



**Marion County
Board of County Commissioners**

Office of the County Engineer

412 SE 25th Ave.
Ocala, FL 34471
Phone: 352-671-8686
Fax: 352-671-8687

May 27, 2025

KITTELSON & ASSOCIATES
KOK WAN MAH
225 E. ROBINSON STREET, #355
ORLANDO, FL 32801

SUBJECT: TRAFFIC METHODOLOGY APPROVAL LETTER
PROJECT NAME: SANDY CLAY PUD
PROJECT #2022110021 APPLICATION: #32572 PARCEL #37896-000-00

Dear Kok Wan,

The Traffic Methodology dated May 15, 2025 for the above referenced project was approved by Marion County on May 27, 2025. Please submit the Traffic Study in accordance with this approved Methodology.

Feel free to contact the Office of the County Engineer at (352) 671-8686 or DevelopmentReview@marionfl.org should you have questions.

Sincerely,

Your Development Review Team
Office of the County Engineer

TECHNICAL MEMORANDUM

May 15, 2025

Project# 31370

To: Michael Olson

Taylor Morison Tampa

10210 Highland Manor Drive, Suite 400A

Tampa, FL 33610

From: Kok Wan Mah, PE; Misbaou Bah

RE: Sandy Clay Property – Methodology

Introduction and Project Description

This technical memorandum provides a recommended Transportation Impact Study (TIS) methodology for the proposed Sandy Clay Property project located in Marion County, Florida, on the northeast corner of SE 92nd Loop and SE 110th Street Road. The site consists of the following parcel IDs: 37896-000-00 and 37896-000-01, on 119.69 acres. The proposed project includes up to 442 single family residential units.

The development will be constructed in a single phase with an anticipated buildout year of 2028. Access to the proposed property will be three (3) driveways, one full access driveway on SE 110th Street Road, a northern left/right-in with a right-out access on SE 92nd Loop and a southern right-in/right-out emergency access on SE 92nd loop. **Figure 1** shows the location of the proposed site. The site plan is found in **Appendix A**.

The proposed methodology is based on the requirements contained in the *Marion County Traffic Impact Analysis Guidelines*.



Site Vicinity Map & Study Area
Bellevue, Florida

Figure
1

Trip Generation

The trip generation analysis was conducted using information published by the *Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition*. **Table 1** summarizes the resulting trip generation analysis for the total weekday daily, weekday AM and Weekday PM peak hour vehicles trip generation for the proposed development. As the development is anticipated to consist of a single land use group (residential), no internal capture or pass-by trips would be generated by the site.

Table 1: Project Trip Generation

Land Use	ITE Code	Intensity	Weekday Daily Trips	AM Peak Period			PM Peak Period		
				In	Out	Total	In	Out	Total
Single-Family Detached Housing	210	442 DU	3,960	72	216	288	253	149	402

The proposed development is expected to generate 3,960 new daily trip ends, 288 new AM peak hour trips, and 402

new PM peak hour trips for the buildout condition. The ITE Trip Generation summary sheets can be found in **Appendix B**.

Trip Distribution & Assignment

The project trip distribution and assignment were estimated based on a select zone analysis using the Central Florida Regional Planning Model (CFRPM), Version 7, project driveway distribution, and local traffic patterns. The models provide a macroscopic assignment of project trips within the study area. The model plot is included in **Appendix D**.

The CFRPM depicts approximately 38.8% of project traffic travels to/from the north on SE 92nd Loop, 39.8% of project traffic travels to/from the south on SE 92nd Loop, 7.1% of project traffic travels to/from the west on SE 110th Street Road and 14.3% of project traffic travels to/from the east of SE 110th Street Road. **Figure 2, Figure 3, and Figure 4**, summarize the proposed distribution and trip assignment.

