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July 6, 2020
Revised August 11, 2020
VIA UPS

Verona Township Planning Board
Verona Town Hall
600 Bloomfield Avenue
Verona, NJ 07044

Re: Traffic Assessment Letter
PIRHL Verona
Block 2301, Lots 10-12 & 14-19
Verona Township, Essex County, New Jersey
MC Project No.: 20000318A

Dear Board Members:

This Traffic Assessment has been prepared in support of the site plan application to Verona Township (“Township”) for PIRHL, LLC (“Applicant”) to construct a 95-unit multi-family residential development (“The Project”). The project is being developed in accordance with “The Depot and Pine Redevelopment Area Redevelopment Plan” adopted by the Township. The subject site is located between Linn Drive and Pine Street and is designated as Block 2301, Lots 10-12 & 14-19 on the Verona Township Tax Maps. Access to the project is proposed via a full movement driveway along Linn Drive and a right-in/right-out only driveway along Pine Street. The subject site is currently developed with an approximate 18,000 SF Industrial building. It is proposed to raze the existing building and construct the multi-family residential development. The site location map and Site Plan are included as **Figures 1 and 2** of **Appendix A**.

Linn Drive is a local roadway under Verona Township jurisdiction with a general north/south orientation. Linn Drive provides one (1) travel lane in each direction and the posted speed limit 25 MPH.

Pine Street is a local roadway under Verona Township jurisdiction with a general east/west orientation. Pine Street provides one (1) travel lane in each direction east of its intersection with Depot Street and one (1) travel lane, westbound, west of its intersection with Depot Street.

Trip Generation

The impact of any development to the adjacent street network is typically dependent upon the number of site generated trips the development is anticipated to generate. Trip generation estimates for the existing and proposed uses were made utilizing data published under Land Use Code 110 – General Light Industrial and Land Use Code 220 – Multifamily Housing (Low-Rise) in the Institute of Transportation Engineers’ (ITE) publication *Trip Generation, Tenth Edition*. This publication sets forth trip generation rates based on traffic counts conducted at research sites throughout the country. **Table 1** details the anticipated trips for the existing and proposed uses.



Table 1 – ITE Trip Generation Comparison

ITE Land Use		Size	AM Peak			PM Peak			SAT Peak		
			In	Out	Total	In	Out	Total	In	Out	Total
Existing	110 – General Light Industrial	18,000 SF	11	2	13	1	10	11	3	4	7
Proposed	220 – Multifamily Housing (Low-Rise)	95 units	10	35	45	35	21	56	37	32	69
Difference			-1	+33	+32	+34	+11	+45	+34	+28	+62

As illustrated from the table above, the proposed development would generate a maximum of 62 new peak hour trips. It is noted NJDOT and ITE define a significant increase in traffic as 100 or more peak hour trips added to the adjacent network. As the project would generate less than 100 trips during the weekday morning and evening peak hours, it can be considered not a significant increase in traffic on the adjacent roadway system.

Site Access & Parking Assessment

Access to the project is proposed via a full movement driveway along Linn Drive and a right-in/right-out only driveway along Pine Street. It is proposed to provide 143 surface parking spaces. All parking spaces will be 9’ x 18’ in size and will have aisle widths of 24’, complying with the Residential Site Improvement Standards (RSIS). The proposed site plan can accommodate two-way circulation throughout the site. The layout of the site provides sufficient circulation for a typical delivery truck, garbage truck, and emergency vehicle to efficiently maneuver through the site.

“The Depot and Pine Redevelopment Area Redevelopment Plan” sets forth a parking requirement of 1.5 spaces per residential dwelling unit. For the proposed 95-unit residential building, the parking requirement equates to 143 spaces. It is proposed to provide 143 surface parking spaces, thus satisfying the Redevelopment Plan requirement.

Additionally, parking estimates for the development of the project were made utilizing data as published under Land Use Code 223 – Affordable Housing in the ITE publication, *Parking Generation, 5th Edition*. Based on the ITE published data, the 85th percentile peak period parking demand ratio is 1.33 spaces per dwelling unit, which equates to a total of 127 spaces for the 95-unit multi-family residential development. As previously mentioned, it is proposed to provide 143 spaces, thus exceeding the ITE requirement. Based on the calculated projected demand from published industry standards, adequate parking will be provided.



Conclusion

In summary, given this project does not generate a significant increase in site generated traffic, it is our opinion that this project will not have a negative impact on the adjacent roadway system. Additionally, sufficient parking is provided based on the “Depot and Pine Redevelopment Area Redevelopment Plan” requirement and published industry data.

Should you have any questions, or require any additional information, please do not hesitate to contact this office.

Very truly yours,

MASER CONSULTING P.A.

A handwritten signature in blue ink, appearing to read 'Jeffrey M. Fiore', is written over a horizontal line.

