



181 WEST HIGH STREET
SOMERVILLE, NJ 08876

908 927 0100p
908 927 0181f

May 23, 2022

Township of Berkeley Heights
Zoning Board of Adjustment
29 Park Avenue
Berkeley Heights, NJ 07922

Re: Oz Custom Builders, LLC
Proposed Residential Development
725 Mountain Avenue
Berkeley Heights Township, Union County

Dear Board Members:

As requested by the Board at the last public hearing on April 13, 2022, Dolan & Dean Consulting Engineers, LLC (D&D) has prepared this Traffic Safety Study to address specific concerns of the Board and members of the public as related to the location of the proposed site access. At the prior public hearing, substantial expert testimony was provided regarding the extremely low level of trip generation anticipated from the proposed site development and that sufficient sight distance can be provided with limited regrading and clearing on the subject site. As a follow-up to that evaluation, our office has prepared this comprehensive evaluation of off-site/tract external traffic conditions.

Specifically, our office has reviewed the accident history along the site frontage and at the intersection of Mountain Avenue and Plainfield Avenue, as there was a perception of reoccurring accidents at this location. A speed study has also been performed along the site frontage to ensure that the sight distances outlined by the American Association of State Highway Transportation Officials (AASHTO) and Union County are met. Lastly, a capacity analysis was performed for the proposed site access during the peak hours.

REVIEW OF MOTOR VEHICLE CRASH HISTORY

Our office requested motor vehicle crash reports from 2019 to the present for the section of Plainfield Avenue extending from the signalized intersection with Mountain Avenue to the site frontage. Attached to this letter is a crash diagram illustrating the types and relative infrequency of incidents over the past three years.

As shown, only 5 crashes have occurred over this timeframe – slightly more than one per year. None of the accident types were recurring; thus, there is no discernable pattern attributed to any particular or unique issue with the intersection or roadway design. Only one accident occurred along northbound Plainfield Avenue near the site frontage due to inattentive driving at a residential driveway located opposite the site.

TRAFFIC ENGINEERING
PARKING STUDIES
HIGHWAY DESIGN
DOT ACCESS PERMITS

As such, with proper sight distance proposed, safe and efficient access can be provided to the site. The review reveals that there is no significant accident history in the site vicinity.

SPEED STUDY

Automatic traffic recorders (ATRs) were installed along the Plainfield Avenue site frontage to quantify both the volume and speed of passing traffic near the site. The data was compiled and is summarized in Tables I and II below. Table I shows the average and 85th percentile speed in both directions along the subject roadway. Table II summarizes the peak hour traffic volumes along the site frontage. The 85th percentile speed is a customary measure for traffic engineering and safety studies and is most often used to establish/verify appropriate speed limits based on the geometry and condition of the roadway.

TABLE I
 PLAINFIELD AVENUE SPEED STUDY
 SUMMARY TABLE

Direction	Date	Average Speed (MPH)	85th Percentile Speed (MPH)	Weekly Average Speed (MPH)	Weekly 85th Percentile Speed (MPH)
Northbound	Monday, May 2, 2022	32	38	32	37
	Tuesday, May 3, 2022	31	36		
	Wednesday, May 4, 2022	31	37		
	Thursday, May 5, 2022	32	37		
	Friday, May 6, 2022	30	36		
	Saturday, May 7, 2022	32	37		
	Sunday, May 8, 2022	33	38		
Southbound	Monday, May 2, 2022	33	37	33	37
	Tuesday, May 3, 2022	32	37		
	Wednesday, May 4, 2022	32	37		
	Thursday, May 5, 2022	33	37		
	Friday, May 6, 2022	32	36		
	Saturday, May 7, 2022	33	37		
	Sunday, May 8, 2022	33	38		

TABLE II
 PLAINFIELD AVENUE
 PEAK TRAFFIC VOLUMES

Day	Morning			Evening		
	NB	SB	Total	NB	SB	Total
Monday	325	351	676	346	334	680
Tuesday	327	388	715	363	339	702
Wednesday	344	331	675	320	320	640
Thursday	327	361	688	370	351	721
Friday	345	366	711	372	310	682
Saturday	215	225	440	204	206	410
Sunday	202	225	427	229	238	467
Weekly Average	334	359	693	354	331	685
Weekend Average	209	225	434	217	222	439

As shown in Table I, the average speed traveled is 33 miles per hour and the 85th percentile speed on Plainfield Avenue along the site frontage is 37 miles per hour. The posted speed limit is 35 miles per hour, therefore the 85th percentile speed is very close to the speed limit demonstrating the posted speed limit is appropriate.