Planned and Programmed Improvements

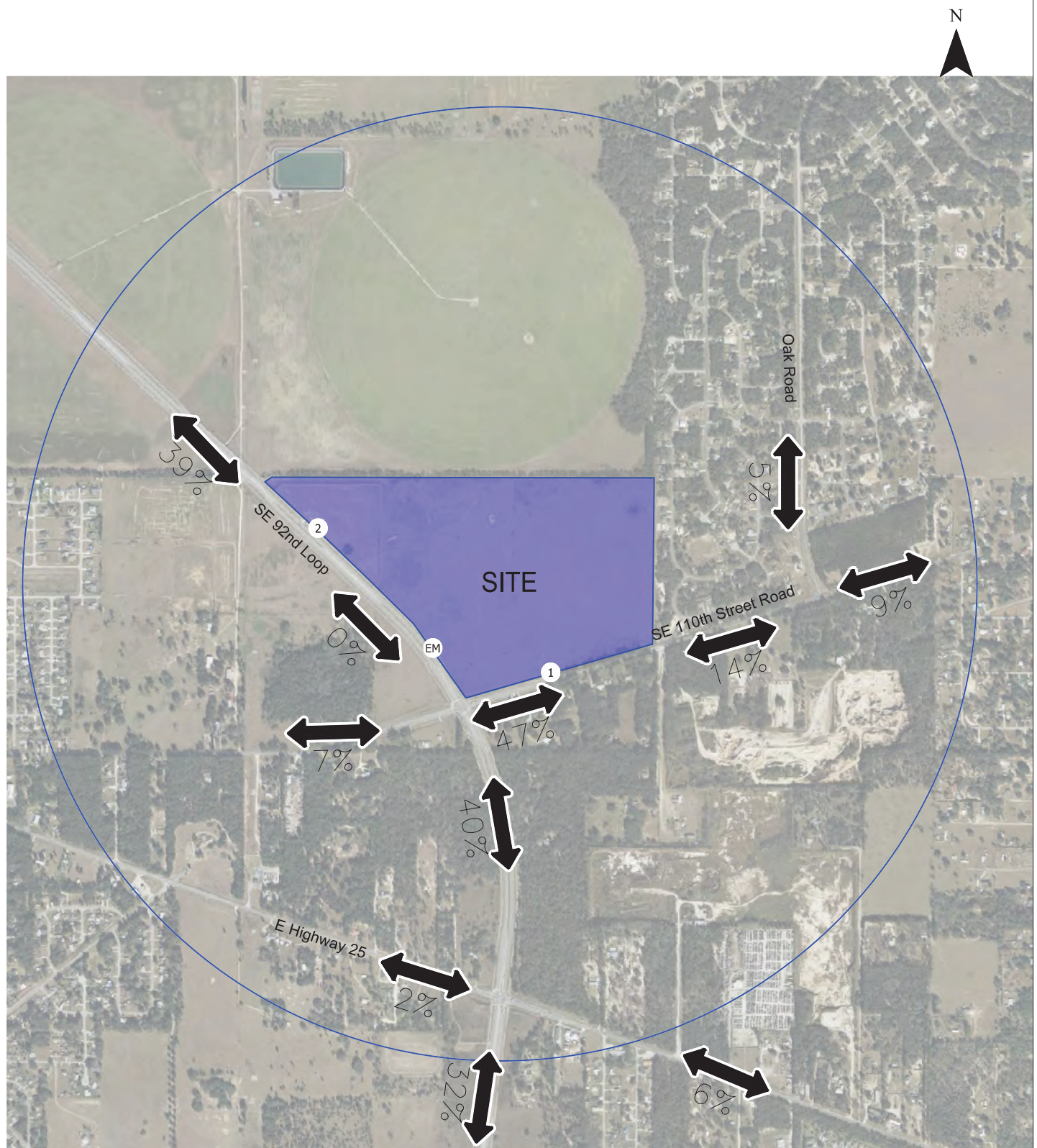
The extension of Emerald Road from existing Emerald Road to SE 92nd Loop will be considered for future conditions as a two-lane road. It is assumed that the intersection of SE 92nd Loop at Emerald Road will be signalized.



- ## Proposed Site Entry Trip Distribution Bellevue, Florida

Figure
2

C:\Users\mbah\Downloads\Downloads\31370 Sandy Clay Methodology Figs_2.dwg Apr 24, 2025 - 11:06pm - mbah Layout Tab: Fig02_Ent_Dist



(X) - Site Accesses

(EM) - Emergency Access

(O) - Study Area

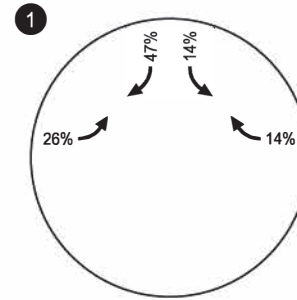
XX% - Trip Distribution Percentage

Proposed Site Exit Trip Distribution
Belleview, Florida

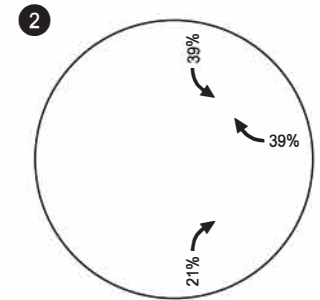
Figure
3



SE 110th Street Road & Access 1



SE 92nd Loop & Access 2



- (X) - Site Accesses
- (EM) - Emergency Access
- ↷ - Site Accesses Trip Distribution

Accesses Entry/Exit Project Trip Distribution
Bellevue, Florida

Figure
4

Study Area Determination

Per *Marion County Traffic Impact Analysis Guidelines*, a study area for a Traffic Study level of analysis includes public roadways where the net new project's traffic consumes at least three (3) percent of the maximum service volume based on the adopted level of service. **Table 2** presents the project's significance review. Roadway segment maximum service volumes and the existing traffic counts were obtained from the Ocala Marion Congestion Management Process (CMP), dated August 2023, included in **Appendix C**. Project trips were calculated using trips generated by the proposed development and trip distribution presented in previous sections.

Based on the expected trip generation, distribution, assignment, and significance review, it is recommended that the following roadway segment and intersections be evaluated in the TIA.

Roadway segments:

- SE 92nd Loop
 - SR 35 to Access 2
 - Access 2 to SE 110th Street Road
 - SE 110th Street Road to CR 25
 - CR 25 to US 441
- SE 110th Street Road
 - CR 25 to SE 92nd Loop
 - SE 92nd Loop to Access 1
 - Access 1 to Oak Road
 - Oak Road to CR 464
- US 441
 - SE 147 Place to SE 92nd Place Loop
 - SE 92nd Place Road to SE 73rd Street
- SE 92nd Place Road
 - US 441 to SR 35

Intersections:

1. SE 92nd Loop at SE 110th Street Road (Signalized)
2. SE 92nd Loop at Access 2 (Stop Controlled)
3. SE 92nd Loop at CR 25 (Signalized)
4. SE 110th Street Road at Access 1 (Stop Controlled)
5. SR 35 at SE 92nd Place Road (Signalized)
6. Oak Road at SE 110th Street Road (Stop controlled)
7. US 441 at SE 132nd Street Road (Signalized)
8. US 441 at SE 92nd Place Road (Signalized)
9. SE 92nd Loop at Emerald Road (future connection and signal)

Counts from the intersection turning movements will be used to develop existing baseline volumes.

