Traffic Noise Analysis Technical Report

US 79 from IH 35 to East of FM 1460
Williamson County, Texas

CSJ: 0204-01-063

December 2019

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

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1.0 Traffic Noise

1.1 Introduction

This technical report identifies and assesses traffic noise impacts associated with the proposed improvements to United States (US) Highway 79 (US 79) between Interstate Highway 35 (I-35) to Farm-to-Market (FM) 1460/A. W. Grimes Blvd. in Williamson County, Texas. The Texas Department of Transportation (TxDOT) Austin District is proposing roadway improvements to US 79 within the City of Round Rock and is shown on the **Project Location Map** in **Appendix A**. A detailed description of the proposed project is presented below.

The traffic data used in the noise analysis is included in **Appendix B**. A memorandum from TxDOT's Transportation Planning and Programming Division provided anticipated average daily traffic volumes and turning movements for baseline (2024) and proposed (2044) conditions (TxDOT 2017).

1.2 Existing Facility

Within the project limits, US 79 consists of four 12-foot main lanes (two in each direction) with 10-foot outside shoulders. Some locations along the corridor have a central turn lane measuring 14 feet. The existing US 79 right-of-way (ROW) varies from 150 to 300 feet wide.

1.3 Proposed Facility

Proposed improvements include widening the existing US 79 roadway to add a third travel lane in each direction and installing a raised median for safety. Improvements to intersections would include overpasses at US 79/Mays Street and US 79/A.W. Grimes Blvd and altering the US 79/I-35 Intersection. Driveways and access points would be modified to improve safety and traffic flow. The proposed improvements also include installing shared-use paths on both sides of US 79 to improve pedestrian and bicycle accommodations. The proposed project would require approximately 8.97 acres of new right-of-way. Deep impacts are anticipated as part of the construction of a grade separation at the intersection of US 79 and Mays Street.

The proposed project would include a major reconfiguration of the intersection at US 79 and Mays Street. The addition of a partial cloverleaf interchange would replace the existing four-way traffic light to improve safety and enhance the flow of traffic from one corridor to the other. Two traffic lights would be added facilitating the left and right hand turns on and off Mays Street. The addition of an overpass would direct Mays Street traffic over US 79, thus avoiding the potential danger and congestion associated with the intersection.

A raised median is proposed along the center of US 79 throughout the majority of the project area. The addition of this median would limit access points on and off US 79 to five cross-

street intersections, the interchange at Mays Street, and three designated turn lanes at breaks in the median. The five cross-street intersections are listed below:

- A.W. Grimes Blvd
- Sunrise Road
- Georgetown Street
- Egger Avenue
- Heritage Center

The proposed project would include the addition of an overpass at the intersection of US 79 and A.W. Grimes Blvd. The overpass would allow vehicles traveling in the left lanes along US 79 to go over A.W. Grimes Blvd without stopping, thus bypassing the intersection. The right lanes would direct traffic to the 4-way traffic light at the intersection of US 79 and A.W. Grimes Blvd, below the overpass bridge. This intersection would include turnaround lanes, protected left turn lanes, and pedestrian crosswalks and would facilitate the transfer of vehicles on and off US 79 and A.W. Grimes Blvd.

The proposed project occurs on 79.1 acres of existing right-of-way and 0.18 acre of existing easement. It would require approximately 10.32 acres of new right-of-way for a total project footprint of 89.53 acres.

1.4 Traffic Noise Analysis

SWCA Environmental Consultants (SWCA) evaluated traffic noise impacts for the proposed project in accordance with the most current Federal Highway Administration (FHWA) policy and procedures, and the TxDOT (FHWA approved) *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (TxDOT 2011).

Sound from highway traffic is generated primarily from a vehicle's tires, engine and exhaust. It is commonly measured in decibels (dB). Sound occurs over a wide range of frequencies; however, not all frequencies are detectable by the human ear. Therefore, an adjustment is made to the high and low frequencies to approximate the way an average person hears traffic sounds. This adjustment is called A-weighting and is expressed as "dB(A)."

Also, because traffic sound levels are never constant due to the changing number, type and speed of vehicles, a single value is used to represent the average or equivalent sound level and is expressed as "Leq."

A traffic noise analysis typically includes the following elements:

- Identification of land use activity areas that might be impacted by traffic noise
- Determination of existing noise levels
- Prediction of future noise levels
- Identification of possible noise impacts
- Consideration and evaluation of measures to reduce noise impacts

The FHWA has established the following Noise Abatement Criteria (NAC) for various land use activity areas and is reflected in **Table 1**. These criteria are used as one of two methods to determine when a traffic noise impact would occur.

Table 1: FHWA Noise Abatement Criteria

Activity Category	dBA Leq	Description of Land Use Activity Areas
A	57 (exterior)	Lands on which serenity and quiet are of extra-ordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 (exterior)	Residential
C	67 (exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52 (interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E	72 (exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F
F	--	Agricultural, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	Undeveloped lands that are not permitted

Source: TxDOT 2011

A noise impact occurs when either the absolute or relative criterion is met:

- *Absolute Criterion*: the predicted noise level at a receiver approaches, equals or exceeds the NAC. "Approach" is defined as one dB(A) below the FHWA NAC. For example: a noise impact would occur at a Category B residence if the noise level is predicted to be 66 dB(A) or above.
- *Relative Criterion*: the predicted noise level substantially exceeds the existing noise level at a receiver even though the predicted noise level does not approach, equal or exceed the NAC. “Substantially exceeds” is defined as more than 10 dB(A). For example: a noise impact would occur at a Category B residence if the existing level is 54 dB(A) and the predicted level is 65 dB(A).

When a traffic noise impact occurs, noise abatement measures must be considered. A noise abatement measure is any positive action taken to reduce the impact of traffic noise on an activity area.

SWCA used the FHWA traffic noise modelling software (TNM 2.5) to calculate existing and predicted traffic noise levels at the receiver locations along the proposed project corridor as shown in **Table 2**, below, and **Appendix A, Figure 2,** representing the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and potentially benefit from feasible and reasonable noise abatement[1]. TNM primarily considers the number, type and speed of vehicles; roadway alignment and grade; cuts, fills and natural berms; surrounding terrain features; and the locations of activity areas likely to be impacted by the associated traffic noise.

Table 2: Traffic Noise Levels (dBA Leq)

Representative Receiver	NAC Categor	NAC Level	Existing	Predicted 2038	Change (+/-)	Noise Impact
R1. Restaurant (outdoor seating)	E	72	71	72	+1	Yes
R2. Restaurant (outdoor seating)	E	72	71	71	0	Yes
R3. School	C	67	66	65	-1	No
R4. Church	D	52	44	46	+2	No
R5. Residence	B	67	64	65	+1	No
R6. Residence	B	67	64	67	+3	Yes
R7. Apartments	B	67	71	74	+3	Yes
R8. Residence	B	67	67	69	+2	Yes
R9. Residence	B	67	70	72	+2	Yes
R10. Apartments	B	67	68	70	+2	Yes
R11. Church	D	52	45	47	+2	No
R12. Apartments	B	67	71	72	+1	Yes

[1] Traffic Data used in Traffic Noise Analysis: 41,600 Existing ADT, 56,000 Predicted ADT, 13.0 k-factor, and a fleet mix of 92.6% Light Duty, 0.6% Medium Duty, and 6.8% Heavy Duty (TxDOT 2017).

Representative Receiver	NAC Categor	NAC Level	Existing	Predicted 2038	Change (+/-)	Noise Impact
R13. Apartments	B	67	67	69	+2	Yes
R14. Restaurant (outdoor seating)	E	72	67	68	+1	No
R15. Church	D	52	41	41	0	No

Source: SWCA 2019

As indicated in **Table 2**, the proposed project would result in nine traffic noise impacts to representative receivers; therefore, the construction of noise barriers was considered.

Before any noise abatement measure can be proposed for incorporation into the project, it must be both feasible and reasonable. In order to be "feasible," the abatement measure must be able to reduce the noise level at greater than 50% of impacted, first row receivers by at least 5 dBA; and to be "reasonable," it must not exceed the cost-effectiveness criterion of $25,000 for each receiver that would benefit by a reduction of at least 5 dBA and the abatement measure must be able to reduce the noise level for at least one impacted, first row receiver by at least 7 dBA.

Noise barriers are the most commonly used noise abatement measure and were evaluated for each of the impacted receiver locations. Noise barriers would not be feasible and reasonable for any of the following impacted receivers (see **Figure 2**) and, therefore, are not proposed for incorporation into the project:

R1: Starbucks - This receiver has driveways facing the roadway. A continuous noise barrier would restrict access to this receiver. Gaps in a noise barrier would satisfy access requirements, but the resulting non-continuous barrier segments would not be sufficient to achieve the minimum, feasible reduction of 5 dBA or the noise reduction design goal of 7 dBA.

R2: Pacific Star - This receiver has driveways facing the roadway. A continuous noise barrier would restrict access to this receiver. Gaps in a noise barrier would satisfy access requirements, but the resulting non-continuous barrier segments would not be sufficient to achieve the minimum, feasible reduction of 5 dBA or the noise reduction design goal of 7 dBA.

R6: Texas Baptist Children's Home - This receiver represents a total of five residences. A noise barrier 1,053 feet in length and 12 feet in height would reduce noise levels by at least 5 dBA for four benefitted receivers and achieve a 7 dBA noise reduction design goal at a total cost of $227,448 or $56,862 for each benefitted receiver. The cost of this barrier would exceed the reasonable, cost-effectiveness criteria of $25,000.

R8 and R9 - These receivers represent a total of 10 residences with driveways facing the roadway. A continuous noise barrier would restrict access to these residences. Gaps in a noise

barrier would satisfy access requirements, but the resulting non-continuous barrier segments would not be sufficient to achieve the minimum, feasible reduction of 5 dBA or the noise reduction design goal of 7 dBA.

Noise barriers would be acoustically feasible and reasonable and cost effective for the following impacted receivers (see **Figure 2**) and, therefore, are proposed for incorporation into the project:

R7: Steeplechase Apartments - This receiver represents a total of 20 residences. Based on preliminary calculations, noise barriers 289 feet and 294 feet in length and 18 feet in height would reduce noise levels by at least 5 dBA for 16 benefitted receivers and by 7 dBA for one or more benefitted receivers at a total cost of $188,982, or $11,811 for each benefitted receiver.

R10: Somerset Apartments - This receiver represents a total of 16 residences. Based on preliminary calculations, a noise barrier 319 feet in length and 18 feet in height would reduce noise levels by at least 5 dBA for 10 benefitted receivers and by 7 dBA for one or more benefitted receivers at a total cost of $103,356 or $10,336 for each benefitted receiver.

R12 and R13: Rocking Horse Apartments - These receivers represent a total of 56 residences. Based on preliminary calculations, noise barriers 619 feet and 559 feet in length and 18 feet in height would reduce noise levels by at 5 dBA for 42 benefitted receivers and by 7 dBA for one or more benefitted receivers at a total cost of $381,672 or $9,087 for each benefitted receiver.

Table 3: Noise Barrier Proposal - Preliminary

Barrier	Representative Receiver(s)	Total # Benefitted	Length (ft)	Height (ft)	Total Cost ($)	$/Benefitted Receiver
1	R7 - Steeplechase Apts	16	583	18	188,982	11,811
2	R10 - Somerset Apts	10	319	18	103,356	10,336
3	R12 & R13 - Rocking Horse Apts	42	1,178	18	381,672	9,087

Source: SWCA 2019

Any subsequent project design changes may require a reevaluation of this preliminary noise barrier proposal. The final decision to construct the proposed noise barrier will not be made until completion of the project design, utility evaluation and polling of adjacent property owners.

Land use activity areas on the south side of the proposed project between Provident Lane and Lance Lane and from 800 feet east of Palm Valley Cove to the east end of the project are

currently undeveloped land (NAC Category G) which is not permitted for development. To avoid noise impacts that may result from future development of properties adjacent to the proposed project build alternative, local officials responsible for land use control programs must ensure, to the maximum extent possible, that no new activities are planned or constructed along or within the predicted (2038) noise impact contours identified in **Table 4**.

Table 4: Predicted Noise Impact Contours

Undeveloped Area Location	Land Use	Impact Contour	Distance from ROW (ft)
South side of US 79 from Provident Lane to Lance Lane	NAC Category B&C	66 dBA	250
	NAC Category E	71 dBA	110
From 600 feet east of Palm Valley Cove to east end of project	NAC Category B&C	66 dBA	180
	NAC Category E	71 dBA	50

Source: SWCA 2019

During the construction phase of this project, temporary increases in noise may result from construction activities. Noise associated with the construction of the project is difficult to predict. Heavy machinery, the major source of noise in construction, is constantly moving in unpredictable patterns. However, construction normally occurs during daylight hours when occasional loud noises are tolerable. None of the receivers are expected to be exposed to construction noise for a long duration; therefore, any extended disruption of normal activities is not expected. Provisions would be included in the construction plans and specifications that require the contractor to make every reasonable effort to minimize construction noise through abatement measures such as work-hour controls and proper maintenance of muffler systems.

A copy of this traffic noise analysis will be available to local officials to ensure, to the maximum extent possible, future developments are planned, designed and programmed in a manner that would avoid traffic noise impacts. On the date of NEPA approval (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

2.0 List of Preparers

Jeff Wellman (Ecological Restoration Project Manager/Noise Analyst) – M.Ag./B.S. in Rangeland Ecology and Management, 20 years of NEPA / Traffic Noise experience.

