DOLAN&DEAN
CONSULTING ENGINEERS, LLC

181 WEST HIGH STREET
SOMERVILLE, NJ 08876

908 927 0100 p
908 927 0181 f

TRAFFIC IMPACT ANALYSIS

FOR

PROPOSED

14-LOT SUBDIVISION

295 CEDAR GROVE LANE
BLOCK 508.02, LOT 12
FRANKLIN TOWNSHIP
SOMERSET COUNTY, NEW JERSEY

JANUARY 29, 2024

ELIZABETH DOLAN, P.E.
NJ LICENSE NO. 37071

RIANNA KIRCHHOF, P.E.
NJ LICENSE NO. 54558

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INTRODUCTION

To support a site plan application being submitted to Franklin Township, this Traffic Impact Analysis has been prepared to evaluate the traffic impacts associated with a 14-lot residential subdivision. The new development is proposed along Cedar Grove Lane southbound, approximately 1,600 feet north of its intersection with Amwell Road as shown in Figure 1.

The property currently exists with one single family home and auxiliary structures. Access is provided to the site via one full-movement driveway along Cedar Grove Lane. As part of the redevelopment proposal, the existing structures will all be razed, the lot subdivided, and 14 single family homes constructed.

Dolan & Dean Consulting Engineers, LLC (D&D) has been commissioned by the applicant to prepare this study for the proposed site redevelopment. While any development of the subject property may affect traffic conditions, both the volume and characteristics of that traffic are of important consideration in the evaluation of this application.

This assessment projects the traffic movements along the adjacent roadway network that could occur from the redevelopment and includes an assessment of future site access operating conditions, as well as a review of access, on-site circulation, and parking with respect to the Residential Site Improvement Standards (RSIS).

EXISTING CONDITIONS

The subject property is designated Block 508.02, Lot 12, and is also known as 295 Cedar Grove Lane. The site is located with frontage along Cedar Grove Lane and developed with one single-family home and auxiliary structures. Access is provided via one full-movement driveway as shown in the below photograph.

Cedar Grove Lane has a north/south orientation and provides travel between Amwell Road and Easton Avenue to the North. Within the general site vicinity, the roadway provides one travel lane in each direction with a posted speed limit of 45 miles per hour. Shoulders of varying width are provided and second as designated bike lanes. No on-street parking is permitted. The roadway is under Somerset County jurisdiction and known as County Route 619. Cedar Grove Lane is classified as an urban minor arterial.

TRAFFIC CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

For this study, traffic projections were prepared by reviewing trip generation data published by the Institute of Transportation Engineers (ITE) in the 11th Edition of the Trip Generation Manual. The appropriate ITE land uses for the proposed development is Land Use Code 210: "Single Family Detached Housing". Trip generation projections are summarized in Table I.

TABLE I
TRIP GENERATION PROJECTIONS
14-LOT RESIDENTIAL SUBDIVISION

PEAK HOUR									DAILY TRIPS		
MORNING			EVENING			WEEKEND					
ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
3	9	12	10	6	16	12	10	22	83	83	166

As shown, the total peak hour site traffic is relatively low. Typically, traffic impact studies are performed for new uses that generate 100 or more trips in an hour, based on the ITE Manual of Transportation Engineering Studies and as required by the NJDOT State Highway Access Management Code. It is anticipated that the peak hour trip generation associated with the development will result in at most 22% of that level and will have a negligible impact to the adjacent roadway networks. Averaging at most one vehicle movement approximately every three minutes, such an impact would be imperceptible on traffic flows.

As previously mentioned, the site is currently occupied by one single-family home. Table II shows the overall traffic comparison between the existing and proposed site uses.

TABLE II
TRIP GENERATION COMPARISON

USE	SIZE	PEAK HOUR			DAILY TRIPS
		MORNING	EVENING	WEEKEND	
Existing	1 Dwelling	1	1	1	15
Proposed	14 Dwellings	12	16	22	166
Traffic Increase		+11	+15	+21	+151

As shown, the property will continue to operate with minimal peak hour volumes.

The low trip generation associated with the 14-lot subdivision will have virtually no impact on the adjacent roadway network and will not create the need for any off-tract improvements or mitigation.

SITE DRIVEWAY OPERATION

A volume/capacity analysis was conducted for the proposed site driveway along Cedar Grove Lane for the peak hours noted. Traffic data collected at the Cedar Grove Lane intersection with Amwell Road in March 2022 was used to establish peak hour volumes on the roadway. The traffic count sheets have been appended.

Assuming the proposed development would be fully occupied by 2026, a 1.0% growth rate, compounded annually, was applied to the 2022 volumes to establish the Cedar Grove Lane volumes in 2026. The 1.0% growth rate is published by NJDOT for Urban Minor Arterials in Somerset County. The "build" traffic volumes which include the site traffic are shown on Figure 2. Appended Figure 3 displays the anticipated Levels of Service at the driveway. The analysis demonstrates the minimal impact of the proposed development would have along Cedar Grove Lane, where left turns into the property will operate at Level of Service "B" or better.

SITE ACCESS, CIRCULATION AND PARKING

The Site Dimensional Plan prepared by Menlo Engineering Associates has been reviewed with regard to site access, circulation, and parking. The following comments summarize our review:

- One full-movement access is proposed along Cedar Grove Lane. The access, labeled Road A, will be gated and provide two 20-foot lanes separated by a landscaped median to accommodate inbound and outbound movements. The gate will be located 100 feet from Cedar Grove Lane, and a U-turn opening will be provided in advance of the gate.

- Road A will have a 50-foot right-of-way and a 30-foot cartway. These dimensions comply with RSIS and will allow parking on one side of street. The proposed cul-de-sac bulb will have a 45-foot radius, which also complies with RSIS.

- Sidewalk is proposed along the south side of Road A, and along the cul-de-sac bulb. The provision of sidewalk on one side of the street complies with RSIS.

- Each residential dwelling is proposed with a 20-foot by 40-foot (minimum) access driveway leading to a 35-foot by 50-foot paved or graveled area. These dimensions can comfortably provide parking for four or more vehicles. According to RSIS, a 2-car garage and driveway shall count as 3.5 parking spaces, which will support homes with 5 or 6 bedrooms.

