME SHALL CONSTRUCTION ACTIVITIES OR WORK WITHIN THE STATE HIGHWAY RIGHT–OF–WAY ASSOCIATED WITH THE NEON MARKETPLACE CONSTRUCTION OBSTRUCT OR INTERFERE WITH THE STATE CONTRACTOR'S ABILITY TO PASS AND REPASS ON THE ADJACENT LOT TO THE EAST OR INFRINGE ON PROPOSED TEMPORARY TRAFFIC CONTROL MEASURES BEING IMPLEMENTED FOR THE BRIDGE CONSTRUCTION PROJECT.

IF THE RIDOT BRIDGE PROJECT IS COMPLETE IN ADVANCE OF THE NEON MARKETPLACE CONSTRUCTION, THE APPLICANT SHALL CONSTRUCT THE OFF–SITE IMPROVEMENTS AS SHOWN IN THIS PAP PLAN SET SHEETS 1–13.




## LEGEND

- (BCP) 1.5" FRICTION COURSE
  2" CLASS 12.5 HMA
  4" CLASS 19.0 HMA
  12" GRAVEL BORROW SUBBASE COURSE
- (6WSS) 6" WHITE EPOXY RESIN PAVEMENT MARKINGS (2' STRIPE WITH 4' GAP)

| NUMBER | DATE | MADE BY | CHECKED BY | REVISIONS |
|---|---|---|---|---|
| | | | | |

DRAWN BY:

DESIGNED BY:

CHECKED BY:

REGISTERED PROFESSIONAL

PREPARED BY: BETA — www.BETA-Inc.com

IN ASSOCIATION WITH: DiPrete Engineering — Engineers • Planners • Surveyors

SCALE: 20 0 20 40 — SCALE IN FEET: 1"=20'



PROJECT

**1149 Division Street**
**Assessor's Plat 125 Lot 8**
**WARWICK, RHODE ISLAND**

TITLE

ROUTE 4 SOUTHBOUND RAMPS
INTERSECTION IMPROVEMENT PLAN

SITE DRIVEWAY/ROUTE 4 SB RAMPS AT
DIVISION ST. (ROUTE 401)

BETA JOB NO. 7365

ISSUE DATE OCTOBER 13, 2021

SHEET NO.