Jeffrey M. Fiore, P.E.
Transportation Planning Department Manager

KMC

Attachments

cc: Lara Schwager, PIRHL (via UPS w/enclosures)

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***PIRHL VERONA
TRAFFIC ASSESSMENT***

APPENDIX

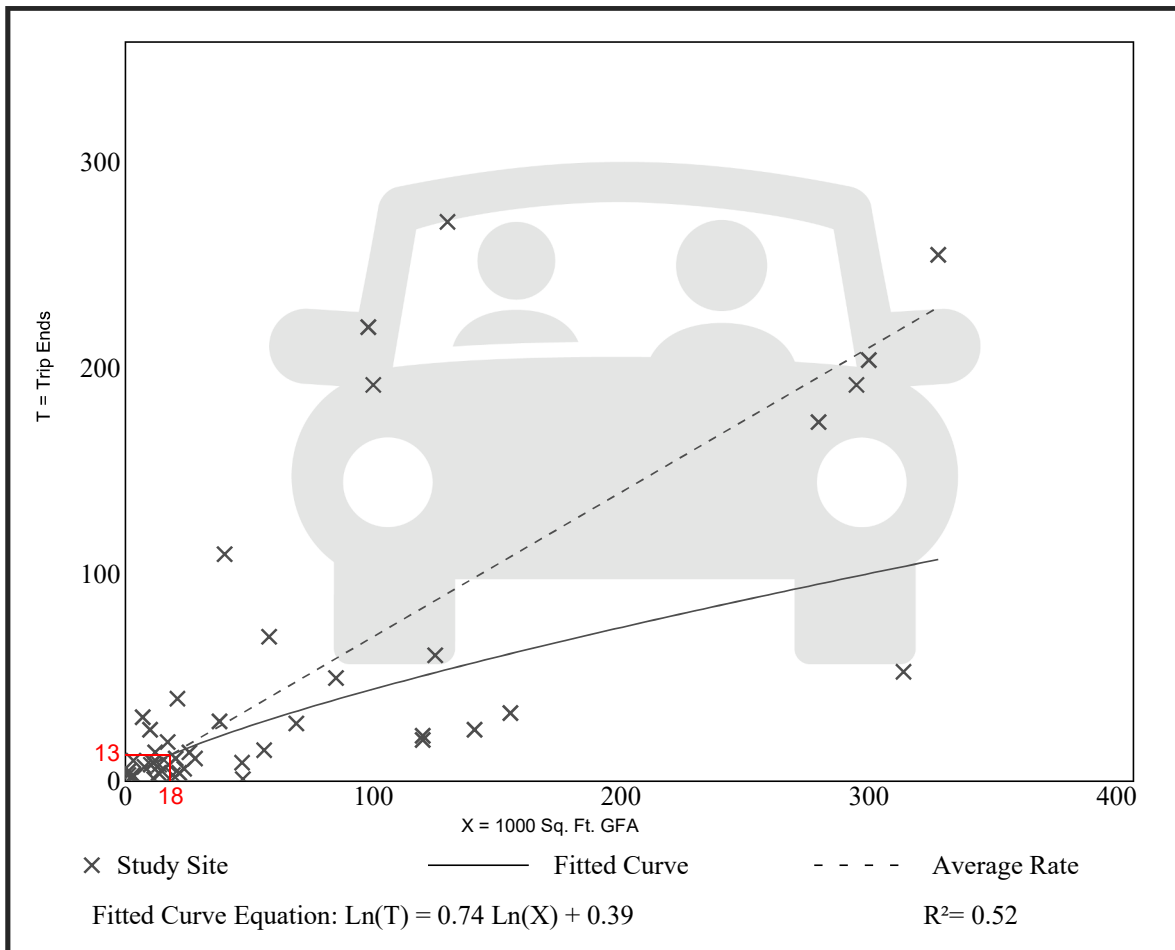
General Light Industrial
(110)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
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: 45
 Avg. 1000 Sq. Ft. GFA: 73
 Directional Distribution: 88% entering, 12% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.70	0.02 - 4.46	0.65