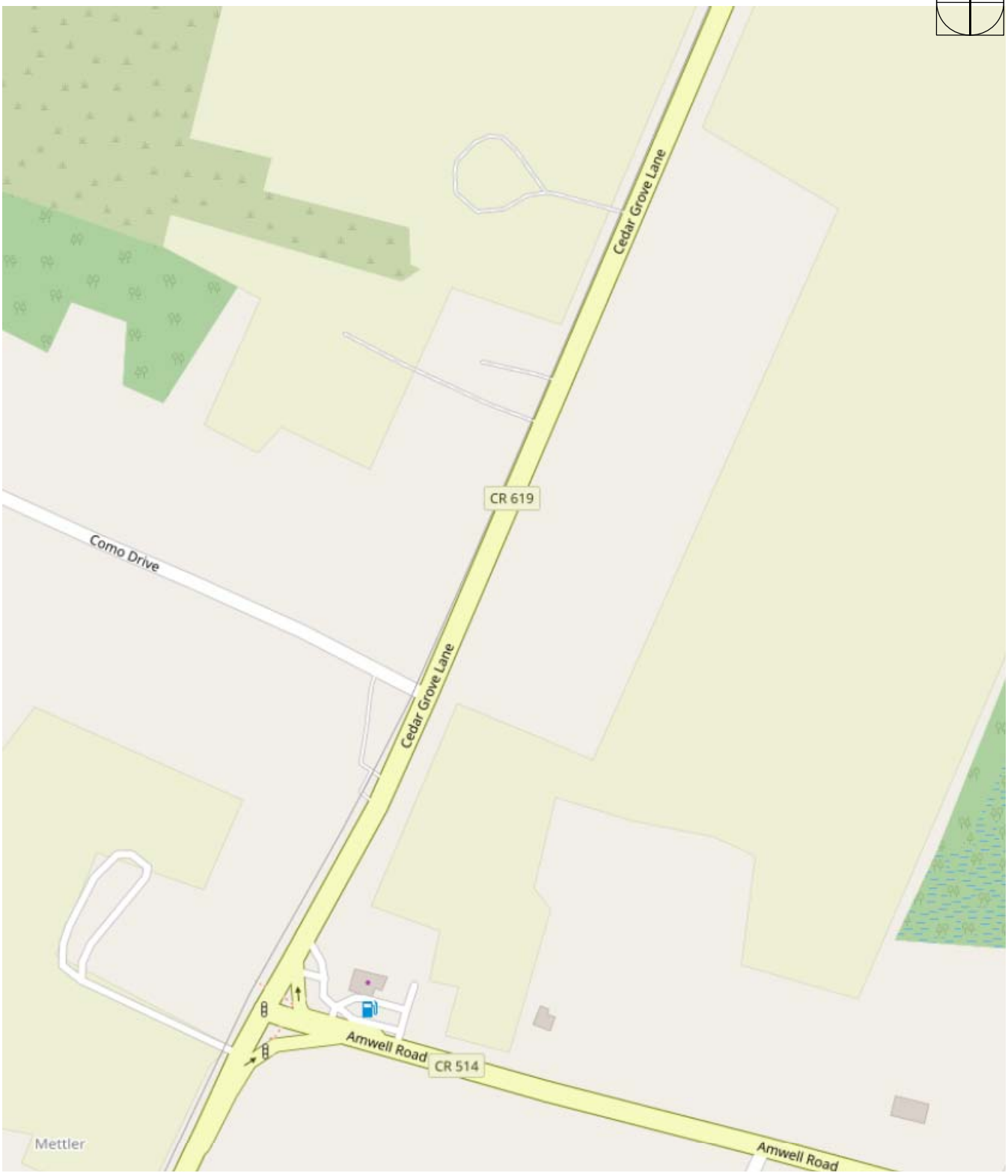
CONCLUSIONS

In summary, it is evident that the proposed 14-lot subdivision would generate minimal traffic increases, which will not create a negative impact on the local roadway network.

With the traffic generation associated with the application, adequate roadway capacity will continue to exist to accommodate future site traffic. All movements to and from the site will operate safely and efficiently with reasonable and prudent driver behavior.

Based on these findings, it is concluded that the site is particularly well suited for the proposed development. Such an operation will not negatively impact the traffic in the surrounding area or along the adjacent streets as adequate roadway capacity exists to accommodate the increases.

