CROSSMAN ENGINEERING

Civil • Transportation • Environmental • Site Planning • Surveying • Permitting

January 21, 2025

Mr. Robert DeBlois
D2 Homes, Inc.
420 Scrabbletown Road, Suite G
North Kingstown, RI 02852

RE: Proposed Residential Development
AP 13, Lot 22, Phases 1G, 1H, 1I, 1J and 1M
Highlands at Hopkins Hill
Dante Boulevard, Coventry, Rhode Island

Dear Mr. DeBlois:

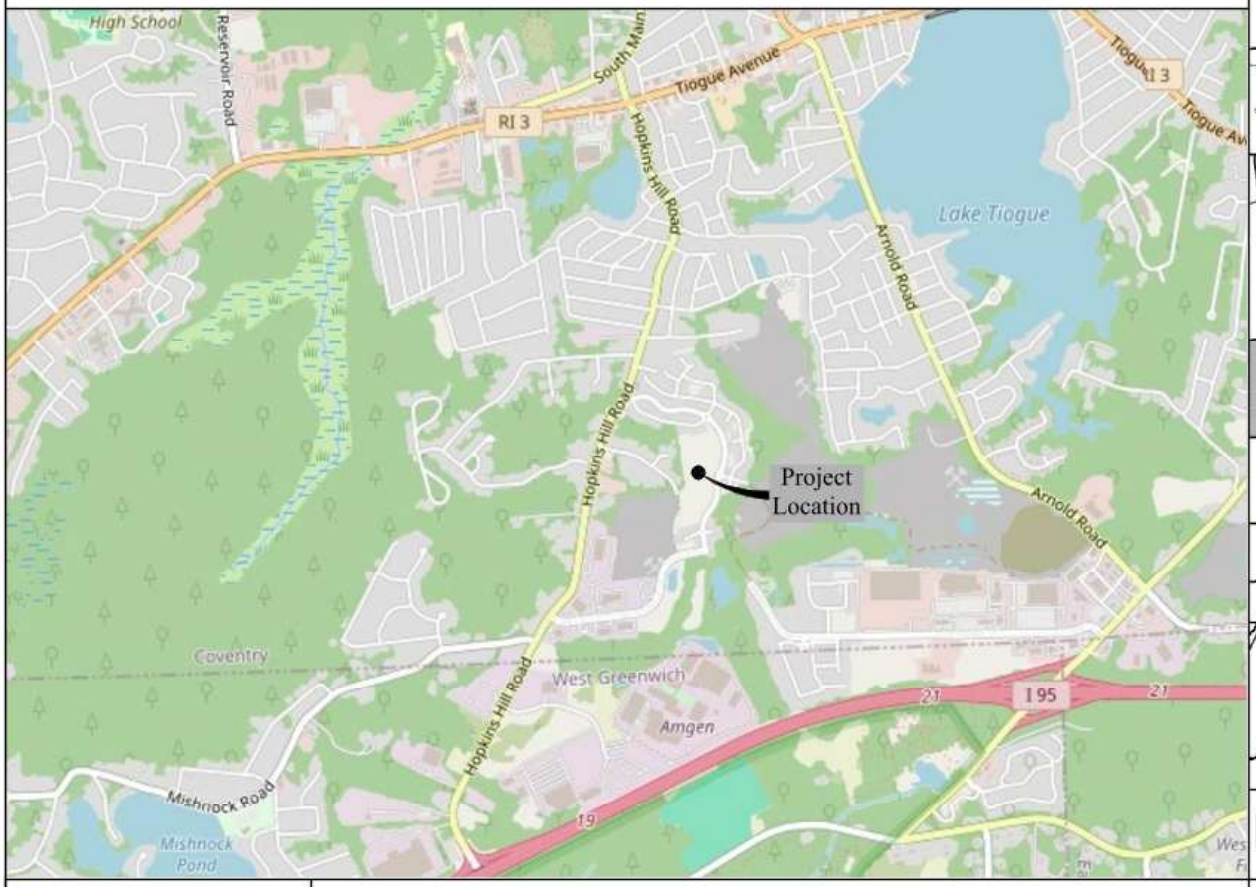
Crossman Engineering, in accordance with our scope of services, has completed a planning level assessment of the immediate servicing roadways to a proposed residential development that includes construction of the final phases of the *Highlands at Hopkins Hill* condominium neighborhood, in the Town of Coventry, Rhode Island. The study was completed for submission to the town as part of the preliminary plan approval process, and provides a summary of existing roadway conditions, and an estimate of future traffic conditions if the project was to be approved and constructed. The subject property, approximately 14 acres in size, is located within the *Highlands* residential neighborhood portion of the existing, large scale mixed-use site known as the *Centre of New England*. Figure 1 on the following page depicts the general vicinity of the project in the community.

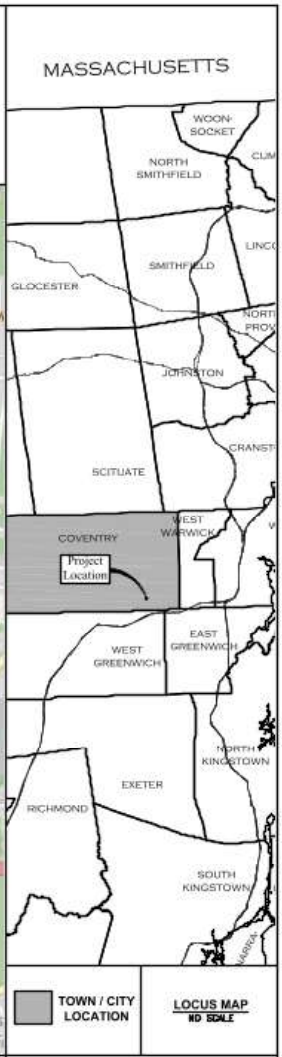
As part of the initial approvals for the *Highlands* condominium neighborhood identified as Phase 1 of the residential component within the *Centre of New England*, a Traffic Impact Study was prepared by BETA Group in May 2004. That study assessed the impact of a larger, residential project that has since been reduced in size based upon the final buildout of the *Highlands*. It is our understanding from information provided by your office, and a review of the current site plan prepared by *DiPrete Engineering*, that the subject property will be developed consistent with and similar to original approvals for Phase 1. The site will contain a 66 single family homes in a condominium configuration, resulting in a total of 218 units within the *Highlands* neighborhood, a reduction from the original 304 units that began construction in the early 2000's. Access to the new homes will be provided from two internal roadways, intersecting with Dante Boulevard on the south and Stephanie Drive to the north.

The study summarized herein focused on both traffic flow efficiency and safety along the immediate servicing roadways of Centre of New England Boulevard and Dante Boulevard, including the existing and proposed site access road intersections. The potential impacts associated with the site related traffic have been defined and evaluated in accordance with standard traffic engineering guidelines and procedures.

Highlands at Hopkins Hill

COVENTRY, RHODE ISLAND





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Project Location Map

Figure 1

Project Approach

The objective of this traffic study is to determine if any traffic operational and/or safety concerns presently exist along the neighborhood roadways servicing the subject property. A review of the existing roadway features was completed to determine if any potential deficiencies presently warrant mitigation. In addition to existing conditions, the analysis also included the assessment of potential impacts resulting from the additional traffic generated by completion of the final phase of the *Highlands* condominium neighborhood. The study focused on these issues and made recommendations for improvements if determined necessary, based upon the findings of the data collection and analysis phases of the study.

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

- An inventory of the physical roadway characteristics of Centre of New England Boulevard, Dante Boulevard and Stephanie Drive in the immediate site vicinity to determine the adequacy of the existing roadway geometric features in reference to safety and operations.
- A data collection program was completed including a manual turning movement count (TMC) at the Centre of New England Boulevard intersection with Dante Boulevard and review of record traffic count data for the servicing roadways including TMC's at the Hopkins Hill Road intersections with Centre of New England Boulevard and Dante Boulevard, and an Automatic Traffic Recorder Count (ATR) on Hopkins Hill Road.
- An analysis of crash records obtained from the Coventry Police Department to determine if there are any safety concerns relative to the frequency, severity, or pattern of crashes in the project area.
- An estimate of future traffic volumes for the proposed residential development 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 build traffic conditions and development of recommendations where necessary, that would be required to maintain safe and efficient traffic flow in the project area.

Project Area

The *Centre of New England* was initially approved in 2003 with a comprehensive master development plan of land uses that included a mixture of large big box stores, small strip retail buildings, restaurants, hotels, offices, commercial buildings and various residential style buildings. This approval also included a *Transportation Master Plan* prepared by Rizzo Associates/Tetra Tech that outlined an off-site infrastructure mitigation program based upon a phased approach to the development, and traffic monitoring as the project was to be completed over an extended period of time. Construction of elements within the expansive 431-acre property began in the late 1990's and have been continuing on a lot-by-lot basis over the last 20 years with the initial, major focus being the commercial portions directly off of New London Turnpike and Hopkins Hill Road.

Centre of New England Boulevard was approved as a primary arterial road servicing the abutting lots within the project, and was designed to extend as a through road between New London Turnpike and Hopkins Hill Road. The road has been constructed in sections over time, starting at either end as lots were developed

along its length. The short segments of road completed as part of the initial phase in the early 2000's, were constructed to service the *Cracker Barrel, Wendy's, Applebee's, Hampton Inn* and *BJ's Wholesale Club* on the east, and in conjunction with Dante Boulevard servicing office, warehousing and contractor buildings and the *Highlands* condominiums on the west.

Much of the current buildout of the *Centre of New England* was completed in subsequent phases by 2010. During this initial period off of Hopkins Hill Road, Dante Boulevard was constructed for access to the *Highlands* residential neighborhood element of the project. This residential street provides a second means of access from Hopkins Hill Road to the western section of Centre of New England Boulevard, intersecting at its current easterly terminus that extends to the wetland boundary limits.