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

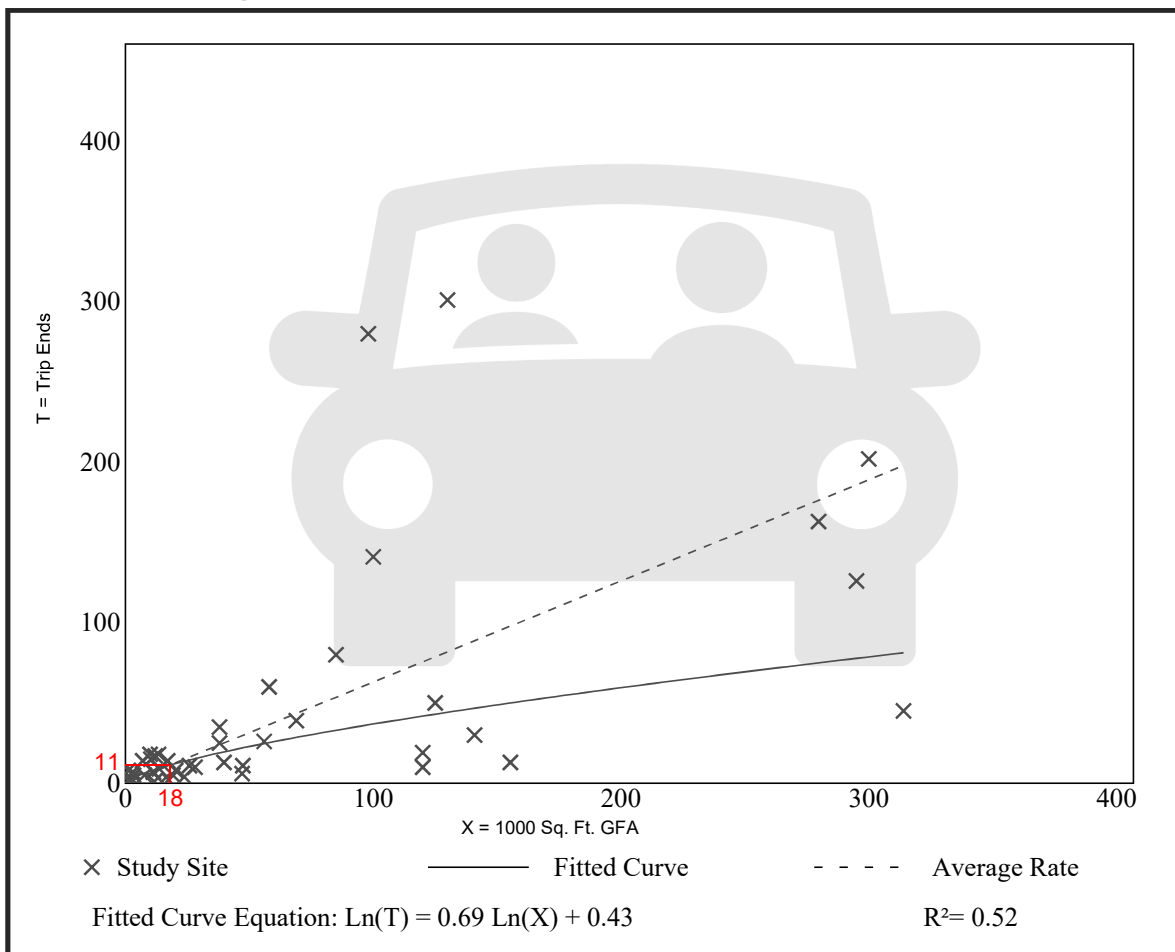
General Light Industrial
(110)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
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: 44
 Avg. 1000 Sq. Ft. GFA: 67
 Directional Distribution: 13% entering, 87% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.63	0.07 - 7.02	0.68

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

General Light Industrial
(110)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

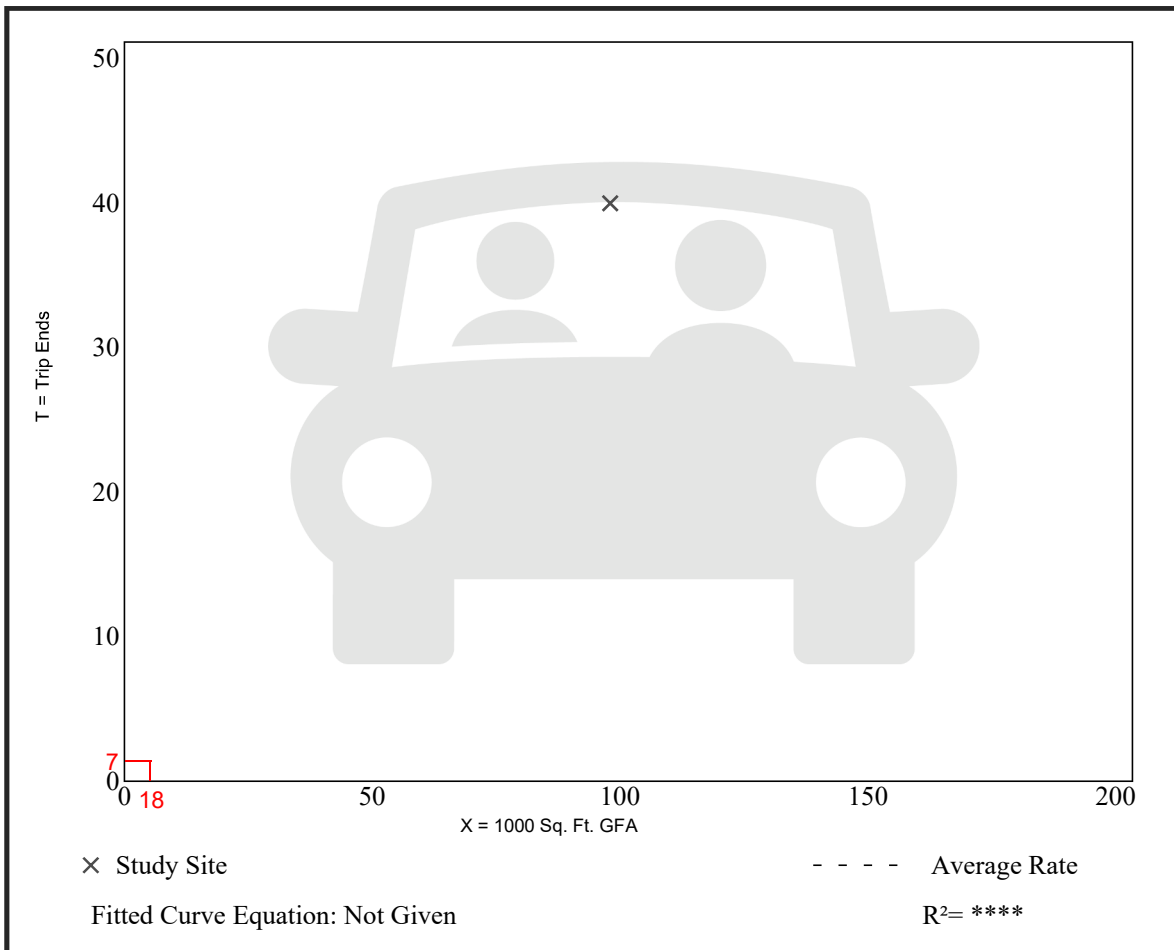
Setting/Location: General Urban/Suburban
Number of Studies: 1
Avg. 1000 Sq. Ft. GFA: 98
Directional Distribution: 47% entering, 53% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.41	0.41 - 0.41	*

