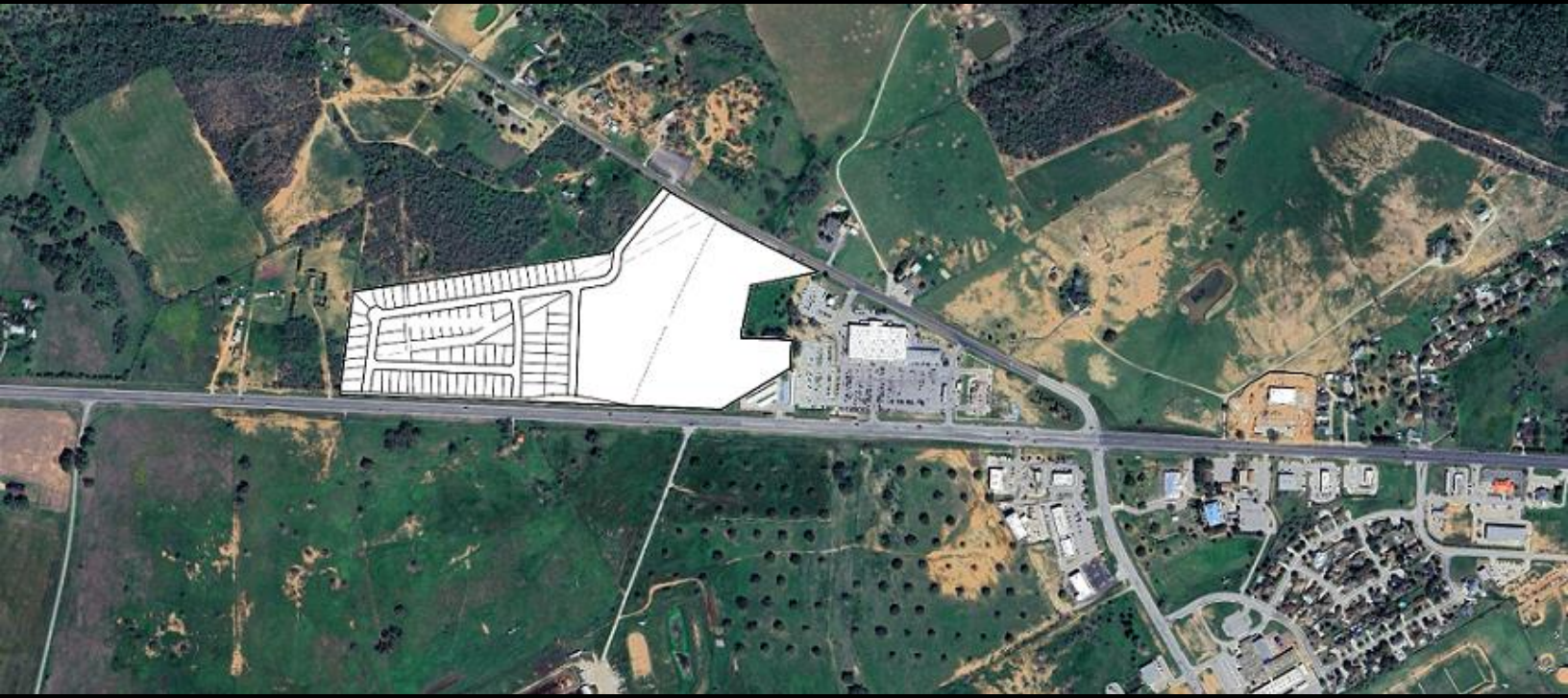


TRAFFIC IMPACT ANALYSIS

NP Homes Subdivision

US Highway 87

La Vernia, Texas



Prepared for: Intrepid Surveying & Engineering
109 Dilworth Plaza
Poth, Texas 78147

Prepared by: AC Group, LLC
5828 Sebastian Place, Suite 108
Seguin, Texas 78249

March 28, 2024
Project No. 2024000800



3/28/24



Texas TBPE Firm No. F-11727

TRAFFIC IMPACT ANALYSIS

**NP Homes Subdivision
La Vernia, Texas**

**March 2024
Version 1**

Prepared by:



**AC Group, LLC
5828 Sebastian Place, Ste. 108
Seguin, Texas 78249
(210) 535-3558
TBPE Firm Registration No. F-11727**

EXECUTIVE SUMMARY

Project Description

As required by the Texas Department of Transportation (TxDOT), a Traffic Impact Analysis (TIA) has been prepared on behalf of Intrepid Surveying & Engineering for the proposed NP Homes Subdivision to be located along US Highway 87 and FM 1346 in La Vernia, Texas. The proposed NP Homes Subdivision will include as many as 81 Single-Family Residential (ITE Code: 210) lots and as many as 220 Multi-family (ITE Code: 220) residential units. The proposed subdivision would generate 145 morning peak hour trips and 188 evening peak hour trips.

Access Driveways

Access to the proposed NP Homes Subdivision will include three proposed driveways along US Highway 87 and one proposed driveway along FM 1346. The three proposed driveways along US Highway 87 will be located approximately 4,115' (Driveway No. 1), 3,260' (Driveway No. 2), and 2,920' (Driveway No. 3) west of FM 1346. The one proposed driveway along FM 1346 will be located approximately 2,850' (Driveway No. 4) north of US Highway 87.

Traffic Impact Analysis

Based on trip generation and distribution projections for the proposed NP Homes Subdivision, it is not anticipated that trips entering or exiting the proposed subdivision would have a significant impact on the surrounding roadway system, specifically US Highway 87 and FM 1346.

Turn Lane Analysis

Table 2-3 of the TxDOT *Access Management Manual* requires that a left or right-turn lane be installed when turn volumes exceed 50 vehicles per hour in a 45 mile per hour (or greater) speed zone and 60 vehicles per hour in speed zones less than 45 miles per hour. US Highway 87 and FM 1346 both have a posted speed limit of 45 miles per hour in the vicinity of the proposed development; therefore the 50 vehicle per hour threshold was used for the determination of turn lane requirements. Based on entering and exiting trip projects, none of the proposed access intersections are forecasted to exceed the 50 vehicle per hour threshold and would not be required turn lane installations.

TRAFFIC IMPACT ANALYSIS

NP Homes Subdivision La Vernia, Texas

PROJECT SCOPE

As required by the Texas Department of Transportation (TxDOT), a Traffic Impact Analysis (TIA) has been prepared on behalf of Intrepid Surveying & Engineering for the proposed NP Homes Subdivision to be located along US Highway 87 and FM 1346 in La Vernia, Texas. The proposed NP Homes Subdivision will include as many as 81 Single-Family Residential (ITE Code: 210) lots and as many as 220 Multi-family (ITE Code: 220) residential units. The proposed subdivision would generate 145 morning peak hour trips and 188 evening peak hour trips. Figure 1 below shows a location map for the proposed NP Homes Subdivision at the intersection of US Highway 87 and FM 1346 in La Vernia, Texas.