Tom Allemand (Senior Project Manager) – M.S./B.S. in Aquatic Biology, 20 years of biology, environmental science and NEPA planning experience.

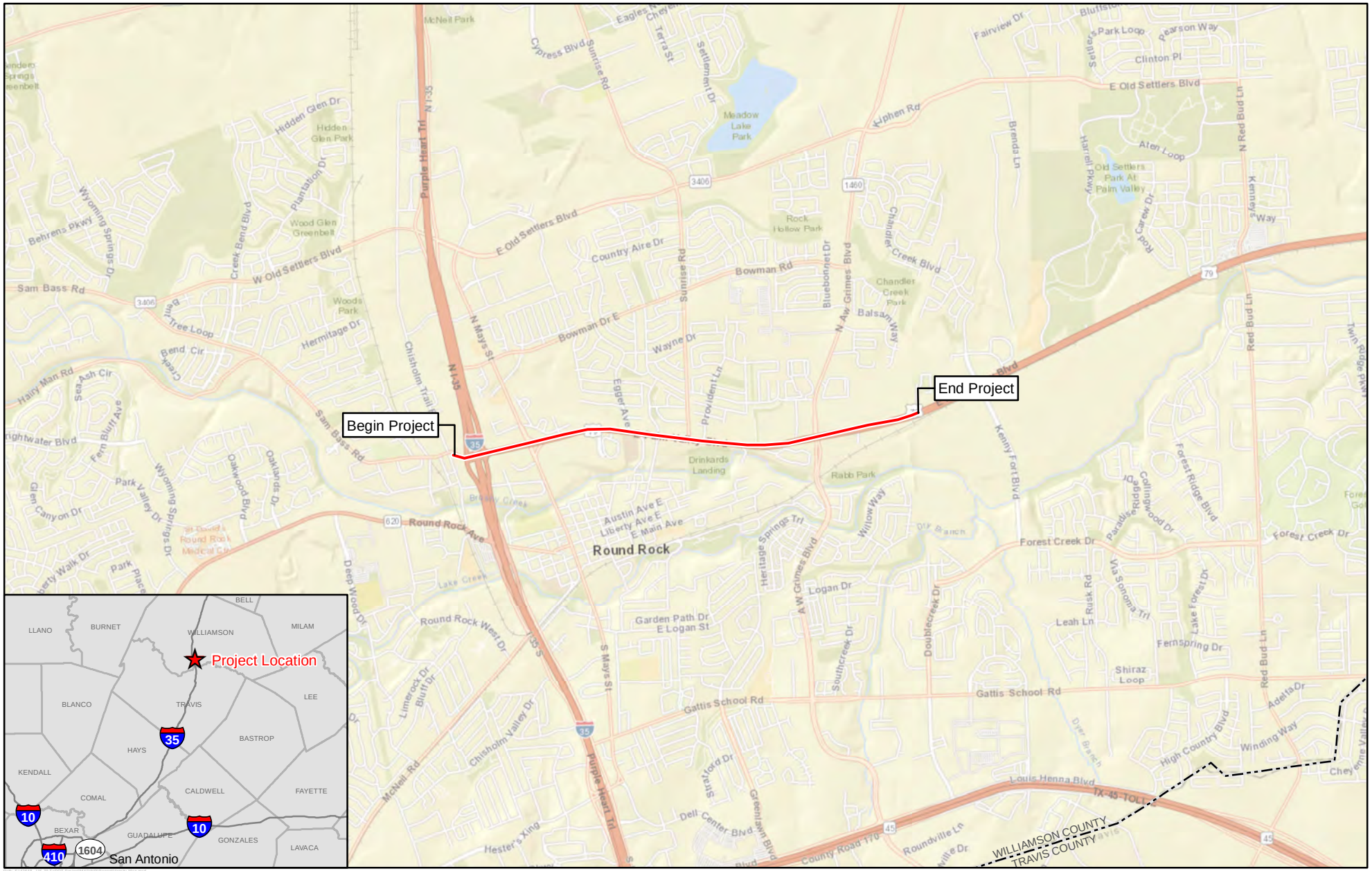
3.0 References

Texas Department of Transportation (TxDOT). 2011. Guidelines for Analysis and Abatement of Roadway Traffic Noise.

———. 2017. Traffic Analysis for Highway Design - Traffic Data, CSJ: 0204-01-083, US 79: From I-35 to East of FM 1460.

APPENDIX A

Figures



US 79 FROM IH 35 TO EAST OF FM 1460
CSJ: 0204-01-063

PROJECT LOCATION MAP
WILLIAMSON COUNTY, TEXAS

FIGURE 1

Project Location
County Boundary

1:48,000

Created By: KS
Project Number: 42648
Date: 10/23/2018
NAD 1983 StatePlane Texas Central
FIPS 4203 Feet

0 1,000 2,000 3,000 4,000 Feet
0 300 600 900 1,200 Meters

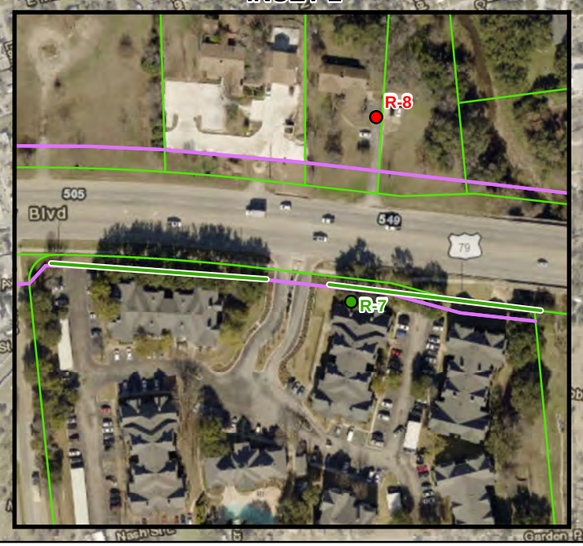
INSET 1

INSET 2

INSET 3

INSET 4

R-1
R-2
R-3
R-4
R-5
R-6
R-7
R-8
R-9
R-10
R-11
R-12
R-13
R-14
R-15



US 79 FROM IH 35 TO EAST OF FM 1460
CSJ: 0204-01-063

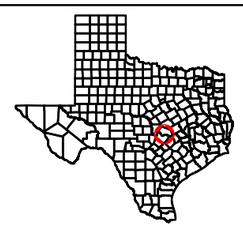
NOISE RECEIVER LOCATIONS
WILLIAMSON COUNTY, TEXAS

FIGURE 2

- Proposed Noise Barrier
- Proposed ROW
- Existing ROW/Property Boundaries

Receiver

- Not Impacted
- Impacted and No Benefit
- Impacted and Benefited



1:11,000

Created By: KS
Project Number: 42648
Date: 11/21/2019
NAD 1983 StatePlane Texas
Central FIPS 4203 Feet

N
S

0 500 1,000 1,500 Feet
0 150 300 450 Meters

APPENDIX B

Traffic Data

Texas Department of Transportation

MEMO

December 1, 2017

To: Terry G. McCoy, P.E., District Engineer
Lorena E. Echeverria De Misi, P.E., Director of TPD

Through: William E. Knowles, P.E.
Traffic Analysis Section Director, TPP

From: Gabriel Contreras
Planner III, TPP

Subject: Traffic Data
CSJ: 0204-01-063
US 79:
From I-35
To East of FM 1460

Williamson County

Attached is a corridor information packet for the described limits of the route.

Please refer to your original request dated June 28, 2017.

If you have any questions or need additional information, please contact Gabriel Contreras at (512) 486-5180.

Attachments

CC: Carmen Ramos, Planner, Austin District

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

December 1, 2017

Description of Location	Average Daily Traffic 2024	Average Daily Traffic 2044	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2024 to 2044) Flexible Pavement	S N	Rigid Pavement	SLAB
US 79 (Corridor Information Packet) DRAFT PROJECTIONS From I-35 To East of FM 1460 Williamson County	41,600	56,000	55 - 45	13.0	12.3	7.4	0	0	0	3	0	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	87.7	92.6
Medium Duty	1.0	0.6
Heavy Duty	11.3	6.8

Description of Location	Average Daily Traffic 2024	Average Daily Traffic 2054	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2024 to 2054) Flexible Pavement	S N	Rigid Pavement	SLAB
US 79 (Corridor Information Packet) DRAFT PROJECTIONS From I-35 To East of FM 1460 Williamson County	41,600	63,200	55 - 45	13.0	12.3	7.4	0	0	0	3	0	8"

Request for Traffic Data

Date: 06/28/2017

District: Austin **County:** Williamson **CSJ:** 0204-01-063

Highway: US 79

Limits: IH 35 to east of FM 1460

Texas Reference Marker System

From Marker: 562 From Displacement: 1.787 From DFO: 271.216

To Marker: 566 To Displacement: 0.243 To DFO: 273.556

Is it in the UTP: ☒ Yes ☐ No District Priority: 7 Est. Letting Date: 03/03/2022

Existing Number of Lanes: 4

Proposed Number of Lanes: 6

District Contact Person: Carmen Ramos

Phone Number: 512-832-7075

Please attach an 8-1/2" x 11" location map and make note of any existing or proposed development that will be a traffic generator. NOTE:

The following to be completed (Please mark information to be provided):

☒ 1. Basic Highway Traffic Data for pavement design
(No line diagram analysis required)
- A. Base year/ Beginning year: 2024
- B. Forecasted 20 year: 2044
- C. Forecasted 30 year: 2054
- D. Directional Distribution
- E. K-factor
- F. Percent Trucks ADT/DHV
- G. Average Ten Heaviest Wheel Loads (ATHWLD)
- H. Percent Tandem Axles in the ATHWLD
- I. One Directional cumulative 18 KSA at the end of the 20 years/30 years
- J. Slab Thickness (8" unless otherwise specified):
- K. Structural Number (3 unless otherwise specified):

☒ 2. Vehicle classification for environmental studies (Air and Noise Analysis)

☐ 3. Line diagram analysis (straight line turning movements; please provide line diagram).

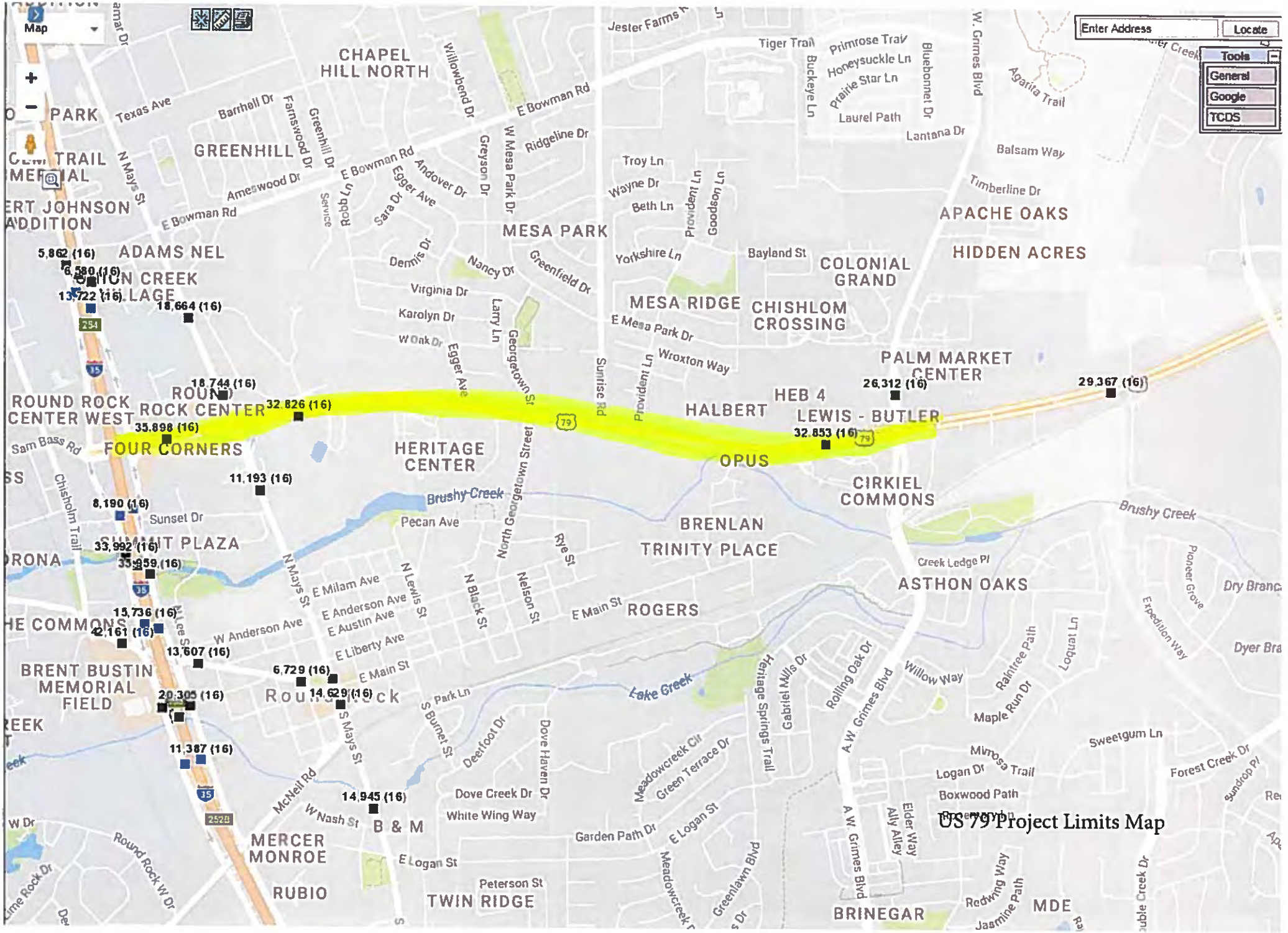
☐ 4. Complete Corridor Analysis (includes basic highway traffic data for pavement design, environmental studies and detailed schematic turning movements; *please provide detailed schematic*).