Data Plot and Equation

Caution – Small Sample Size



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

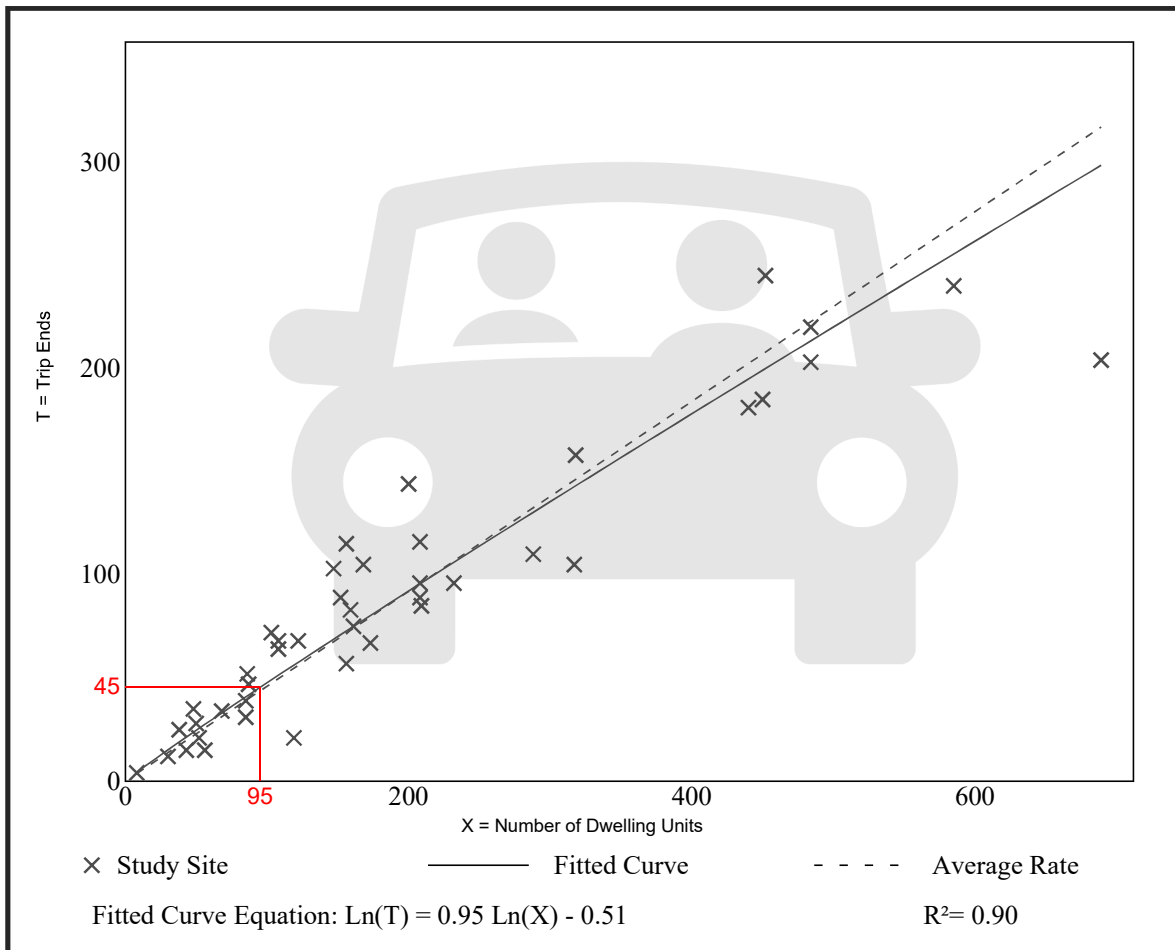
Setting/Location: General Urban/Suburban