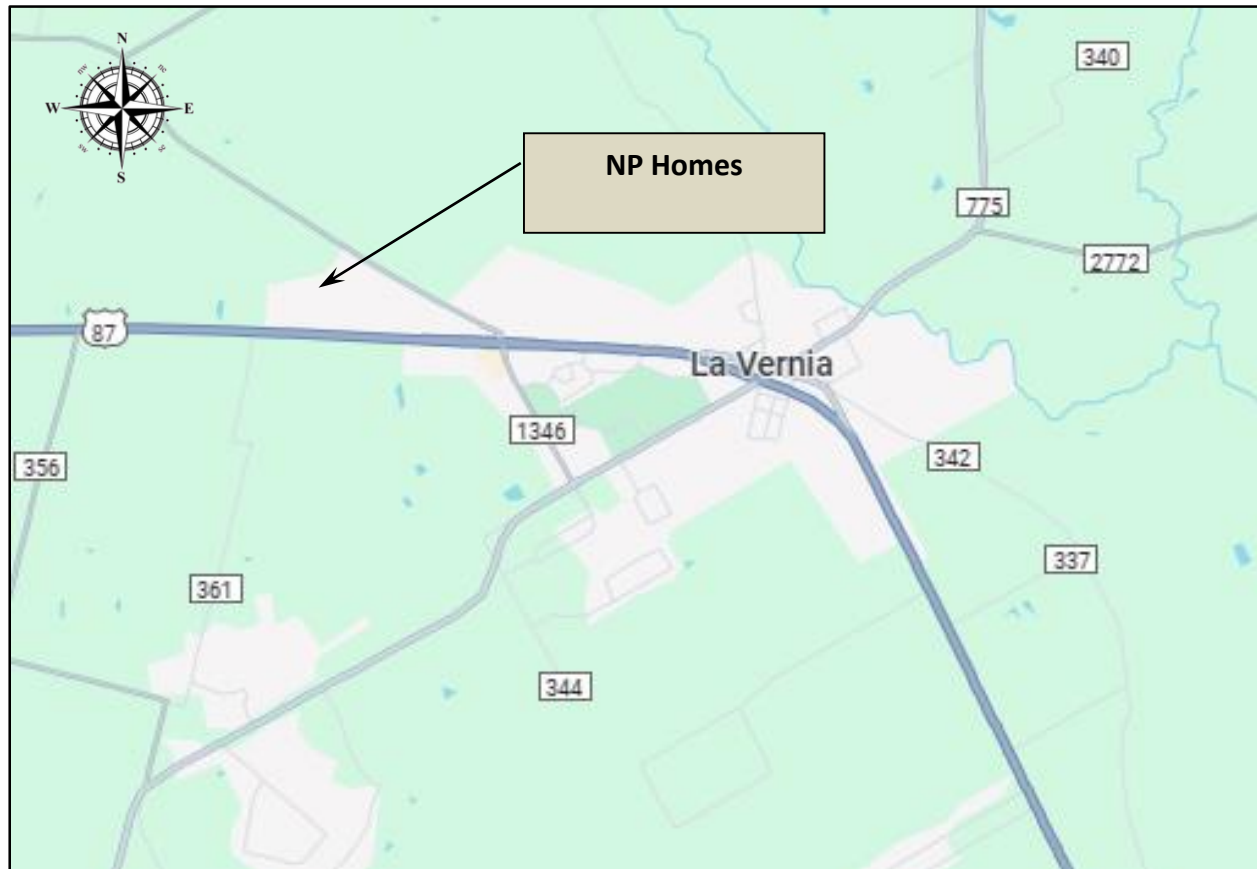


Figure 1. Location Map for the Proposed NP Homes Subdivision

Access to the proposed NP Homes Subdivision will include three proposed driveways along US Highway 87 and one proposed driveway along FM 1346. The three proposed driveways along US Highway 87 will be located approximately 4,115' (Driveway No. 1), 3,260' (Driveway No. 2), and 2,920' (Driveway No. 3) west of FM 1346. The one proposed driveway along FM 1346 will be located approximately 2,850' (Driveway No. 4) north of US Highway 87. Figure 2 below shows an aerial location map of the proposed NP Homes Subdivision at US Highway 87 and FM 1346. Figure 3 shows a site layout of the proposed NP Homes Subdivision.



Figure 2. Aerial Location Map for the Proposed NP Homes Subdivision

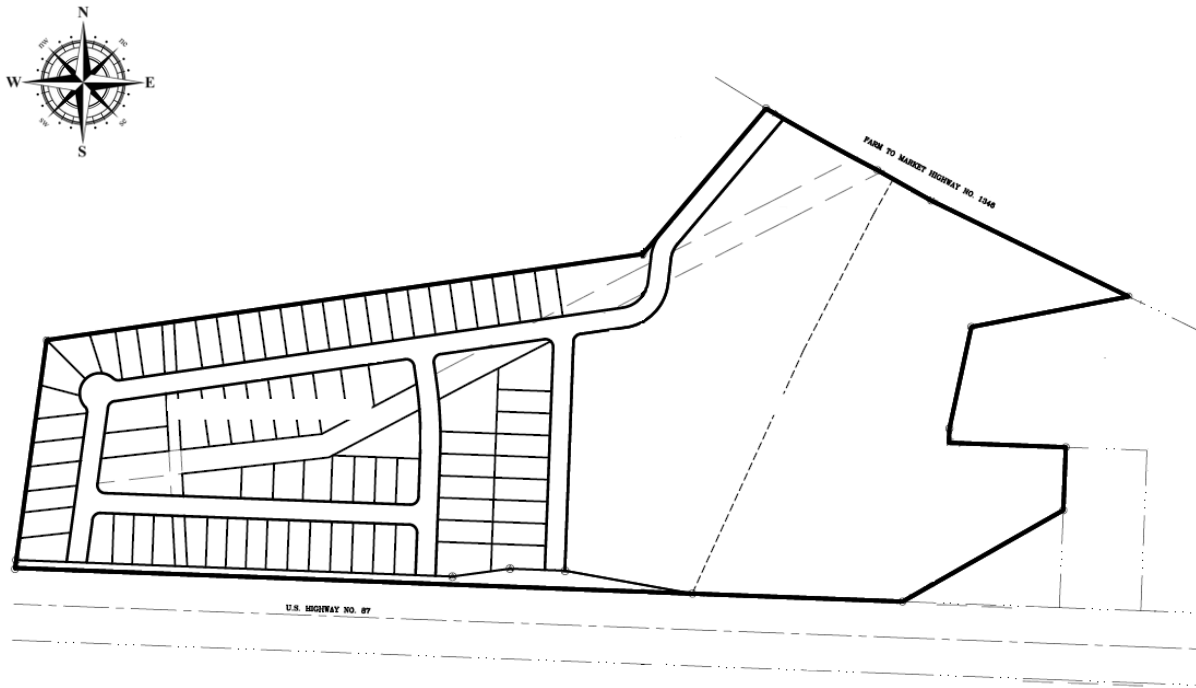


Figure 3. Site Plan for Proposed NP Homes Subdivision with Proposed Driveways

STUDY AREA

The study area for this traffic impact analysis includes each of the proposed access driveways along US Highway 87 and FM 1346. The Texas Department of Transportation (TxDOT) does require a traffic impact analysis during the access permitting process and would include each of the proposed access driveways, as shown in Figure 4 below.