Permitting to extend and connect the main boulevard to create the through road was initially denied by the RIDEM, and for years permitting for the crossing was not pursued. As a result of safety and operational concerns identified by town public safety officials the dead-ended boulevard created, modifications to the original six lane boulevard style road were made, reducing its width to only two lanes through the wetland complex. This design was approved by the RIDEM in May 2024 allowing for completion of the boulevard that will provide a through connection between New London Turnpike and Hopkins Hill Road. Construction was initiated at the beginning of August 2024, and it is anticipated that this work will be completed within a 12-month period, and open for traffic during the summer of 2025.

The connection will result in a major redistribution of traffic on the local roadways providing access to the *Centre of New England* including New London Turnpike, Hopkins Hill Road, Arnold Road, and the I-95 interchanges. This change will require a future analysis of these roadways and intersections to document the traffic redistribution, and what if any modifications to the existing points of access to the *Centre of New England* servicing the development are necessary. These potential improvements will be dictated by the redistribution of traffic resulting from the boulevard completion, in combination with development of the remaining vacant lots that propose primarily residential uses abutting the *Highlands* neighborhood.

These undeveloped lots are presently under review by the town, and would represent full development of the 431-acre site in accordance with the previous 2005 Master Plan approvals. A Traffic Impact Study prepared by Crossman Engineering was recently completed and submitted with the application for development of these final lots within the *Centre of New England*. The study provided analysis of the project area including Hopkins Hill Road and Centre of New England Boulevard and included development of the subject property as part of the overall site analysis. A supplemental additional study will be completed in accordance with a condition of the recent Planning Board approval as part of final project reviews. The updated study will incorporate the traffic redistribution impacts resulting from completion of Centre of New England Boulevard. This will be done in order to provide updated base conditions to determine the appropriate final infrastructure improvements along the servicing roadways based upon final travel patterns realized for the *Centre of New England*.

The necessary mitigation to accommodate traffic demands of the full *Centre of New England* development, including potential signalization of the Hopkins Hill Road intersection with Centre of New England Boulevard as identified in the original *Transportation Master Plan,* will be monitored and implemented as part of the overall *Centre of New England* development infrastructure responsibilities of the current owner. Property sales and site infrastructure improvements are the responsibility of the court appointed receiver that is managing the property. The receiver recently implemented the roadway maintenance program completed

in 2024, and the roadway connection construction project to be completed in 2025 that were funded through property sales.

The subject project, which is a completion of the final phase of the *Highlands* condominium neighborhood, is a minor, negligible component of the overall *Centre of New England* development. This small project will have no bearing on the timing and extent of potential additional infrastructure needs noted above, where the other factors as described, will drive any future improvements that may be warranted. Therefore, noting the previous studies that have been completed that incorporate the subject site, in combination with the supplemental study that will be completed in 2025 to document the traffic redistribution associated with the roadway connection, for the subject project, this study focused primarily on the *Highlands* local neighborhood street system to ensure proper design treatments and measures are incorporated to provide safe and efficient access to the new homes. The limits of our analysis included Dante Boulevard between Hopkins Hill Road and Centre of New England Boulevard, and Stephanie Drive that will provide the northern point of access to the new internal streets. Figure 2 on the following page depicts the general project area of the study.

Roadways and Intersections

Centre of New England Boulevard

The section of Centre of New England Boulevard under study for this project extends from Hopkins Hill Road to its easterly dead-end terminus as previously described. It is an east/west local roadway servicing a small portion of the large-scale mixed-use *Centre of New England* development. The roadway as it presently exists was constructed between 1998 and 2007, extending from Hopkins Hill Road to the east to initially service the small group of commercial buildings in the immediate vicinity of Hopkins Hill Road. It was extended further east to intersect with Dante Boulevard as that portion of the project containing a residential use was constructed, providing a loop connection to Hopkins Hill Road. As noted earlier, the original design of the boulevard style roadway was to extend the new six lane road fully between New London Turnpike and Hopkins Hill Road to the west paralleling I-95. The roadway was never completed and presently extends approximately 5,000 feet from New London Turnpike and 2,600 feet from Hopkins Hill Road, both ending at a dead-end terminus. A short 800-foot section was not constructed as it required a wetland crossing that has recently been permitted by RIDEM. The construction work for this segment was initiated in August 2024, and is expected to be completed by the summer of 2025. The roadway as originally designed, will provide a transportation benefit in the communities surrounding this large-scale development by limiting unnecessary travel along the local arterials.

Highlands at Hopkins Hill

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Project Area Map

Figure 2

The boulevard style roadway extending between Hopkins Hill Road and Dante Boulevard is typically 84-feet wide consisting of 36-foot-wide curb to curb pavement section on either side of a raised 12-foot median that separates each direction of travel. The final surface course and other minor maintenance improvements were completed in the fall of 2024, though short sections in advance of the wetland crossing segment were not upgraded and will be completed under finalization of the roadway connection in 2025. The maintenance work also included replacement of the travel and turning lane delineation that had been worn or was nonexistent due to age. The new markings include delineation of two travel lanes in each direction, and a left turn lane adjacent to the center median, providing for safe and efficient access to the driveways along its length.

As noted, the roadway infrastructure is substantially complete with granite curbing and concrete/brick sidewalks that are provided along the majority of both sides of the road. There are sections of sidewalk missing along the frontage of the few vacant lots that require installation when these properties are developed. The roadway median area provides for a landscaped boulevard environment that includes lighting for the roadway for proper nighttime illumination. As part of the roadway maintenance program, 30 mph speed limit signs will be installed to maintain appropriate speeds along the major route within the *Centre of New England*.

Dante Boulevard

Dante Boulevard is a local neighborhood street extending between Hopkins Hill Road and Centre of New England Boulevard. It serves as the main collector road within the condominium neighborhood, linking to parallel residential streets that provide direct access to the homes. There are no homes or driveways located directly along Dante Boulevard, where all traffic entering and exiting the neighborhood must travel for property access.

The roadway was designed in a curvilinear manner with single travel lanes and numerous horizontal curves, serving to maintain proper, low travel speeds through the residential neighborhood. The boulevard style road is 40 feet wide with a 15-foot travel lane in each direction, separated by a 10-foot landscaped median with ornamental lighting. Concrete curbing and sidewalks are provided along both sides of the road.

Three small roundabouts (traffic circles), are utilized at the intersecting side streets for intersection control as seen in the photograph on the following page. It should be noted that there are no standard signs or pavement markings at these junctions to properly direct drivers, or indicate required movement control and

right-of-way around the circles. It is recommended that standard regulatory signing and pavement markings be installed along the road and at intersections during the maintenance upgrade of the streets.

Similar to Centre of New England Boulevard, these roads were never completed and had been surfaced with only a binder course since construction over 15 years ago. Completion of these residential roads with placement of the final surface course was initiated last fall within this neighborhood.

Hopkins Hill Road at Dante Boulevard

Hopkins Hill Road intersects Dante Boulevard to form an unsignalized, three-way junction. Hopkins Hill Road forms the north and south legs, while Dante Boulevard forms the eastern leg. The northbound movements are delineated with a single through/right turn lane. The southbound approach consists of one through/left travel lane. The westbound approach is comprised of a single left/right turn lane. Sidewalks are provided on all quadrant with accessible ramps limited to Dante Boulevard, though they appear not to be ADA compliant. The sidewalk is concrete along the westerly side of Hopkins Hill Road but are a paver material on Dante Boulevard, extending onto Hopkins Hill Road along the site frontage. Crosswalks are available across the northern and eastern legs of the intersection, though no curb ramps are provided for full pedestrian accessibility to the crosswalk on Hopkins Hill Road. The minor approach is properly signed with stop control (sign and pavement marking).

Centre of New England Boulevard at Dante Boulevard

Centre of New England Boulevard intersects Dante Boulevard to form an unsignalized, three-way junction. Dante Boulevard forms the northern leg, while Centre of New England Boulevard forms the eastern and western legs. As noted, the eastern leg (westbound approach), is currently under construction for completion in 2025 and will be narrowed from its existing 36-foot width. Presently there are no pavement markings or intersection control signing at the junction. These features can be seen in the adjacent photograph.

As part of the roadway completion project currently underway, appropriate signing and markings are proposed to be installed. The intersection will also be physically modified to provide single through travel lanes on Centre of New England Boulevard, with a separate eastbound left turn lane onto Dante Boulevard. The Dante Boulevard southbound approach provides a single all-purpose lane for left and right turning traffic. Concrete sidewalks are available on all quadrant with accessible ramps, though they appear not to be ADA compliant. No crosswalk is available across the northern leg of the intersection. It is recommended that a crosswalk linking to the two wheelchair ramps be installed as part of the current roadway construction project.

Dante Boulevard at Site Access Road Intersections

Access to this phase of the *Highlands* condominiums will be provided at two locations that had been established for access into to property including to a local residential street at Stephanie Drive that links to Dante Boulevard at two locations. The second, and primary access will be to the main collector road within the neighborhood, Dante Boulevard, directly at a roundabout intersection to the south. The roundabout will provide for single lane approaches with yield control, limiting all entering traffic to right turns at low speeds and safe turning movements. Concrete and brick sidewalks are provided on all quadrant with accessible ramps at the Dante Road junction. No crosswalks are available on any of the intersection approaches.

Traffic

Existing traffic flow characteristics for this area were developed from a traffic counting program completed by Crossman, and review of historical traffic count data from the initial *Centre of New England Transportation Master Plan* that also included a traffic monitoring program, and subsequent studies for other projects completed in the area. Automatic Traffic Recorder (ATR) counts were reviewed from data collected on Hopkins Hill Road south of Centre of New England Boulevard in June 2024 to obtain daily traffic volume, speed and classification data for the roadway. Manual Turning Movement Counts (TMC) were also completed in June and July 2024 at the Hopkins Hill Road intersections with Centre of New England Boulevard and Dante Boulevard, and in January 2025 at the Centre of New England Boulevard intersection Dante Boulevard. Data was obtained during the morning and afternoon peak hours of traffic to define daily peak traffic demands and patterns of the roadways providing access to the site.