Technical Appendix

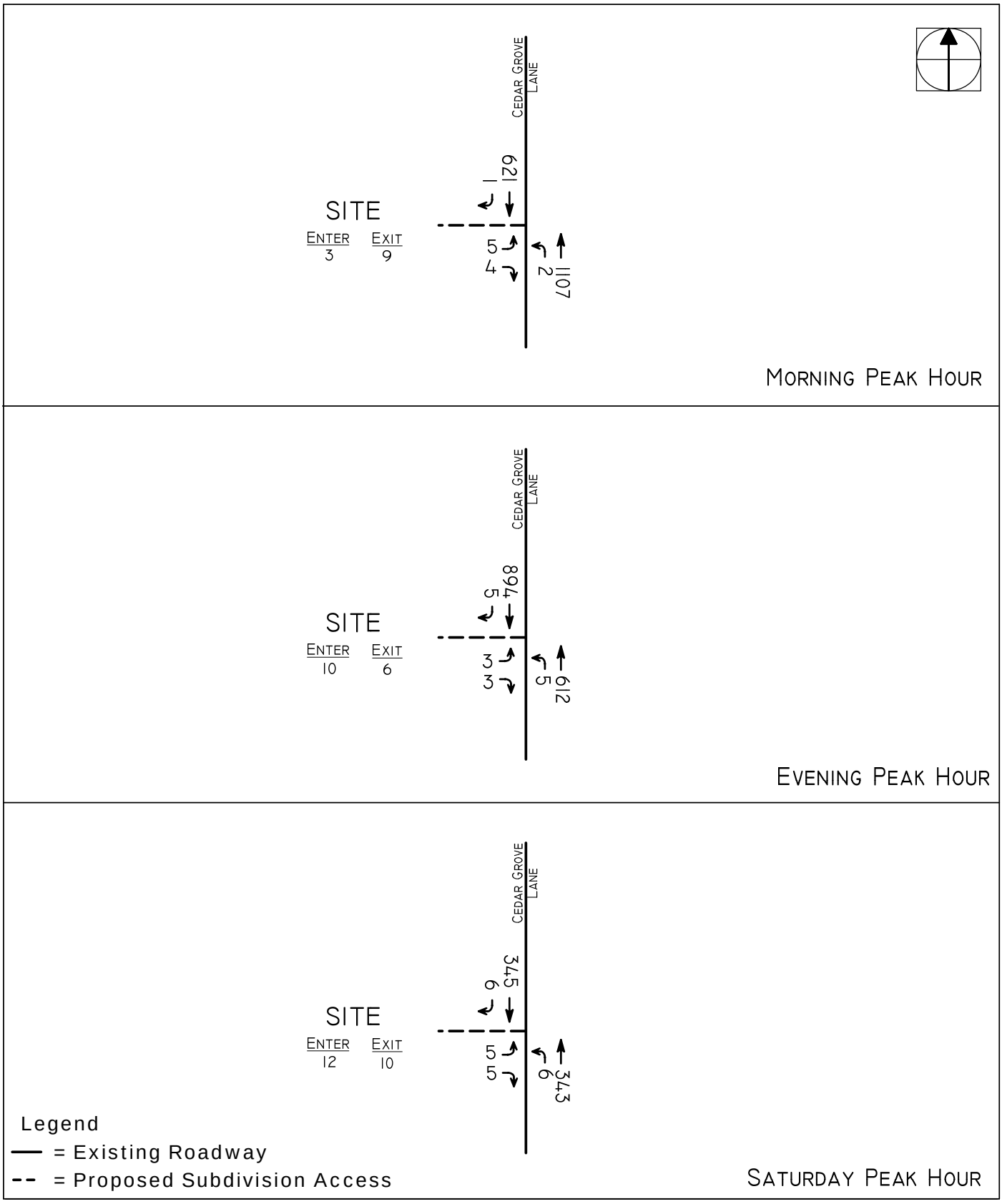


PROPOSED SUBDIVISION
FRANKLIN TOWNSHIP
SOMERSET COUNTY, NEW JERSEY

FIGURE 1

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

SITE LOCATION MAP

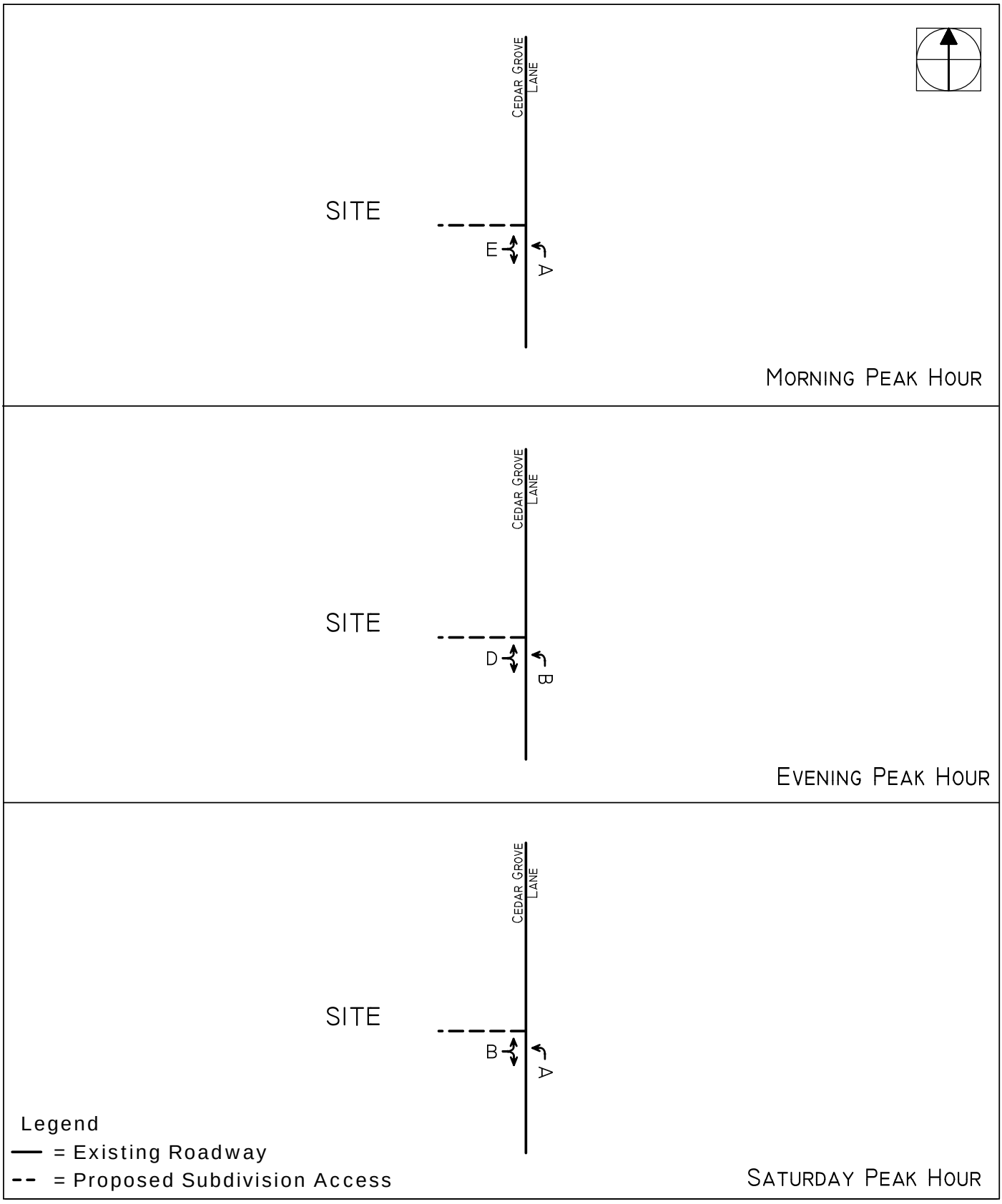


PROPOSED SUBDIVISION
FRANKLIN TOWNSHIP
SOMERSET COUNTY, NEW JERSEY

FIGURE 2

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