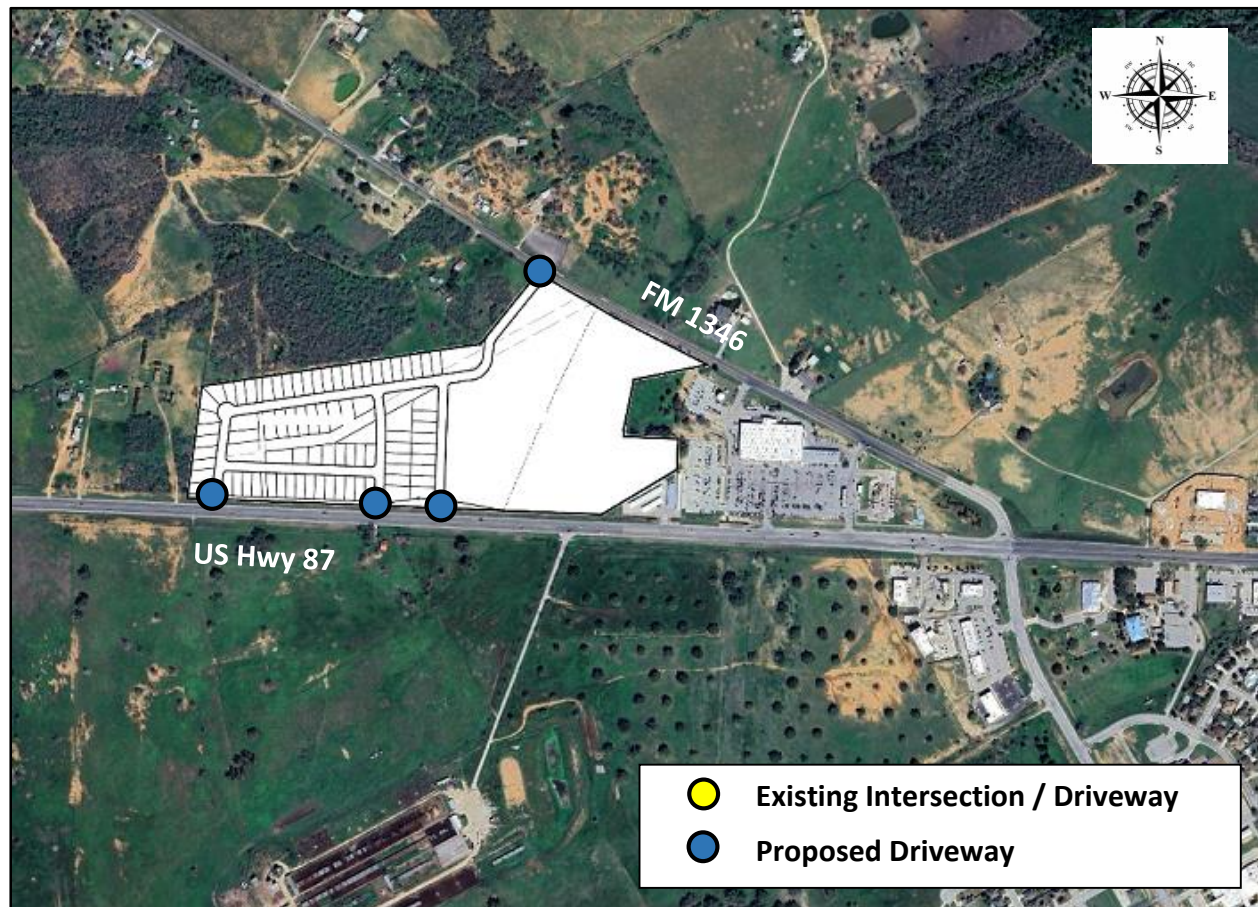


Figure 4. Study Intersections for the Proposed NP Homes Subdivision Traffic Impact Analysis

LAND USE AND ZONING

The proposed NP Homes Subdivision Development is to be located on a site zoned as General Commercial (C-2) and has a legal description of CITY OF LA VERNIA, LOT 101B, ACRES 45.75. The surrounding zoning districts include other General Commercial (C-2) and Single Family Agriculture (R-A) along US Highway 87, as shown in Figure 5 below.

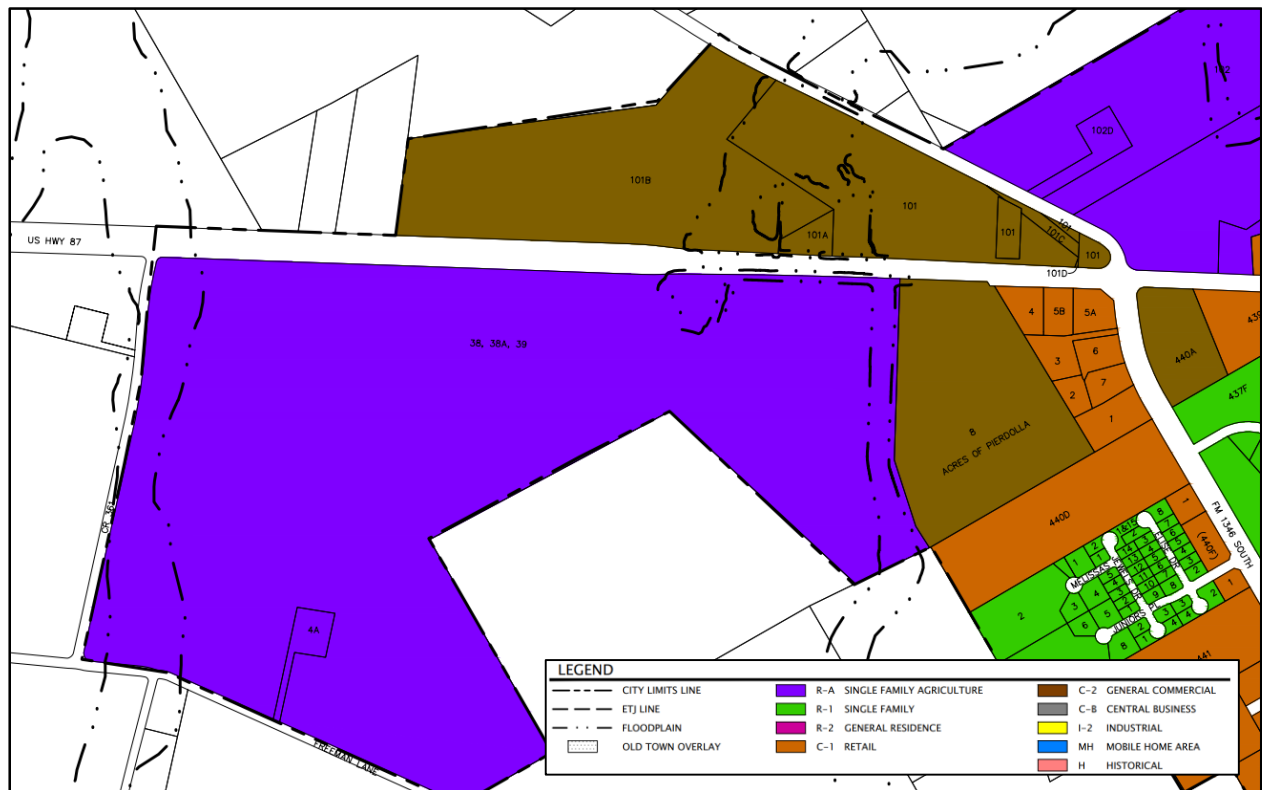


Figure 5. City of La Vernia Zoning in the Vicinity of the Proposed NP Homes Subdivision

EXISTING ROADWAYS

US Highway 87 is an uncurbed 70' wide paved roadway with two 12' lanes in each direction of travel and 11' shoulders. US Highway 87 has no sidewalks and no bicycle lanes in the vicinity of the proposed development. US Highway 87 is classified as an Existing Arterial Street (100' ROW) on the City of La Vernia Master Thoroughfare Plan (October 2019) and has a posted speed limit of 45 miles per hour adjacent to the proposed development. US Highway 87 currently has fair pavement conditions with visible pavement markings. Figure 6 below shows US Highway 87 adjacent to the proposed development. Appendix G includes the City of La Vernia 2019 Master Thoroughfare Plan updated in October 2019.