Table 2. Project Trip Significance

Segment ID	Road Name	From/To	Lanes	Func. Class	Flow	Daily Capacity	Peak hour Dir Capacity	2023 AADT	2023 PHPD Volume*	% of Project Trips	#PM Project Trips	Project Sig	v/c	Significant	Adjacent to Site?	In Study Area
1010	SE 92 LOOP	SR 35 to Access 2	4	Arterial	Interrupted	35,820	1,800	12,500	623	39%	99	5.50%	0.35	Yes	Yes	Yes
1010	SE 92 LOOP	Access 2 to SE 110 ST RD	4	Arterial	Interrupted	35,820	1,800	12,500	623	21%	53	2.94%	0.35	No	Yes	Yes
1010	SE 92 LOOP	SE 110 St Road to CR 25	4	Arterial	Interrupted	35,820	1,800	12,500	623	40%	101	5.61%	0.35	Yes	No	Yes
1010	SE 92 LOOP	CR 25 to US 441	4	Arterial	Interrupted	35,820	1,800	12,500	623	32%	81	4.50%	0.35	Yes	No	Yes
3840.1	SE 110 ST RD	CR 25 to SE 92 Lp	2	Collector	Interrupted	15,930	792	3,400	170	7%	17	2.15%	0.21	No	No	Yes
3840.1	SE 110 ST RD	SE 92 Lp to Access 1	2	Collector	Interrupted	15,930	792	3,400	170	47%	119	15.03%	0.21	Yes	Yes	Yes
3840.1	SE 110 ST RD	Access 1 to Oak Rd	2	Collector	Interrupted	15,930	792	3,400	170	14%	35	4.42%	0.21	Yes	Yes	Yes
3850.1	SE 110 ST RD	Oak Rd to CR 464	2	Collector	Uninterrupted	29,340	1,449	3,400	170	10%	25	1.73%	0.12	No	No	Yes
5090.1	SR 35	SE 92nd Pl to Laurel Rd	4	Arterial	Interrupted	58,485	3,056	27,600	1,376	14%	35	1.15%	0.45	No	No	No
5080.1	SR 35	SR 25 to SE 92nd Pl	4	Arterial	Interrupted	32,970	1,722	12,700	633	1%	2	0.12%	0.37	No	No	No
6750.2	US 441	CR 25A to US 301	4	Arterial	Interrupted	38,430	1,901	18,300	912	0%	0	0.00%	0.48	No	No	No
6750.4	US 441	SE 92 Place Lp to CR 25A	4	Arterial	Uninterrupted	38,430	1,901	18,200	907	1%	2	0.11%	0.48	No	No	No
6770	US 441	US 301 to CR 484	4	Arterial	Interrupted	38,430	1,901	27,800	1,386	0%	0	0.00%	0.73	No	No	No
6780	US 441	CR 484 to SE 110 ST	4	Arterial	Interrupted	38,430	1,901	27,800	1,386	0%	0	0.00%	0.73	No	No	No
6790	US 441	SE 110 ST to SE 92 PL RD	4	Arterial	Interrupted	38,430	1,901	27,800	1,386	4%	10	0.53%	0.73	No	No	No
6840	US 441	SE 92 PL Rd to SE 73 ST	4	Arterial	Interrupted	38,430	1,901	27,800	1,386	14%	35	1.84%	0.73	No	No	Yes
1100.4	CR 25	SE 108 Ter Rd to SE 92 PL Loop	2	Collector	Interrupted	15,930	792	7,000	349	6%	15	1.89%	0.44	No	No	No

Segment ID	Road Name	From/To	Lanes	Func. Class	Flow	Daily Capacity	Peak hour Dir Capacity	2023 AADT	2023 PHPD Volume*	% of Project Trips	#PM Project Trips	Project Sig	v/c	Significant	Adjacent to Site?	In Study Area
1110.4	CR 25	SE 92 PL Loop to SE 110 ST	2	Collector	Interrupted	15,930	792	9,900	494	2%	5	0.63%	0.62	No	No	No
3830.1	CR 25	SE 110 ST to SR 35	2	Collector	Interrupted	15,930	792	9,900	494	7%	17	2.27%	0.62	No	No	No
3590.1	OAK Rd	SE 110 ST to CR 464	2	Collector	Uninterrupted	29,340	1,449	6,000	299	5%	12	0.83%	0.21	No	No	No
1770	CR 464	Oak Rd to Emerald RD N	4	Arterial	Interrupted	35,820	1,800	15,600	778	0%	0	0.00%	0.43	No	No	No
1790	CR 464	Emerald RD S to SE 110 ST	4	Arterial	Interrupted	35,820	1,800	9,300	464	0%	0	0.00%	0.26	No	No	No
4550	SE 92 PL RD	US 441 to SR 35	2	Arterial	Interrupted	12,744	634	10,900	543	17%	43	6.78%	0.86	Yes	No	Yes
2240	SR 25	US 441 to Baseline Rd	2	Arterial	Interrupted	22,785	1,124	10,500	524	6%	15	1.33%	0.47	No	No	No
7165	SE 132 ST Rd	CR 484 to US 301	4	Arterial	Interrupted	35,820	1,800	14,200	708	5%	13	0.72%	0.39	No	No	No
7170	SE 132 ST Rd	US 301 to US 441	4	Arterial	Interrupted	35,820	1,800	15,100	753	12%	30	1.67%	0.42	No	No	No
6740	US 441	SE 147 PL to SE 92 PL Lp	4	Arterial	Interrupted	38,430	1,901	33,300	1,660	19%	48	2.52%	0.87	No	No	Yes

*D -factor of 0.09 and K-Factor of 0.554 were applied to the AADT based on FDOT count station site 367020 to develop the PHPD Volumes.

FUTURE VOLUMES BUILDOUT (2028)

Traffic counts will be collected at the study intersections, including heavy vehicles percentages. The seasonal factor will be applied to existing peak hour data. If the seasonal factor is less than 1.0, then the counts will not be seasonally adjusted.