Number of Studies: 42
 Avg. Num. of Dwelling Units: 199
 Directional Distribution: 23% entering, 77% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.46	0.18 - 0.74	0.12

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

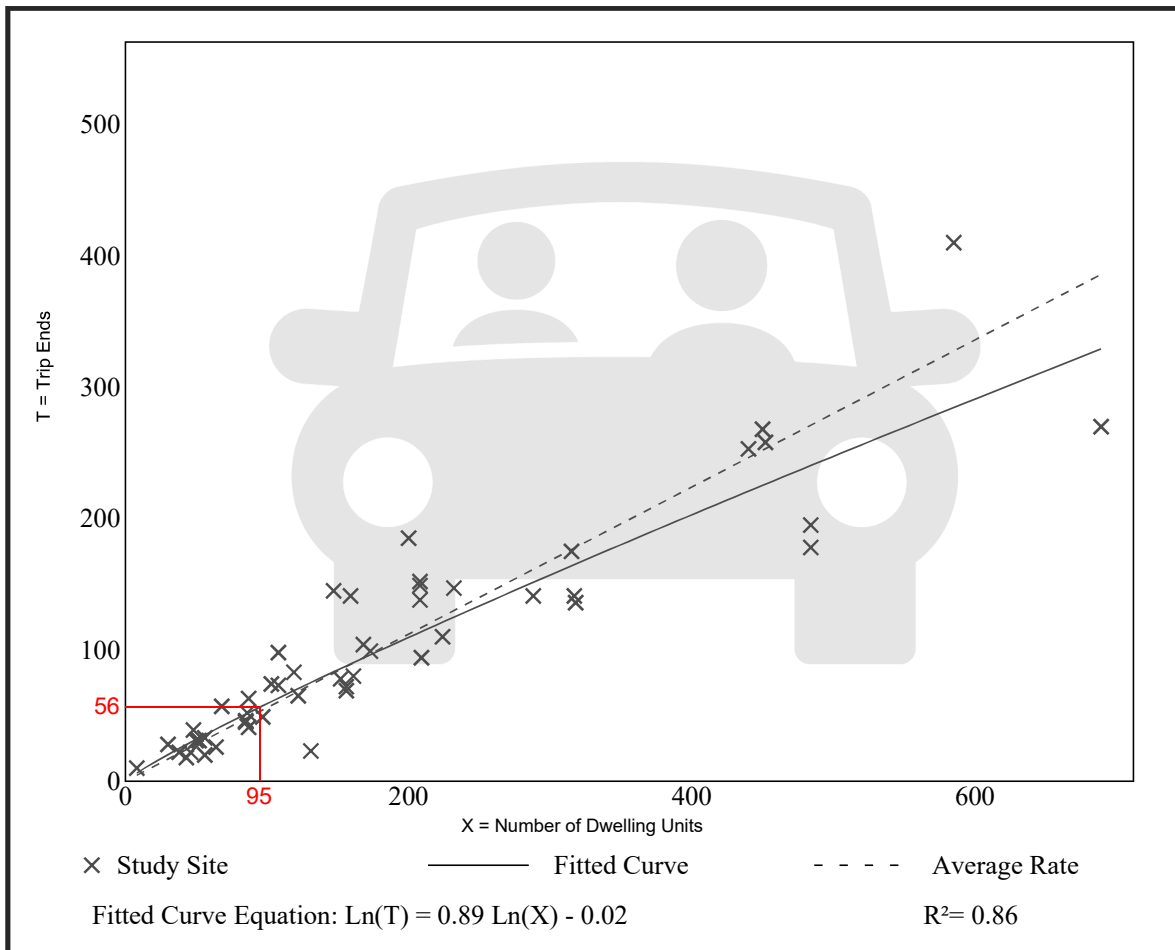
Setting/Location: General Urban/Suburban

Number of Studies: 50
 Avg. Num. of Dwelling Units: 187
 Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.56	0.18 - 1.25	0.16

Data Plot and Equation



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

Multifamily Housing (Low-Rise)
(220)