2026 BUILD TRAFFIC VOLUMES



PROPOSED SUBDIVISION
FRANKLIN TOWNSHIP
SOMERSET COUNTY, NEW JERSEY

FIGURE 3

DOLAN&DEAN
CONSULTING ENGINEERS, LLC

2026 BUILD LEVELS OF SERVICE

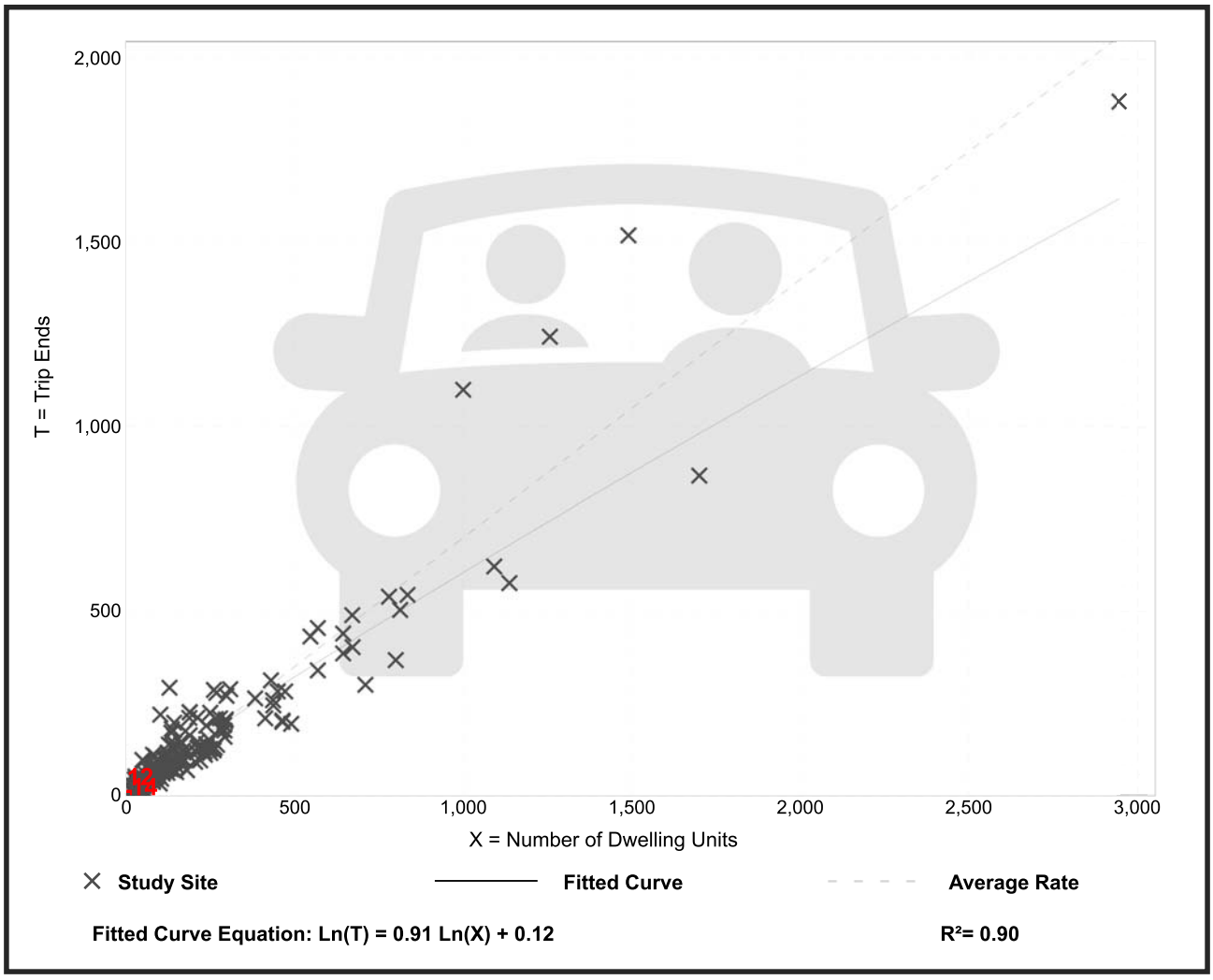
Single-Family Detached Housing
(210)

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: 25% entering, 75% 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