Utilizing this data, a weekday average daily traffic volume of approximately 10,200 vehicles per day was determined for Hopkins Hill Road to the immediate south of Centre of New England Boulevard. On a typical weekday along this section of Hopkins Hill Road, traffic volumes begin to increase at 6:00 AM, until the morning peak hour between 7:00 and 8:00 AM with a total volume of approximately 725 vehicles. The volumes then decrease and range between 500 and 650 vehicles per hour until 2:00 PM before gradually increasing to the daily afternoon peak hour of traffic between 4:00 to 5:00 PM of 940 vehicles. During the morning peak period between 60 to 70 percent of the traffic is destined to the south, while in the afternoon peak period approximately 65 percent is northbound. The 2024 traffic volume data was compared to the 2004 record information available for this same section of Hopkins Hill Road. A review of the daily and hourly volumes found a minor growth rate in traffic of less than 0.5 percent per year. The 2004 daily volume of 9,350 vpd increased by approximately 850 vehicles per day over the 20-year review period. During the daily peak hours of traffic, the morning peak hour was determined to be 25 vehicles less today, and the afternoon peak hour 125 vehicles more within the range of daily volume fluctuations, and which are both negligible in relation to peak hour intersection operations and delay.

In addition to the ATR counts, Crossman completed manual turning movement counts at the study intersections noted along Dante Boulevard. Data was collected during the peak weekday periods between 7:00 to 9:00 AM and 4:00 to 6:00 PM when the proposed site and surrounding roadway would service the highest combined peak volume of traffic. The turning movement count data found that during the busiest periods approximately 26 vehicles are serviced on Dante Boulevard to the east of Hopkins Hill Road during the 7:00 to 8:00 AM period with approximately 5 vehicles eastbound and 21 vehicles westbound. During the PM peak between 4:00 and 5:00 PM approximately 69 vehicles are serviced with approximately 43 eastbound vehicles and 26 vehicles westbound. During these periods Hopkins Hill Road at this intersection serviced approximately 750 AM and 1,030 PM vehicles per hour. The manual traffic counts corroborated the ATR data and also the minor changes in peak hour volumes that have occurred in the project area over the last 20 years. Complete count information can be found in the Attachment.

Safety Analysis

In order to determine if there are any limiting factors affecting safety relating to access to the proposed residential project, the physical characteristics of Hopkins Hill Road, Centre of New England Boulevard and Dante Boulevard in the project area were investigated. These limiting factors would potentially include horizontal or vertical roadway geometric 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 *Stopping Sight Distance* requirement is a design standard necessary to permit turning vehicles to safely enter and exit the development at the existing intersections serving the property and at the proposed site access road intersection with Stephanie Drive.

STOPPING SIGHT DISTANCE

Stopping Sight Distance (SSD) is the minimum distance that a driver travelling along a roadway at or near the design speed, requires in order to adequately perceive, react and safely come to a stop prior to reaching an object in its travel path and avoid a collision. The available and required SSD are a function of the roadway geometry and design speed respectively, and are factored in when determining the appropriate and safe location of a site driveway or roadway intersection.

A review of the existing roadway geometry at the major points of access to the neighborhood off of Hopkins Hill Road were completed. The geometry Hopkins Hill Road in the defined project area can be described as curvilinear with multiple horizontal and vertical curves along its length. The roadway has two minor horizontal curves to the north and south of the Dante Boulevard intersection, which is located on the tangent between these two curves. The roadway gradient is relatively level to the north with a gradual incline heading in a southerly direction, up to the crest of the curve in the vicinity of Bestwick Trail. In the immediate vicinity of the Centre of New England Boulevard intersection, a reverse horizontal curve extending to both the north and south of the minor side street is present, and the vertical alignment can be described as generally level with several minor crest vertical curves that do not limit sight lines while travelling along the road. The vertical and horizontal alignment of Dante Boulevard in the vicinity of the site access road intersections that are roundabout controlled, are generally level with horizontal approach curvature typical over the boulevard length.

Based upon the roadway geometry as described and the available sight distances determined at the study intersections, a review of the required stopping sight distance was undertaken to ensure safe operations. The *required* SSD is based upon the speed of traffic travelling along the roadway and this value is compared to the available or *measured* SSD to determine if this safety measure is satisfied. In determining the required

SSD, the design speed of the roadway must be established. The most recent edition of the American Association of State Highway and Transportation Official's (AASHTO's) publication ***A Policy on Geometric Design of Highways and Streets,*** *Table 3-1* is referenced in determining the required stopping sight distances, which is based on the design speeds for each roadway.

One method of determining the design speed of a roadway is referenced in the ***RIDOT Highway Design Manual***. On roadways with a posted speed limit less than 40 mph, the design speed is estimated to be the posted speed limit, plus 5 mph in urban areas, and plus 10 mph in rural areas. To determine if the minimum requirements for safe SSDs were met in this study, design speeds of 40 mph and 20 mph were utilized for evaluating the stopping sight distance on Hopkins Hill Road in the vicinity of the Centre of New England Boulevard and the Dante Boulevard roundabout intersections respectfully.

In addition to evaluating the SSD based upon the posted *speed limit* and resultant *design speed*, to be conservative, actual speed data was also obtained to determine the 85th percentile speed for drivers travelling along Hopkins Hill Road in the project area. The 85th percentile speed represents the speed at which 85 percent of drivers are travelling at or slower and is utilized when available in the analysis of required sight distances. Based on speed data obtained as part of the data collection program, the 85th percentile speed for Hopkins Hill Road in the 4-lane section with a posted speed limit of 35 mph was determined to be 47 miles per hour for southbound and 49 mph for northbound traffic.

Based upon the roadway geometry as defined for Hopkins Hill Road, the sight distances available at the Centre of New England Boulevard intersection were determined to be in excess of 450 feet in both directions, which is greater than the required safe stopping sight distance of 250 feet based on the posted speed of 35 mph, 305 feet for the AASHTO requirements for design speed established per RIDOT policy, and the 414 feet for the 85th percentile travel speeds between 47 and 49 mph recorded along this section of road. Based on observations of the intersection, it is recommended that landscaping to the south of Centre of New England Boulevard be properly maintained to have the low-level shrubs maintained at less than two feet, and the branches on the mature trees removed/trimmed up to a height of 10 feet to allow for unimpeded sight lines in this direction.

Based upon the roadway geometry of Hopkins Hill Road in the vicinity of the Dante Boulevard intersection, the available sight distances were determined to be in excess of 500 feet in both directions. These values are greater than the required safe stopping sight distance of 155 feet based on the posted speed of 25 mph, 200 feet for the AASHTO requirements for design speed established per RIDOT policy, and the 305 feet for observed travel speeds between 30 and 40 mph along this section of road.

Based upon the roadway geometry of Dante Boulevard in the vicinity of the local residential street intersections, the available sight distances were determined to be in excess of 150 feet on all approaches. These values are greater than the required safe stopping sight distance of 115 feet based on the yield-controlled condition on all of the approaches to the intersection and observed travel speeds between 15 and 20 mph required to traverse the roundabout intersections as there is no posted speed limit on this private residential street.

Based upon the review of existing roadway geometry and operations, roadway or traffic related safety enhancements could be implemented to improve safety within the immediate project area. As previously noted, landscaping should be maintained along the frontage of Hopkins Hill Road as not to hinder sight lines south of Centre of New England Boulevard, and roadway striping specifically at the Centre of New England Boulevard intersection should also be completed including installation of a *Stop* sign as part of the current roadway maintenance project to improve lane delineation and proper utilization. Yield signs and markings

should also be placed at the roundabout intersections along Dante Boulevard along with proper advanced signing.

Trip Generation and Operational Analysis

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, development proposal includes construction of a total of 66 residential condominium units as part of the final phase of the *Highlands* neighborhood that began construction in the early 2000's. The new homes are proposed on a single 13.6-acre site that had been cleared and partially graded as part of the initial construction phases. Access/egress to the new residential homes will be provided at two locations that had been established as part of the original plans at two locations, Stephanie Drive to the north and Dante Boulevard at a roundabout to the south. Figure 3 on the following page depicts the site layout and access plan provided by *DiPrete Engineering*.

For this site, projected traffic volumes for the residential 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. For the proposed residential project, Land Use Code 210 Single Family Detached housing was utilized based upon the layout and configuration of the homes. The table below provides a summary of peak hour trips estimated for the residential development project.

Trip Generation Summary

	AM Peak Hour		PM Peak Hour
Two Way Trip Total:	***46***	*Two Way Trip Total:*	***62***
Entering:	12	Entering:	39
Exiting:	34	Exiting:	23

As indicated in the table, the proposed residential use results in a relatively low volume estimate of vehicles entering and exiting the site during the morning and afternoon peak traffic periods. It should be noted that the values presented in the table are highly conservative due the ITE land use classification utilized for this study for the new neighborhood. Though they are physically "single family" detached homes, these new types of residential condominium projects that are a variation of a typical senior living or age restricted developments, generate much less traffic than a standard single-family residential neighborhood where families with children are more prevalent. The demographics of these types of developments are typically residents that are empty nesters or retired.

Information provided in the ITE rate sheet included in the Attachment, reference these types of developments as "patio home" style neighborhoods that are configured as single units in a condominium layout instead of duplex/townhouse units, where lower rates (0.26 AM/0.47 PM) have been demonstrated

Highlands at Hopkins Hill

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Site Plan

Figure 3

over a conventional single family style neighborhood. This was found to be consistent with the current units in the *Highlands* which is not age restricted, and where trip rates are substantially less than a typical family style neighborhood. This type of land use would be expected to generate between 50 and 65 percent fewer peak hour trips than the number of vehicle trips that have been estimated in the table. Using the existing *Highlands* neighborhood site trip rates, 16 and 32 trips would be expected to be generated during the AM and PM peak periods respectively for the final phase of the project.