Vehicle Trip Ends vs: Dwelling Units
On a: Saturday, Peak Hour of Generator

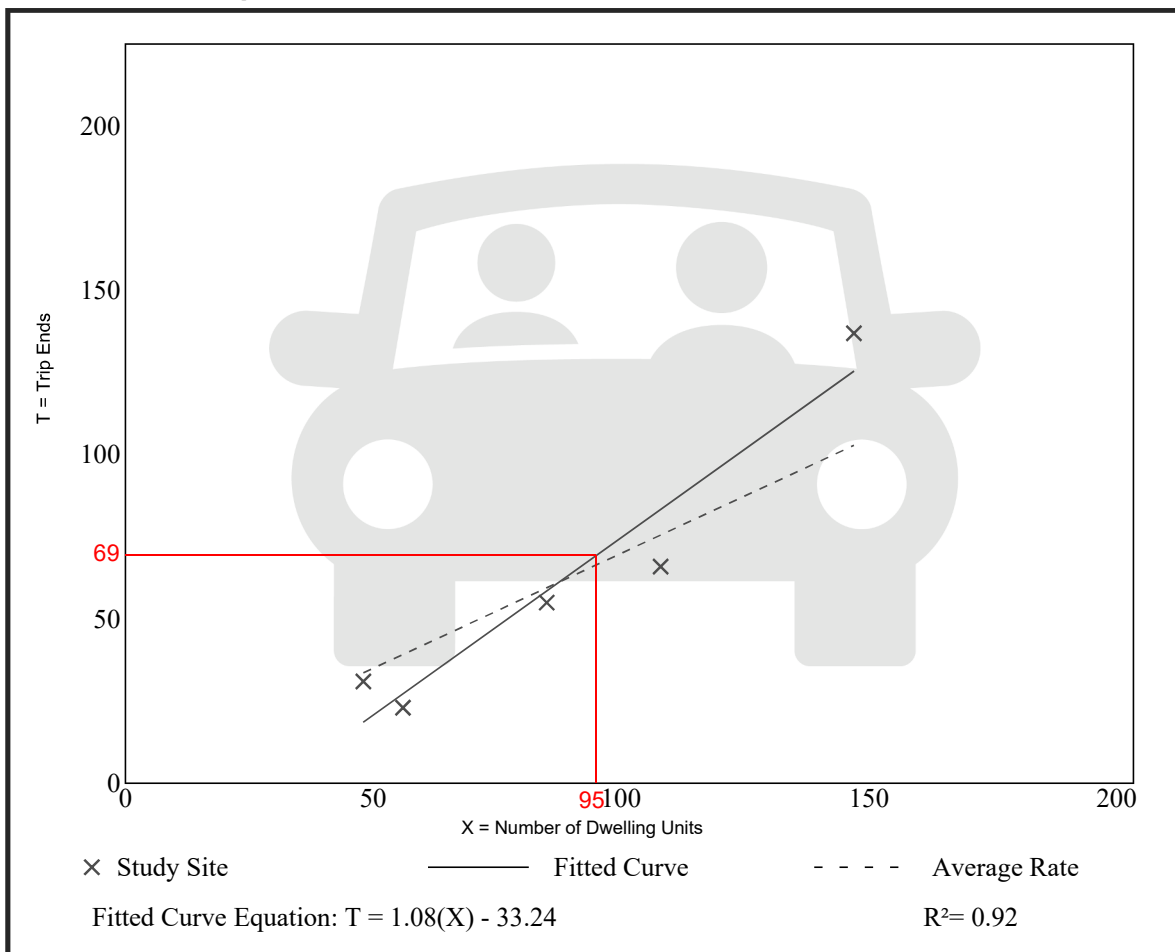
Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. Num. of Dwelling Units: 89
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.41 - 0.93	0.20

Data Plot and Equation

Caution – Small Sample Size



Trip Gen Manual, 10th Ed + Supplement • Institute of Transportation Engineers

The procedure and rationale used to establish trip distribution from the proposed lot or site shall be documented. Trip tables for each land use on the lot or site shall be shown. The documentation shall tie the trip table to the data source, such as U.S. Census "Commuting in the United States: 2009," marketing studies, gravity model, or employment data. Where existing travel patterns or other information are used for all or a component of the lot or site's traffic, an explanation is required as to why the expected patterns are likely to replicate these existing patterns. Trip distribution shall be described and illustrated by figures.

c. Trip Assignment

Trip assignment shall follow logically from the trip distribution established above. Any special deviations from this logical assignment shall be explained. Peak hour traffic volumes covering the analysis area shall be illustrated by figures and must identify lot or site generated trips broken into primary, pass-by, diverted link, and total traffic. Traffic entering and exiting the lot or site shall be routed on public roadways, the subject lot or site, or another lot or site by a permanent easement. The distribution of these trips must be discussed and the impact of any additional trips on an existing lot or site's permit addressed.

d. Determination of Study Locations

1. Study locations shall be based on trips generated to and from the lot or site and their origin and destination and illustrated by figures.

2. The lot or site owner's responsibility for all trips to and from the lot or site and either their origin or destination ceases at the midpoint of each trip. The half of each trip furthest from the lot or site shall be eliminated. This determination shall be made based on a trip table that identifies origins and destinations. Documentation must be provided that clearly illustrates the midpoint for each trip and what method was utilized to derive that location.

3. Study locations include all locations with 100 or more new half-trips during any peak hour. These locations may include:

- i. The lot or site driveway, whether signalized or not;
- ii. The lot or site non-State highway access, whether signalized or not;
- iii. All signalized driveways within the traffic impact study area; and
- iv. All intersections, whether signalized or not, uninterrupted flow highway sections, highway weaving sections, highway merge sections, and highway diverge sections.