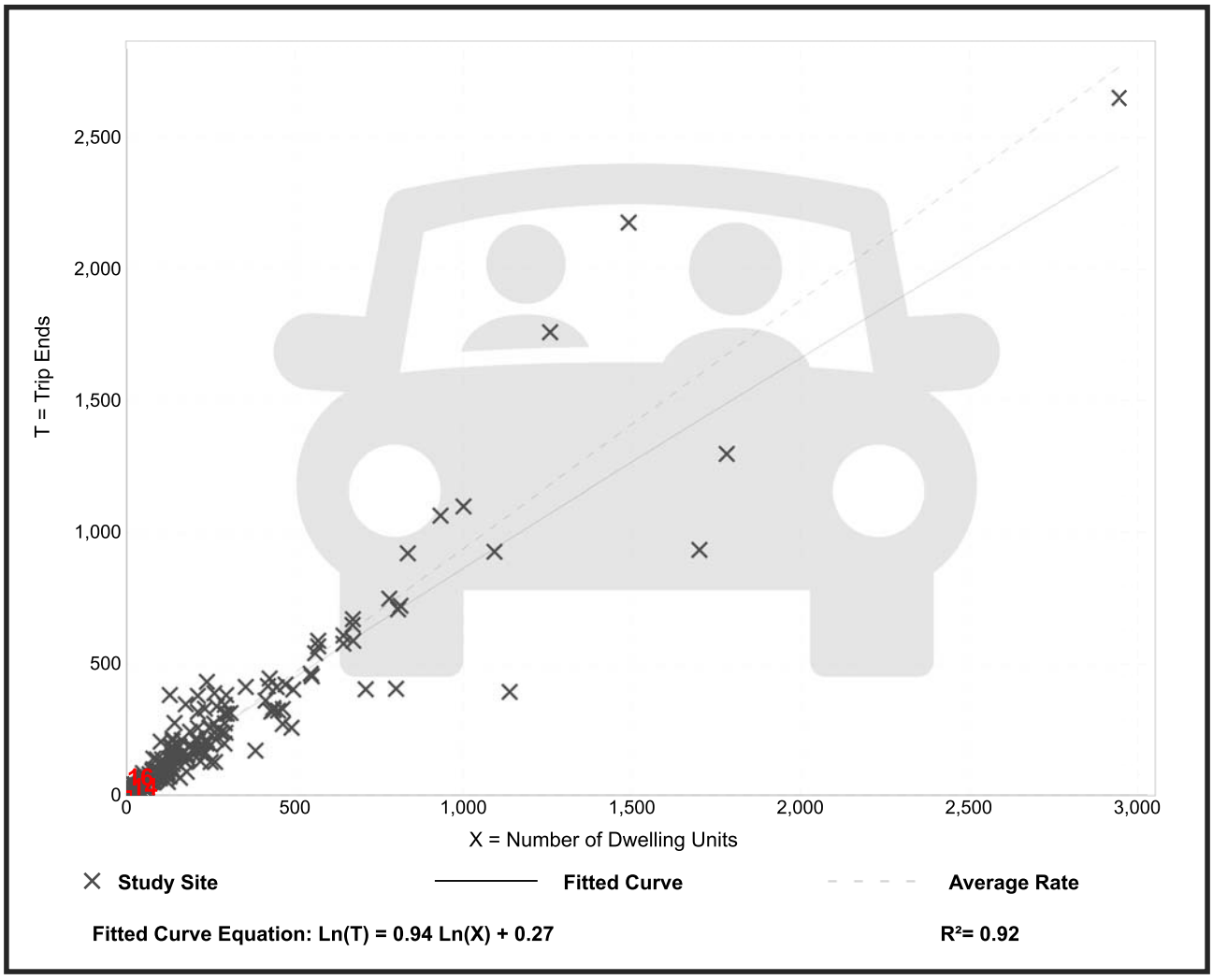
Single-Family Detached Housing
(210)

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**

Single-Family Detached Housing
(210)

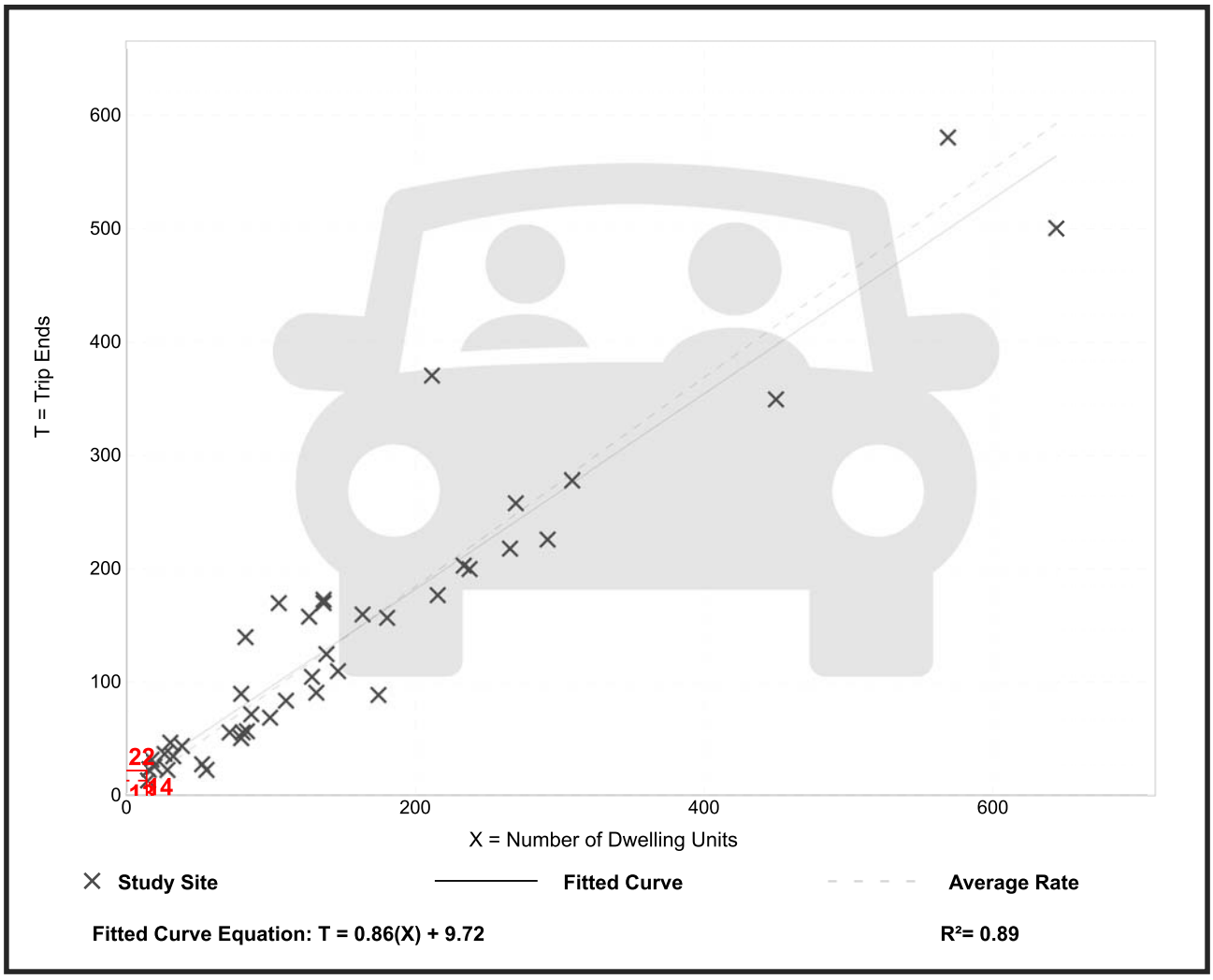
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 42
Avg. Num. of Dwelling Units: 152
Directional Distribution: 54% entering, 46% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.92	0.41 - 1.78	0.27

Data Plot and Equation



Single-Family Detached Housing
(210)