To determine future operations of the servicing roadways, the analysis completed under the major 712-unit residential development recently approved at the concept stage by the town that included the subject development, was reviewed. At the Hopkins Hill Road intersections, it was determined that the estimated volumes of left turning traffic from Hopkins Hill Road into the minor side streets of Dante Boulevard and Centre of New England Boulevard would operate efficiently at LOS B or better with delays of 10 seconds of less during both the future weekday morning and afternoon peak hours. The Dante Boulevard minor approach exiting traffic is estimated to operate at an acceptable LOS D or better during the morning and afternoon peak periods with average queues of one to two vehicles and no congestion. The existing roundabout intersections along Dante Boulevard providing access to the new homes would also operate with minor delays and no congestion due to the minor hourly volumes serviced through the neighborhood.

The Centre of New England Boulevard intersection was estimated to experience the greatest delays in the future under full buildout conditions due to the higher exiting volumes anticipated for the primary road providing access to the *Centre of New England* when this area of the site is fully developed. As expected, the westbound left turn exiting movement from Centre of New England Boulevard is estimated to operate at LOS F with delays in excess of 50 seconds, while the right turn exiting traffic, with a dedicated lane, will operate efficiently at LOS B or better during peak daily traffic conditions. The delays for left turning traffic are estimated to result in average queuing of 5 to 10 vehicles during the morning and afternoon peak periods respectively.

Under existing conditions, and with the subject 66-unit residential development, delays and queuing of the minor approach are acceptable. But as additional development occurs over an extended period of time within the *Centre of New England*, operations will continue to deteriorate to a point where improved control including signalization, will be required to maintain safe and adequate operations at this junction. It is recommended through coordination with the town, that a traffic monitoring program be established through the receiver to review future conditions associated with the roadway connection, and under additional development, in order to determine the appropriate schedule for the upgrade. Under a future signal-controlled junction upgrade, the report determined that the intersection with signal control would operate overall at a good LOS A during both peak periods reviewed for this study with all movements operating at LOS B or better.

Conclusions and Recommendations

In summary, based upon the data obtained and analysis completed as presented in this letter, it has been determined that the proposed final phase of the *Highlands* condominium development project within the *Centre of New England* mixed use center, with the recommendations to maintain landscaped areas at intersections for proper sight lines, and to provide final signing and striping improvements, will not adversely impact the local servicing roadways. The final portion of the residential project is consistent with the previously approved project and the original traffic study conclusions remain valid where the proposed use

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will not have a negative impact on public safety or welfare in the defined study area, and adequate and safe access is available to the property.

We trust that this letter sufficiently addresses the requirements of the Town of Coventry to obtain your local approvals. If you should have any questions, please do not hesitate to contact our office.

Very truly yours,
Crossman Engineering, Inc.

Paul J. Bannon
Senior Project Director

ATTACHMENTS

A. Traffic Count Data

B. Trip Generation

ATTACHMENT A – Traffic Count Data

Automatic Traffic Recorder Count (ATR)

Hopkins Hill Road

Intersection Turning Movement Count (TMC)

Hopkins Hill Road at Dante Boulevard

Centre of New England Boulevard at Dante Boulevard

A

Automatic Traffic Recorder Count (ATR)

Hopkins Hill Road

Hopkins Hill Road

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

Hopkins Hill Road south of
Centre of New England Boulevard
City, State: Coventry, RI
Client: Crossman/P. Bannon

05824AVOLUME
Site Code: 2873

Start Time	6/3/2024 Mon	6/4/2024 Tue	6/5/2024 Wed	6/6/2024 Thu	6/7/2024 Fri	Weekday Average	6/8/2024 Sat	6/9/2024 Sun
12:00 AM	33	44	47	63	53	48	92	73
01:00	22	25	21	15	21	21	29	45
02:00	20	11	16	14	14	15	23	28
03:00	22	17	28	20	22	22	20	15
04:00	70	69	76	72	78	73	24	24
05:00	205	199	227	213	229	215	90	61
06:00	518	508	507	522	477	506	183	127
07:00	**762**	**753**	**752**	662	683	722	282	189
08:00	671	711	685	**668**	**736**	694	413	280
09:00	526	602	612	541	516	559	536	367
10:00	530	508	535	490	575	528	591	460
11:00	532	598	581	490	601	560	**682**	**539**
12:00 PM	633	632	658	675	676	655	**696**	**559**
01:00	556	563	615	578	602	583	622	509
02:00	709	743	742	729	719	728	605	511
03:00	824	899	903	834	800	852	568	518
04:00	**982**	**972**	**937**	**911**	**883**	937	603	506
05:00	745	823	854	780	807	802	511	447
06:00	500	584	521	506	492	521	450	380
07:00	419	427	445	386	413	418	367	336
08:00	288	320	323	300	331	312	309	258
09:00	192	223	207	217	239	216	214	144
10:00	103	112	110	121	164	122	199	109
11:00	76	76	72	92	117	87	120	49
Total	9938	10419	10474	9899	10248		8229	6534
Percentage	97.5%	102.2%	102.7%	97.1%	100.5%		80.7%	64.1%
AM Peak	07:00	07:00	07:00	08:00	08:00	-	11:00	11:00
Vol.	762	753	752	668	736	-	682	539
PM Peak	16:00	16:00	16:00	16:00	16:00	-	12:00	12:00
Vol.	982	972	937	911	883	-	696	559
Total		10419	10474					

Transportation Data Corporation
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Hopkins Hill Road south of
Centre of New England Boulevard
City, State: Coventry, RI
Client: Crossman/P. Bannon

05824Avolume
Site Code: 2873

Start	6/3/2024		Tue		Wed		Thu		Fri		Weekday Average		Sat		Sun	
Time	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
12:00 AM	19	14	32	12	32	15	47	16	37	16	33	15	74	18	51	22
01:00	16	6	18	7	13	8	10	5	15	6	14	6	23	6	29	16
02:00	12	8	4	7	9	7	9	5	9	5	9	6	17	6	23	5
03:00	6	16	4	13	15	13	7	13	12	10	9	13	14	6	8	7
04:00	26	44	14	55	19	57	16	56	23	55	20	53	8	16	15	9
05:00	57	148	51	148	62	165	59	154	65	164	59	156	34	56	14	47
06:00	171	347	184	324	174	333	166	356	163	314	172	335	70	113	44	83
07:00	275	**487**	297	**456**	295	**457**	234	**428**	256	**427**	271	**451**	121	161	95	94
08:00	**322**	349	318	393	290	395	**288**	380	**338**	398	**311**	383	188	225	133	147
09:00	242	284	295	307	287	325	254	287	255	261	267	293	257	279	174	193
10:00	273	257	259	249	282	253	251	239	281	294	269	258	315	276	226	234
11:00	288	244	**356**	242	**314**	267	257	233	323	278	308	253	**363**	**319**	**291**	**248**
12:00 PM	359	274	329	303	356	302	343	**332**	361	315	350	305	**377**	**319**	**316**	**243**
01:00	322	234	318	245	364	251	314	264	347	255	333	250	365	257	285	224
02:00	416	293	461	282	455	287	437	292	430	289	440	289	354	251	298	213
03:00	541	283	599	300	586	317	540	294	515	285	556	296	327	241	305	213
04:00	**663**	**319**	**635**	**337**	**619**	**318**	**589**	322	**549**	**334**	**611**	**326**	358	245	290	216
05:00	502	243	565	258	545	309	513	267	504	303	526	276	305	206	272	175
06:00	292	208	362	222	313	208	310	196	279	213	311	209	256	194	216	164
07:00	247	172	252	175	273	172	231	155	266	147	254	164	229	138	212	124
08:00	195	93	205	115	208	115	187	113	215	116	202	110	189	120	171	87
09:00	117	75	138	85	139	68	144	73	152	87	138	78	139	75	99	45
10:00	63	40	85	27	79	31	76	45	112	52	83	39	126	73	68	41
11:00	56	20	50	26	51	21	61	31	76	41	59	28	79	41	33	16
Total	5480	4458	5831	4588	5780	4694	5343	4556	5583	4665	5605	4592	4588	3641	3668	2866
Day	9938		10419		10474		9899		10248		10197		8229		6534	
AM Peak	08:00	07:00	11:00	07:00	11:00	07:00	08:00	07:00	08:00	07:00	08:00	07:00	11:00	11:00	11:00	11:00
Vol.	322	487	356	456	314	457	288	428	338	427	311	451	363	319	291	248
PM Peak	16:00	16:00	16:00	16:00	16:00	16:00	16:00	12:00	16:00	16:00	16:00	16:00	12:00	12:00	12:00	12:00
Vol.	663	319	635	337	619	318	589	332	549	334	611	326	377	319	316	243

Comb. Total	9938	10419	10474	9899	10248	10197	8229	6534
ADT	ADT 9,392	AADT 9,392						

A

Intersection Turning Movement Count (TMC)

Hopkins Hill Road at Dante Boulevard

Centre of New England Boulevard at Dante Boulevard

Hopkins Hill Road at Dante Boulevard

Transportation Data Corporation
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N/S: Hopkins Hill Road
E: Dante Boulevard
City, State: Coventry, RI
Client: Crossman/P. Bannon

File Name : 05824B
Site Code : 2873
Start Date : 6/12/2024
Page No : 1

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

	Hopkins Hill Road From North			Dante Boulevard From East			Hopkins Hill Road From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	130	1	0	2	1	1	1	66	0	202
07:15 AM	132	1	0	4	4	0	0	61	0	202
07:30 AM	109	0	0	4	3	0	1	64	0	181
07:45 AM	106	1	0	1	2	3	0	71	0	184
Total	477	3	0	11	10	4	2	262	0	769
08:00 AM	97	2	0	3	7	0	0	54	0	163
08:15 AM	96	1	0	1	3	1	2	65	0	169
08:30 AM	78	1	0	1	6	0	0	63	0	149
08:45 AM	85	2	0	4	3	0	1	77	0	172
Total	356	6	0	9	19	1	3	259	0	653
Grand Total	833	9	0	20	29	5	5	521	0	1422
Apprch %	98.9	1.1	0	37	53.7	9.3	1	99	0	
Total %	58.6	0.6	0	1.4	2	0.4	0.4	36.6	0	
Cars & Peds	811	9	0	20	28	5	4	493	0	1370
% Cars & Peds	97.4	100	0	100	96.6	100	80	94.6	0	96.3
Trucks & Buses	22	0	0	0	0	0	0	27	0	49
% Trucks & Buses	2.6	0	0	0	0	0	0	5.2	0	3.4
Bikes by Direction	0	0	0	0	1	0	1	1	0	3
% Bikes by Direction	0	0	0	0	3.4	0	20	0.2	0	0.2