☒ 5. Consultant Corridor Information Packet

☐ 6. No build traffic analysis.
- ☐ EA
- ☐ EIS
- ☐ EA/EIS Reevaluation

Note: If complete corridor analysis is requested, please attach a traffic schematic diagram.

Project Location Map
0204-01-063
US 79 from IH 35 to east of FM 1460



US 79 Project Limits Map

Corridor Analysis Worksheet: 1 Section, 2 Forecast Years, Air & Noise

Project	US 79 (Corridor Information Packet)	District	Austin
Rd Type	US	County	Williamson
Direction	Two-Way	CSJ	0204-01-063
Project	From I-35		
Limits	To East of FM 1460	Analyst	GAC

Date: Request	6/28/2017	Received	6/28/2017	Started	12/1/2017	Completed	12/1/2017
District Contact	Carmen Ramos			Phone #	

	Year	ADT's			% Trks ADT	% Trks DHV
Count	2016	35898			12.3	7.4
Base	2024	41600	DRAFT	# Trks	5117	
Forecast	2044	56000	PROJECTIONS			
Forecast	2054	63200				

SPR Station	S-10	MC Stn	M-939	% Trks	20.0
Year	2016	Dir	SW	Num Trks	1938
Peak Hour	17.4	Year	2016	Axle Factor	2.91
DD	55	ADT	9679	% Single Axles	0.39
100-DD	45				
K-Factor	13.0				

Main Road Growth Rate	2.0	TDM Assignment	
Growth Rate after 20 Years	2.0		
20 Year Growth Factor	1.731		
30 Year Growth Factor	1.731	LOD	99999
Design Period 1	20		
Design Period 2	30		

					# Lanes
Structural Number (SN)	3			Existing	4
Slab Thickness (ST)	8			Proposed	6

Past Projects	
Project	US 79
From	I-35
To	FM 1460
Date	4/23/2013
County	Williamson
CSJ	0204-01-06

Items Done on This Project

Straight Line Turning Movements		Detailed Schematic Turning Movements	
Traffic Analysis for Highway Design		Field Trip	
Vehicle Mix		Travel Demand Model Used	
Manual Count Worksheet			

NOTES:

These are DRAFT traffic projections based on the highest volume within the project limits.

DATA CALCULATIONS FOR USE IN AIR & NOISE ANALYSIS

FHWA Format Vehicle Class. Counts		
Light Duty Vehicles	Motorcycles	9
	Passenger	4386
	Pickup or Van	3346
Single Units	Buses	18
	Other 2 Axle	129
	3 Axles	61
	4 Axles or more	1
Truck Combs.	3-4 Axles	36
	5 Axles	1656
	6 Axles or more	16
Semi-Trailer-Trailer	5 Axles or less	15
	6 Axles	6
	7 Axles or more	0

	Number	%
Light	7741	80.0
Medium	165	1.7
Heavy	1773	18.3
Trucks	1938	20.0

SECTION 1

US

	ADT	DHV
Light	87.7	92.6
Medium	1.0	0.6
Heavy	11.3	6.8

Total Vehicles	9679
Total Trucks	1938
Total Singles	2217.0
Total Tandems	3430.0
AXLE FACTOR	2.91
SINGLE AX FACT	0.39

INPUT DATA FOR KIPS: AUTOMATIC

SN, ST	3, 8					
Design Periods	1	2				
Year 1	24	24				
Year 2	44	54				
ADT	41600	41600				
% Trks	12.3	12.3				
Growth Rate	1.731	1.731				
Years	20	30				
Facil Type	B	B				
S.N.	3	3				
SLAB	8	8				
Weight Sta	99999	99999				
Axle Factor	2.91	2.91				
Single Axle	0.39	0.39				

OUTPUT DATA FROM KIPS: ENTER FOR TAHD FORM

SN, ST	3, 8					
Design Periods	1	2				
ATHWLD						
% T in ATHWLD						
FLEXIBLE						
RIGID						

TRAFFIC VOLUME REGRESSION WORKSHEET

December 1, 2017

PROJECT: US 79
LIMITS: From I-35 to East of FM 1460
Main Rd. regressions along US 79 in project limits

District: Austin
County: Williamson
CSJ: 0204-01-063

Cross Street traffic regressions

ROUTE	US 79	US 79	US 79	US 79			Mays St-B 35	Mays St-B 35	FM 1460 (Cross Street)			
LOCATION	H-25	T-58	H-24	H-22			T-58A	T-56A	H-21			
1996	30000	27000	19900	17600			17900	11800	4400			
1997	30000	28000	19700	17700			18200	12800	5100			
1998	35000	32000	23000	21000			21000	13100	6600			
1999	28000	30000	23000	21000			21000	12600	7100			
2000	39000	35000	25000	23000			21000	16000	8400			
2001	40000	36000	28000	26000			22000	18300	10400			
2002	42000	35000	31000	25000			20000	15000	10100			
2003	42000	37000	32000	30000			20000	15900	10200			
2004	50000	41000	37000	33000			19900	14700	10000			
2005	46110	40250	36790	33100			20000	16900	10100			
2006	41000	45000	41000	34000			21000	18700	12100			
2007	48000	41000	41000	36000			22000	17000	12500			
2008	47000	39000	37000	35000			20000	16500	13400			
2009	46000	41000	36000	34000			18500	13000	16000			
2010	46000	40000	36000	33000			18800	12700	17300			
2011	41000	37000	33000	29000			17200	11600	17200			
2012	41000	37000	35000	31000			18400	11900	18900			
2013	43293	39703	38742	32023			21001	13655	21059			
2014	39236	35686	35701	29855			21801	14172	19294			
2015	33391	30644	30286	29660			21005	13655	23999			
2016	35898	32826	32853	29367			18744	11193	26312			
	Regr01	Regr02	Regr03	Regr04	Regr05	Regr06	Regr07	Regr08	Regr09	Regr10	Regr11	Regr12
Low Linear Annual Growth Rate	-0.1%	0.0%	0.8%	0.8%			-0.5%	-1.5%	2.6%			
Forecast Lnr. An. Grwth Rate	0.8% ☑	0.7% ☑	1.8% ☑	1.8% ☑	☐	☐	0.0% ☐	-0.5% ☐	4.2% ☐	☐	☐	☐
High Linear Annual Growth Rate	1.7%	1.5%	2.9%	2.8%			0.4%	0.5%	5.8%			
Estimated Standard Deviation	5826.33	4398.62	4802.91	4271.71			1423.24	2202.93	1451.25			
B (Slope)	352	292	724	635			-9	-71	962			
A (Intercept)	36683	33271	24754	22328			20060	15052	3734			
R=	0.351	0.381	0.683	0.678			-0.037	-0.196	0.972			
Confidence Interval	+/- 90% CI 378	+/- 90% CI 289	+/- 90% CI 399	+/- 90% CI 353			+/- 90% CI 86	+/- 90% CI 136	+/- 90% CI 373			
	Avg. of selected Forecast Linear Annual Growth Rates:					1.3%	Avg. of all Forecast Linear Annual Growth Rates:				1.3%	
GR's for Non-Regression vol's only												

PROJECTIONS OF ABOVE TRAFFIC VOLUME DATA TO FORECASTED YEARS

Use last Count Year from above. ☑
Do not use last Count Year from above. ☐
Enter any one of previous count years from above. 2010

Enter Base Year 2024

Pivot Growth Rate at 20 Years from Count Year (most commonly used). ☑
Pivot Growth Rate (GR) at other than 20 Years from Count Year. ☐
Enter years from Count Year for pivoting Growth Rate (e.g. for pivoting growth ten years from Count Year, enter 10) 10

Enter Model Year

Optional Input: SPR Station, Yr
Optional Input: K-Factor
Optional Input: Dir. Dist.

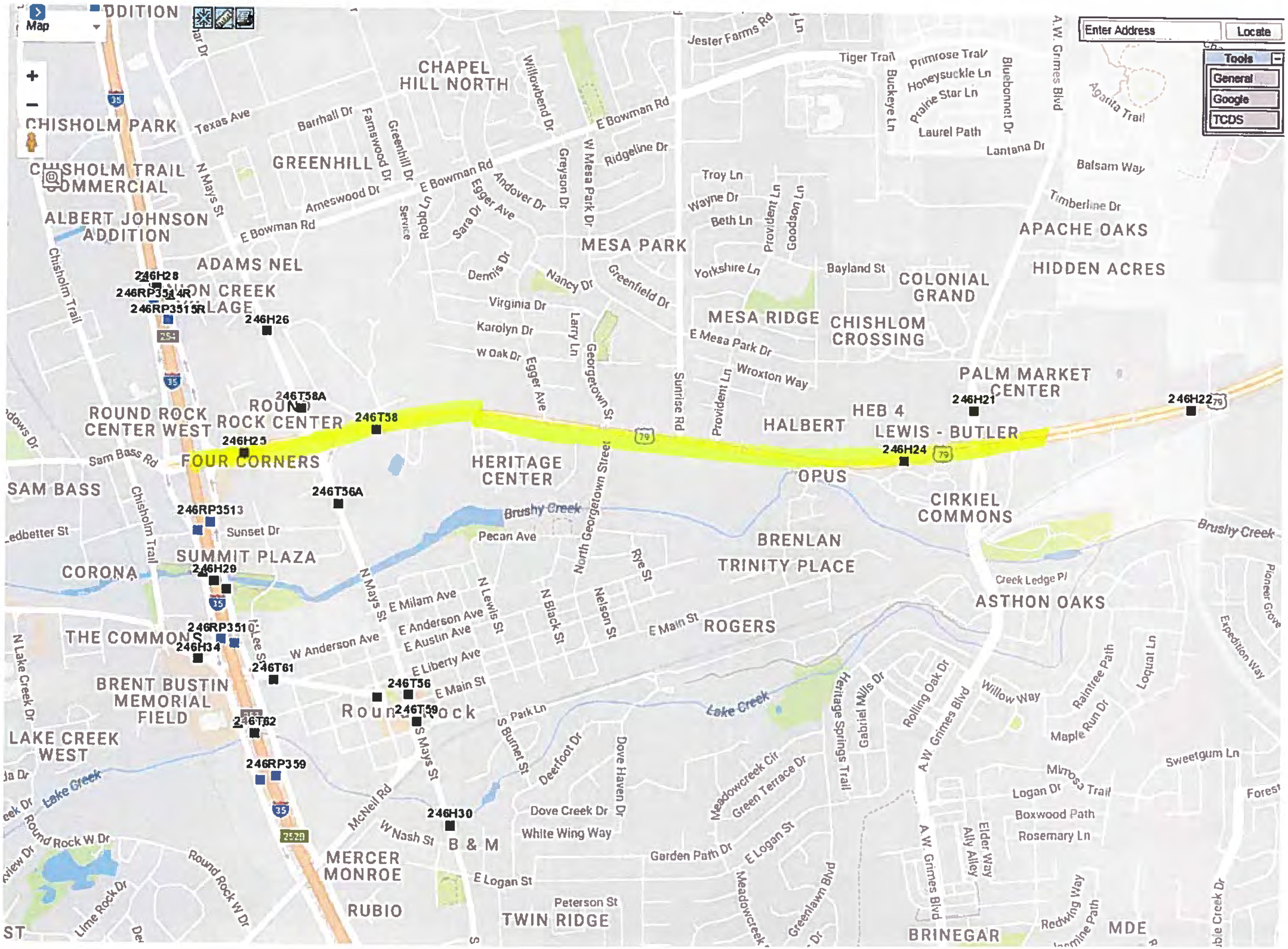
Enter Earliest Variable Year 2044
Enter Latest Variable Year 2054

Pre-20/Pivot Yr Growth Rates Selection

Use Relative Low & Non-Regression GR's	○
Use Relative Frcst & Non-Regression GR's	○
Use Relative High & Non-Regression GR's	○
Use Avg. of Selected Low Growth Rates	○ 0.4%
Use Avg. of Selected Forecast Growth Rates	○ 1.3%
Use Avg. of Selected High Growth Rates	○ 2.2%
Use Avg. of All Low Growth Rates	○ 0.3%
Use Avg. of All Forecast Growth Rates	○ 1.3%
Use Avg. of All High Growth Rates	○ 2.2%
Use Highest Forecast Growth Rate	○ 4.2%
Use Lowest Forecast Growth Rate	○ -0.5%
Use Manually Selected Growth Rate	● 2.0%