Historical average annual daily traffic (AADT) volumes along the study roadways were initially reviewed using data from the Ocala Marion Transportation Planning Organization (TPO) Database, as included in **Appendix C**. A composite growth rate of **2.43%** annually was determined, as shown in **Table 3**, and will be applied for future conditions analysis for all study roadway segments. The calculated composite annual average is based on the weighted average growth rate for the study area roadways published in the Ocala Marion CMP Database. **Table 3** presents the calculation of the composite rate.

Table 3: Growth Rate Determination

Segment	Limits	2023 AADT	Annual Growth Rate	Weighted Growth
SE 92 LOOP	SR 35 to US 441	12,500	1.60%	600
SE 92 Place Road	US 441 to SR 35	11,300	13.10%	4,441
SR 35	SE 92 PL to Laurel Rd	27,500	1.50%	1,238
SE 110 ST RD	SE 92 PL Lp to Oak Rd	3,300	3.50%	347
Composite Annual Average Growth Rate				2.43%

In addition to the annual growth rate, the following future vested trips will be accounted for in the development of traffic volumes:

- AR 29582 – Carissa Oaks
- AR 27902 – Central Florida RV Park at CR 25
- AR 27932 – C-25 Group Property (C-25 Mixed Use Development)
- AR 30026 – 7-Eleven on SE 92nd Loop at SR 35 (Parcel 37515-004-03)
- Bellehaven Community Development District in Belleview (Parcel 37912-000-00)

A request will be made to Marion County and the City of Belleview Development Services to obtain the above-listed studies.

FUTURE CONDITIONS OPERATIONAL ANALYSIS

The TIS will analyze weekday AM and PM peak hour traffic operations at the following intersections for existing conditions and Future Year 2028 Background (No Build) and Buildout conditions:

- SE 92nd Loop at SE 110th St Rd (Signalized)
- Oak Road at SE 110th St Rd (Stop Controlled)

Site driveways will be analyzed for the AM and PM peak hours for buildout conditions.

Additionally, it will analyze weekday PM peak hour traffic operations at all other intersections within the study area.

The intersection operations analyses will use the HCM 7th Edition methodology included in Synchro 12 software. These analyses will assess overall intersection delay and level of service (LOS), as well as queues, delays, and LOS by movement for the study intersections. Roadway segments will be analyzed for existing and Future Year 2028 No Build and Future Buildout conditions using peak-hour peak-direction roadway capacities published in the Ocala Marion TPO CMP Database 2023. For segments where capacities are not provided in the CMP Database, FDOT Generalized LOS Tables will be used. For roadways or intersections found to be operating deficiently due to the addition of site-generated trips, recommendations will be provided to address the identified deficiencies.

Turn lanes access to the property will be evaluated according to the *FDOT Multimodal Access Management Guidebook* (October 2023): Turn Lanes and U-Turns.

Appendix A | Site Plan

Appendix B | ITE Trip Generation Sheets

Single-Family Detached Housing (210)

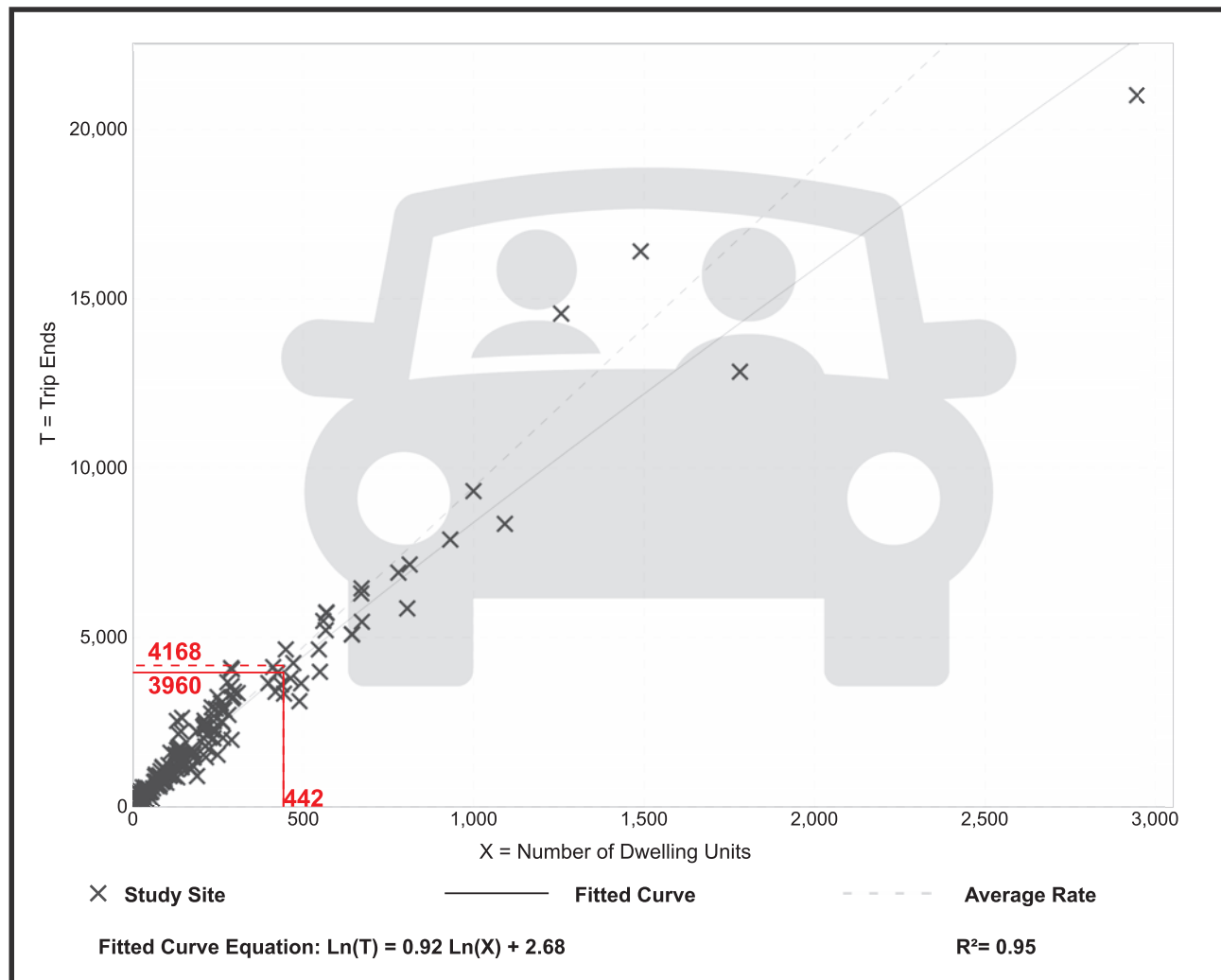
Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