	Hopkins Hill Road From North				Dante Boulevard From East				Hopkins Hill Road From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	130	**1**	0	131	2	1	1	4	**1**	66	0	67	**202**
07:15 AM	**132**	1	0	**133**	**4**	**4**	0	**8**	0	61	0	61	202
07:30 AM	109	0	0	109	4	3	0	7	1	64	0	65	181
07:45 AM	106	1	0	107	1	2	**3**	6	0	**71**	0	**71**	184
Total Volume	477	3	0	480	11	10	4	25	2	262	0	264	769
% App. Total	99.4	0.6	0		44	40	16		0.8	99.2	0		
PHF	.903	.750	.000	.902	.688	.625	.333	.781	.500	.923	.000	.930	.952
Cars & Peds	465	3	0	468	11	10	4	25	2	249	0	251	744
% Cars & Peds	97.5	100	0	97.5	100	100	100	100	100	95.0	0	95.1	96.7
Trucks & Buses	12	0	0	12	0	0	0	0	0	13	0	13	25
% Trucks & Buses	2.5	0	0	2.5	0	0	0	0	0	5.0	0	4.9	3.3
Bikes by Direction	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

Transportation Data Corporation
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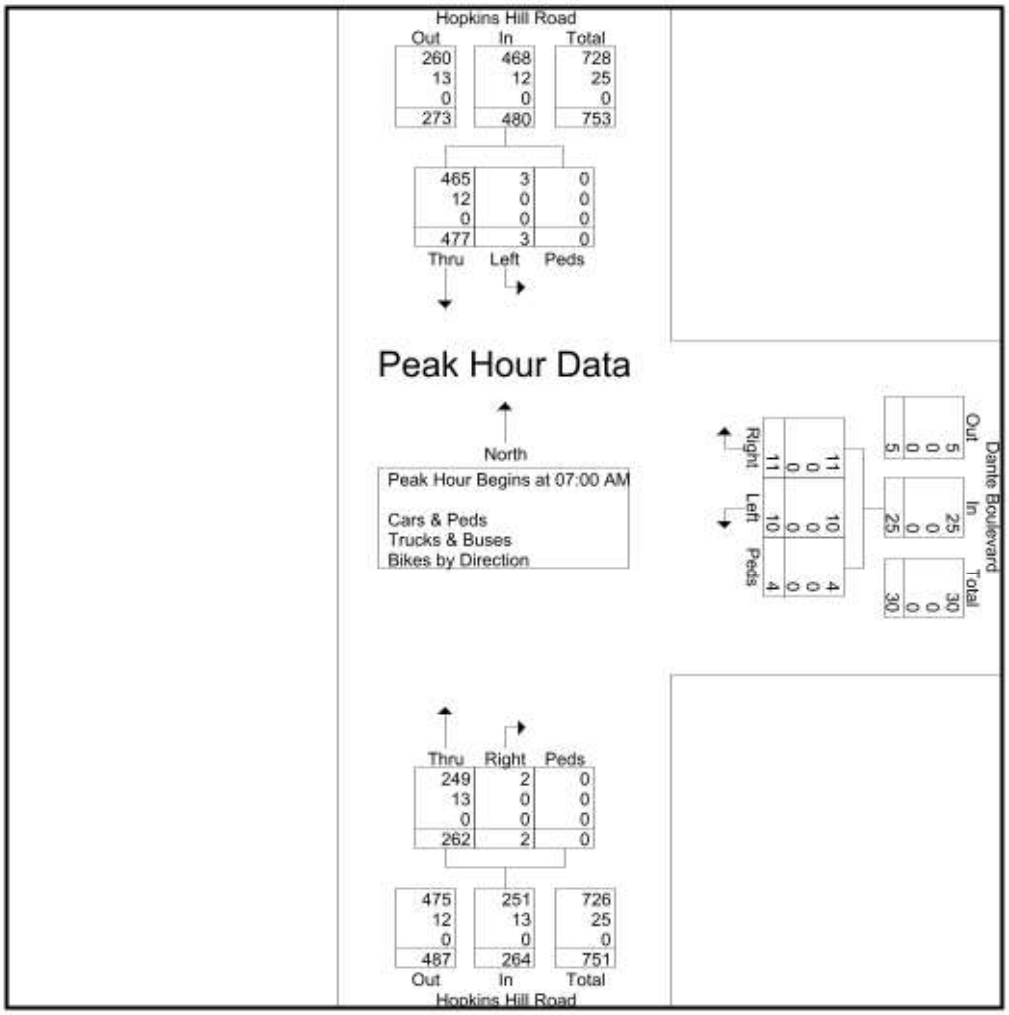
N/S: Hopkins Hill Road
E: Dante Boulevard
City, State: Coventry, RI
Client: Crossman/P. Bannon

File Name : 05824B
Site Code : 2873
Start Date : 6/12/2024
Page No : 1

	Hopkins Hill Road From North				Dante Boulevard From East				Hopkins Hill Road From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	130	**1**	0	131	2	1	1	4	**1**	66	0	67	**202**
07:15 AM	**132**	1	0	**133**	**4**	**4**	0	**8**	0	61	0	61	202
07:30 AM	109	0	0	109	4	3	0	7	1	64	0	65	181
07:45 AM	106	1	0	107	1	2	**3**	6	0	**71**	0	**71**	184
Total Volume	477	3	0	480	11	10	4	25	2	262	0	264	769
% App. Total	99.4	0.6	0		44	40	16		0.8	99.2	0		
PHF	.903	.750	.000	.902	.688	.625	.333	.781	.500	.923	.000	.930	.952
Cars & Peds	465	3	0	468	11	10	4	25	2	249	0	251	744
% Cars & Peds	97.5	100	0	97.5	100	100	100	100	100	95.0	0	95.1	96.7
Trucks & Buses	12	0	0	12	0	0	0	0	0	13	0	13	25
% Trucks & Buses	2.5	0	0	2.5	0	0	0	0	0	5.0	0	4.9	3.3
Bikes by Direction	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



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N/S: Hopkins Hill Road
E: Dante Boulevard
City, State: Coventry, RI
Client: Crossman/P. Bannon

File Name : 05824BB
Site Code : 2873
Start Date : 6/12/2024
Page No : 1

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

	Hopkins Hill Road From North			Dante Boulevard From East			Hopkins Hill Road From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
03:00 PM	93	4	0	4	3	0	6	103	0	213
03:15 PM	78	8	0	6	6	0	6	112	0	216
03:30 PM	89	8	0	8	2	0	6	150	0	263
03:45 PM	78	5	0	5	0	0	2	159	0	249
Total	338	25	0	23	11	0	20	524	0	941
04:00 PM	101	4	0	4	2	0	5	172	0	288
04:15 PM	77	7	0	3	2	0	6	161	0	256
04:30 PM	86	2	0	5	1	0	2	154	0	250
04:45 PM	81	6	0	3	3	2	3	156	0	254
Total	345	19	0	15	8	2	16	643	0	1048
05:00 PM	84	2	0	3	2	0	1	150	0	242
05:15 PM	76	5	0	5	2	0	5	140	0	233
05:30 PM	63	1	0	2	2	0	5	138	0	211
05:45 PM	71	6	0	2	2	0	3	104	0	188
Total	294	14	0	12	8	0	14	532	0	874
Grand Total	977	58	0	50	27	2	50	1699	0	2863
Apprch %	94.4	5.6	0	63.3	34.2	2.5	2.9	97.1	0	
Total %	34.1	2	0	1.7	0.9	0.1	1.7	59.3	0	
Cars & Peds	968	58	0	50	27	2	50	1686	0	2841
% Cars & Peds	99.1	100	0	100	100	100	100	99.2	0	99.2
Trucks & Buses	8	0	0	0	0	0	0	12	0	20
% Trucks & Buses	0.8	0	0	0	0	0	0	0.7	0	0.7
Bikes by Direction	1	0	0	0	0	0	0	1	0	2
% Bikes by Direction	0.1	0	0	0	0	0	0	0.1	0	0.1

	Hopkins Hill Road From North				Dante Boulevard From East				Hopkins Hill Road From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:30 PM													
03:30 PM	89	**8**	0	97	**8**	**2**	0	**10**	**6**	150	0	156	263
03:45 PM	78	5	0	83	5	0	0	5	2	159	0	161	249
04:00 PM	**101**	4	0	**105**	4	2	0	6	5	**172**	0	**177**	**288**
04:15 PM	77	7	0	84	3	2	0	5	6	161	0	167	256
Total Volume	345	24	0	369	20	6	0	26	19	642	0	661	1056
% App. Total	93.5	6.5	0		76.9	23.1	0		2.9	97.1	0		
PHF	.854	.750	.000	.879	.625	.750	.000	.650	.792	.933	.000	.934	.917
Cars & Peds	341	24	0	365	20	6	0	26	19	641	0	660	1051
% Cars & Peds	98.8	100	0	98.9	100	100	0	100	100	99.8	0	99.8	99.5
Trucks & Buses	4	0	0	4	0	0	0	0	0	1	0	1	5
% Trucks & Buses	1.2	0	0	1.1	0	0	0	0	0	0.2	0	0.2	0.5
Bikes by Direction	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