Post-20/Pivot Year Growth Rate Note: If Pre-20/Pivot Yr GR is 2.0% or less, that rate is used in the projections, not the rate below.
Enter Growth Rate (2.0% most common) 2.0%

ROUTE	US 79	US 79	US 79	US 79			Mays St-B 35	Mays St-B 35	FM 1460 (Cr			
LOCATION	H-25	T-58	H-24	H-22			T-58A	T-56A	H-21			
20/PIVOT YR AN. GROWTH RATE	2.0%	2.0%	2.0%	2.0%			2.0%	2.0%	2.0%			
Count Year - 2016	35898	32826	32853	29367			18744	11193	26312			
Base Year - 2024	41600	38100	38100	34100			21700	13000	30500			
Ten Year Forecast - 2034	48800	44600	44700	39900			25500	15200	35800			
Twenty Year Forecast - 2044	56000	51200	51300	45800			29200	17500	41000			
Thirty Year Forecast - 2054	63200	57800	57800	51700			33000	19700	46300			
Forty Year Forecast - 2064	70400	64300	64400	57600			36700	21900	51600			
GR Pivot Year Forecast - 2036	50300	46000	46000	41100			26200	15700	36800			
Earliest Var Yr Frcst - 2044	56000	51200	51300	45800			29200	17500	41000			
Latest Var Yr Frcst - 2054	63200	57800	57800	51700			33000	19700	46300			
Model Year Forecast - Model Traffic Assignment												
Difference of Model Yr Forecast from Model Traffic Assignment Above Difference in DDHV												
% Difference of Model Yr Forecast from Model Traffic Assignment												



Map
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CHAPEL HILL NORTH
CHISHOLM PARK
GREENHILL
CHISHOLM TRAIL COMMERCIAL
ALBERT JOHNSON ADDITION
ADAMS NEL
MESA PARK
APACHE OAKS
HIDDEN ACRES
COLONIAL GRAND
MESA RIDGE
CHISHLOM CROSSING
PALM MARKET CENTER
HEB 4
HALBERT
LEWIS - BUTLER
ROUND ROCK CENTER WEST
ROCK CENTER
FOUR CORNERS
HERITAGE CENTER
OPUS
CIRKIEL COMMONS
SAM BASS
SUMMIT PLAZA
CORONA
BRENLAN
TRINITY PLACE
ASTHON OAKS
ROGERS
THE COMMONS
BRENT BUSTIN MEMORIAL FIELD
LAKE CREEK WEST
Round Rock
B & M
MERCER MONROE
RUBIO
TWIN RIDGE
BRINEGAR
MDE
246H28
246RP3514R
246RP3515R
246H26
246T58A
246T58
246H25
246T56A
246RP3513
246H29
246RP3510
246H34
246T61
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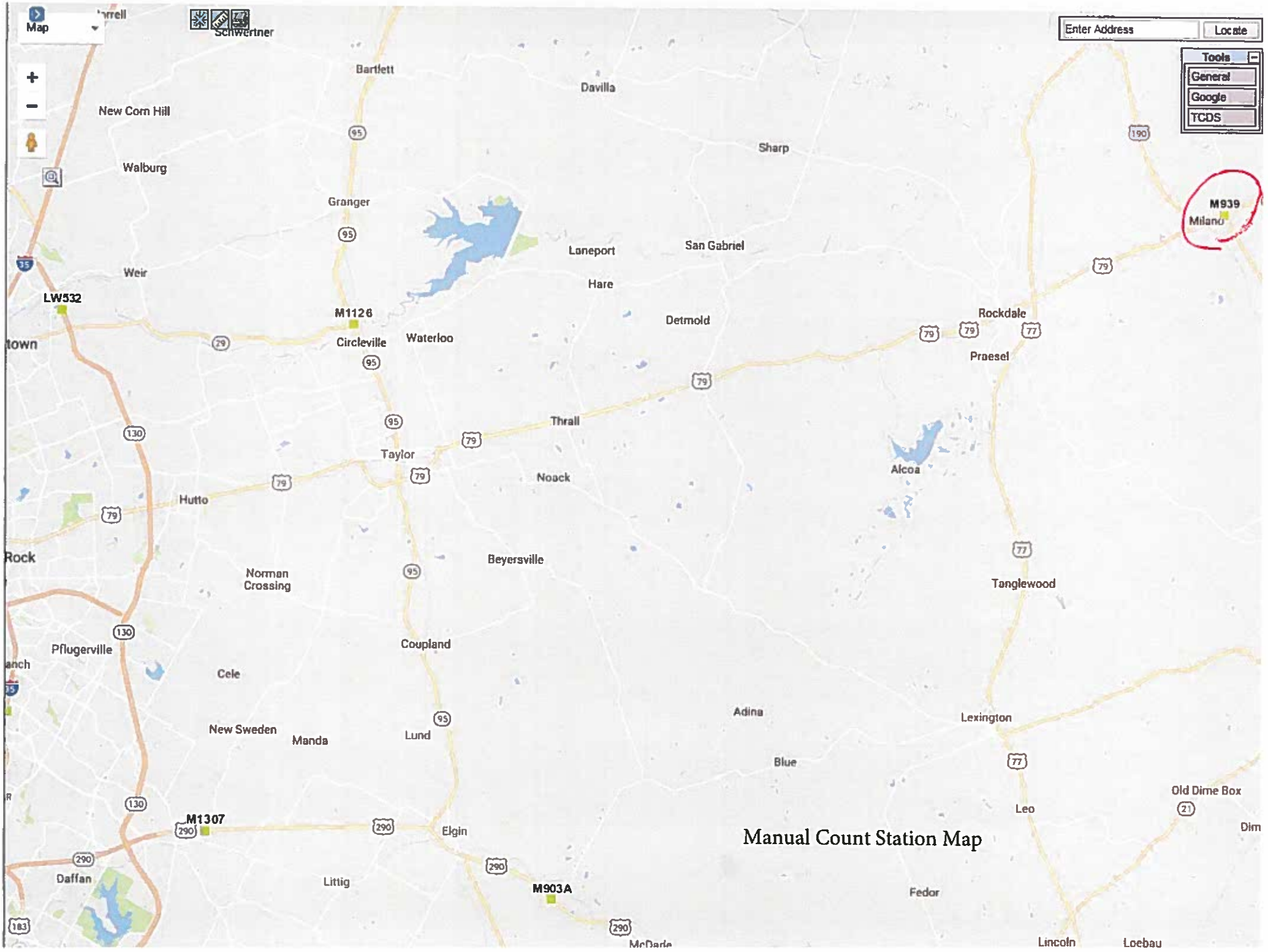
246RP359
246H30
246H21
246H22
246H24
Texas Ave
Barrhall Dr
Farnswood Dr
Greenhill Dr
Willowbend Dr
E Bowman Rd
Ameswood Dr
N Mays St
Robb Ln
Sara Dr
Egger Ave
Andover Dr
Greyson Dr
W Mesa Park Dr
Ridgeline Dr
Troy Ln
Wayne Dr
Beth Ln
Provident Ln
Goodson Ln
Yorkshire Ln
Bayland St
Jester Farms Rd
Tiger Trail
Buckeye Ln
Primrose Trail
Honeysuckle Ln
Prairie Star Ln
Laurel Path
Bluebonnet Dr
A.W. Grimes Blvd
Agarita Trail
Lantana Dr
Balsam Way
Timberline Dr
Dennis Dr
Nancy Dr
Greenfield Dr
Virginia Dr
Karolyn Dr
W Oak Dr
Larry Ln
Georgetown St
E Mesa Park Dr
Wroxton Way
Sunrise Rd
Sam Bass Rd
Chisholm Trail
Sunset Dr
Ledbetter St
Brushy Creek
Pecan Ave
North Georgetown Street
Rye St
Creek Ledge Pl
Pioneer Grove
Expedition Way
E Milam Ave
E Anderson Ave
E Austin Ave
E Liberty Ave
E Main St
W Anderson Ave
N Lewis St
N Black St
Nelson St
Lee St
N Lake Creek Dr
Lake Creek
S Park Ln
S Burnet St
S Mays St
Deerfoot Dr
Dove Haven Dr
Dove Creek Dr
White Wing Way
McNeil Rd
W Nash St
Round Rock W Dr
Lime Rock Dr
Meadowcreek Cir
Green Terrace Dr
Heritage Springs Trail
Gabriel Mills Dr
Rolling Oak Dr
Willow Way
Raintree Path
Loquat Ln
Maple Run Dr
Sweetgum Ln
Mimosa Trail
Logan Dr
Boxwood Path
Rosemary Ln
Elder Way
Ally Alley
Garden Path Dr
E Logan St
Peterson St
Greenlawn Blvd
Redwing Way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Walburg
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Milano
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San Gabriel
Weir
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LW532
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Detmold
Rockdale
Circleville
Waterloo
Praesel
Thrall
Taylor
Noack
Alcoa
Hutto
Beyersville
Norman Crossing
Tanglewood
Pflugerville
Coupland
Cele
Adina
Lexington
New Sweden
Manda
Lund
Blue
Old Dime Box
Leo
M1307
Elgin
Daffan
Littig
M903A
Fedor
Lincoln
Loebau
Manual Count Station Map

Texas Department of Transportation

MS2

Traffic Count Database System (TCDS)

Classification Report

Location ID	M939_SW	**Located On**	US 79	**County**	Milam
Counted By		**AT**	SH 36	**Community**	-
Start Date	Thu 11/10/2016	**Loc On Alias**		**Station**	M939_SW
Start Time	12:00:00 AM	**Direction**	SW	**Agency**	Texas DOT
Source		**Sensor Type**		**Owner**	Stacey Lewis
Axle Factor	0.787	**Count Status**	Accepted		
Filename	M-939.16				

FHWA-Scheme F Classification

Start Time	Motor cycle	Car	Pick up	Bus	2A SU	3A SU	>3A SU	<5A 2U	5A 2U	>5A 2U	<6A >2U	6A >2U	>6A >2U	14	15	TOTAL
12:00 AM	0	20	13	0	1	0	0	0	24	0	3	1	0	0	0	62
1:00 AM	0	19	11	0	0	2	0	0	25	0	0	0	0	0	0	57
2:00 AM	0	14	10	0	1	0	0	0	34	0	0	0	0	0	0	59
3:00 AM	0	17	11	0	1	0	0	1	32	0	1	0	0	0	0	63
4:00 AM	0	28	30	1	2	4	0	0	35	1	1	0	0	0	0	102
5:00 AM	0	62	72	0	2	3	0	1	58	1	0	0	0	0	0	199
6:00 AM	0	142	142	3	6	1	0	3	70	0	0	2	0	0	0	369
7:00 AM	0	283	191	2	6	2	0	1	79	2	0	0	0	0	0	566
8:00 AM	0	189	181	0	7	2	0	4	102	1	1	0	0	0	0	487
9:00 AM	0	202	193	3	12	1	0	0	89	2	0	0	0	0	0	502
10:00 AM	0	231	205	0	11	3	0	8	98	0	0	0	0	0	0	556
11:00 AM	0	208	185	0	15	7	0	0	114	0	0	0	0	0	0	529
12:00 PM	1	252	225	0	12	5	0	1	78	2	1	0	0	0	0	577
1:00 PM	4	321	235	0	7	8	1	2	97	2	0	0	0	0	0	677
2:00 PM	1	301	240	2	10	5	0	5	89	1	0	0	0	0	0	654
3:00 PM	0	378	287	1	14	3	0	3	96	0	1	0	0	0	0	783
4:00 PM	3	392	281	5	4	3	0	1	95	2	0	0	0	0	0	786
5:00 PM	0	377	243	0	3	3	0	2	117	2	0	1	0	0	0	748
6:00 PM	0	335	203	0	6	2	0	1	81	0	1	0	0	0	0	629
7:00 PM	0	223	151	0	4	3	0	0	51	0	0	1	0	0	0	433
8:00 PM	0	134	77	0	2	1	0	1	50	0	1	0	0	0	0	266
9:00 PM	0	91	83	1	1	1	0	1	54	0	0	0	0	0	0	232
10:00 PM	0	120	47	0	0	2	0	0	45	0	1	0	0	0	0	215
11:00 PM	0	47	30	0	2	0	0	1	43	0	4	1	0	0	0	128
TOTAL	9	4386	3346	18	129	61	1	36	1656	16	15	6	0	0	0	9679