4. Unsignalized driveways, other than the lot or site owner's driveways, shall not be considered traffic impact study area locations.

F-1.5 Transportation System Inventory

a. The transportation system inventory shall describe the physical, functional, and operational characteristics of the roadway system in the traffic impact study area. Transportation system inventory data shall include, where applicable, the following:

1. Highway peak hour volumes;
2. Highway cross-section;
3. Traffic signals and configuration, including existing timing;
4. Traffic signal progression;
5. Percentage of heavy trucks;
6. Grades;
7. Jurisdictional responsibility for each road;
8. Transit routes, stops, and frequency;
9. Sidewalks and bikeways; and
10. A discussion of the interaction of conflicting movements at adjacent driveways or streets.

b. Traffic signal configurations, timing, and signal progression information can be obtained from:

Bureau of Traffic Engineering
New Jersey Department of Transportation
1035 Parkway Avenue
PO Box 600
Trenton, NJ 08625-0600
609-530-2600

F-1.6 Traffic Signal Progression Analysis

A traffic signal progression analysis, as described in N.J.A.C. 16:47 Appendix G, will be required when the minimum signal spacing requirements found at Table G-1 are violated, or a new traffic signal is proposed within an existing coordinated traffic signal system, or if changes to phasing/timing of existing signals are proposed without adding a new traffic signal.

F-1.7 Traffic Analysis

a. Traffic Counts

Traffic counts shall be taken in a manner that establishes average annual daily traffic and daily peak hours and shall be taken within 12 months of the application date. Traffic counts shall be shown by 15-minute intervals over a period long enough to establish a peak hour, generally a two-hour period.

Context

Traffic impact studies project future transportation demands, describe the impact of the increased demands, and suggest ways of alleviating the adverse effects of new developments. The transportation demands are defined as the need for the movement of people and goods by all forms of transportation including autos, carpools, transit, taxi, trucks, and bicycles or as pedestrians in and near a proposed development. The development may be residential, office, commercial, or a combination of these.

Thus, the studies evaluate the changes and effects that result from new land development; and they prepare off-site and on-site transportation improvements to accommodate the additional travel and traffic and to ameliorate impacts. The studies are an integral part of the site development review process. They are specifically concerned with the site traffic generation, its allocation between public and private transport, and its directional distribution and assignment onto existing or future roadways. They identify public safety requirements and determine the transportation needs of the site and the surrounding road system.

The traffic (or transportation) impact study may be part of an environmental impact report or environmental impact assessment. The environmental studies are required for all public and many private developments. Traffic impact studies are essential for many access management decisions. Wherever possible, it is desirable to evaluate the combined impacts not only of the proposed development but also of other likely nearby developments along the major roadways. Thus, the typical "traffic impact study" for an individual development should be broadened by simultaneously assessing the collective impacts of many related developments. In all cases, access plans for a parcel must be integrated with access to adjacent properties or developments on opposite sides of the road, or within the proposed improvement area.

It is difficult to anticipate future land development in the environs of a planned project. One approach is to consider the impacts of those developments that (1) are under construction, (2) have received land use approvals, or (3) have submitted applications.

Need

The minimum traffic and parking thresholds for when traffic impact studies should be conducted vary among public agencies. The Institute of Transportation Engineers (ITE) has suggested that a complete traffic impact analyses should be performed for each of the following situations:⁶

1. All developments that can be expected to generate more than 100 new peak hour vehicle trips on the adjacent street or for a lesser volume when a review of the site plan indicates the need.
2. In some cases, a development that generates less than 100 new peak hour trips should require a traffic impact study or assessment if it affects local "problem" areas. These would include high accident locations, currently congested areas, or areas of critical local concern.
3. All applications for rezoning.
4. All applications for annexation.
5. Any change in the land use or density that will change the site traffic generation by more than 15 percent, where at least 100 new peak hour trips are involved.
6. Any change in the land use that will cause the directional distribution of site traffic to change by more than twenty percent.

⁶ *Traffic Access and Impact Studies for Site Development. Proposed Recommended Practice* (Washington D.C.: Institute of Transportation Engineers, 1988).

7. When the original impact study is more than two years old, access decisions are still outstanding, and changes in development have occurred in the site environs.
8. Necessary development agreements to determine “fair share” contributions to major roadway improvements.

The use of a lower threshold (i.e., less than 100 new peak hour trips) minimizes the chance that developments will be approved without a study. Agencies that require lower thresholds may reduce the scope of the study.

Scope

The scope of traffic impact studies depends on the type, location, and scale of development. In activity centers, where walk-in and transit trips are common (or have potential), both total person trips and vehicular trips should be analyzed. This involves estimates of mode split and vehicle occupancy. The adequacy of the site plan for transit riders and pedestrians should be assessed.