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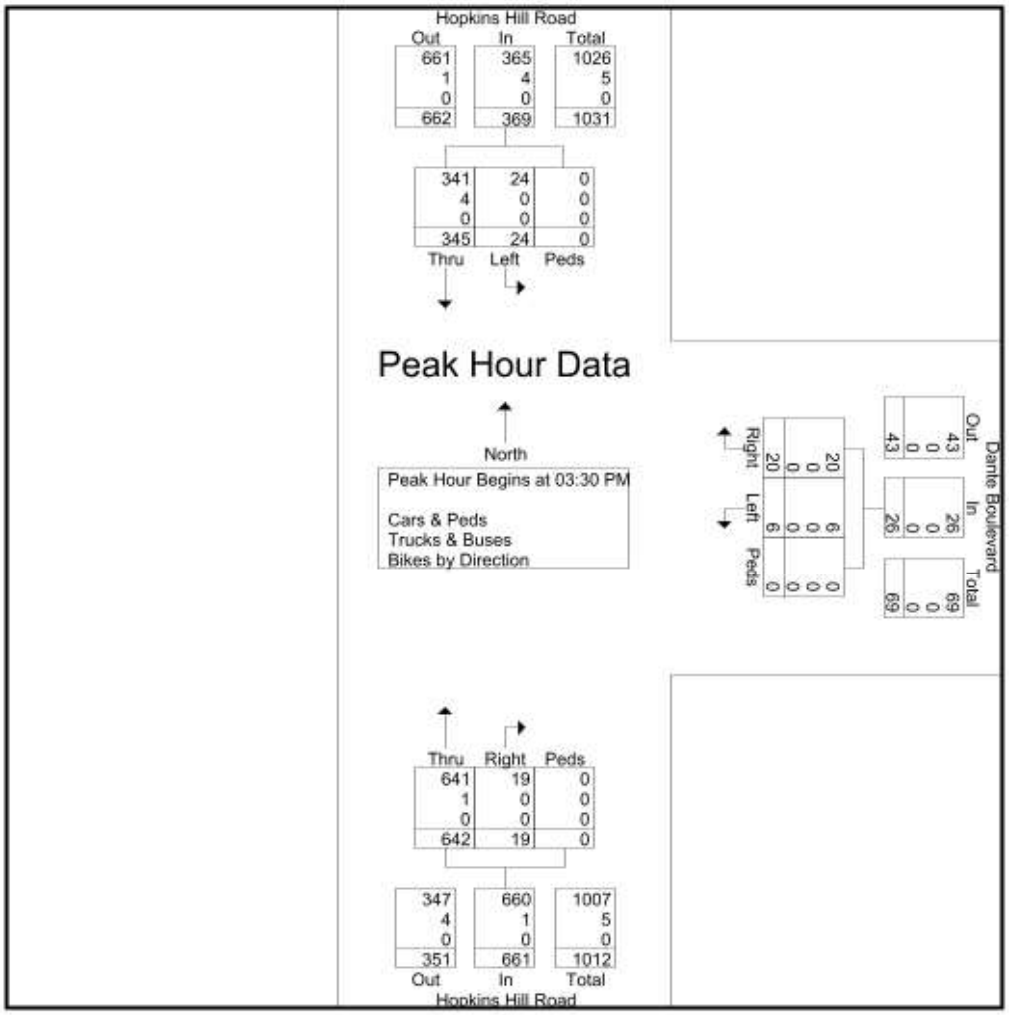
N/S: Hopkins Hill Road
E: Dante Boulevard
City, State: Coventry, RI
Client: Crossman/P. Bannon

File Name : 05824BB
Site Code : 2873
Start Date : 6/12/2024
Page No : 1

	Hopkins Hill Road From North				Dante Boulevard From East				Hopkins Hill Road From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:30 PM													
03:30 PM	89	**8**	0	97	**8**	**2**	0	**10**	**6**	150	0	156	263
03:45 PM	78	5	0	83	5	0	0	5	2	159	0	161	249
04:00 PM	**101**	4	0	**105**	4	2	0	6	5	**172**	0	**177**	**288**
04:15 PM	77	7	0	84	3	2	0	5	6	161	0	167	256
Total Volume	345	24	0	369	20	6	0	26	19	642	0	661	1056
% App. Total	93.5	6.5	0		76.9	23.1	0		2.9	97.1	0		
PHF	.854	.750	.000	.879	.625	.750	.000	.650	.792	.933	.000	.934	.917
Cars & Peds	341	24	0	365	20	6	0	26	19	641	0	660	1051
% Cars & Peds	98.8	100	0	98.9	100	100	0	100	100	99.8	0	99.8	99.5
Trucks & Buses	4	0	0	4	0	0	0	0	0	1	0	1	5
% Trucks & Buses	1.2	0	0	1.1	0	0	0	0	0	0.2	0	0.2	0.5
Bikes by Direction	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



Centre of New England Boulevard at Dante Boulevard

CROSSMAN ENGINEERING

Intersection Turning Movement Count

Project: Highlands
Community: Coventry
Location: CNE at Dante Blvd
Weather: Sunny/Cold

File Name : dante at cne blvd
Site Code : 00000046
Start Date : 1/16/2025
Page No : 1

Groups Printed- Unshifted - Bank 1

	Dante Blvd Southbound				CNE Blvd Westbound				Northbound				CNE Blvd Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
08:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	3
08:30 AM	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	2	3
08:45 AM	0	0	2	2	0	0	0	0	0	0	0	0	2	0	0	2	4
Total	0	0	7	7	0	0	0	0	0	0	0	0	4	0	0	4	11
09:00 AM	0	0	2	2	0	0	0	0	0	0	0	0	1	0	0	1	3
09:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
09:30 AM	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	3
09:45 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	7	7	0	0	0	0	0	0	0	0	1	0	0	1	8
*** BREAK ***																	
04:00 PM	0	0	2	2	0	0	0	0	0	0	0	0	3	0	0	3	5
04:15 PM	0	0	2	2	0	0	0	0	0	0	0	0	1	0	0	1	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
04:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	5	5	0	0	0	0	0	0	0	0	6	0	0	6	11
05:00 PM	0	0	2	2	0	0	0	0	0	0	0	0	2	0	0	2	4
05:15 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
05:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	3	0	0	3	4
Total	0	0	4	4	0	0	0	0	0	0	0	0	7	0	0	7	11
Grand Total	0	0	23	23	0	0	0	0	0	0	0	0	18	0	0	18	41
Apprch %	0	0	100		0	0	0		0	0	0		100	0	0		
Total %	0	0	56.1	56.1	0	0	0	0	0	0	0	0	43.9	0	0	43.9	
Unshifted	0	0	23	23	0	0	0	0	0	0	0	0	18	0	0	18	41
% Unshifted	0	0	100	100	0	0	0	0	0	0	0	0	100	0	0	100	100
Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

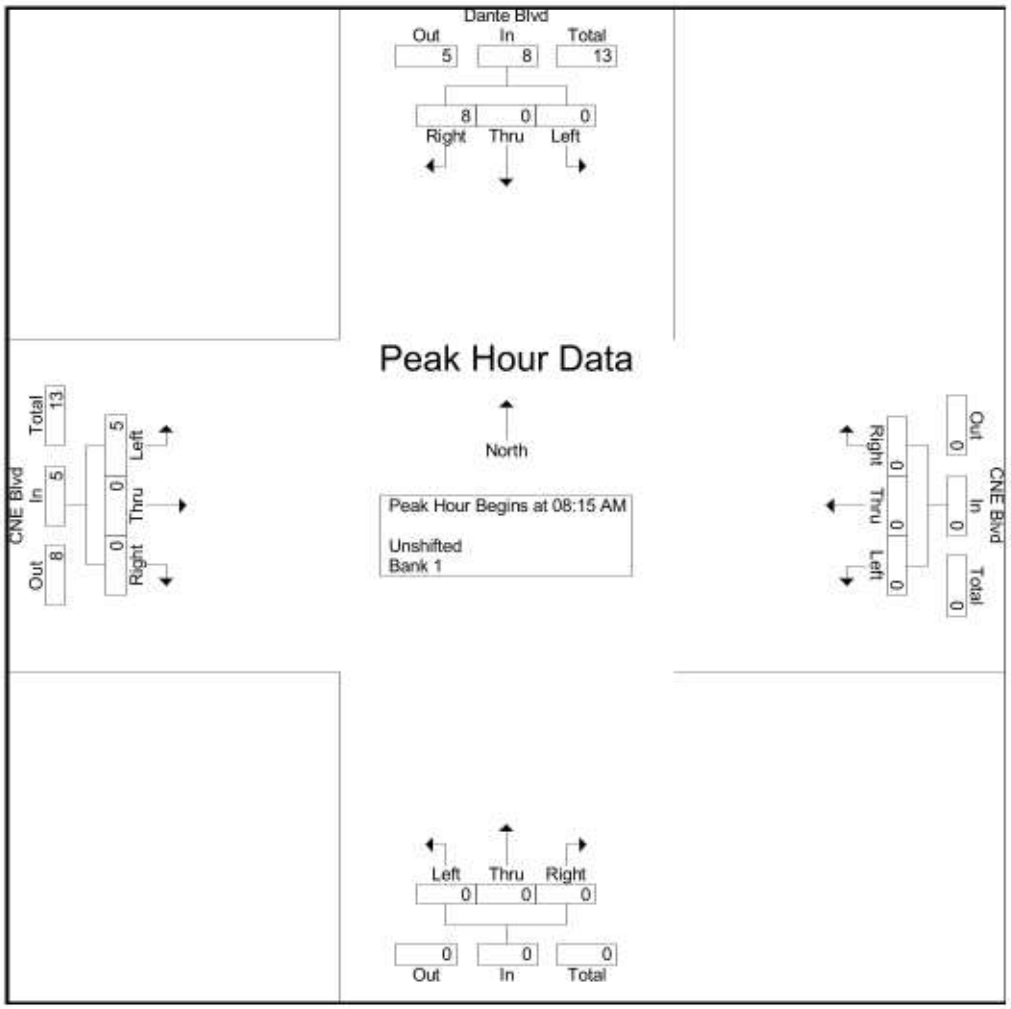
CROSSMAN ENGINEERING

Intersection Turning Movement Count

Project: Highlands
Community: Coventry
Location: CNE at Dante Blvd
Weather: Sunny/Cold