MANUAL COUNT DESIGN DATA - FHWA FORMAT

Station Number M-939 **Direction** SW **Year** 2016

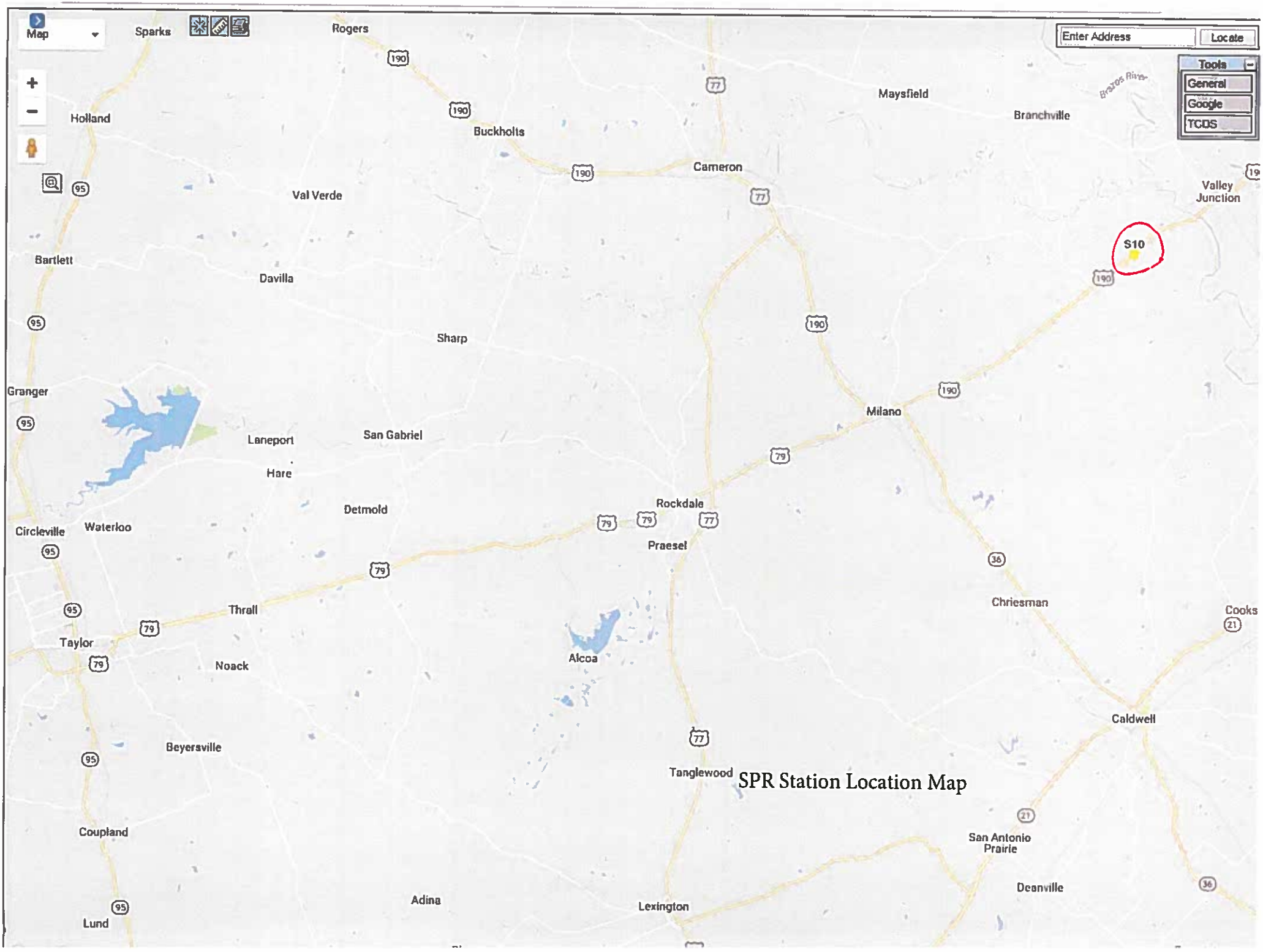
Optional Misc. Info. (loc., etc.)

Type of Truck		Number of Trucks	Single Axles Mult.		Tandem Axle Sets Mult.	
Single Units						
Buses	4	18	2	36	0	0
2-D	5	129	2	258	0	0
3-Axle	6	61	1	61	1	61
4-Axle	7	1	1	1	1	1
Single Trailer						
3-4-Axle	8	36	2.5	90.0	0.5	18.0
5-Axle	9	1656	1	1656	2	3312
6-Axle	10	16	1	16	2	32
Multi-Trailers						
5-Axle	11	15	5	75	0	0
6-Axle	12	6	4	24	1	6
7-Axle	13	0	3	0	2	0
Total		1938		2217.0		3430.0

(Singles + Tandems) / Total Trucks = Axle Factor	2.91
(Singles Axles / (Singles + Tandems))	0.39

Light Duty Vehicles	Motorcycles	9
	Passenger Cars	4386
	Pickup or Van	3346
Single Units	Buses	18
	Other 2 Axle	129
	3 Axles	61
	4 Axles or more	1
Single Trailer	3-4 Axles	36
	5 Axles	1656
	6 Axles or more	16
Multi-Trailers	5 Axles or less	15
	6 Axles	6
	7 Axles or more	0

Light	7741
Medium	165
Heavy	1773
Trucks	1938
Total Vehicles	9679
%T of Tot. Veh.	20.0
Num. of Trucks	1938
Axle Factor	2.91
% Single Axles	0.39



SPR Station Location Map

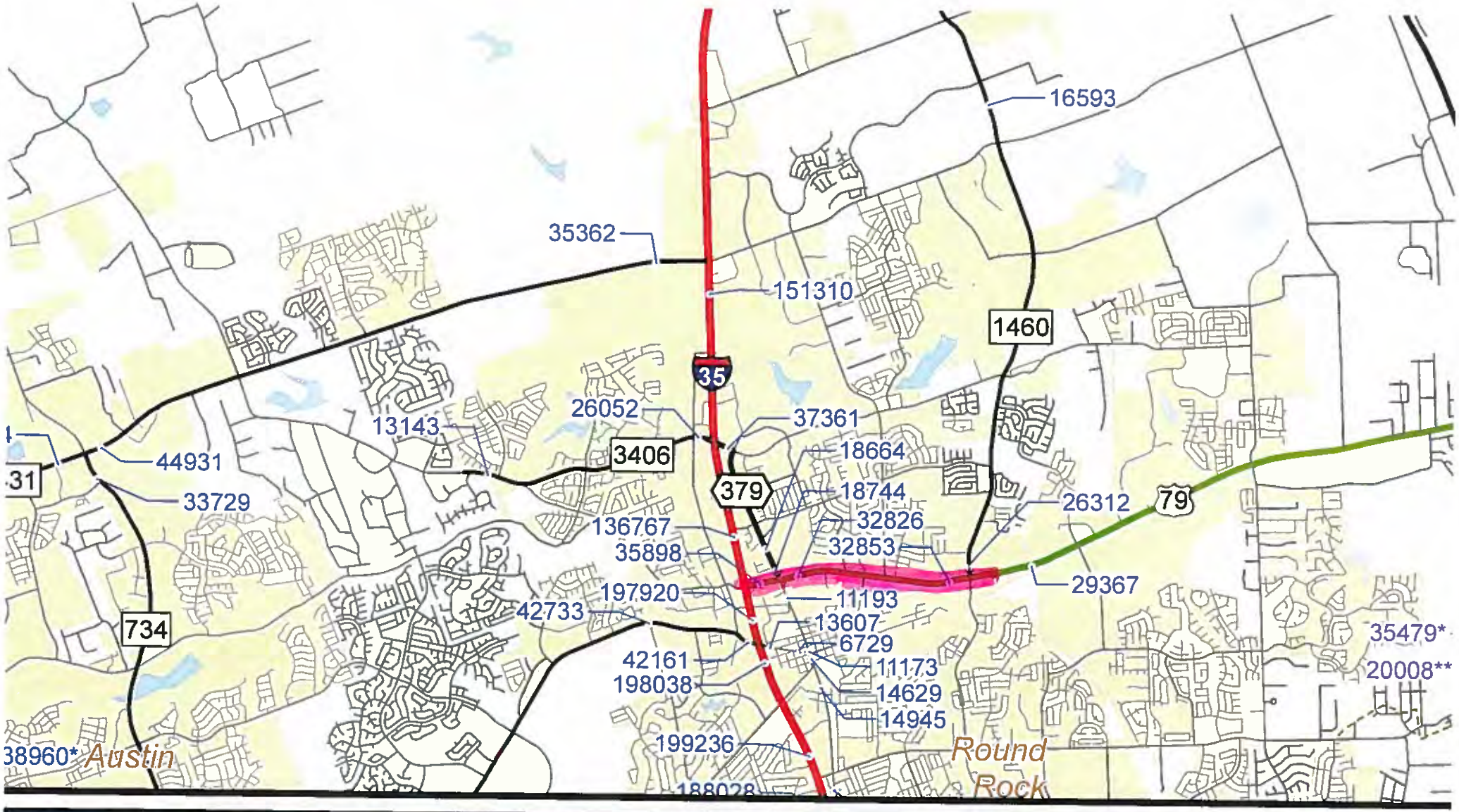
Texas Department of Transportation

Transportation Planning and Programming Division's
Statewide Traffic Analysis and Reporting System II

High Hourly Volumes for Year for 1/1/2016 - 12/31/2016

District : Bryan
County : Milam
Community : Hearne
Route:
On Road: US0079
Location ID : S10
Collection Type : PERM
AADT: 6,203
Roadbed : ML

Ordinal High Hour	Date	Day of Week	Hour	Volume	K Factor	Peak Direction	Directional Distribution
1	11/23/2016	Wednesday	3pm-4pm	1078	17.4	NB	58
2	11/27/2016	Sunday	2pm-3pm	1065	17.2	NB	52
3	11/23/2016	Wednesday	4pm-5pm	1027	16.6	NB	58
4	11/27/2016	Sunday	3pm-4pm	1025	16.5	SB	54
5	11/27/2016	Sunday	4pm-5pm	1020	16.4	SB	56
6	11/27/2016	Sunday	1pm-2pm	1012	16.3	SB	50
7	11/23/2016	Wednesday	2pm-3pm	982	15.8	NB	60
8	11/23/2016	Wednesday	5pm-6pm	932	15	NB	58
9	11/23/2016	Wednesday	1pm-2pm	931	15	NB	56
10	9/5/2016	Monday	3pm-4pm	921	14.8	NB	54
20	3/20/2016	Sunday	4pm-5pm	850	13.7	SB	50
25	3/20/2016	Sunday	2pm-3pm	818	13.2	NB	51
30	3/27/2016	Sunday	6pm-7pm	804	13	SB	55
35	11/18/2016	Friday	4pm-5pm	793	12.8	NB	58
40	11/25/2016	Friday	11am-12pm	772	12.4	NB	50
40	11/25/2016	Friday	11am-12pm	772	12.4	SB	50
45	9/30/2016	Friday	4pm-5pm	753	12.1	NB	51
50	5/6/2016	Friday	5pm-6pm	746	12	NB	52
75	11/22/2016	Tuesday	3pm-4pm	714	11.5	SB	52
100	10/14/2016	Friday	5pm-6pm	690	11.1	SB	51
125	11/18/2016	Friday	3pm-4pm	679	10.9	NB	54
150	10/16/2016	Sunday	1pm-2pm	667	10.8	NB	52
175	4/29/2016	Friday	5pm-6pm	654	10.5	NB	50
200	8/19/2016	Friday	5pm-6pm	641	10.3	NB	51