Figure 6. US Highway87 – Facing east towards FM 1346

FM 1346 is an uncurbed 30' wide paved roadway with one 12' lane in each direction of travel and 3' shoulders. FM 1346 has no sidewalks and no bicycle lanes in the vicinity of the proposed development. FM 1346 is classified as an Existing Arterial Street (100' ROW) on the City of La Vernia Master Thoroughfare Plan (October 2019) and has a posted speed limit of 45 miles per hour adjacent to the proposed development. FM 1346 currently has fair pavement conditions with visible pavement markings. Figure 7 below shows FM 1346 north of US Highway 87 and adjacent to the proposed development.



Figure 7. FM 1346 – Facing North from US Highway 87

ACCESS DRIVEWAYS

Access to the proposed NP Homes Subdivision will include three proposed driveways along US Highway 87 and one proposed driveway along FM 1346. The three proposed driveways along US Highway 87 will be located approximately 4,115' (Driveway No. 1), 3,260' (Driveway No. 2), and 2,920' (Driveway No. 3) west of FM 1346. The one proposed driveway along FM 1346 will be located approximately 2,850' (Driveway No. 4) north of US Highway 87. Figure 8 below shows the location of each of the proposed access driveways along US Highway 87 and FM 1346.

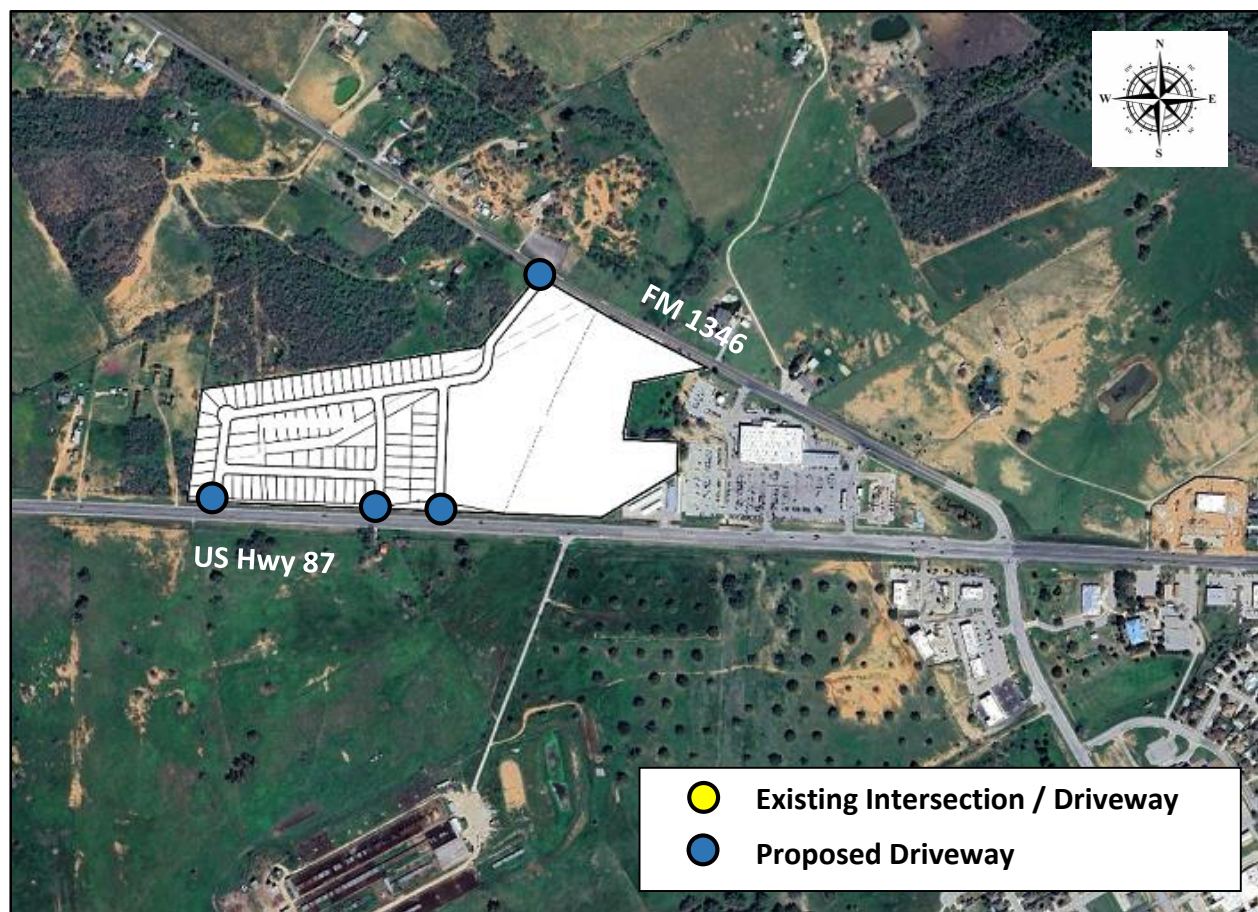


Figure 8. Existing and Proposed Access Driveways for the NP Homes

EXISTING TRAFFIC DATA

The TxDOT Traffic Count Database System (TCDS) shows that US Highway 87 east of FM 1346 had an average daily traffic (ADT) volume of 14,427 vehicles per day in 2020 and 16,809 vehicles per day in 2022. Traffic data count sheets are included in Appendix D.

BACKGROUND TRAFFIC GROWTH

An annual average growth rate (AAGR) was estimated at **8.00%** per year based on historical average daily traffic (ADT) counts available on the Texas Department of Transportation (TxDOT) Traffic Count Database System (TCDS) for 2020 and 2022. Historical average daily traffic data was available for US Highway 87 east of FM 1346. This rate represents the annual average growth rate (AAGR) for the area surrounding in the vicinity of the proposed development. The table below illustrates ADT data for US Highway 87 east of FM 1346.

Table 1. Annual Average Growth Rate for US Highway 87, East of FM 1346

Location	Year	ADT	Rate of Growth	Proposed AAGR (%)
US Hwy 87	2020	14,427	-	
	2022	16,809	0.07940	8.00%

PROJECTED TRAFFIC DATA

Projected traffic volume data may be calculated for a 2025 project completion using a 8.00% annual average growth rate (AAGR), as determined in the previous section. The 2025 projected average daily traffic (ADT) volume for US Highway 87 east of FM 1346 and in the vicinity of the proposed development, was calculated as 21,174 vehicles per day.

TRIP GENERATION

Using the Eleventh Edition of the ITE *TRIP GENERATION MANUAL* reference, the proposed NP Homes Subdivision is projected to generate trips based on the total number of Single-Family Detached Housing (ITE Code: 210) lots and multi-family Housing (ITE Code: 220) units. Table 2 shows projected trip generation trips for the proposed NP Homes Subdivision with 81 single-family residential lots and 220 multifamily housing units.

The ITE Trip Generation Manual describes Single-Family Detached Housing (ITE Code: 210) as a site that includes any single-family detached home on an individual lot. A typical site surveyed is a suburban subdivision.