As stated during testimony, the Union County requirement of 400 feet of sight distance can be provided and equates to a design speed of 45 miles per hour - well above the posted 35 MPH speed limit and 85th percentile speed of 37 MPH. Therefore, adequate sight distance exists for the prevailing roadway conditions and in accordance with the applicable design criteria.

FUTURE ACCESS

Based on the peak hour vehicle volume collected by the ATR as shown in Table II and the projected trip generation for the proposed residential development, the 2024 "build" traffic volumes were determined that include future traffic growth potential as well as the site-generated traffic. Figure B attached to this letter illustrates the future "build" traffic volumes.

A volume/capacity Level of Service analyses was then conducted for the projected future build traffic conditions. Figure C illustrates the projected Levels of Service for the proposed development during the morning and evening peak hours. As shown, with the addition of site traffic, all movements at the new unsignalized intersection of Plainfield Avenue and Westminster Court will operate at a Level of Service A during all peak hours. To reiterate the expert testimony provided, the limited exiting and entering traffic from the proposed development will have negligible effects on the intersection of Plainfield Avenue and Mountain Avenue and the roadway system as a whole.

OZ CUSTOM BUILDERS, LLC
PROPOSED RESIDENTIAL DEVELOPMENT
725 MOUNTAIN AVENUE
BERKELEY HEIGHTS TOWNSHIP, UNION COUNTY

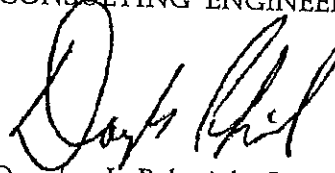
MAY 23, 2022

Based on the above, the information collected demonstrates that the new intersection can operate safely at the sight distance proposed and current speeds recorded. Additionally, the site access will operate at Level of Service A, indicating limited, if any delay.

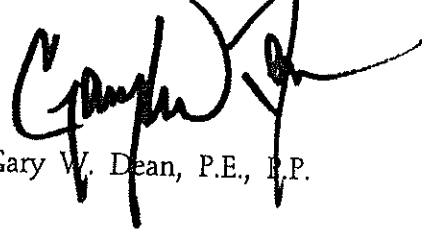
Finally, this Traffic Safety Study has found no evidence of inherently unsafe conditions in the site vicinity or at the off-tract intersection with Mountain Avenue.

Very truly yours,

DOLAN & DEAN
CONSULTING ENGINEERS, LLC



Douglas J. Polyniak, P.E.