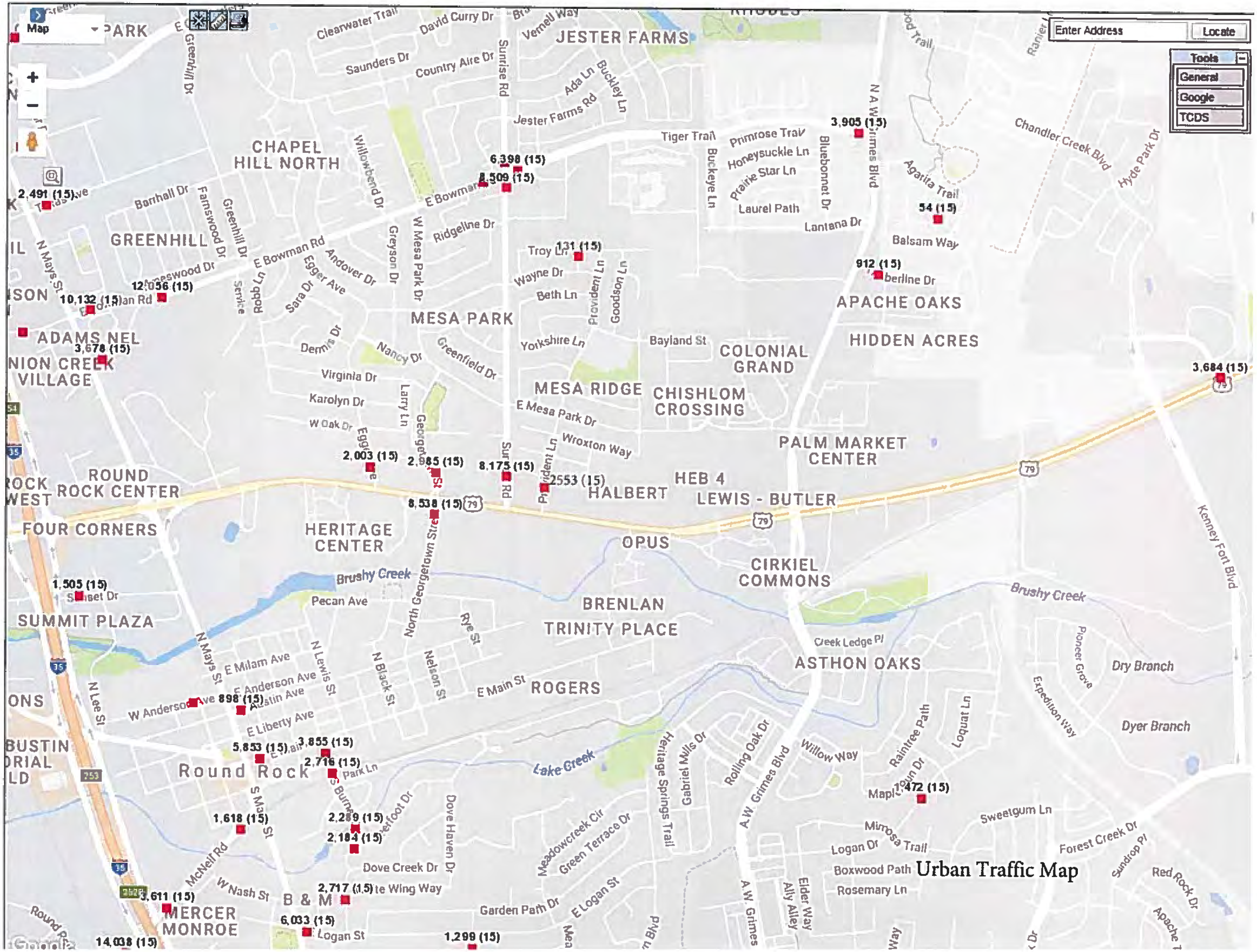
2016 AUSTIN DISTRICT TRAFFIC MAP

PREPARED BY THE

Texas Department of Transportation

Transportation Planning and Programming Division

Traffic Analysis System Support Branch


Urban Traffic Map
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Map
JESTER FARMS
CHAPEL HILL NORTH
GREENHILL
MESA PARK
MESA RIDGE
APACHE OAKS
HIDDEN ACRES
COLONIAL GRAND
CHISHLOM CROSSING
PALM MARKET CENTER
HEB 4
HALBERT
LEWIS - BUTLER
OPUS
CIRKIEL COMMONS
BRENLAN
TRINITY PLACE
ASTHON OAKS
ROGERS
HERITAGE CENTER
ROUND ROCK CENTER
FOUR CORNERS
SUMMIT PLAZA
VILLAGE
Round Rock
MERCER MONROE
B & M
3,905 (15)
6,398 (15)
8,509 (15)
54 (15)
131 (15)
912 (15)
2,491 (15)
12,056 (15)
10,132 (15)
3,678 (15)
3,684 (15)
2,003 (15)
2,985 (15)
8,175 (15)
2553 (15)
8,538 (15)
1,505 (15)
898 (15)
5,853 (15)
3,855 (15)
2,716 (15)
1,618 (15)
2,289 (15)
2,184 (15)
472 (15)
3,611 (15)
2,717 (15)
6,033 (15)
14,038 (15)
1,299 (15)
Clearwater Trail
David Curry Dr
Saunders Dr
Country Aire Dr
Sunrise Rd
Jester Farms Rd
Ada Ln
Buckley Ln
Tiger Trail
Primrose Trail
Honeysuckle Ln
Prairie Star Ln
Laurel Path
Bluebonnet Dr
Buckeye Ln
Lantana Dr
N A W Grimes Blvd
Chandler Creek Blvd
Hyde Park Dr
Agarita Trail
Balsam Way
Willowbend Dr
Barnhall Dr
Farnswood Dr
Greenhill Dr
E Bowman Rd
Ridgeline Dr
Greyson Dr
W Mesa Park Dr
Andover Dr
Egger Ave
Sara Dr
Robb Ln
Service
Troy Ln
Wayne Dr
Beth Ln
Provident Ln
Goodson Ln
Yorkshire Ln
Bayland St
Greenfield Dr
Nancy Dr
Virginia Dr
Karolyn Dr
W Oak Dr
Larry Ln
E Mesa Park Dr
Wroxton Way
North Georgetown Street
Brushy Creek
Pecan Ave
Rye St
Nelson St
N Black St
N Lewis St
E Main St
E Milam Ave
E Anderson Ave
Austin Ave
E Liberty Ave
N Mays St
W Anderson Ave
N Lee St
Park Ln
Lake Creek
Heritage Springs Trail
Gabriel Mills Dr
Rolling Oak Dr
A W Grimes Blvd
Willow Way
Raintree Path
Loquat Ln
Creek Ledge Pl
Pioneer Grove
Expedition Way
Dry Branch
Dyer Branch
Kenney Fort Blvd
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Boxwood Path
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Forest Creek Dr
Sundrop Pl
Red Rock Dr
Elder Way
Ally Alley
Meadowcreek Cir
Green Terrace Dr
E Logan St
Garden Path Dr
Dove Haven Dr
Dove Creek Dr
McNeil Rd
W Nash St
Logan St
Round Rock
Chisholm Trail
S Mays St

File

MEMORANDUM

TO: Greg Malatek, P.E.

DATE: April 23, 2013

FROM: William E. Knowles, P.E.

SUBJECT: Traffic Data
CSJ: 0204-01-06
US 79:
From I-35
To FM 1460

Williamson County

Attached is a copy of a schematic depicting 2013, 2033 and 2043 anticipated average daily traffic volumes and turning movements along US 79 specified in your request. Also attached are tabulations showing traffic analysis for highway design for the 2013 to 2033 twenty year period and 2013 to 2043 thirty year period for the described limits of the route. Included is a tabulation showing data for use in air and noise analysis.

Please refer to your original memorandum dated March 25, 2013.

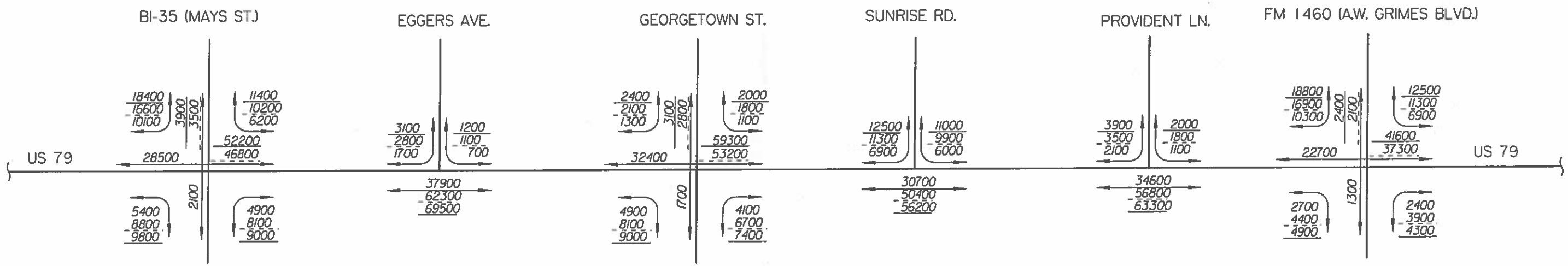
If you have any questions or need additional information, please contact Robert Williams at (512) 486-5145.

Attachments

cc: Ed Collins, Austin District
Design Division

PAST PROJECT

William E Knowles



LEGEND
1000 - 2013 ADT
1000 - 2033 ADT
1000 - 2043 ADT

2013, 2033 AND 2043 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG U.S. 79 FROM I-35 TO FM 1460 WILLIAMSON COUNTY

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
APRIL 29, 2013

PP

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

April 23, 2013

Description of Location	Average Daily Traffic 2013	Average Daily Traffic 2033	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2013 to 2033) Flexible Pavement	S N	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2013 to 2033) Rigid Pavement	SLAB
US 79 From I-35 To FM 1460 Williamson County	44,000	72,200	53 - 47	12.8	14.9	8.9	12,900	40	30,473,000	3	42,692,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	85.1	91.1
Medium Duty	4.1	2.5
Heavy Duty	10.8	6.4

Description of Location	Average Daily Traffic 2013	Average Daily Traffic 2043	Base Year Dir Dist %	Base Year K Factor	Base Year Percent Trucks ADT	Base Year Percent Trucks DHV	ATHWLD	Percent Tandem Axles in ATHWLD	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2013 to 2043) Flexible Pavement	S N	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2013 to 2043) Rigid Pavement	SLAB
US 79 From I-35 To FM 1460 Williamson County	44,000	80,400	53 - 47	12.8	14.9	8.9	13,000	40	48,936,000	3	68,558,000	8"

Texas Department of Transportation

FILE TPP
WD ☐ ___ RLR ☐ ___ A ☐ ___ M ☐ ___ F ☐
D ☐ ___ ☐ ___ P ☐ ___ T ☐ ___ File

MEMORANDUM

To: Bill Knowles
Transportation Planning and Programming

Date: March 25, 2013

From: Elizabeth Prestwood
Transportation Planning and Development, Austin District

Subject: Traffic Request

County:	Williamson
CSJ:	0204-01-06
Highway:	US 79
Limits:	From IH 35 to FM 1460

I am attaching the following documents that explain the request:

1. Completed TRAFFIC REQUEST FORM
2. Project Location Map
3. Revised District Priority List

In addition, a layout with known traffic generators that would affect the project limits is also attached.

If you have any questions, please feel free to contact me at 832-7284.

PP

RECEIVED TPP
0377 MAR 27 13

REQUEST FOR TRAFFIC DATA

Form 2124
(6/2004)
Page 1 of 1

Date: 3/5/13

District: 14 **County:** Williamson **CSJ:** 0204-01-06

Highway: US 79
Limits: From IH 35 to FM 1460

Texas Reference Marker System
From Marker: 564 From Displacement: 0.320 From DFO: 272.036
To Marker: 564 To Displacement: 01.968 To DFO: 273.684

Is it in the UTP? ☐ Yes ☒ No District Priority: Est. Letting Date:

RECEIVED
MAR 27 2013
BY TPP

Existing Number of Lanes: 5
Proposed Number of Lanes: 7

District Contact Person: Ed Collins
Phone Number: 512/832-7041

Please attach an 8-1/2" x 11" location map and make note of any existing or proposed development that will be a traffic generator.

The following to be completed (Please mark information to be provided):

☒ 1. Basic Highway Traffic Data for pavement design
(No line diagram analysis required)
- A. Base year/Beginning year: 2013
- B. Forecasted 20 year: 2033
- C. Forecasted 30 year: 2043
- D. Directional Distribution
- E. K-factor
- F. Percent Trucks ADT/DHV
- G. Average Ten Heaviest Wheel Loads (ATHWLD)
- H. Percent Tandem Axles in the ATHWLD
- I. One Directional cumulative 18 KSA at the end of the 20 years/30years
- J. Slab Thickness (8" unless otherwise specified):
- K. Structural Number (3 unless otherwise specified):

ALSO NEED TURNING MOVEMENT COUNTS AT THE FOLLOWING INTERSECTIONS:
- BI-35 (MAYS ST)
- EGGER AVE
- GEORGETOWN ST
- SUNRISE RD
- PROVIDENCE LN
- HEB DRIVEWAY (WEST END OF PROPERTY)
- FM 1460 (A.W. GRIMES)

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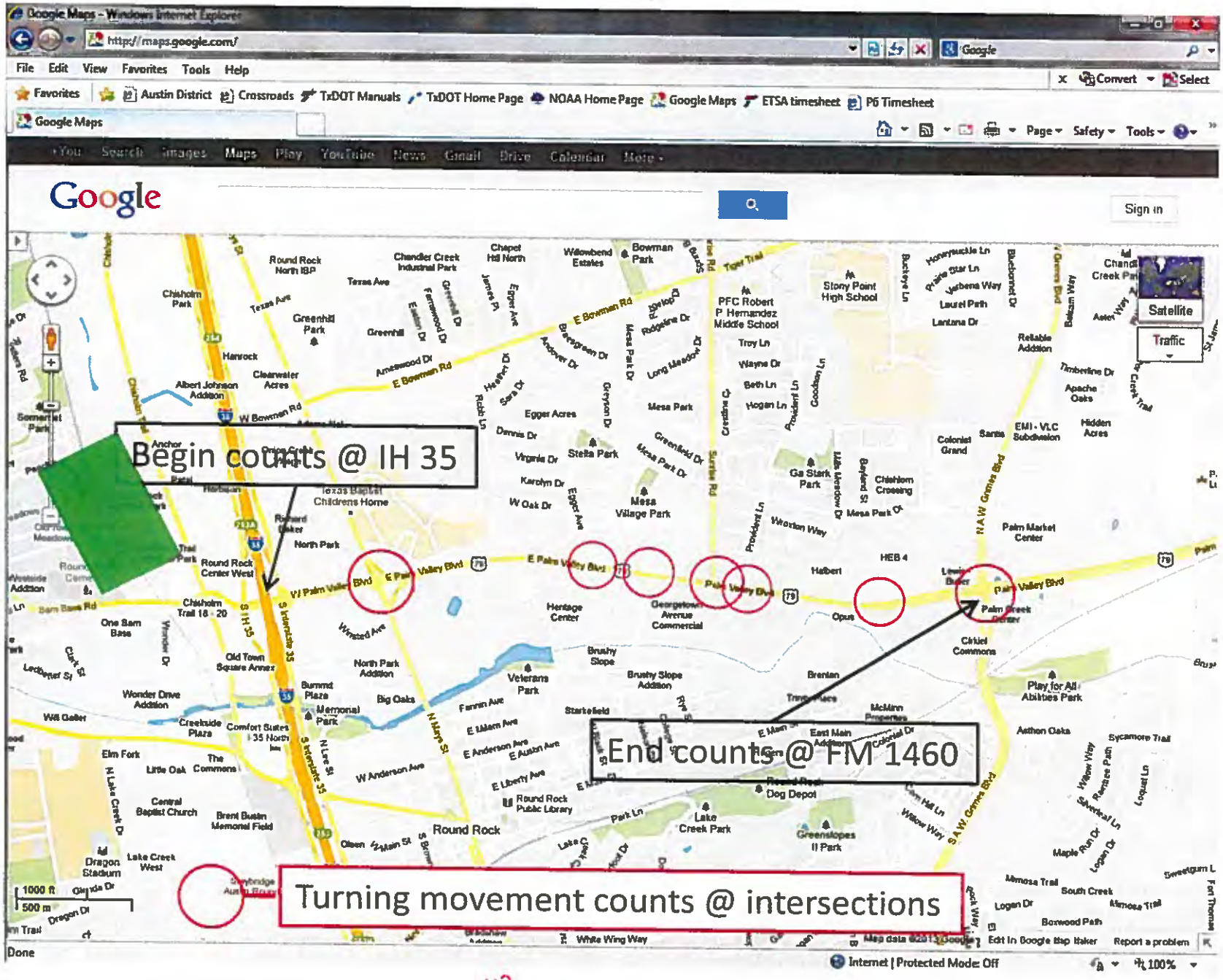
☐ 2. Vehicle classification for environmental studies (Air and Noise Analysis).