The ITE Trip Generation Manual describes a Multifamily Housing (Low-Rise) (ITE Code: 220) as housing that includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

- A walkup apartment typically is two or three floors in height with dwelling units that are accessed by a single or multiple entrances with stairways and hallways.
- A mansion apartment is a single structure that contains several apartments within what appears to be a single-family dwelling unit.
- A fourplex is a single two-story structure with two matching dwelling units on the ground and second floors. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.
- A stacked townhouse is designed to match the external appearance of a townhouse. But, unlike a townhouse dwelling unit that only shares walls with an adjoining unit, the stacked townhouse units share both floors and walls. Access to the individual units is typically internal to the structure and provided through a central entry and stairway.

Table 2. ITE Trip Generation for the Proposed NP Homes Subdivision

TRIP GENERATION										
ITE Code	Weekday 24 Hour		Weekday AM Peak		Weekday PM Peak		Saturday 24 Hour		Saturday Peak	
210	Single-Family Detached Housing									
Rate / Lot	9.43		0.70		0.94		9.48		0.92	
Lots	81		81		81		81		81	
Trips	764		57		76		768		75	
% Enter/Exit	50%	50%	26%	74%	63%	37%	50%	50%	54%	46%
# Enter/Exit	382	382	15	42	48	28	384	384	41	34
220	Multifamily Housing (Low Rise)									
Rate / Unit	6.74		0.40		0.51		4.55		0.41	
Units	220		220		220		220		220	
Trips	1,483		88		112		1,001		90	
% Enter/Exit	50%	50%	24%	76%	63%	37%	50%	50%	50%	50%
# Enter/Exit	741	742	21	67	71	41	500	501	45	45
Total Trips	1,123	1,124	36	109	119	69	884	885	86	79
	2,247		145		188		1,769		165	

Source: ITE Trip Generation Manual, Eleventh Edition

TRIP DISTRIBUTION

Trip distribution for the proposed NP Homes Subdivision was based on the surrounding roadway system and anticipated routes to and from the surrounding major highway system, specifically US Highway 87 and FM 1346. Trip distribution for the proposed NP Homes Subdivision was forecasted as 10% from areas west of the proposed development traveling along US Highway 87, 40% from areas east of the proposed development traveling along US Highway 87, 10% from areas north of the proposed development traveling along FM 1346, and 40% from areas south of the proposed development traveling along FM 1346. Table 3 below shows projected trip distribution for trips to be generated by the proposed NP Homes Subdivision to be located on the north-west corner of the US Highway 87 and FM 1346 intersection (west of the HEB retail center) in La Vernia, Texas.

Table 3. Trip Distribution for the Proposed NP Homes Subdivision

TRIP DISTRIBUTION								
	AM Peak				PM Peak			
	EB US 87	WB US 87	NB FM 1346	SB FM 1346	EB US 87	WB US 87	NB FM 1346	SB FM 1346
Enter	10%	40%	40%	10%	10%	40%	40%	10%
	4	14	14	4	12	47	48	12
	36				119			
	EB US 87	WB US 87	NB FM 1346	SB FM 1346	EB US 87	WB US 87	NB FM 1346	SB FM 1346
Exit	40%	10%	10%	40%	40%	10%	10%	40%
	43	11	11	44	277	7	7	28
	109				69			

TURN LANE ANALYSIS

Table 2-3 of the TxDOT *Access Management Manual* requires that a left or right-turn lane be installed when turn volumes exceed 50 vehicles per hour in a 45 mile per hour (or greater) speed zone and 60 vehicles per hour in speed zones less than 45 miles per hour. US Highway 87 and FM 1346 both have a posted speed limit of 45 miles per hour in the vicinity of the proposed development; therefore the 50 vehicle per hour threshold was used for the determination of turn lane requirements.

Proposed Access No. 1 along US Highway 87 has a projected eastbound left-turn volume of 2 vehicles per hour during the morning peak hour and 6 vehicles per hour during the evening peak hour. Based on turning volume criteria, a left-turn lane would NOT be required for proposed Access No. 1 along eastbound US Highway 87.

Proposed Access No. 1 also has a projected westbound right-turn volume of 4 vehicles per hour during the morning peak hour and 12 vehicles per hour during the evening peak hour. Based on turning volume criteria, a right-turn lane would NOT be required for proposed Access No. 1 along westbound US Highway 87.

Proposed Access No. 2 along US Highway 87 has a projected eastbound left-turn volume of 0 vehicles per hour during the morning peak hour and 0 vehicles per hour during the evening peak hour. Based on turning volume criteria, a left-turn lane would NOT be required for proposed Access No. 2 along eastbound US Highway 87.

Proposed Access No. 2 also has a projected westbound right-turn volume of 4 vehicles per hour during the morning peak hour and 12 vehicles per hour during the evening peak hour. Based on turning volume criteria, a right-turn lane would NOT be required for proposed Access No. 2 along westbound US Highway 87.

Proposed Access No. 3 along US Highway 87 has a projected eastbound left-turn volume of 2 vehicles per hour during the morning peak hour and 6 vehicles per hour during the evening peak hour. Based on turning volume criteria, a left-turn lane would NOT be required for proposed Access No. 3 along eastbound US Highway 87.

Proposed Access No. 3 also has a projected westbound right-turn volume of 12 vehicles per hour during the morning peak hour and 47 vehicles per hour during the evening peak hour. Based on turning volume criteria, a right-turn lane would NOT be required for proposed Access No. 3 along westbound US Highway 87.

Proposed Access No. 4 along FM 1346 has a projected northbound left-turn volume of 8 vehicles per hour during the morning peak hour and 24 vehicles per hour during the evening peak hour. Based on turning volume criteria, a left-turn lane would NOT be required for proposed Access No. 4 along northbound FM 1346.

Proposed Access No. 4 also has a projected southbound right-turn volume of 4 vehicles per hour during the morning peak hour and 12 vehicles per hour during the evening peak hour. Based on turning volume criteria, a right-turn lane would NOT be required for proposed Access No. 4 along southbound FM 1346.

CONCLUSION

Based on trip generation and distribution projections for the proposed NP Homes Subdivision, it is not anticipated that trips entering or exiting the proposed subdivision would have a significant impact on the surrounding roadway system, specifically US Highway 87 and FM 1346.

Turn Lane Analysis

Table 2-3 of the TxDOT *Access Management Manual* requires that a left or right-turn lane be installed when turn volumes exceed 50 vehicles per hour in a 45 mile per hour (or greater) speed zone and 60 vehicles per hour in speed zones less than 45 miles per hour. US Highway 87 and FM 1346 both have a posted speed limit of 45 miles per hour in the vicinity of the proposed development; therefore the 50 vehicle per hour threshold was used for the determination of turn lane requirements. Based on entering and exiting trip projects, none of the proposed access intersections are forecasted to exceed the 50 vehicle per hour threshold and would not be required turn lane installations.



Prepared by:

A handwritten signature in blue ink, appearing to read "Rene Arredondo".

Rene Arredondo, P.E., P.T.O.E.