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



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

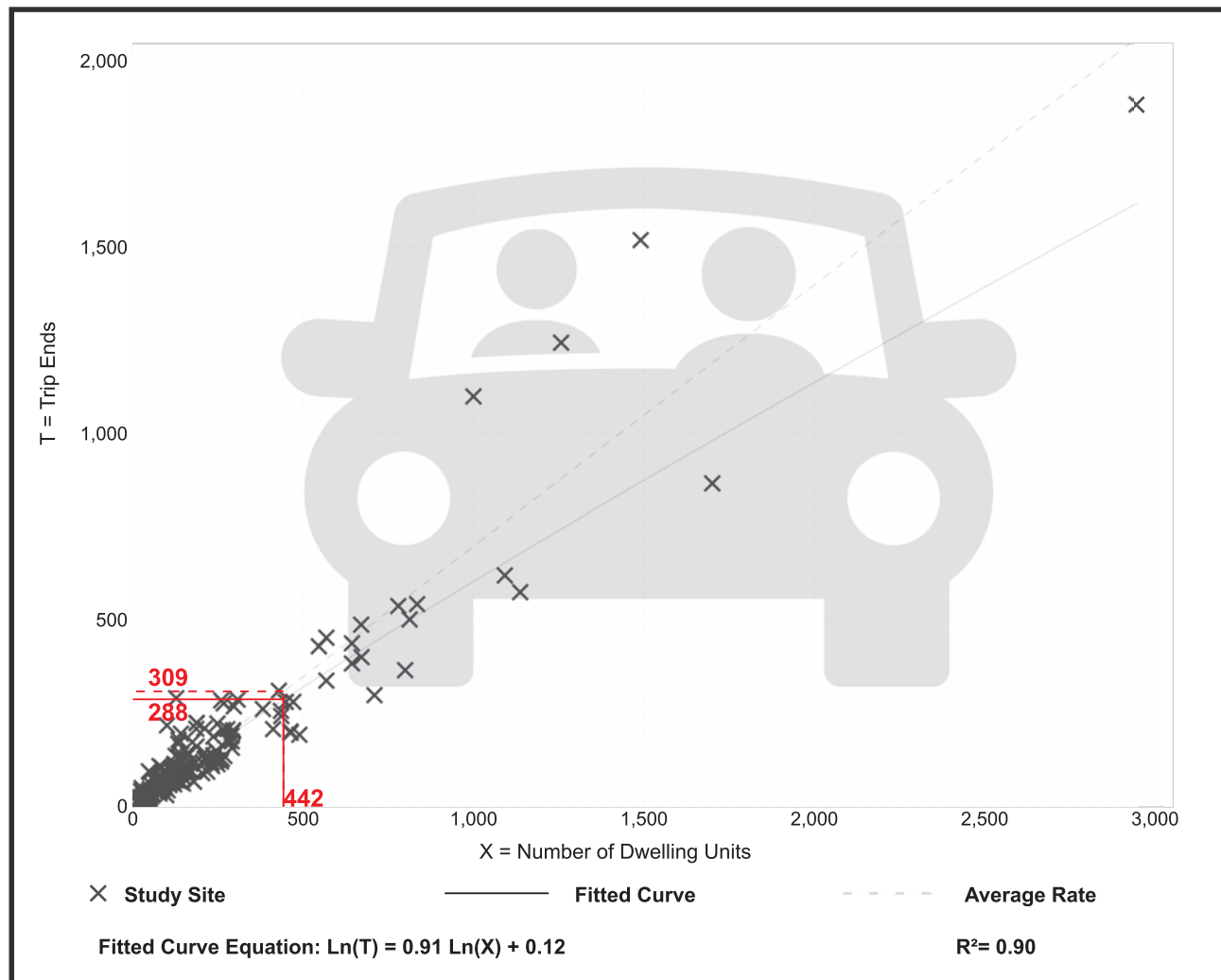
Avg. Num. of Dwelling Units: 226

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

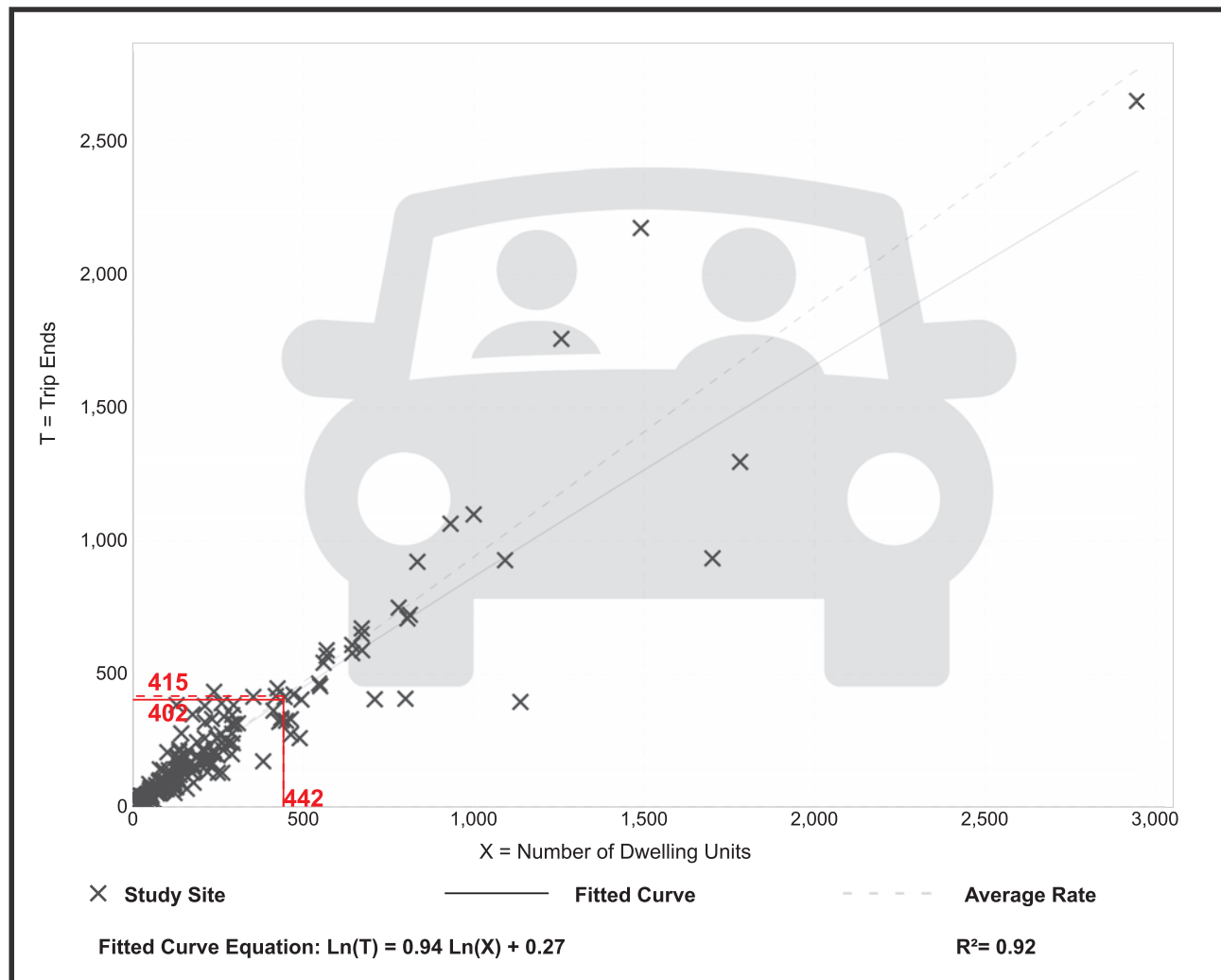
Avg. Num. of Dwelling Units: 248

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

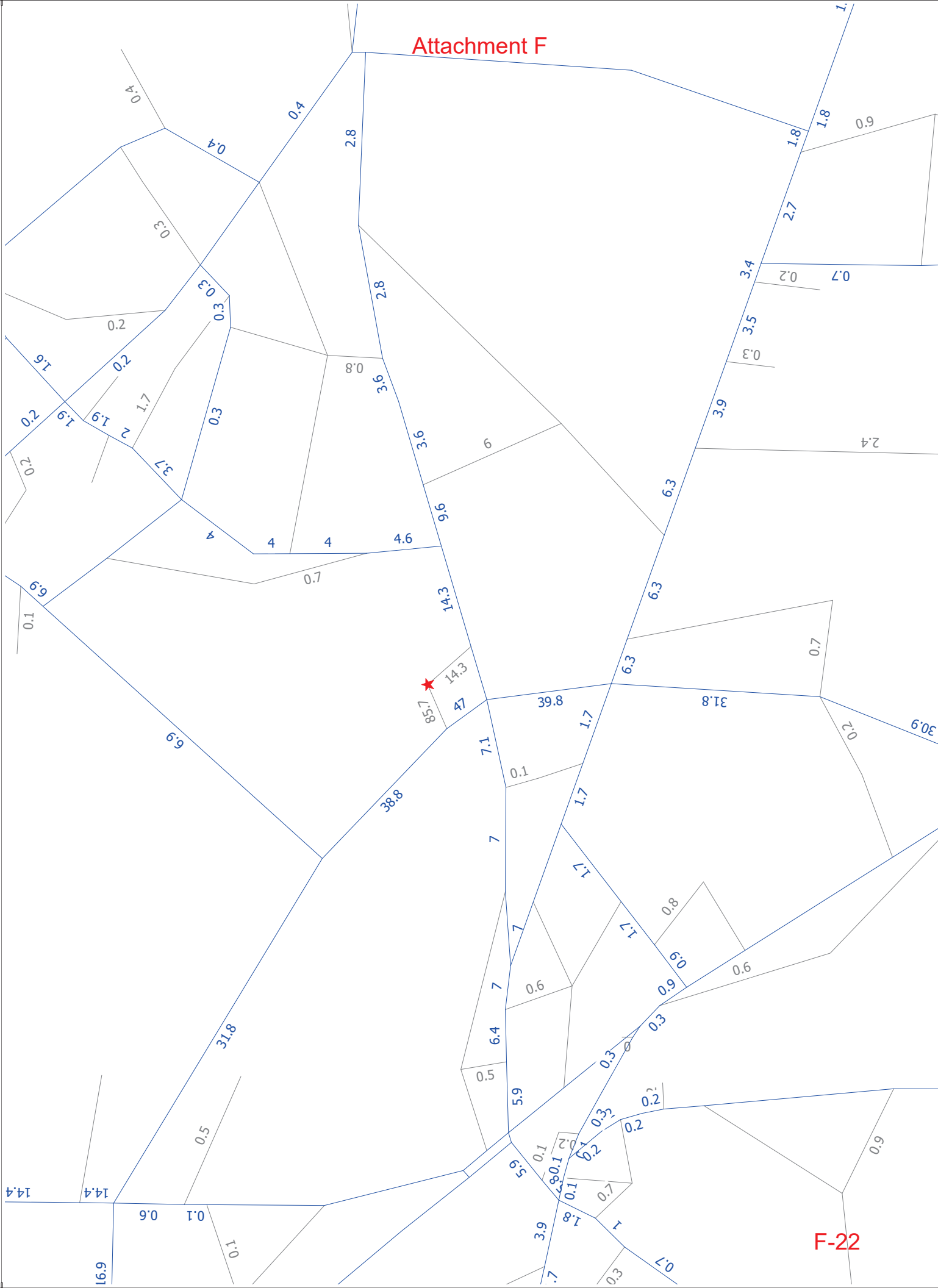
Data Plot and Equation



Appendix C | 2023 Marion County CMP Database

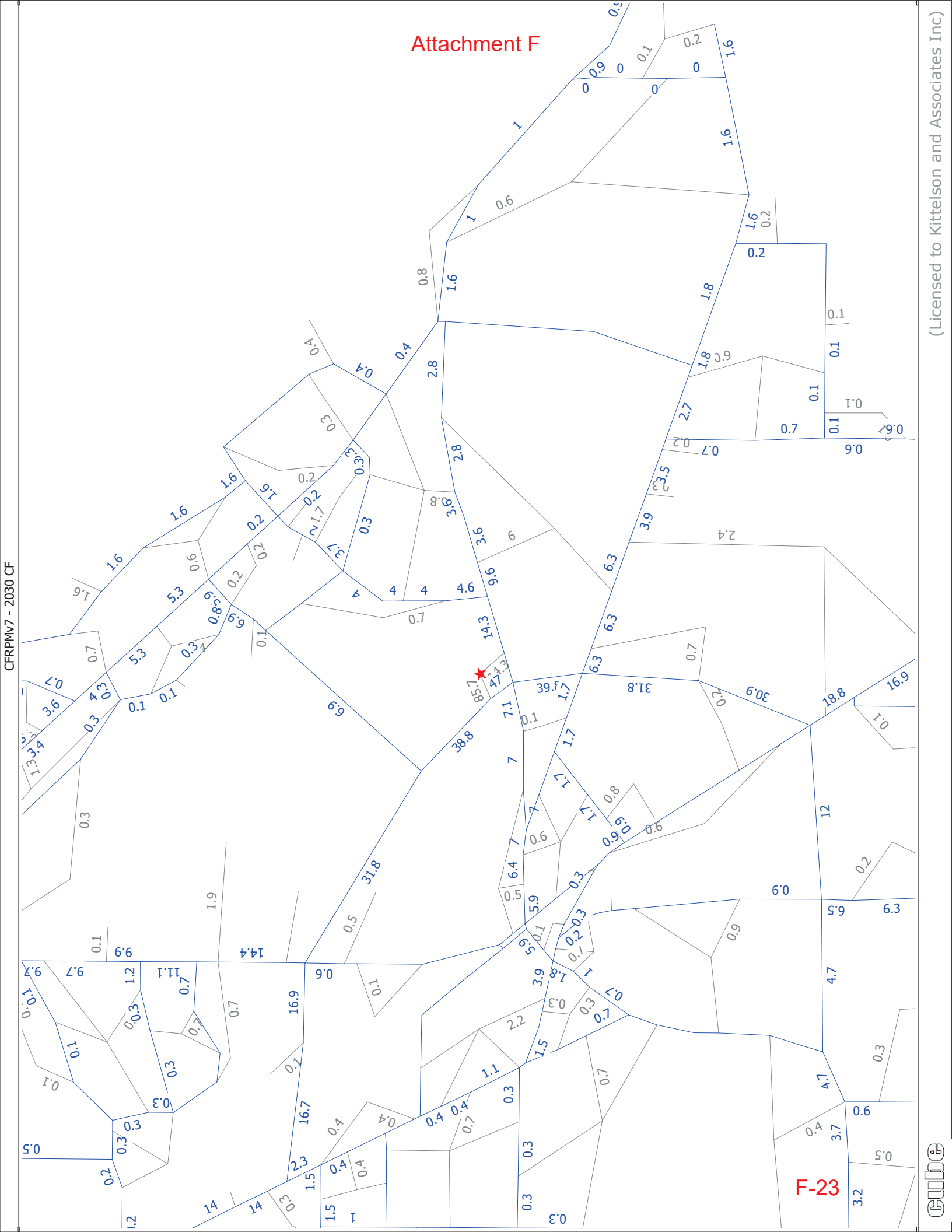
SEGMENT ID	ROAD NAME	FROM	TO	LANES (2023)	FUNCTIONAL CLASSIFICATION	FLOW	FDOT CLASS	DAILY SERVICE VOLUME (2023)	PEAK HOUR DIRECTIONAL SERVICE VOLUME (2023)	LANES (2028)	DAILY SERVICE VOLUME (2028)	PEAK HOUR DIRECTIONAL SERVICE VOLUME (2028)	URBAN / RURAL	DIVIDED / UNDIVIDED	MAINTAINING AGENCY	ADOPTED LOS STANDARD	2023 AADT	2023 DAILY V/MSV	2023 DAILY LOS	GROWTH RATE	2028 AADT	2028 DAILY V/MSV	2028 DAILY LOS
1100.4	CR 25	SE 108 TER RD	SE 92 PL LOOP	2	COLLECTOR	UNINTERRUPTED		29,340	1,449	2	29,340	1,449	Urban	U	COUNTY	E	7,000	0.24	B	6.27%	9,500	0.32	B