The types of information needed to reach appropriate traffic and development decisions normally include the following: (1) characteristics of the existing roadway and public transport systems, (2) characteristics of proposed developments, (3) future development traffic, (4) composite traffic on surrounding and approach roads, (5) road system adequacy and needs, and (6) access plans.

The study should accurately analyze the impact of specific developments, the adequacy of site access, and the suitability of on-site circulation and parking. It should provide the following information to accurately gauge impacts, needs, and opportunities for change: (1) projections of traffic volumes on individual roadway segments, (2) projections of turn movements at individual intersections or access drives, (3) the effects of numerous access points along an arterial as opposed to only a few consolidated access points, (4) the effects of modest changes in land use on the location of individual land uses, and (5) pedestrian and transit access requirements.

Basic Assumptions

At the start of a study it is desirable to establish basic terms of reference with public agencies. These include: (1) methods of capacity and LOS analyses, (2) planning horizon years, (3) extent of study area, (4) time periods to analyze, and (5) travel modes to consider.

1. *Planning horizon year*—the horizon year should be consistent with the size and build-out schedule of the development and anticipated major transportation system changes. Suggested horizon years are given in Table 5-3. A good guide is to set the planning year 3 to 5 years hence, when the proposed development would operate at its target productivity.
2. *Study area*—the study area limits should be based upon the type of land use, size of development, street system patterns, and terrain. A frequently used method is to carry the analysis to locations where site-generated traffic will represent five percent or more of the roadway’s peak hour approach capacity.
3. *Time periods*—the analyses should focus on the periods of the day when a normal “background” highway traffic is at a peak and when site traffic peaks. Thus, the analyses time periods generally will vary for residential, office, industrial, retail, and recreational developments.

Steps

The study content will depend on the type and size of the development and the prevailing traffic conditions. Although the specific guidelines established by public agencies may vary, each study should contain the following information:

N.J.A.C. 5:21-4.15

New Jersey Register, Vol. 49 No. 12, June 19, 2017

***New Jersey Administrative Code > TITLE 5. COMMUNITY AFFAIRS > CHAPTER 21.
RESIDENTIAL SITE IMPROVEMENT STANDARDS > SUBCHAPTER 4. STREETS AND PARKING***

§ 5:21-4.15 Parking space size

Each off-street parking space shall measure nine feet in width by 18 feet in length. Parking spaces for people with disabilities shall be in accordance with the New Jersey Uniform Construction Code ([N.J.A.C. 5:23](#)) or the Americans with Disabilities Act, as applicable.

v. Parking Requirements, Including Off Street Loading.

a. The provisions of §150-12 “Off-Street Parking, Loading and Performance Standards and Design Criteria” shall NOT be applicable to the A-2R Overlay Zone, with the EXCEPTION(S)” that:

1-§150-12.6 “Off Street Parking” provisions shall NOT generally be applicable to the A-2R Overlay Zone but a deviation from the New Jersey Residential Site Improvement Standards (“R.S.I.S”) as described in this paragraph shall be complied with. The deviation from RSIS is justified since the redevelopment area is within walking distance to a nearby bus transit line and because the residential units have unique characteristics, specifically, qualified affordable income households. Further, given the size and shape of the property the parking resources serving the A-2R Overlay Zone, the number of on-site parking spaces appropriate for each affordable residential unit and therefor required in the A-2R Overlay Zone shall be 1.5 vehicles per unit. (See N.J.A.C. 5:21-4.14 (c)-RSIS alternate parking standards).

2-The provisions of §150-12.7 A. pertaining to commercial vehicles shall NOT be applicable to the A-2R Overlay Zone to the extent that NO commercial vehicle or recreational vehicle shall be parked in the A-2R Overlay Zone unless work is being done on the property (premises) by a contractor using a commercial vehicle.

vi. Signs. The provisions of §150-7.9 U. shall be applicable to the A-2R Overlay Zone. Paragraph 2 shall be applicable but is hereby modified to permit doubled sided signs up to 26 square feet in area. The area and height calculations shall not include any foundation used to support the sign.

vii. Permitted Accessory Use(s) and Structures. The following are permitted:

- a. Screened or enclosed waste collection and recycling areas.
- b. Leasing, management, maintenance, and related offices.
- c. Amenity interior space, including but not limited to community meeting rooms, mailrooms etc.
- d. Exterior amenity space such as recreation areas, benches, gazebos (having a maximum height of twenty-four feet), etc.

Affordable Housing - Income Limits (223)

Peak Period Parking Demand vs: Dwelling Units

On a: **Weekday (Monday - Friday)**

Setting/Location: **General Urban/Suburban**

Peak Period of Parking Demand: 10:00 p.m. - 5:00 a.m.

Number of Studies: 29

Avg. Num. of Dwelling Units: 159

Peak Period Parking Demand per Dwelling Unit

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
0.99	0.32 - 1.66	0.85 / 1.33	0.89 - 1.09	0.27 (27%)

Data Plot and Equation