File Name : dante at cne blvd
Site Code : 00000046
Start Date : 1/16/2025
Page No : 3

	Dante Blvd Southbound				CNE Blvd Westbound				Northbound				CNE Blvd Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 08:00 AM to 11:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 08:15 AM																	
08:15 AM	0	0	**3**	**3**	0	0	0	0	0	0	0	0	0	0	0	0	3
08:30 AM	0	0	1	1	0	0	0	0	0	0	0	0	**2**	0	0	**2**	3
08:45 AM	0	0	2	2	0	0	0	0	0	0	0	0	2	0	0	2	**4**
09:00 AM	0	0	2	2	0	0	0	0	0	0	0	0	1	0	0	1	3
Total Volume	0	0	8	8	0	0	0	0	0	0	0	0	5	0	0	5	13
% App. Total	0	0	100		0	0	0		0	0	0		100	0	0		
PHF	.000	.000	.667	.667	.000	.000	.000	.000	.000	.000	.000	.000	.625	.000	.000	.625	.813



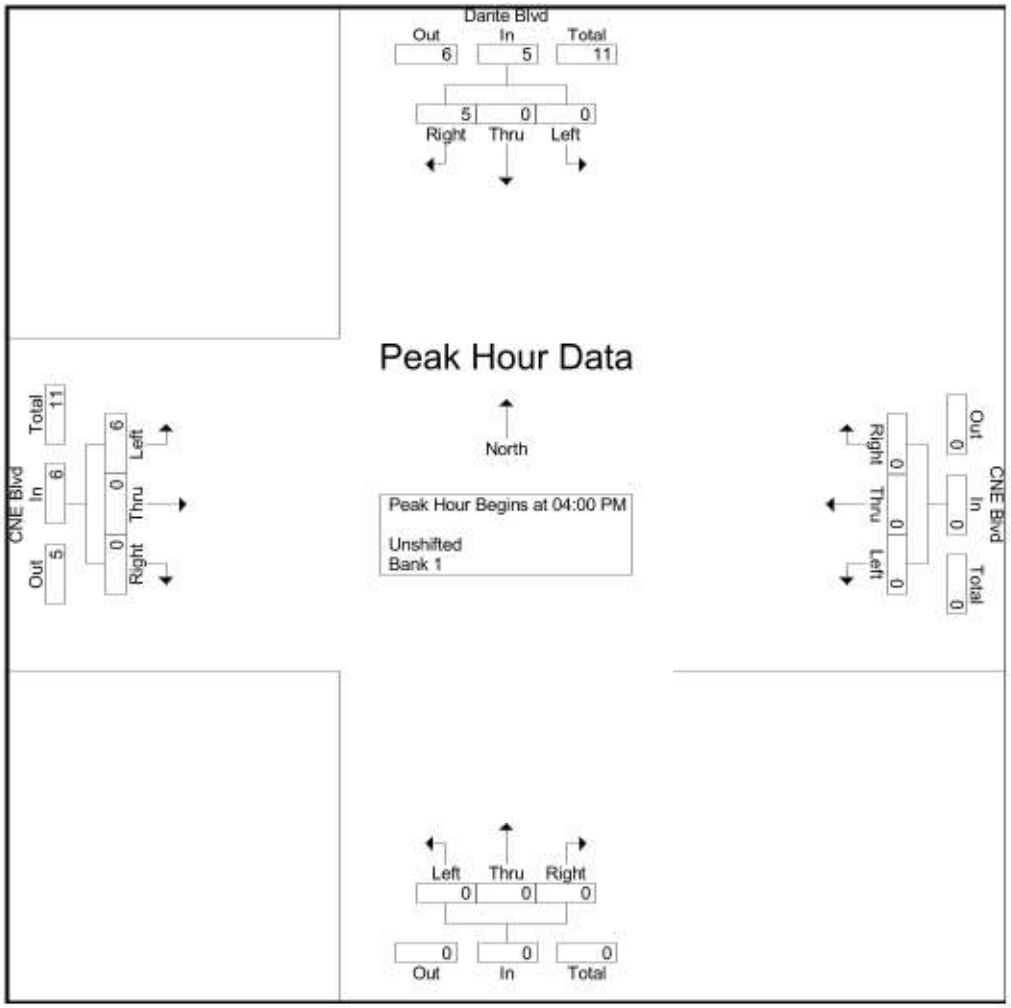
CROSSMAN ENGINEERING

Intersection Turning Movement Count

Project: Highlands
Community: Coventry
Location: CNE at Dante Blvd
Weather: Sunny/Cold

File Name : dante at cne blvd
Site Code : 00000046
Start Date : 1/16/2025
Page No : 4

	Dante Blvd Southbound				CNE Blvd Westbound				Northbound				CNE Blvd Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 12:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:00 PM																	
04:00 PM	0	0	**2**	**2**	0	0	0	0	0	0	0	0	**3**	0	0	**3**	**5**
04:15 PM	0	0	2	2	0	0	0	0	0	0	0	0	1	0	0	1	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
04:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	5	5	0	0	0	0	0	0	0	0	6	0	0	6	11
% App. Total	0	0	100		0	0	0		0	0	0		100	0	0		
PHF	.000	.000	.625	.625	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.550



ATTACHMENT B – Trip Generation

ITE Trip Generation Summary

ITE Land Use Code

ITE Land Use Code 210 – Single Family Detached Housing

B

ITE Trip Generation Summary

Trip Generation Summary

Summary:

	Description	Enter	Exit	Total
AM PEAK HOUR				
ITE Land Use Code 210	Single Family Detached	12	34	46
PM PEAK HOUR				
ITE Land Use Code 210	Single Family Detached	39	23	62

Calculations:

Code 210 – Single Family Detached Housing (66 Units)

Independent Variable (X) = Number of Units X = 66

AM Peak *Directional Distribution 26% Entering, 74% Exiting*

T = 0.70 (X)
T = 0.70 (66)
T = 46

Enter: 12
Exit: 34
Total 46

PM Peak *Directional Distribution 63% Entering, 37% Exiting*

T = 0.94 (X)
T = 0.94 (66)
T = 62

Enter: 39
Exit: 23
Total 62

B

ITE Land Use Code

ITE Land Use Code 210 – Single Family Detached Housing

Land Use: 210
Single-Family Detached Housing

Description

A single-family detached housing site includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

Specialized Land Use

Data have been submitted for several single-family detached housing developments with homes that are commonly referred to as patio homes. A patio home is a detached housing unit that is located on a small lot with little (or no) front or back yard. In some subdivisions, communal maintenance of outside grounds is provided for the patio homes. The three patio home sites total 299 dwelling units with overall weighted average trip generation rates of 5.35 vehicle trips per dwelling unit for weekday, 0.26 for the AM adjacent street peak hour, and 0.47 for the PM adjacent street peak hour. These patio home rates based on a small sample of sites are lower than those for single-family detached housing (Land Use 210), lower than those for single-family attached housing (Land Use 251), and higher than those for senior adult housing – single-family (Land Use 251). Further analysis of this housing type will be conducted in a future edition of *Trip Generation Manual*.

Additional Data

The technical appendices provide supporting information on time-of-day distributions for this land use. The appendices can be accessed through either the ITETripGen web app or the trip generation resource page on the ITE website (https://www.ite.org/technical-resources/topics/trip-and-parking-generation/).

For 30 of the study sites, data on the number of residents and number of household vehicles are available. The overall averages for the 30 sites are 3.6 residents per dwelling unit and 1.5 vehicles per dwelling unit.

The sites were surveyed in the 1980s, the 1990s, the 2000s, and the 2010s in Arizona, California, Connecticut, Delaware, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Minnesota, Montana, New Jersey, North Carolina, Ohio, Ontario (CAN), Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Vermont, Virginia, and West Virginia.

Source Numbers

100, 105, 114, 126, 157, 167, 177, 197, 207, 211, 217, 267, 275, 293, 300, 319, 320, 356, 357, 367, 384, 387, 407, 435, 522, 550, 552, 579, 598, 601, 603, 614, 637, 711, 716, 720, 728, 735, 868, 869, 903, 925, 936, 1005, 1007, 1008, 1010, 1033, 1066, 1077,1078, 1079

Single-Family Detached Housing
(210)