1110.4	CR 25	SE 92 PL LOOP	SE 110 ST	2	COLLECTOR	UNINTERRUPTED		29,340	1,449	2	29,340	1,449	Urban	U	COUNTY	E	9,900	0.34	B	1.00%	10,400	0.35	B
3830.1	CR 25	SE 110 ST	SR 35	2	COLLECTOR	UNINTERRUPTED		30,807	1,521	2	30,807	1,521	Urban	D	COUNTY	E	9,900	0.32	B	1.00%	10,400	0.34	B
1770	CR 464	EMERALD RD (N)	OAK RD	4	ARTERIAL	INTERRUPTED	1	35,820	1,800	4	35,820	1,800	Urban	D	COUNTY	E	15,600	0.44	C	2.09%	17,300	0.48	C
1790	CR 464	EMERALD RD (S)	SE 110 ST	4	ARTERIAL	INTERRUPTED	1	35,820	1,800	4	35,820	1,800	Urban	D	COUNTY	E	9,300	0.26	C	1.86%	10,200	0.28	C
3590.1	OAK RD	SE 110 ST	CR 464	2	COLLECTOR	UNINTERRUPTED		29,340	1,449	2	29,340	1,449	Urban	U	COUNTY	E	6,000	0.2	B	12.82%	10,900	0.37	C
3840.1	SE 110 ST RD	CR 25	OAK RD	2	COLLECTOR	UNINTERRUPTED		29,340	1,449	2	29,340	1,449	Urban	U	COUNTY	E	3,400	0.12	B	1.00%	3,600	0.12	B
3850.1	SE 110 ST RD	OAK RD	CR 464	2	COLLECTOR	UNINTERRUPTED		29,340	1,449	2	29,340	1,449	Urban	U	COUNTY	E	3,400	0.12	B	1.00%	3,600	0.12	B