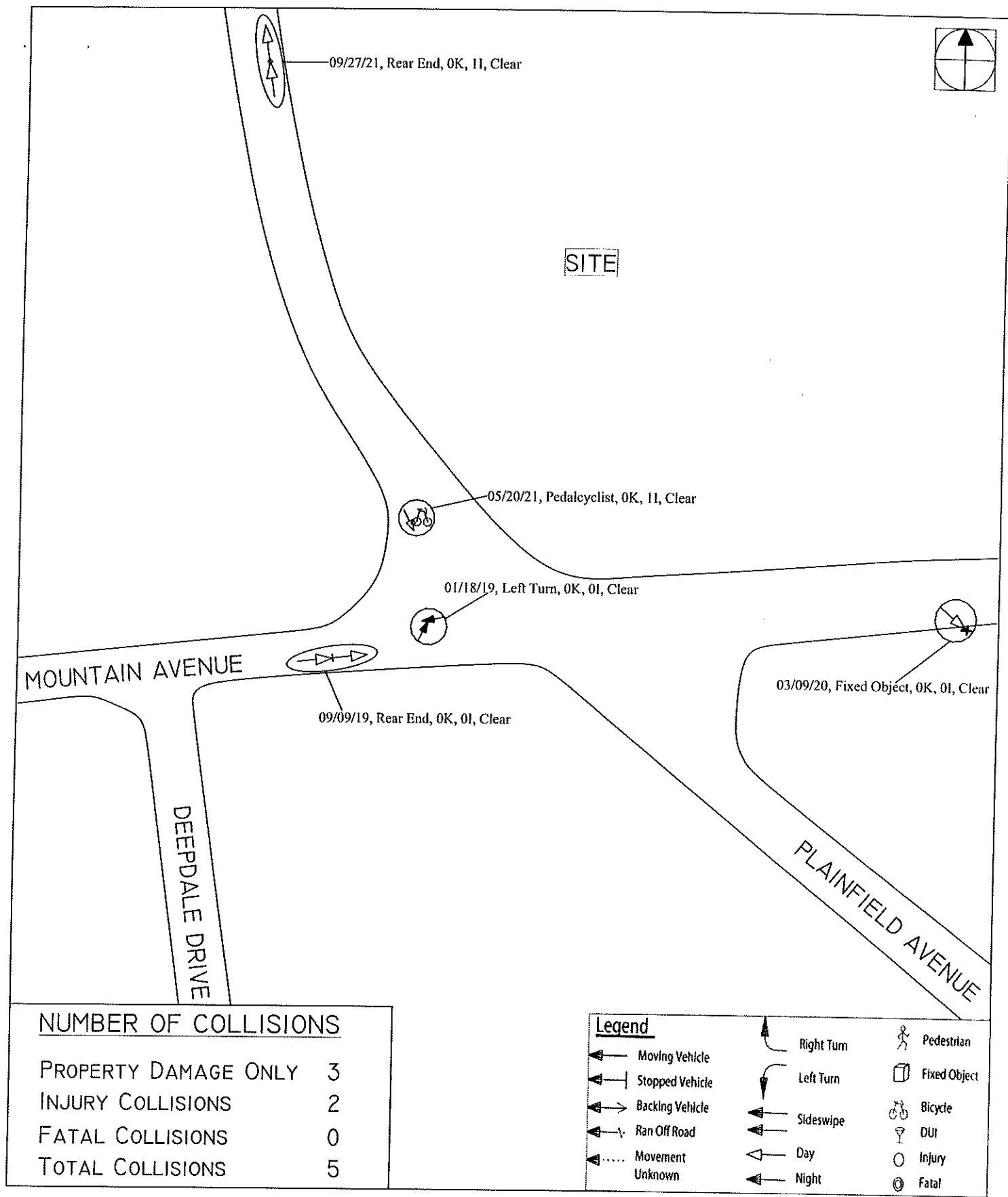


Gary W. Dean, P.E., P.F.

Enclosures

CC: August N. Santore, Jr., Esq.