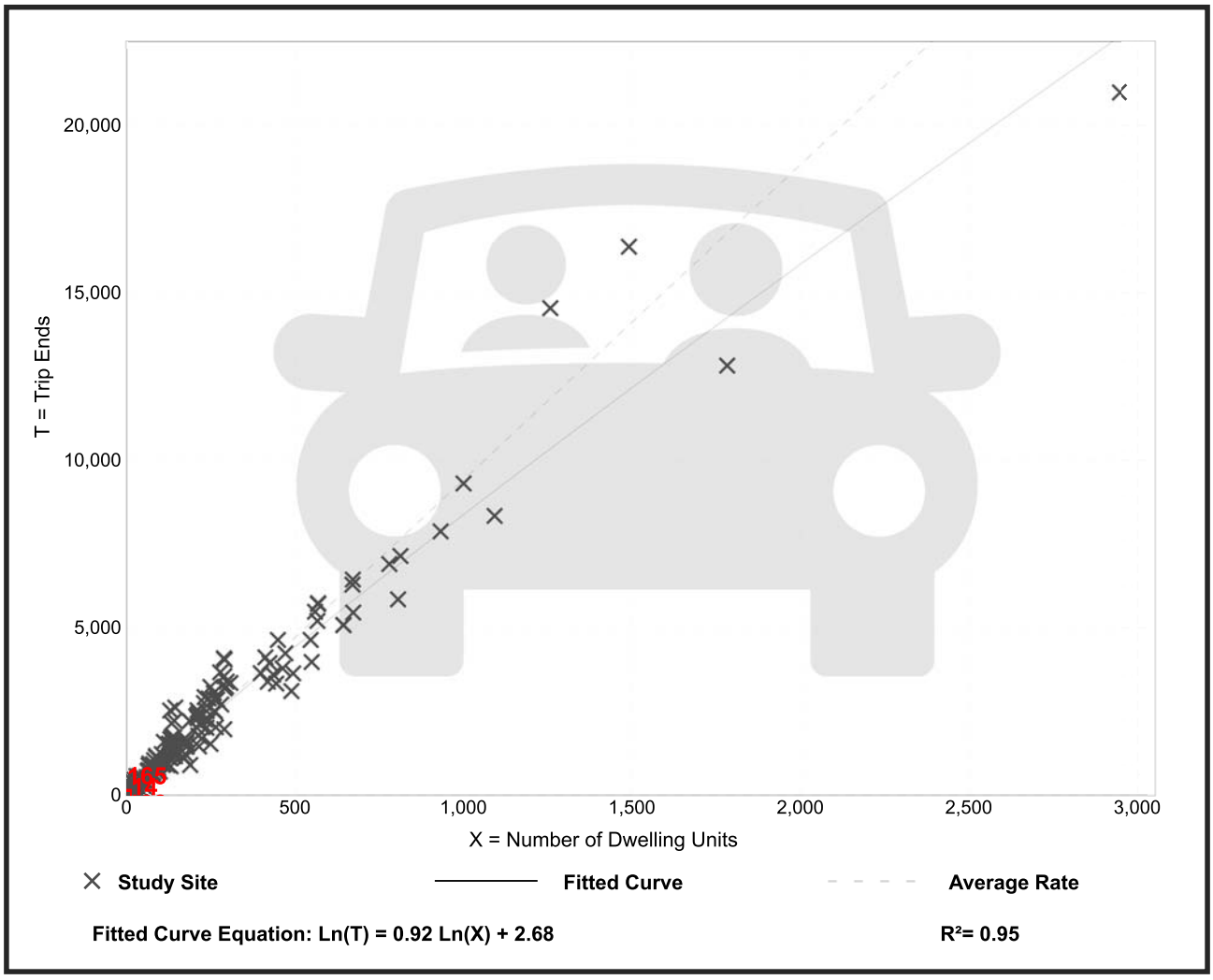
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 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



HCS7 Two-Way Stop-Control Report

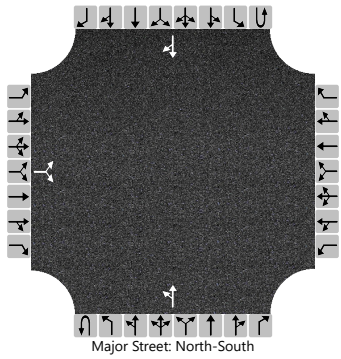
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	1/26/2024
Analysis Year	2024
Time Analyzed	AM Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Site Driveway
Jurisdiction	
East/West Street	Site Driveway
North/South Street	Cedar Grove Lane
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		5		4						2	1107				621	1
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			10							2						
Capacity, c (veh/h)			122							911						
v/c Ratio			0.08							0.00						
95% Queue Length, Q_{95} (veh)			0.3							0.0						
Control Delay (s/veh)			37.1							9.0						
Level of Service (LOS)			E							A						
Approach Delay (s/veh)		37.1								0.1						
Approach LOS		E														

HCS7 Two-Way Stop-Control Report

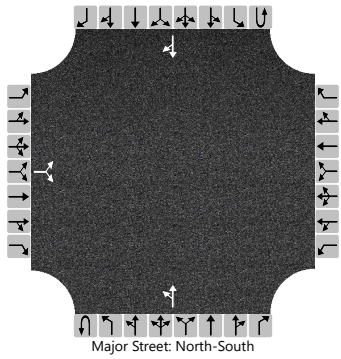
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	1/26/2024
Analysis Year	2024
Time Analyzed	PM Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Site Driveway
Jurisdiction	
East/West Street	Site Driveway
North/South Street	Cedar Grove Lane
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes


Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		3		3						5	612				894	5
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			7							5						
Capacity, c (veh/h)			158							702						
v/c Ratio			0.04							0.01						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			28.8							10.2						
Level of Service (LOS)			D							B						
Approach Delay (s/veh)		28.8								0.2						
Approach LOS		D														