7165	SE 132 ST RD	CR 484	US 301	4	ARTERIAL	INTERRUPTED	1	35,820	1,800	4	35,820	1,800	Urban	D	COUNTY	E	14,200	0.4	C	3.93%	17,300	0.48	C
7170	SE 132 ST RD	US 301	US 441	4	ARTERIAL	INTERRUPTED	1	35,820	1,800	4	35,820	1,800	Urban	D	COUNTY	E	15,100	0.42	C	7.33%	21,600	0.60	C
9999	SE 92 LOOP	CR 25	SE 110 ST RD	4	COLLECTOR	INTERRUPTED	1	35,820	792	4	35,820	1,800	Urban	D	COUNTY	E	Not Counted	N/A	N/A	1.00%	Not Counted	N/A	N/A
4550	SE 92 PL RD	US 441	SR 35	2	ARTERIAL	INTERRUPTED	1	12,744	634	2	12,744	634	Urban	U	COUNTY	E	10,900	0.86	C	5.00%	13,900	1.09	F
1010	SE 92 PLACE LOOP	SR 35	US 441	4	ARTERIAL	UNINTERRUPTED		67,770	3,357	4	67,770	3,357	Urban	D	COUNTY	E	12,400	0.18	B	1.00%	13,100	0.19	B
2240	SR 25	US 441	BASILINE RD	2	ARTERIAL	INTERRUPTED		22,785	1,124	2	22,785	1,124	Urban	D	STATE	D	10,500	0.46	C	1.00%	11,000	0.48	C
5080.1	SR 35	SR 25	SE 92ND PL	4	ARTERIAL	INTERRUPTED		32,970	1,722	4	32,970	1,722	Urban	D	STATE	D	12,700	0.39	C	1.00%	13,400	0.41	C
5090.1	SR 35	SE 92ND PL	LAUREL RD	4	ARTERIAL	INTERRUPTED		58,485	3,056	4	58,485	3,056	Urban	D	STATE	D	27,600	0.47	B	4.27%	34,100	0.58	C