☐ 3. Line diagram analysis (straight line turning movements; please provide line diagram).

☐ 4. Complete Corridor Analysis (includes basic highway traffic data for pavement design, environmental studies and detailed schematic turning movements; *please provide detailed schematic*).

Note: If complete corridor analysis is requested, please attach a traffic schematic diagram.


Google Maps - Windows Internet Explorer
http://maps.google.com/
Google Maps
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Sign in
Satellite
Traffic
Begin counts @ IH 35
End counts @ FM 1460
Turning movement counts @ intersections
Round Rock
Done

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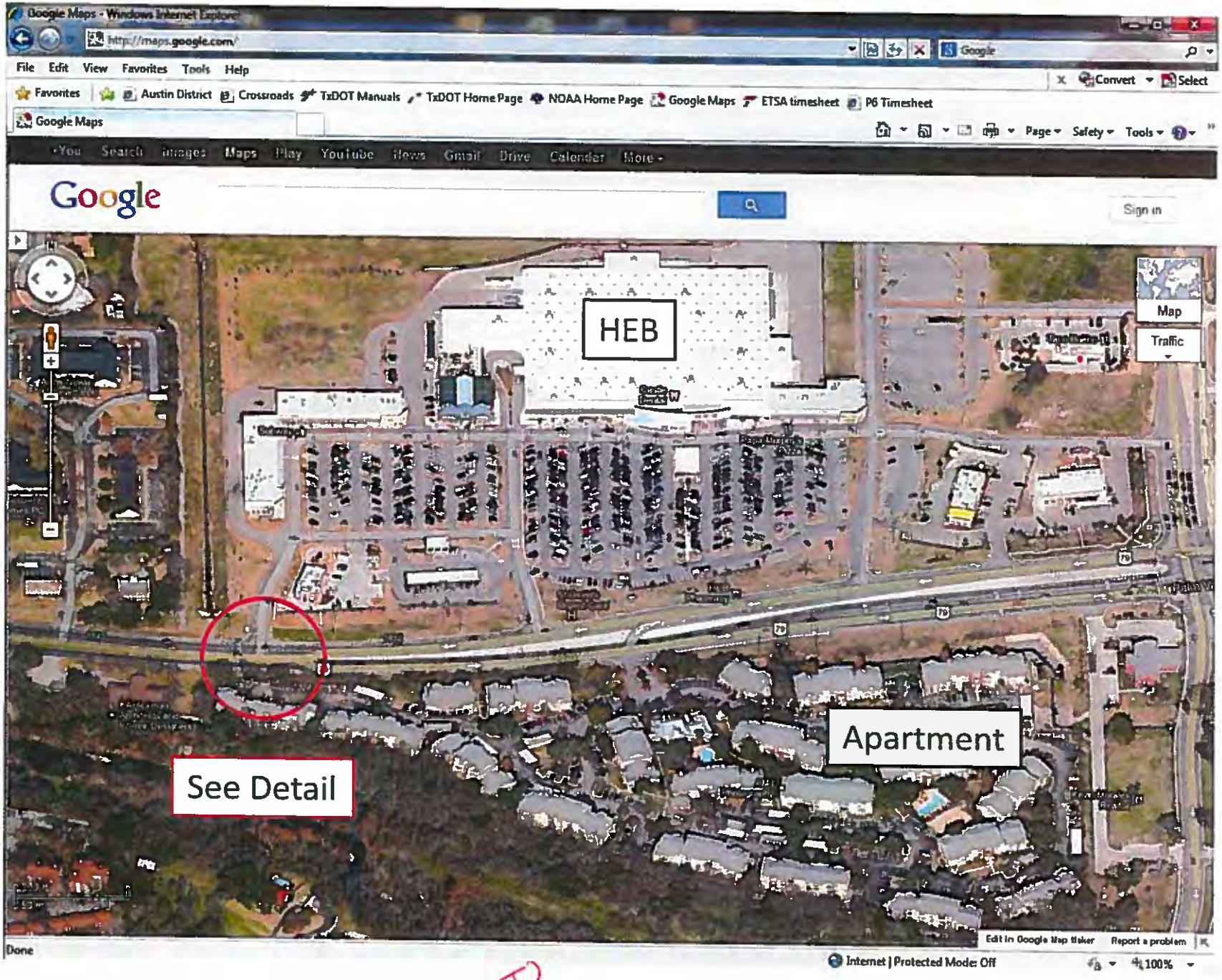
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Favorites
Austin District
Crossroads
TxDOT Manuals
TxDOT Home Page
NOAA Home Page
Google Maps
ETSA timesheet
P6 Timesheet
Google Maps
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Safety
Tools
+You
Search
Images
Maps
Play
YouTube
News
Gmail
Drive
Calendar
More
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Report a problem
Done
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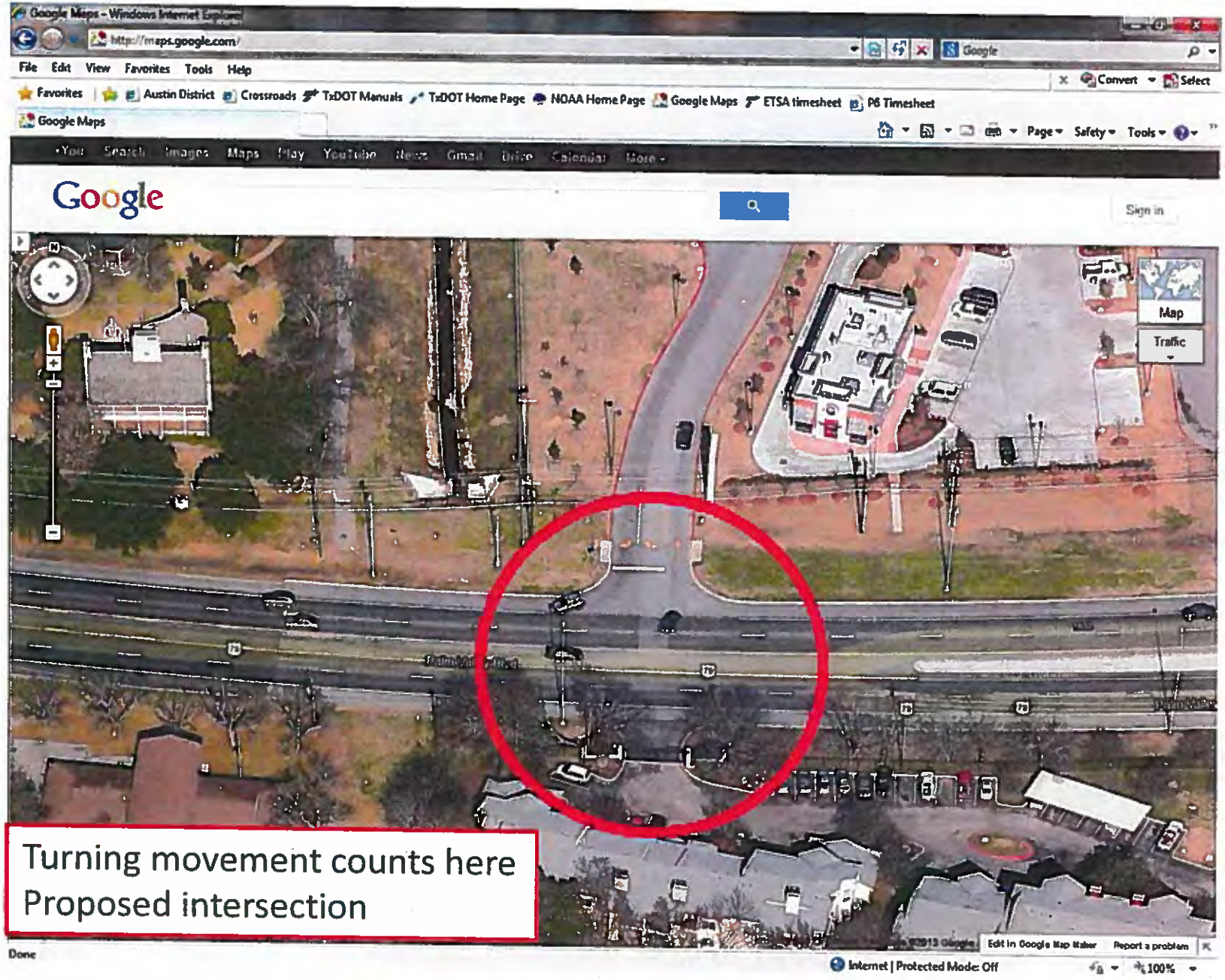
Google Maps - Windows Internet
http://maps.google.com/
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Favorites
Austin District
Crossroads
TxDOT Manuals
TxDOT Home Page
NOAA Home Page
Google Maps
ETSA timesheet
P6 Timesheet
Google Maps
Page
Safety
Tools
Google
Sign in
Map
Traffic
Turning movement counts here
Proposed intersection
Edit in Google Map Maker
Report a problem
Done
Internet | Protected Mode: Off
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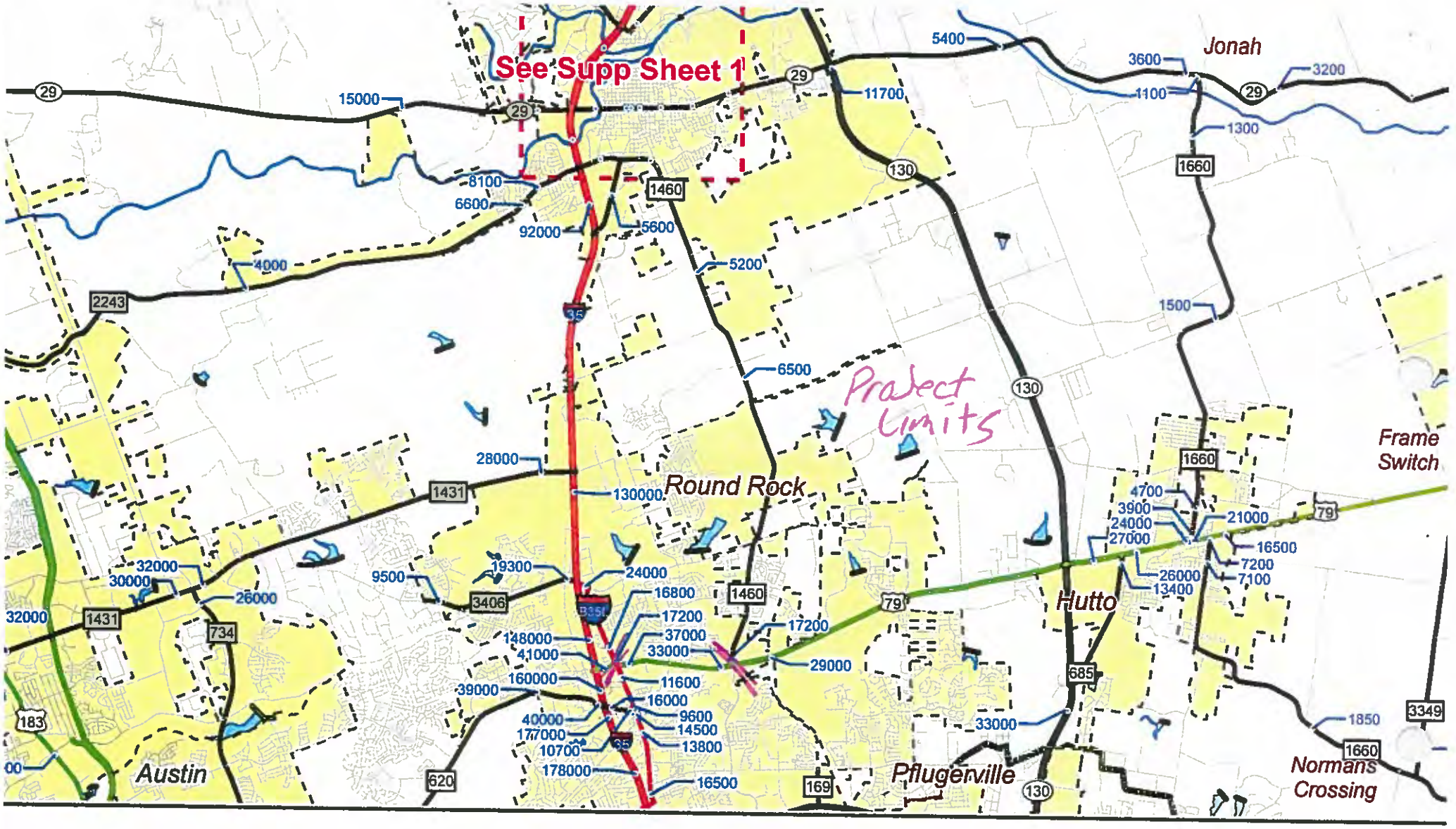

2011 AUSTIN DISTRICT TRAFFIC MAP

PREPARED BY THE

Texas Department of Transportation

Transportation Planning and Programming Division

IN COOPERATION WITH THE

U.S. Department of Transportation

3 4

N

1 2 3 4 6 7 8

2.