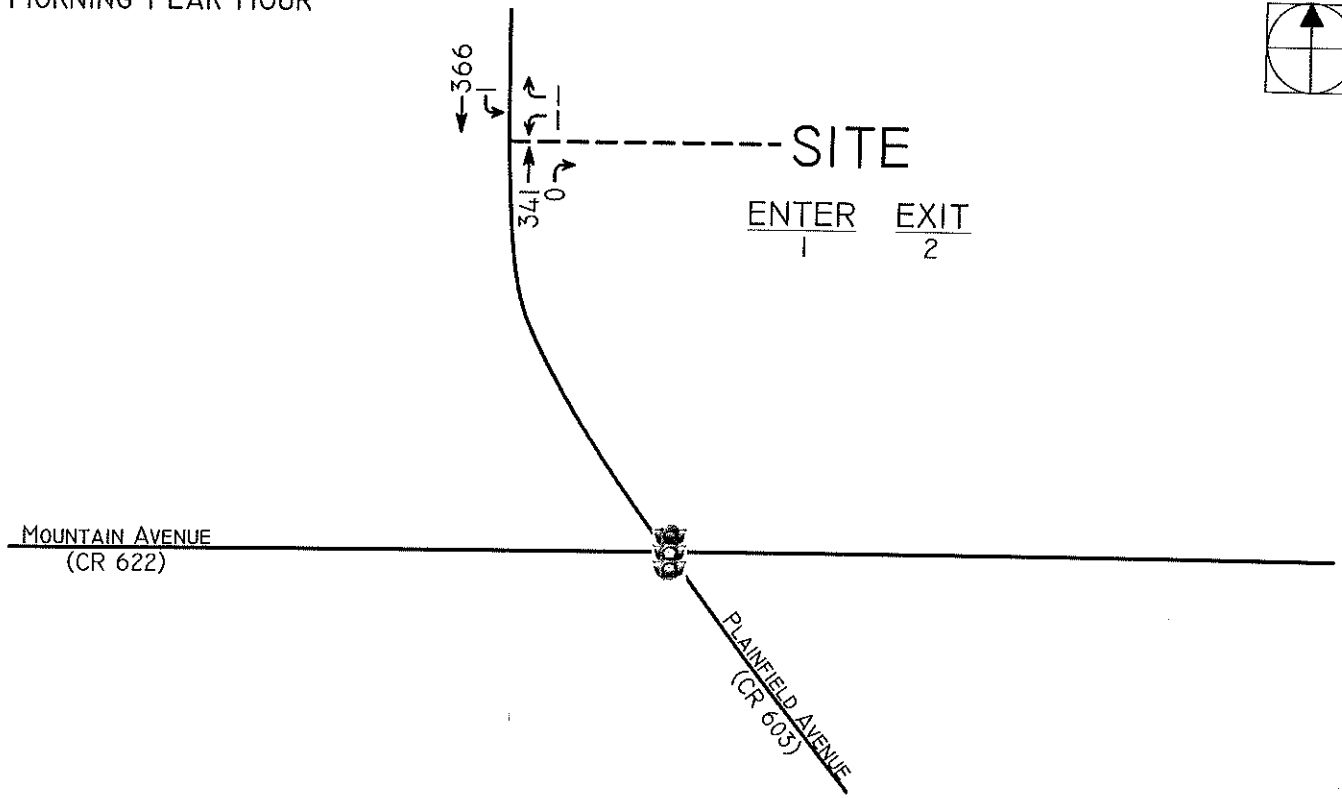
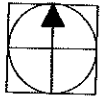
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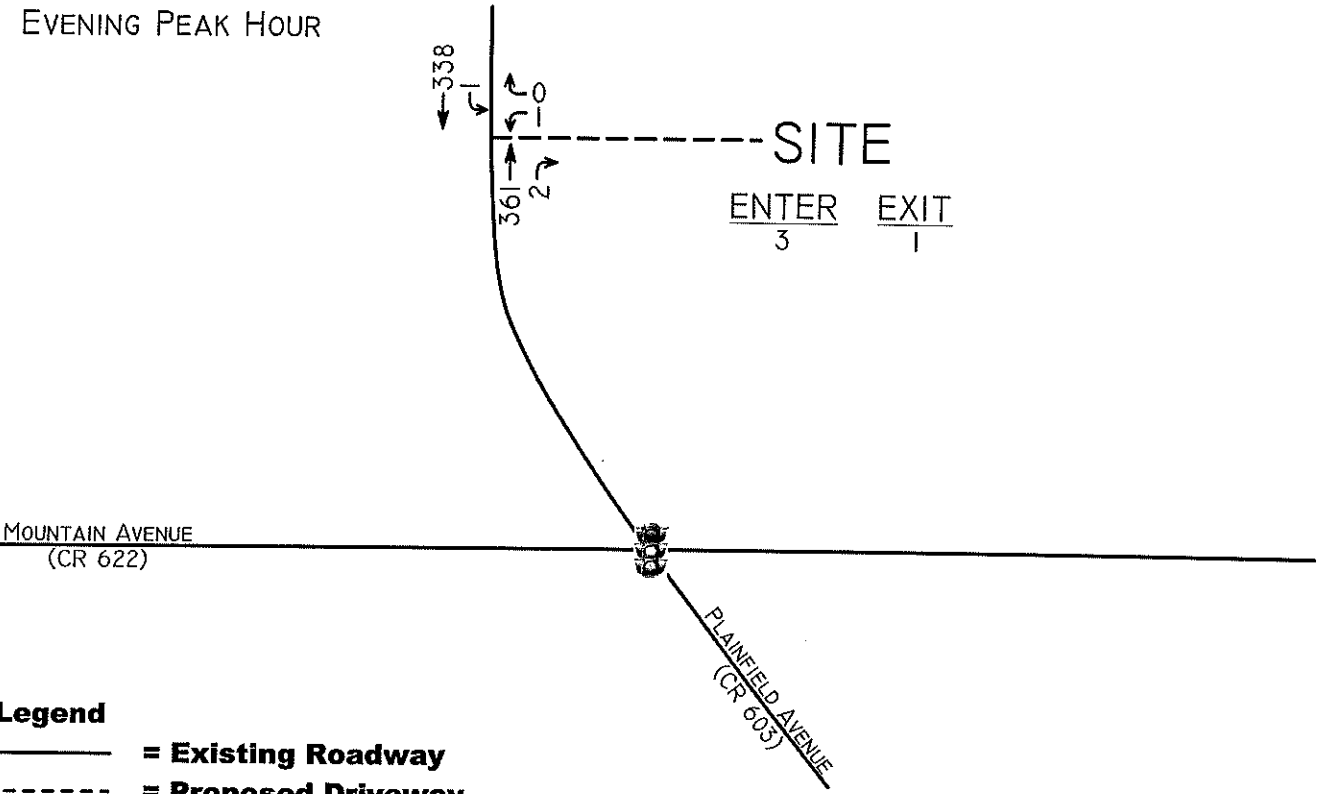
OZ CUSTOM BUILDERS
 TOWNSHIP OF BERKELEY HEIGHTS
 UNION COUNTY, NEW JERSEY