6740	US 441	SE 147 PL	SE 92 PLACE LOOP	4	ARTERIAL	INTERRUPTED		38,430	1,901	4	38,430	1,901	Urban	D	STATE	D	33,300	0.87	D	1.00%	35,000	0.91	D
6750.2	US 441	CR 25A	US 301	4	ARTERIAL	INTERRUPTED		38,430	1,901	4	38,430	1,901	Urban	D	STATE	D	18,300	0.48	C	1.00%	19,200	0.50	C
6750.4	US 441	SE 92 PLACE LOOP	CR 25A	4	ARTERIAL	UNINTERRUPTED		38,430	1,901	4	38,430	1,901	Urban	D	STATE	D	18,200	0.47	C	1.00%	19,100	0.50	C
6770	US 441	US 301	CR 484	4	ARTERIAL	INTERRUPTED		38,430	1,901	4	38,430	1,901	Urban	D	STATE	D	27,800	0.72	C	1.00%	29,200	0.76	C
6780	US 441	CR 484	SE 110 ST	4	ARTERIAL	INTERRUPTED		38,430	1,901	4	38,430	1,901	Urban	D	STATE	D	27,800	0.72	C	1.00%	29,200	0.76	C
6790	US 441	SE 110 ST	SE 92 PL RD	4	ARTERIAL	INTERRUPTED		38,430	1,901	4	38,430	1,901	Urban	D	STATE	D	27,800	0.72	C	1.00%	29,200	0.76	C
6840	US 441	SE 92 PL RD	SE 73 ST	4	ARTERIAL	INTERRUPTED		38,430	1,901	4	38,430	1,901	Urban	D	STATE	D	27,800	0.72	C	1.13%	29,400	0.77	C

Appendix D | Model Plots



Attachment F

F-22



Attachment F

F-23