APPENDIX INDEX

Appendix A Site Layout - Exhibit A

Appendix B Aerial Photo – Exhibit B

Appendix C Trip Distribution Exhibits – Exhibits C and D

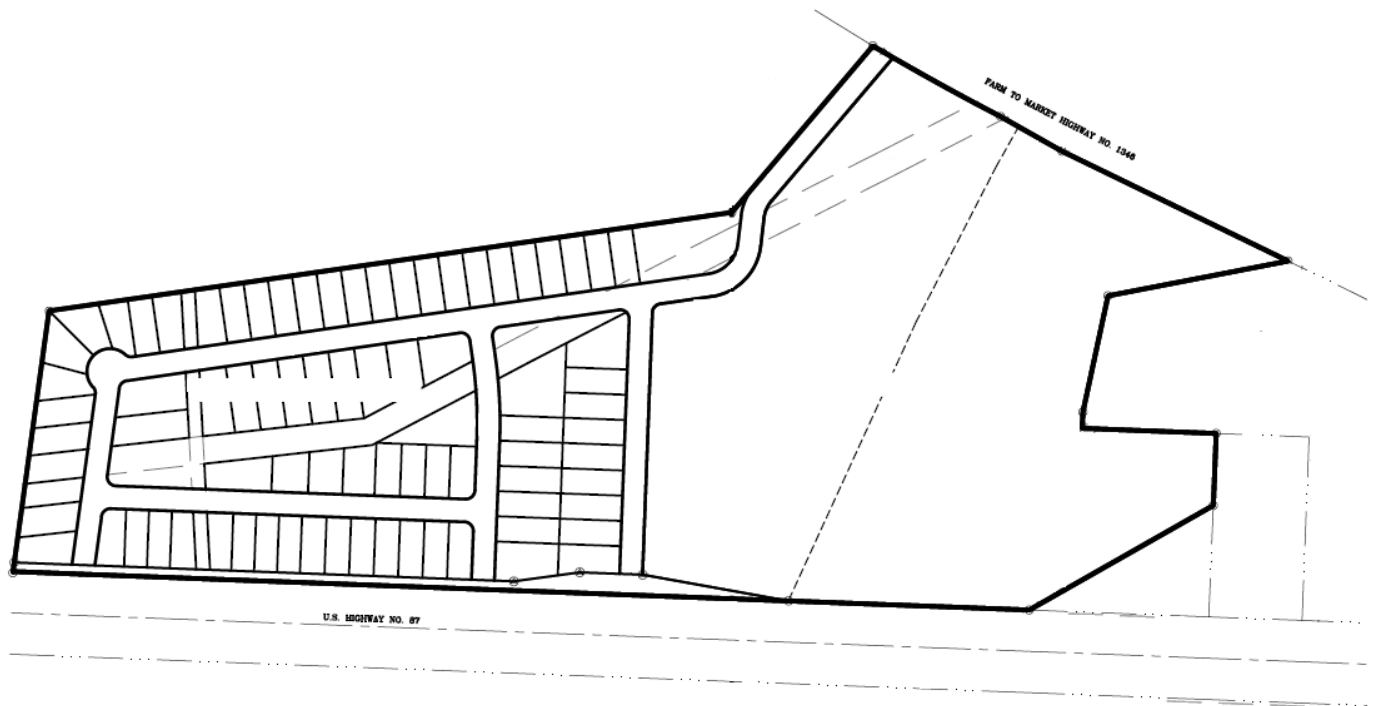
Appendix D Traffic Data Sheets

Appendix E City of La Vernia Master Thoroughfare Plan (2019)