FIGURE A

MORNING PEAK HOUR



EVENING PEAK HOUR



Legend

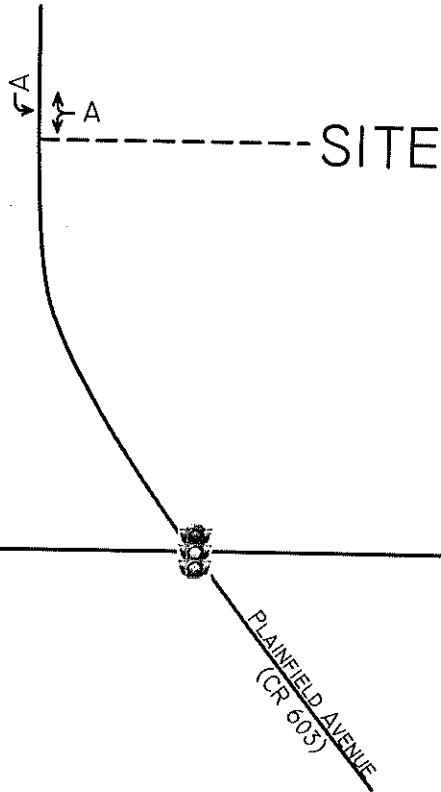
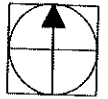
- = Existing Roadway
- = Proposed Driveway

OZ CUSTOM BUILDERS
 TOWNSHIP OF BERKELEY HEIGHTS
 UNION COUNTY, NEW JERSEY

FIGURE B



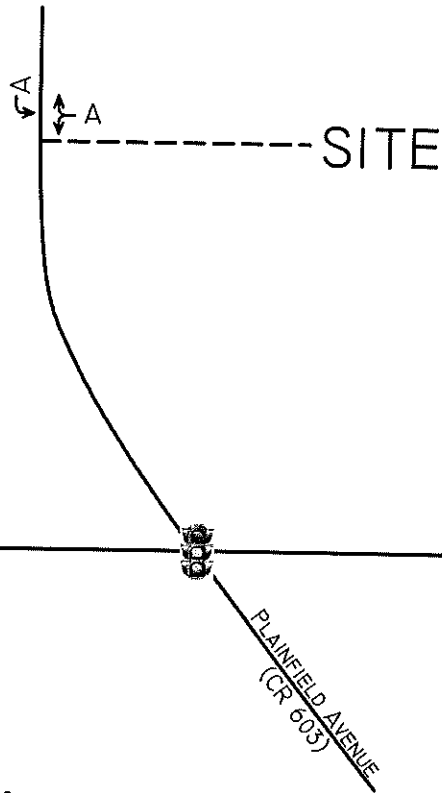
MORNING PEAK HOUR



MOUNTAIN AVENUE
(CR 622)

PLAINFIELD AVENUE
(CR 605)

EVENING PEAK HOUR



MOUNTAIN AVENUE
(CR 622)