HCS7 Two-Way Stop-Control Report

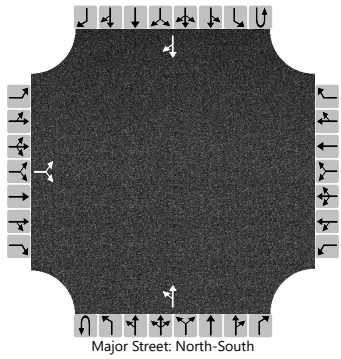
General Information

Analyst	EIC
Agency/Co.	DD
Date Performed	1/26/2024
Analysis Year	2024
Time Analyzed	SAT Build
Intersection Orientation	North-South
Project Description	

Site Information

Intersection	Site Driveway
Jurisdiction	
East/West Street	Site Driveway
North/South Street	Cedar Grove Lane
Peak Hour Factor	0.92
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	1	0		0	0	0	0	0	1	0	0	0	1	0
Configuration			LR							LT						TR
Volume (veh/h)		5		5						6	343				345	6
Percent Heavy Vehicles (%)		3		3						3						
Proportion Time Blocked																
Percent Grade (%)		0														
Right Turn Channelized																
Median Type | Storage		Undivided														

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2						4.1						
Critical Headway (sec)		6.43		6.23						4.13						
Base Follow-Up Headway (sec)		3.5		3.3						2.2						
Follow-Up Headway (sec)		3.53		3.33						2.23						

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)			11							7						
Capacity, c (veh/h)			474							1171						
v/c Ratio			0.02							0.01						
95% Queue Length, Q_{95} (veh)			0.1							0.0						
Control Delay (s/veh)			12.8							8.1						
Level of Service (LOS)			B							A						
Approach Delay (s/veh)		12.8								0.2						
Approach LOS		B														

Prepared by National Data & Surveying Services

Cedar Grove Ln & Amwell Rd

Peak Hour Turning Movement Count

ID: 22-340034-001
City: Somerset

Day: Wednesday
Date: 3/30/2022

PEAK HOURS

AM	07:15 AM - 08:15 AM
NOON	NONE
PM	NONE

COUNT PERIODS

AM	7:00 AM - 09:00 AM
NOON	NONE
PM	NONE

SOUTHBOUND — Cedar Grove Ln

	Left	Thru	Right	U-Turn	Total	
AM	0	150	447	0	1064	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

EASTBOUND — Amwell Rd

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

WESTBOUND — Amwell Rd

	Left	Thru	Right	U-Turn	
PM	0	0	859	1	PM
NOON	0	0	0	1	NOON
AM	0	0	293	0	AM
	0	0	0	0	
	0	0	987		

NORTHBOUND — Cedar Grove Ln

	Left	Thru	Right	U-Turn	Total	
PM	0	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	443	0	0	205	540	AM

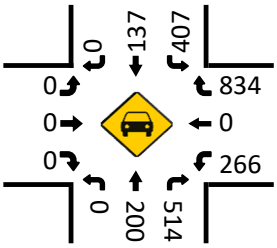
	Left	Thru	Right	U-Turn
	0	1	2	0
	0	0	1	1

CONTROL

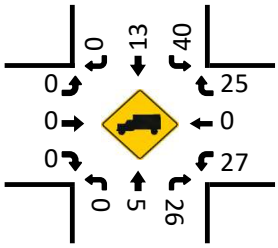
Signalized

		AM	NOON	PM
TEV	2494	0	0	
PHF	0.92			

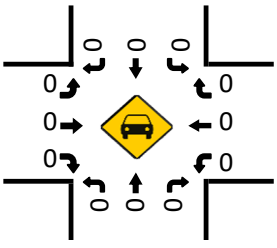
Cars (AM)



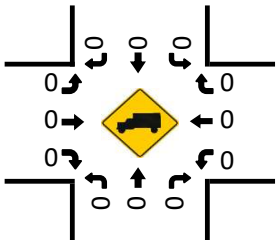
HT (AM)



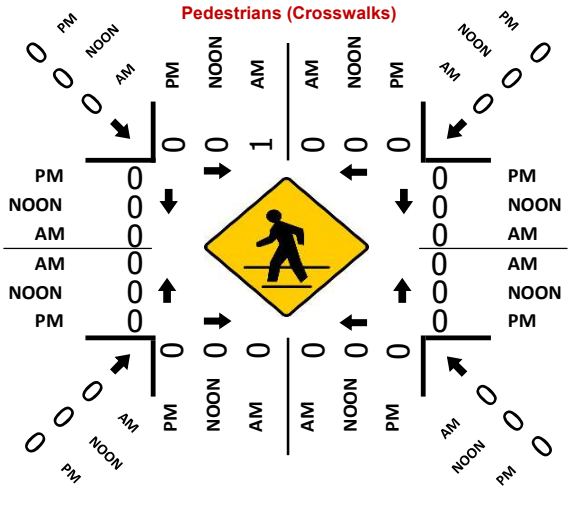
Cars (NOON)



HT (NOON)



Pedestrians (Crosswalks)



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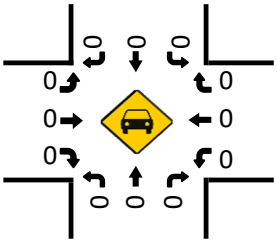
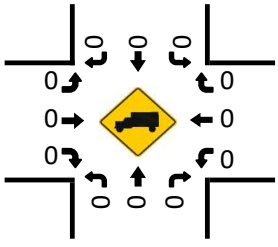


HT (PM)



Prepared by National Data & Surveying Services

Cedar Grove Ln & Amwell Rd

Peak Hour Turning Movement Count

ID: 22-340026-001
City: Somerset

Day: Thursday
Date: 3/10/2022

PEAK HOURS	
AM	NONE
NOON	NONE
PM	05:00 PM - 06:00 PM

COUNT PERIODS	
AM	NONE
NOON	NONE
PM	4:30 PM - 06:30 PM

SOUTHBOUND (Cedar Grove Ln)

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	147	712	0	588	PM

EASTBOUND (Amwell Rd)

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND (Amwell Rd)

PM	NOON	AM	
453	0	0	1
0	0	0	1
415	0	0	0
0	0	0	0
1083	0	0	
PM	NOON	AM	

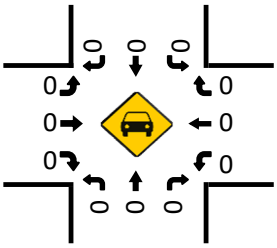
NORTHBOUND (Cedar Grove Ln)