SITE LAYOUT

EXHIBIT A

APPENDIX A



FIRM TBPE No. F-11727

5828 Sebastian Place, Suite 108
San Antonio, Texas 78250

Office: (210) 258-2447
Fax: (210) 509-9680

SITE LAYOUT

NP HOMES SUBDIVISION

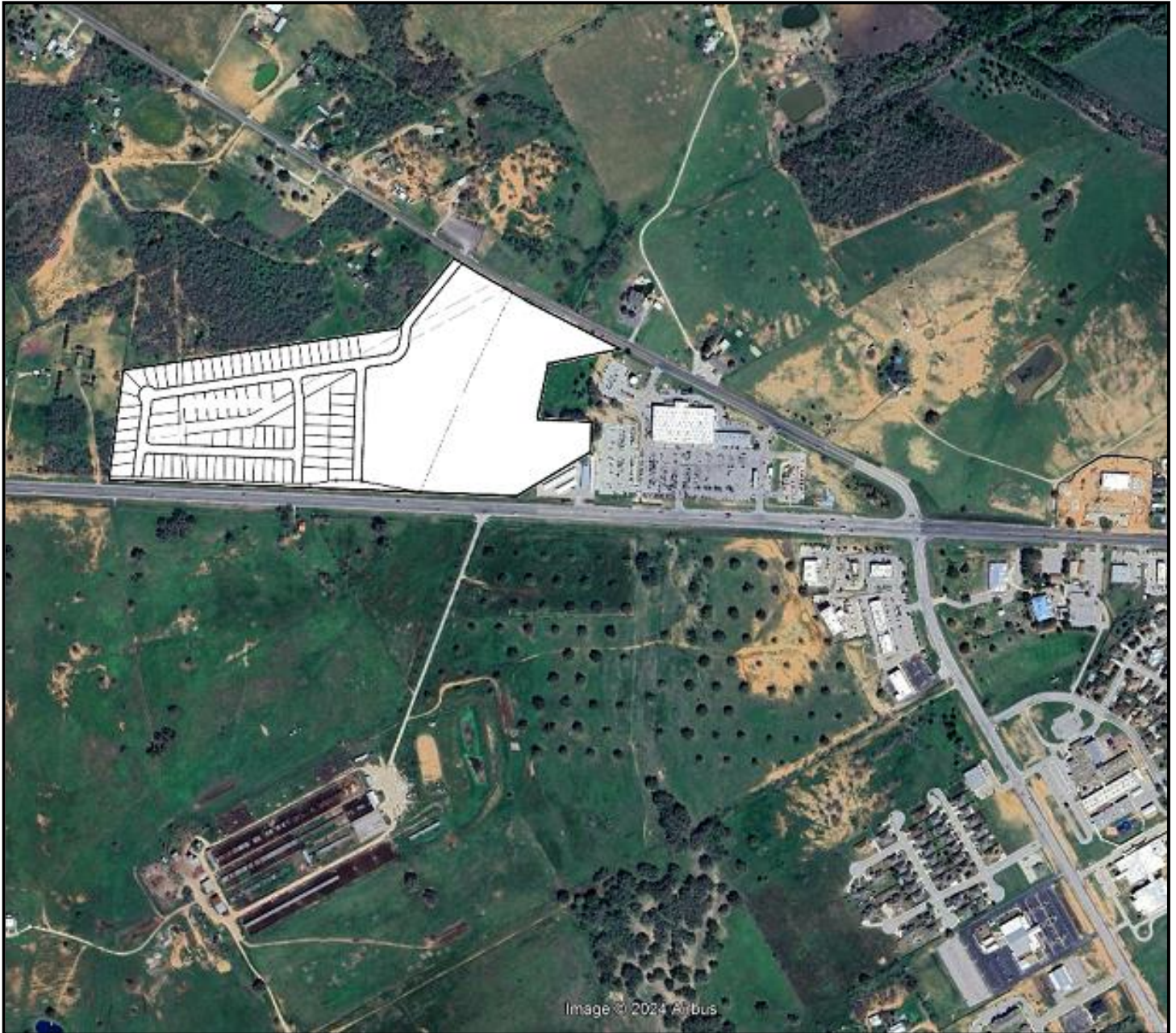


EXHIBIT A

AERIAL PHOTOGRAPH

EXHIBIT B

APPENDIX B



FIRM TBPE No. F-11727

5828 Sebastian Place, Suite 108
San Antonio, Texas 78253

Office: (210) 258-2447
Fax: (210) 509-9680

AERIAL PHOTOGRAPH

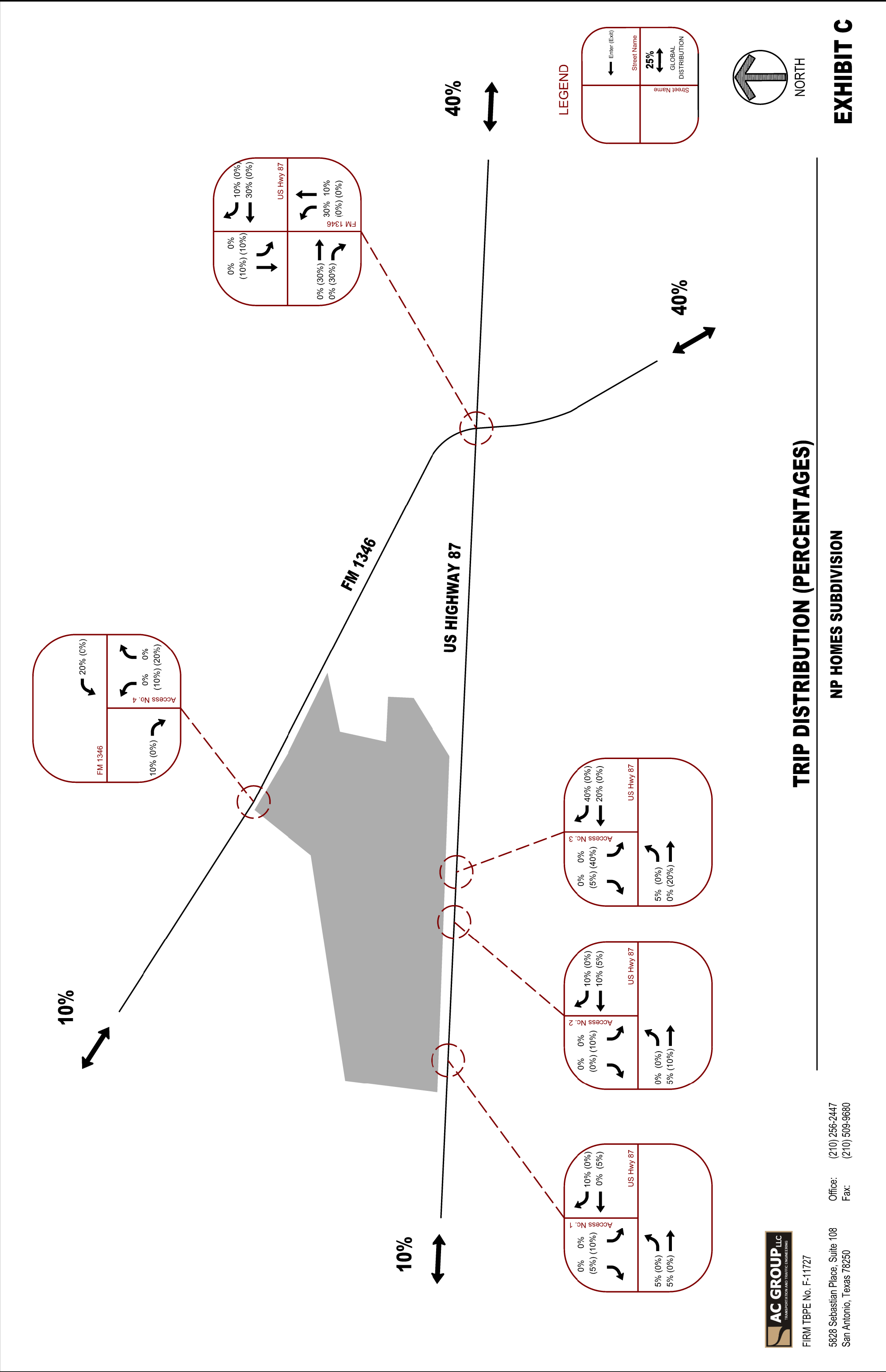
NP HOMES SUBDIVISION



EXHIBIT B

TRIP DISTRIBUTION EXHIBITS

- Exhibit C – Trip Generation and Distribution Percentages
- Exhibit D – Trip Generation and Distribution Volumes



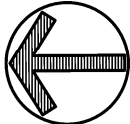
FIRM TBPE No. F-11727

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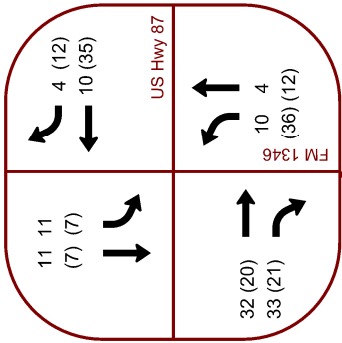
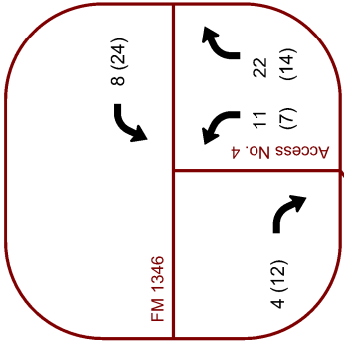
TRIP DISTRIBUTION (PERCENTAGES)

NP HOMES SUBDIVISION

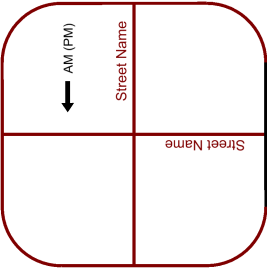


NORTH

EXHIBIT C



LEGEND



FIRM TBPE No. F-11727

5828 Sebastian Place, Suite 108
San Antonio, Texas 78250

Office: (210) 256-2447
Fax: (210) 509-9680

TRIP DISTRIBUTION (VOLUMES)

NP HOMES SUBDIVISION

EXHIBIT D

TxDOT TRAFFIC DATA SHEETS

APPENDIX D

List View

All DIRs

Report Center

Record

1 of 1

Goto Record

Go

Location ID	247H79	MPO ID	
Type	SPOT	HPMS ID	ASSIGNED
SF Group	SAN ANTONIO FC 3	Route Type	US
AF Group	MS160	Route	0087
GF Group	SAN ANTONIO FC 3	Active	Yes
Class Dist Grp	MS05_NW	Category	ANNUAL ACR
Seas Clas Grp	SAN ANTONIO		
WIM Group	Statewide		
QC Group	Volume Group 3		
Funct Class	(3)Principal Arterial-Other		
Located On	US0087		
Loc On Alias	US0087-KG		
More Detail			