Corridor Analysis Worksheet: 1 Section, 2 Forecast Years, Air & Noise

Project	US 79	Date for Memorandum	3/25/2013
Rd Type	US	District	Austin
		County	Williamson
Project	From I-35	CSJ	0204-01-06
Limits	To FM 1460	Analyst	RCW

Date:	Request	3/25/2013	Received	3/27/2013	Started	4/22/2013	Completed	4/23/2013
District Contact					Phone #	832-7284		

	Year	ADT's	% Trks ADT	% Trks DHV
Count	2011	41000	14.9	8.9
Base	2013	44000	# Trks 6556	
Forecast	2033	72200		
Forecast	2043	80400		

SPR Station	S-10	MC Stn	M-939	% Trks	25.5
Year	2011	Dir	6	Num Trks	1929
Peak Hour	18.6	Year	2011	Axle Factor	2.74
DD	53	ADT	7572	% Single Axles	0.50
100-DD	47				
K-Factor	12.8				

Main Road Growth Rate	3.6	TDM Assignment	N/A
Growth Rate after 20 Years	2.0		
20 Year Growth Factor	3.205		
30 Year Growth Factor	2.758	LOD	99999
Design Period 1	20		
Design Period 2	30		

		# Lanes	
Structural Number (SN)	3	Existing	5
Slab Thickness (ST)	8	Proposed	7

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Past Projects	
Project	US 79
From	FM 1460
To	I-35
Date	11/5/2007
County	Williamson
CSJ	0683-01-078

T. Log			
ADT			
% Growth Rate			
K-Factor			
DD			
% Trucks ADT			
% Trucks DHV			
MC Station			
SPR Station			

Items Done on This Project			
Straight Line Turning Movements	Yes	Detailed Schematic Turning Movements	No
Traffic Analysis for Highway Design	Yes	Field Trip	No
Vehicle Mix	Yes	Travel Demand Model Used	No
Manual Count Worksheet	Yes		

NOTES:

See attachments for t-log

DATA CALCULATIONS FOR US[illegible]N AIR & NOISE ANALYSIS

◉ FHWA Format			○ Texas 6 Format		
Light Duty Vehicles	Motorcycles	17	Light Duty Vehicles	Passenger	
	Passenger	3419		Panel & Pickup	
	Pickup or Van	2207	Single Units	Buses	
Single Units	Buses	35		Other 2 Axle	
	Other 2 Axle	431		3 Axle	
	3 Axles	69		4 Axle or More	
	4 Axles or more	0	Truck Combs.	3 Axle	
Truck Combs.	3-4 Axles	129		4 Axle	
	5 Axles	1232		5 Axle	
	6 Axles or more	19		6 Axle or more	
Semi-Trailer-Trailer	5 Axles or less	11	Semi-Trailer-Trailer	5 Axle	
	6 Axles	2		6 Axle	
	7 Axles or more	1		7 Axle or more	

FHWA Format Data	Number	%
Light	5643	74.5
Medium	530	7.0
Heavy	1399	18.5
Trucks	1929	25.5

SECTION 1

US

	ADT	DHV
Light	85.1	91.1
Medium	4.1	2.5
Heavy	10.8	6.4

Total Vehicles	7572
Total Trucks	1929
Total Singles	2640.5
Total Tandems	2639.5
AXLE FACTOR	2.74
SINGLE AX FACT	0.50

INPUT DATA FOR KIPS: AUTOMATIC

SN, ST	3, 8					
Design Periods	1	2				
Year 1	13	13				
Year 2	33	43				
ADT	44000	44000				
% Trks	14.9	14.9				
Growth Rate	3.205	2.758				
Years	20	30				
Facil Type	B	B				
S.N.	3	3				
SLAB	8	8				
Weight Sta	99999	99999				
Axle Factor	2.74	2.74				
Single Axle	0.50	0.50				

OUTPUT DATA FROM KIPS: ENTER FOR TAHD FORM

SN, ST	3, 8					
Design Periods	1	2				
ATHWLD	12900	13000				
% T in ATHWLD	40	40				
FLEXIBLE	30473000	48936000				
RIGID	42692000	68558000				

TRAFFIC VOLUME REGRESSION WORKSHEET

April 22, 2013

PROJECT: US 79 From I-35 to FM 1460
LIMITS:

District: Austin
County: Williamson
CSJ: 0204-01-06

ROUTE					US 79	US 79	US 79					
LOCATION					A	B	C					
1991					29000	19100	10500					
1992					24000	17200	12000					
1993					26000	18100	12900					
1994					32000	19100	13900					
1995					28000	25000	18200					
1996					30000	27000	19900					
1997					30000	28000	19700					
1998					35000	32000	23000					
1999					28000	30000	23000					
2000					39000	35000	25000					
2001					40000	36000	28000					
2002					42000	35000	31000					
2003					42000	37000	32000					
2004					50000	41000	37000					
2005					46110	40250	36790					
2006					41000	45000	41000					
2007					48000	41000	41000					
2008					47000	39000	37000					
2009					46000	41000	36000					
2010					46000	40000	36000					
2011					41000	37000	33000					
	Regr01	Regr02	Regr03	Regr04	Regr05	Regr06	Regr07	Regr08	Regr09	Regr10	Regr11	Regr12
Low Linear Annual Growth Rate					1.4%	1.7%	2.1%					
Forecast Lnr. Ann Grwth Rate	☐	☐	☐	☐	**2.4%** ☐	**2.8%** ☐	**3.6%** ☐	☐	☐	☐	☐	☐
High Linear Annual Growth Rate					3.4%	4.0%	5.0%					
Estimated Standard Deviation					3978.09	3581.02	3553.82					
B (Slope)					1167	1278	1512					
A (intercept)					25956	19750	11876					
R²					0.876	0.911	0.936					
Confidence Interval					+/-90% CI 80	+/-90% CI 84	+/-90% CI 87					
	Avg. of selected Forecast Linear Annual Growth Rates:						**Avg. of all** Forecast Linear Annual Growth Rates:				2.9%	
GR's for Non-Regression vols only												

PROJECTIONS OF ABOVE TRAFFIC VOLUME DATA TO FORECASTED YEARS

Use last Count Year from above. ☑

Do not use last Count Year from above. ☐
Enter any one of previous count years from above. 2010

Enter Base Year 2012

Pivot Growth Rate at 20 Years from Count Year (most commonly used). ☑

Pivot Growth Rate (GR) at other than 20 Years from Count Year. ☐
Enter years from Count Year for pivoting Growth Rate
(e.g. for pivoting growth ten years from Count Year, enter 10) 10

Enter Model Year 2030

Optional Input: SPB Station, Yr
Optional Input: K-Factor
Optional Input: Dir. Dist.

Enter Earliest Variable Year 2015
Enter Latest Variable Year 2025

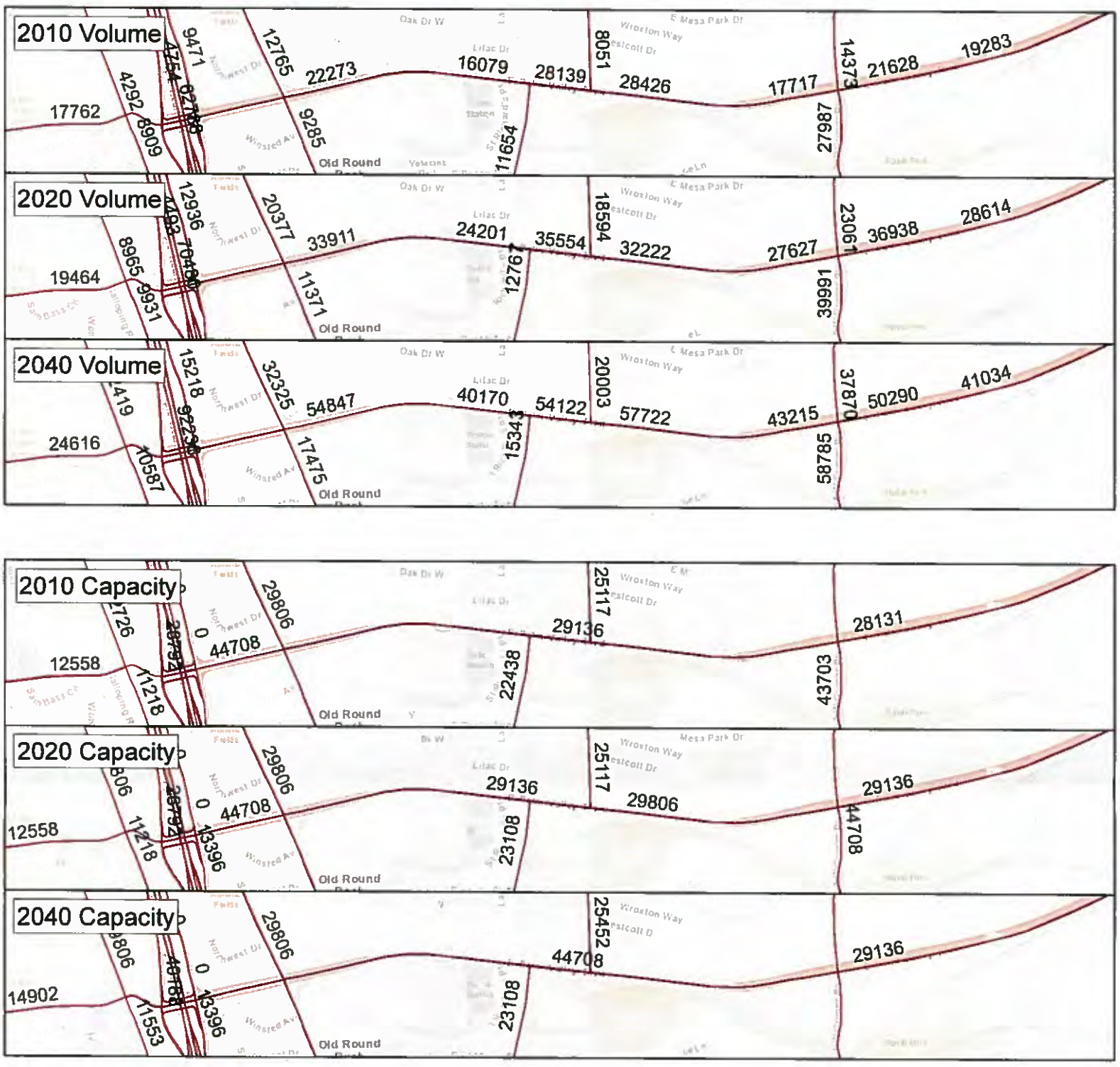
Pre-20/Pivot Yr Growth Rates Selection

Use Relative Low & Non-Regression GR's	○	
Use Relative Frcst & Non-Regression GR's	○	
Use Relative High & Non-Regression GR's	○	
Use Avg. of Selected Low Growth Rates	○	
Use Avg. of Selected Forecast Growth Rates	◉	
Use Avg. of Selected High Growth Rates	○	
Use Avg. of All Low Growth Rates	○	1.7%
Use Avg. of All Forecast Growth Rates	○	2.9%
Use Avg. of All High Growth Rates	○	4.1%
Use Highest Forecast Growth Rate	○	3.6%
Use Lowest Forecast Growth Rate	○	2.4%
Use Manually Selected Growth Rate	○	4.0%

Post-20/Pivot Year Growth Rate Note: If Pre-20/Pivot Yr GR is 2.0% or less, that rate is used in the projections, not the rate below.
Enter Growth Rate (2.0% most common) 2.0%

ROUTE					US 79	US 79	US 79					
LOCATION					A	B	C					
20/PIVOT YR AN. GROWTH RATE												
Count Year - 2011					41000	37000	33000					
Base Year - 2012												
Ten Year Forecast - 2022												
Twenty Year Forecast - 2032												
Thirty Year Forecast - 2042												
Forty Year Forecast - 2052												
GR Pivot Year Forecast - 2031												
Earliest Var Yr Frcst - 2015												
Latest Var Yr Frcst - 2025												
Model Year Forecast - 2030												
Model Traffic Assignment												
Difference of Model Yr Forecast from Model Traffic Assignment												
Above Difference in DDHV												
% Difference of Model Yr Forecast from Model Traffic Assignment												

Volume, capacity and volume to capacity ratios used to determine US79 future growth rate.
Data taken from CAMPO's 2040 regional Travel Demand Model under shared use agreement.
No sub-area study or model calibration was done.



11-29-17 Conference Call w/ Austin District and Lan-inc.
It was agreed to provide a corridor info. packet
with a 2% growth rate.
-Gabe