PM	562	0	0	135	371	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

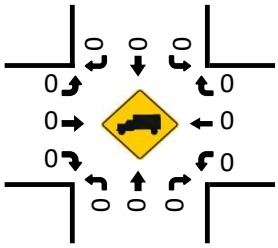
	0	0	1	1
	0	1	2	0

CONTROL			
Signalized			
TEV	0 AM	0 NOON	2233 PM
PHF			0.96

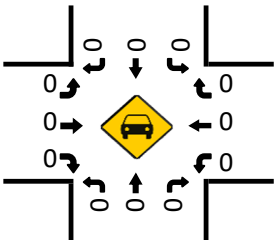
Cars (AM)



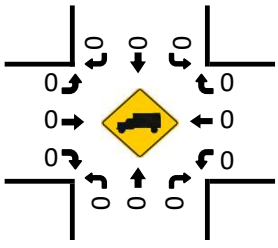
HT (AM)



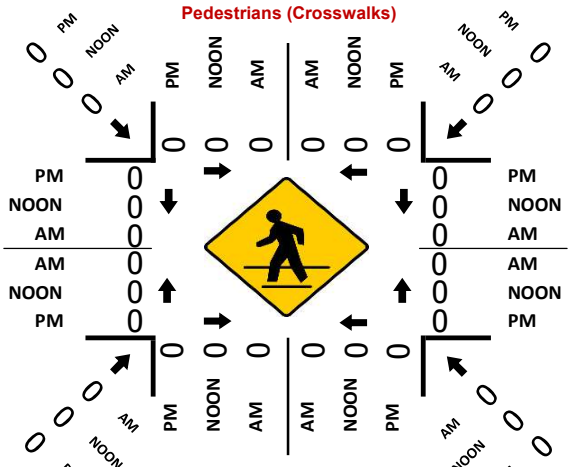
Cars (NOON)



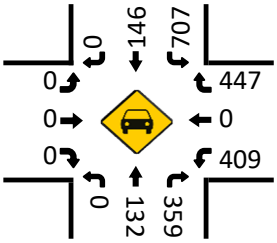
HT (NOON)



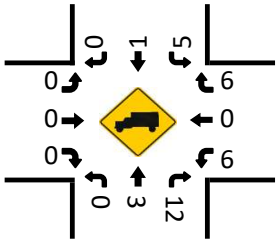
Pedestrians (Crosswalks)



Cars (PM)



HT (PM)



Prepared by National Data & Surveying Services

Cedar Grove Ln & Amwell Rd

Peak Hour Turning Movement Count

ID: 22-340026-001
City: Somerset

Day: Saturday
Date: 3/12/2022

PEAK HOURS

AM	NONE
NOON	12:00 PM - 01:00 PM
PM	NONE

COUNT PERIODS

AM	NONE
NOON	11:00 AM - 01:00 PM
PM	NONE

SOUTHBOUND (Cedar Grove Ln)

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	0 AM
NOON	0	78	254	0	330 NOON
PM	0	0	0	0	0 PM

EASTBOUND (Amwell Rd)

	AM	NOON	PM
	0	0	0
Left	0	0	0
Thru	0	0	0
Right	0	0	0
U-Turn	0	0	0

WESTBOUND (Amwell Rd)

	PM	NOON	AM
U-Turn	0	249	0
Left	0	0	0
Thru	0	174	0
Right	0	0	0
	0	422	0

NORTHBOUND (Cedar Grove Ln)

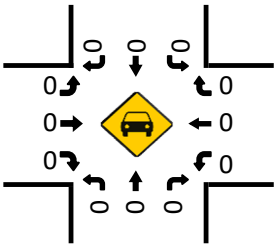
	U-Turn	Left	Thru	Right	
PM	0	0	0	0	0 PM
NOON	252	0	0	81	168 NOON
AM	0	0	0	0	0 AM

	Left	Thru	Right	U-Turn
	0	1	2	0
	0	0	1	1

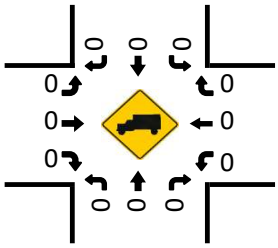
CONTROL: Signalized

	AM	NOON	PM
TEV	0	1004	0
PHF		0.93	

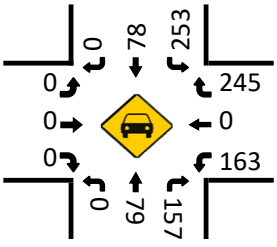
Cars (AM)



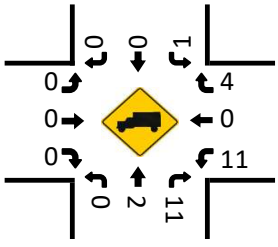
HT (AM)



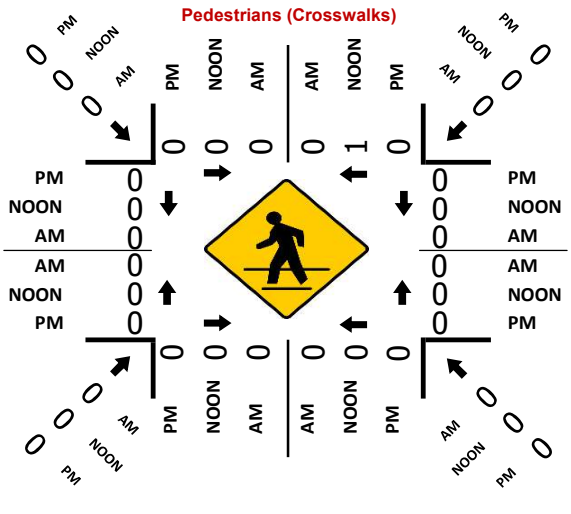
Cars (NOON)



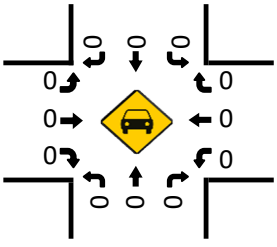
HT (NOON)



Pedestrians (Crosswalks)



Cars (PM)



HT (PM)