STATION DATA

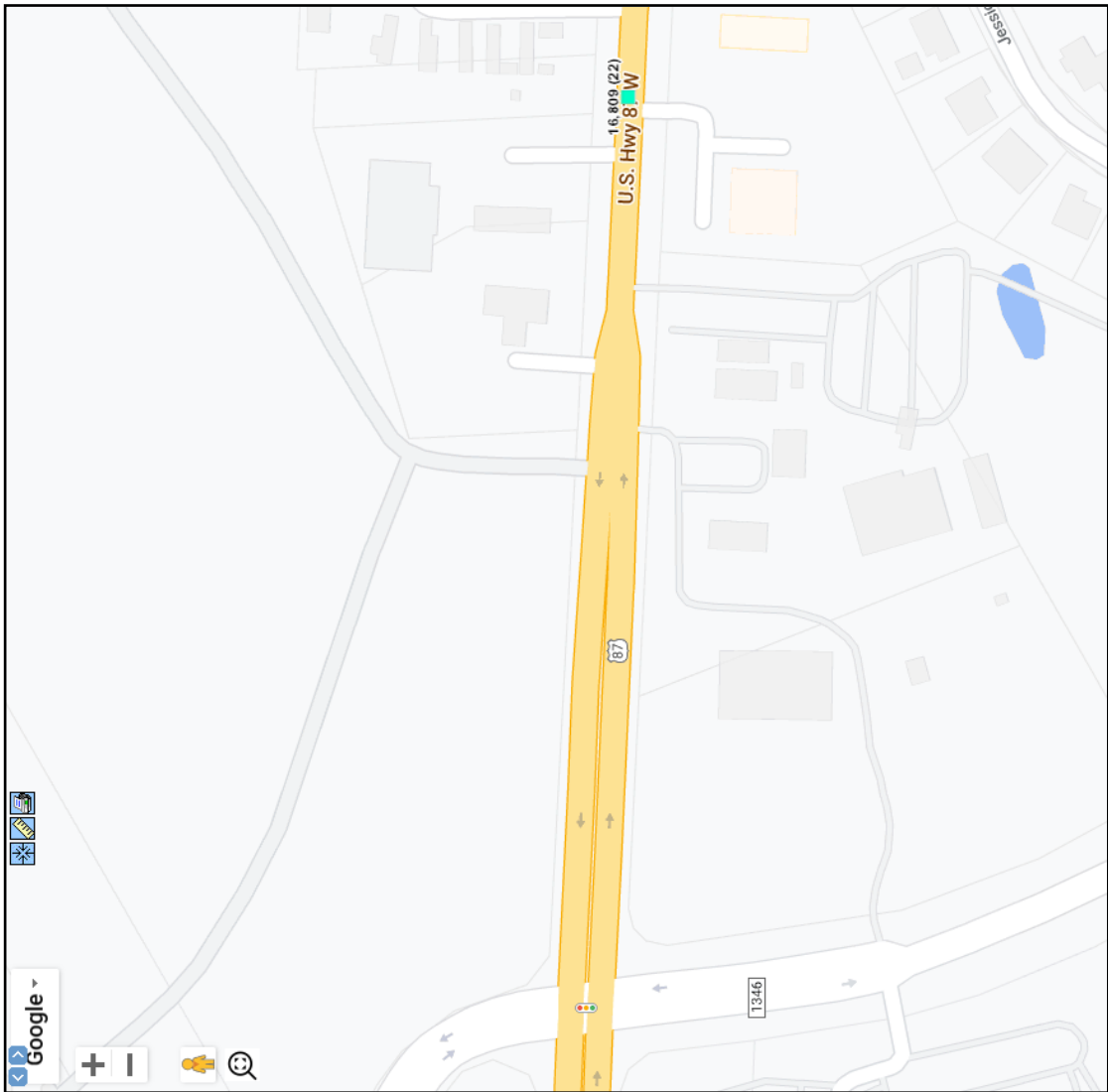
Directions: 2WAY EB WB

AADT									
Year	AADT	DHV-30	K %	D %	PA	BC	Src		
2022	16,809	1,552	9	60	15,352 (91%)	1,457 (9%)			
2021	17,890	1,515	8	58	16,004 (89%)	1,886 (11%)			
2020	14,427	1,597	11	58	13,053 (90%)	1,374 (10%)			
2019	34,810 ²				32,062 (92%)	2,748 (8%)			
2018	15,586	1,680	11	59	13,699 (88%)	1,887 (12%)			

1-5 of 25

Travel Demand Model									
Model	Model	AADT	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PPV

VOLUME COUNT				VOLUME TREND			
Date	Int	Total	Year	Annual Growth			
Mon 10/17/2022	15	18,397	2023	3%			
Wed 1/27/2021	15	17,802	2022	-6%			
Mon 2/10/2020	15	17,567	2021	24%			
Mon 8/26/2019	-		2020	-59%			
Mon 11/5/2018	15	18,378	2019	123%			
Wed 9/27/2017	15	16,789	2018	7%			
Wed 1/20/2016	15	16,605	2017	14%			





Traffic Count Database System (TCDS)

[Home](#)
[Back](#)
[Login](#)
[+ Locate](#)
[+ Locate All](#)
[Auto-Locate ON](#)

Volume Count Report

LOCATION INFO

Location ID	247H79
Type	SPOT
Funct'l Class	3
Located On	US0087
Loc On Alias	US0087-KG
Direction	2-WAY
County	Wilson
Community	La Vernia
MPO ID	
HPMS ID	ASSIGNED
Agency	Texas DOT

INTERVAL:15-MIN

Time	15-min Interval				Hourly Count
	1st	2nd	3rd	4th	
0:00-1:00	26	16	13	26	81
1:00-2:00	14	7	8	15	44
2:00-3:00	21	10	20	15	66
3:00-4:00	13	34	29	31	107
4:00-5:00	45	39	43	65	192
5:00-6:00	65	97	142	170	474
6:00-7:00	216	231	259	257	963
7:00-8:00	319	442	447	365	1,573
8:00-9:00	340	350	277	289	1,256
9:00-10:00	261	263	246	276	1,046
10:00-11:00	260	239	225	222	946
11:00-12:00	257	248	237	277	1,019
12:00-13:00	276	239	266	242	1,023
13:00-14:00	288	260	283	291	1,122
14:00-15:00	258	242	272	275	1,047
15:00-16:00	287	359	396	352	1,394
16:00-17:00	479	440	394	340	1,653
17:00-18:00	388	414	376	335	1,513
18:00-19:00	304	303	284	221	1,112
19:00-20:00	203	191	158	154	706
20:00-21:00	153	140	120	96	509
21:00-22:00	91	72	57	50	270
22:00-23:00	54	48	39	28	169
23:00-24:00	34	38	21	19	112
Total					18,397
AADT					16,809
AM Peak					07:15-08:15 1,594
PM Peak					15:30-16:30 1,667

COUNT DATA INFO

Count Status	Accepted
Holiday	No
Start Date	Mon 10/17/2022
End Date	Tue 10/18/2022
Start Time	10:30:00 AM
End Time	10:30:00 AM
Direction	
Notes	
Station	
Study	
Speed Limit	
Description	
Sensor Type	Axle/Tube
Source	TCDS_COUNT_IMPORT_COMBINE
Latitude,Longitude	

CITY OF LA VERNIA
MASTER THOROUGHFARE PLAN (2019)

APPENDIX E



MASTER THOROUGHFARE PLAN

CITY OF LA VERNIA, TEXAS

DATE: OCTOBER 2019



- LEGEND**
- CITY LIMITS LINE
 - EXISTING ARTERIAL STREETS (10' ROW)
 - EXISTING COLLECTOR STREETS (10' ROW)
 - EXISTING LOCAL STREETS (10' ROW)
 - PROPOSED ARTERIAL STREETS (10' ROW)
 - PROPOSED COLLECTOR STREETS (10' ROW)
 - PROPOSED LOCAL STREETS (10' ROW)
 - FLOODPLAIN LIMITS