PLAINFIELD AVENUE
(CR 605)

Legend

-  = Existing Roadway
-  = Proposed Driveway

OZ CUSTOM BUILDERS
TOWNSHIP OF BERKELEY HEIGHTS
UNION COUNTY, NEW JERSEY

FIGURE C



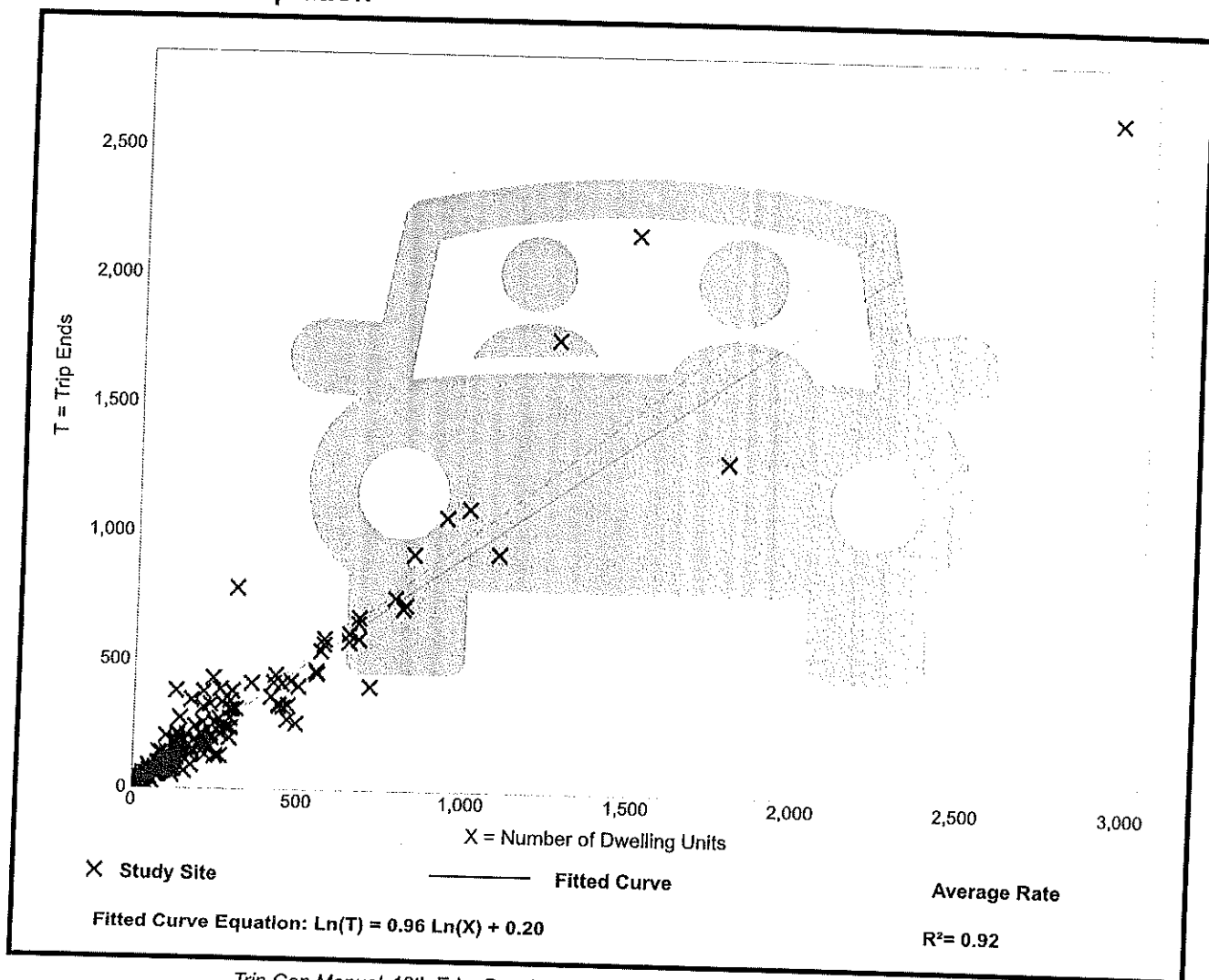
Single-Family Detached Housing (210)