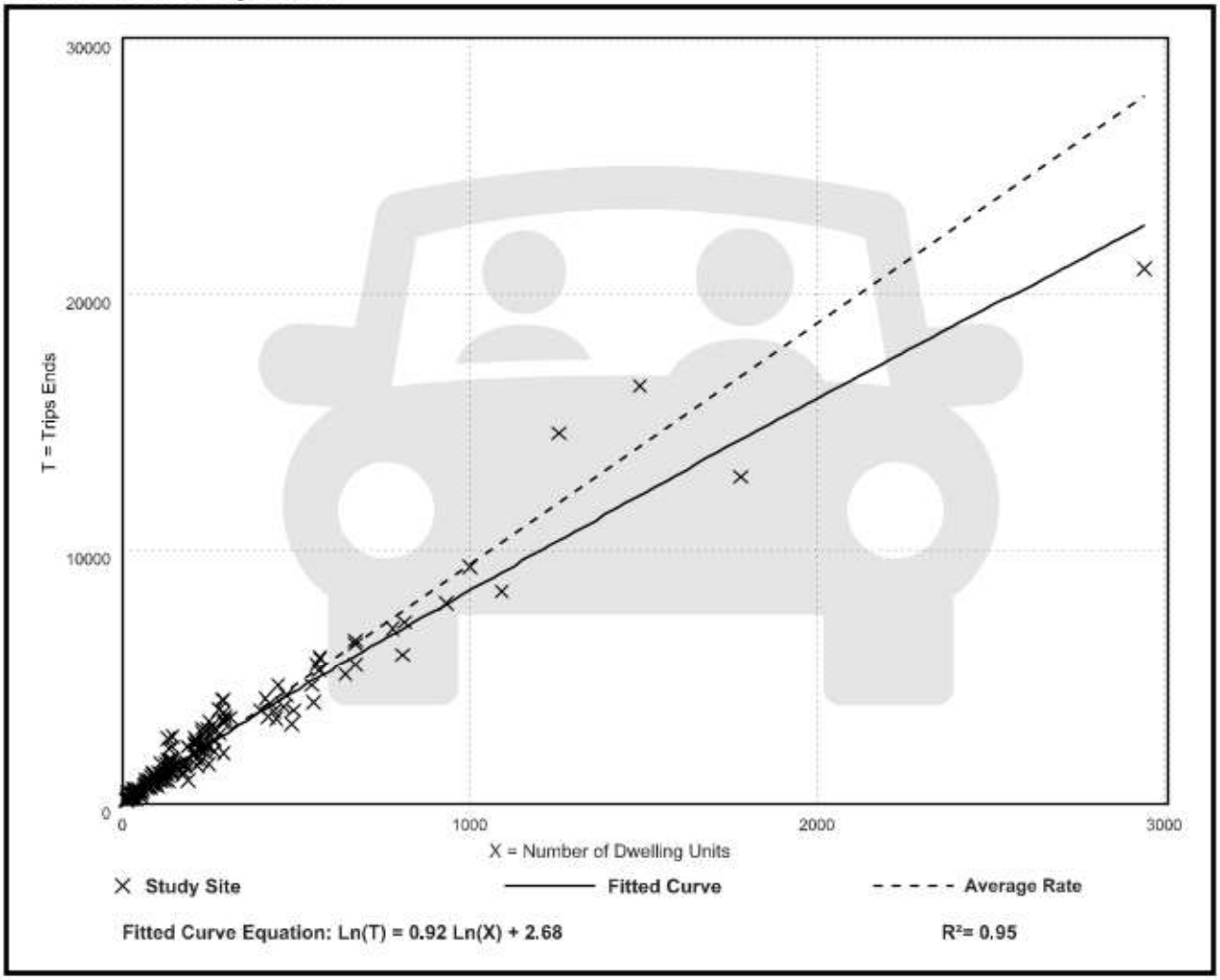
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 174
Avg. Num. of Dwelling Units: 246
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.92 Ln(X) + 2.68

R^2= 0.95

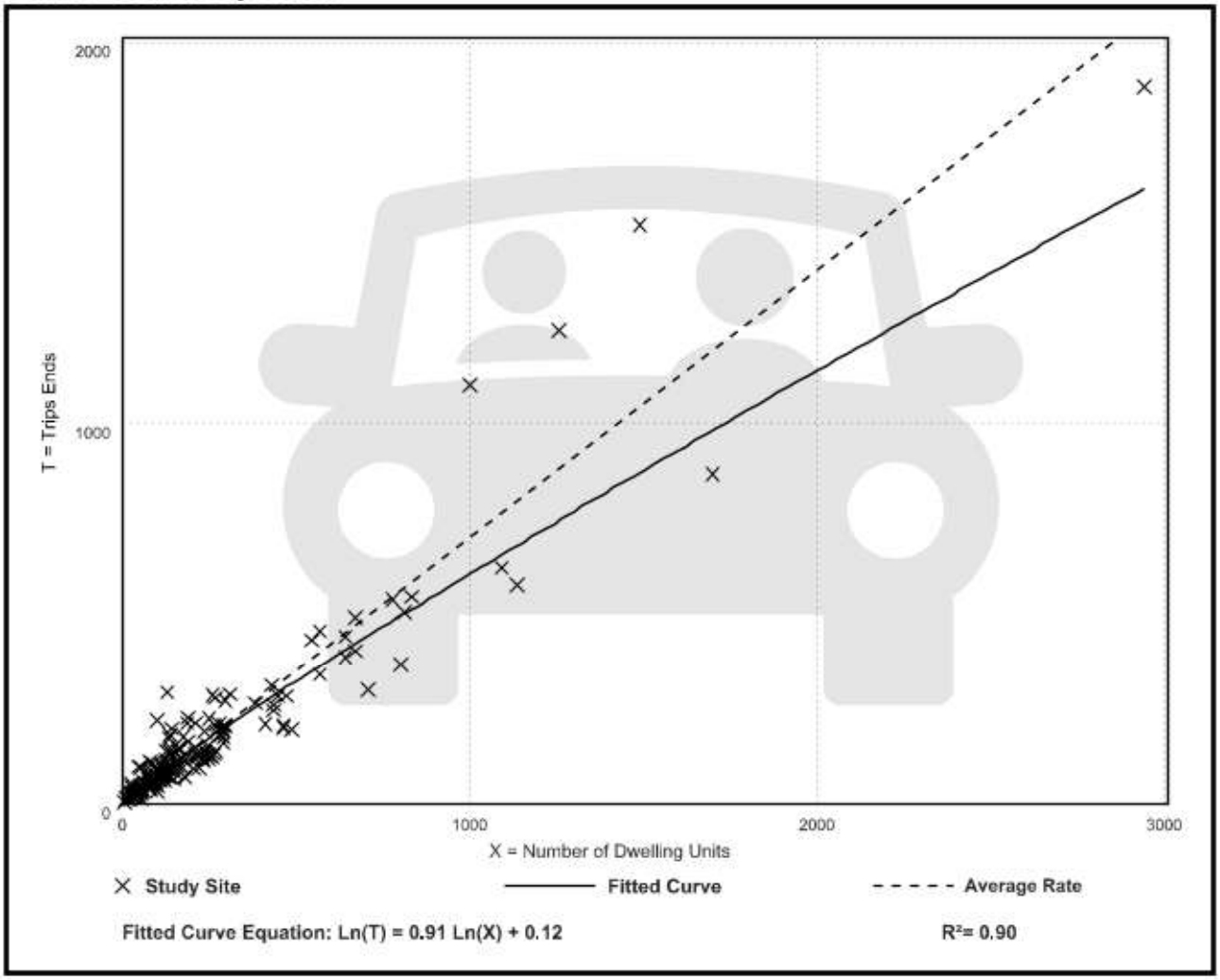
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 192
Avg. Num. of Dwelling Units: 226
Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.91 Ln(X) + 0.12

R^2= 0.90

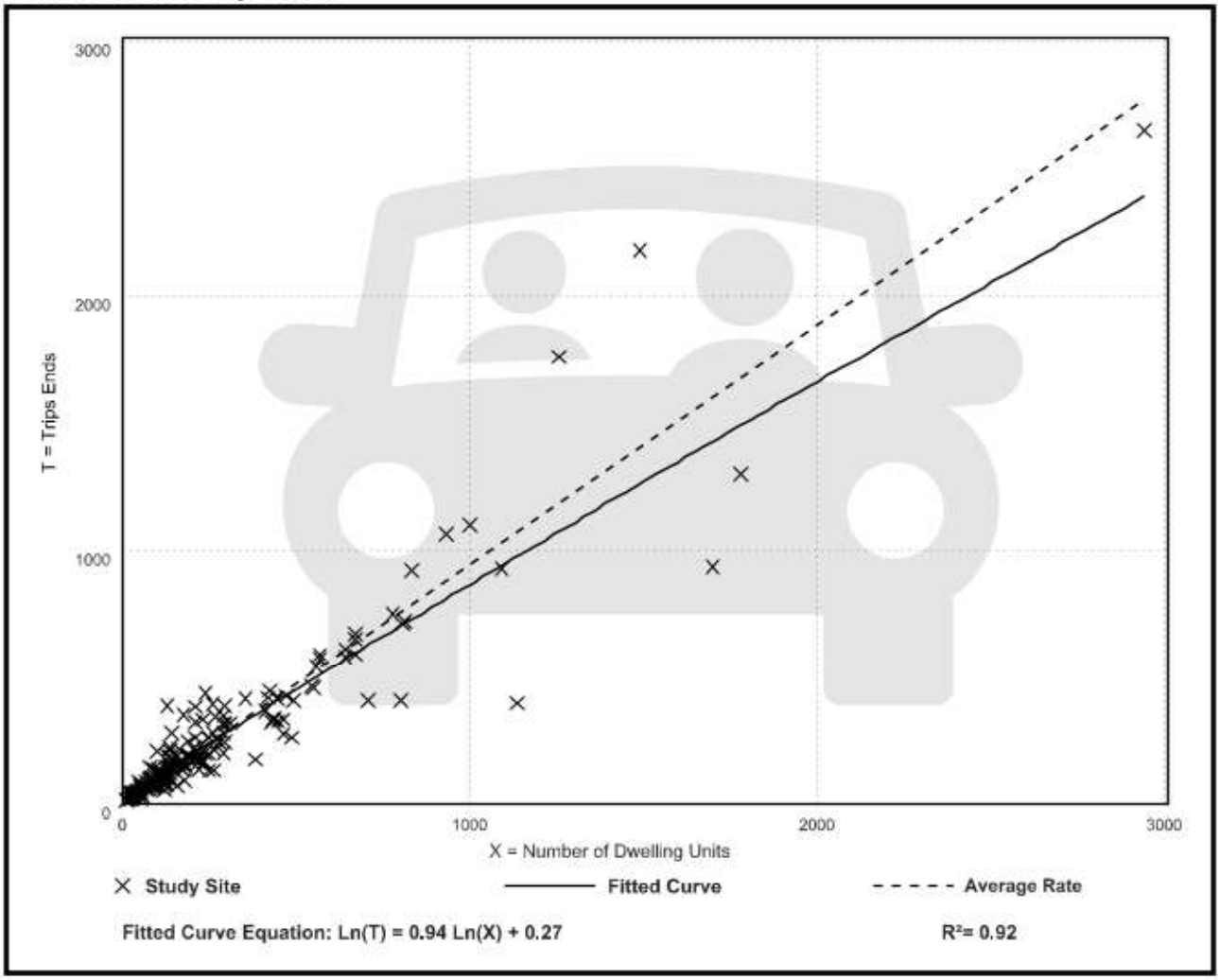
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs: Dwelling Units
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: 208
Avg. Num. of Dwelling Units: 248
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



Fitted Curve Equation: Ln(T) = 0.94 Ln(X) + 0.27

R^2= 0.92