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: 190
 Avg. Num. of Dwelling Units: 242
 Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



Single-Family Detached Housing (210)

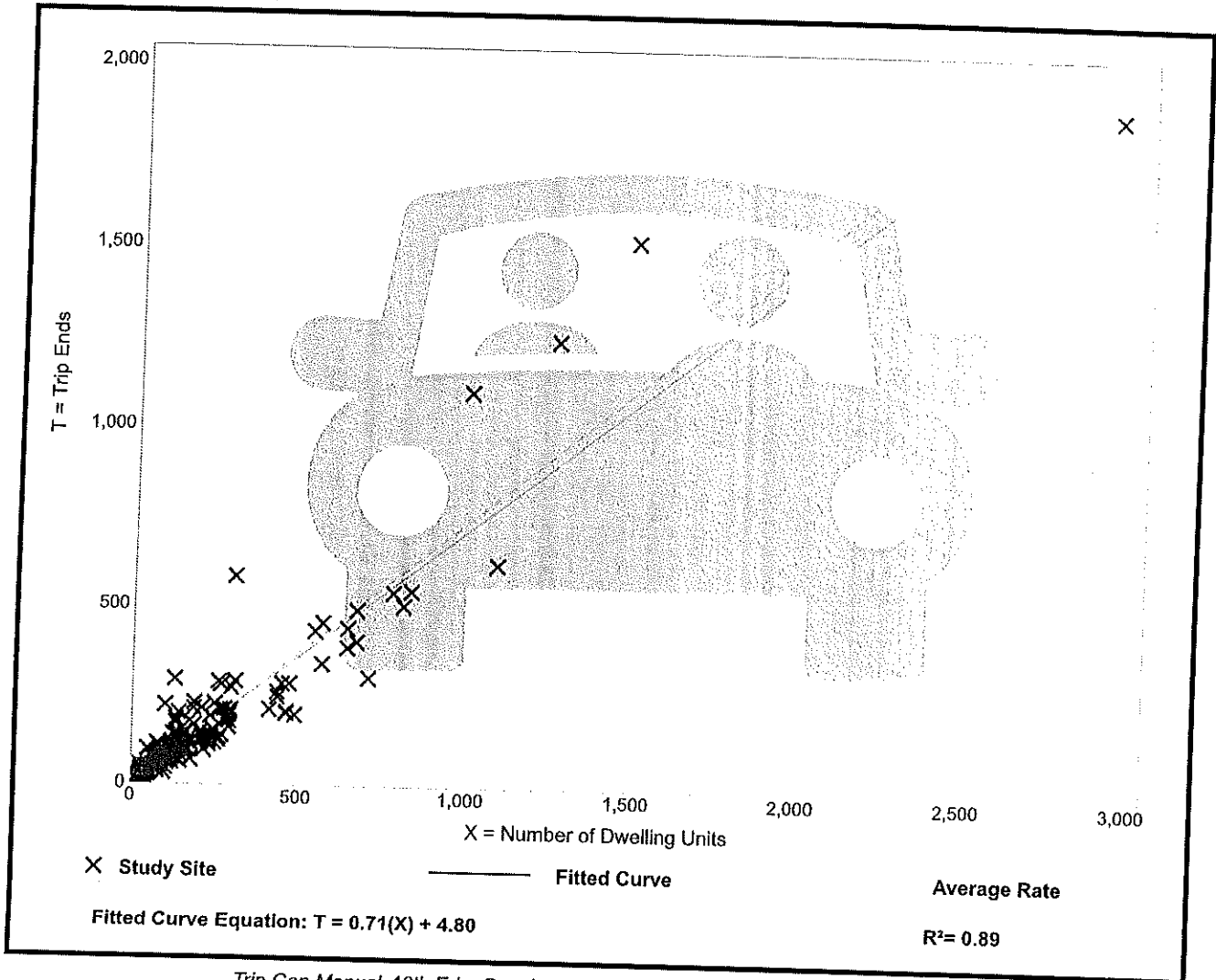
Vehicle Trip Ends vs: Dwelling Units
 On a: Weekday,
 Peak Hour of Adjacent Street Traffic,
 One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban
 Number of Studies: 173
 Avg. Num. of Dwelling Units: 219
 Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation

