DRAFT
Traffic Noise Analysis Technical Report

SH 71 at FM 1209

Bastrop County, Texas

CSJ: 0265-03-041

February 2019

Prepared for the Texas Department of Transportation, Austin District

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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Appendices

Tables

1.0 INTRODUCTION

This technical report identifies and assesses existing and future traffic noise impacts associated with the proposed improvements to SH 71 at FM 1209 in Bastrop County, Texas.

The Texas Department of Transportation (TxDOT) Austin District is proposing to add a grade separation and other roadway improvements to State Highway (SH) 71 from County Road (CR) 206 to SH 21 in Bastrop County, Texas. The proposed improvements would include constructing new frontage roads, a grade-separation over Farm-to-Market (FM) 1209, and shared use paths. FM 1209 would be widened to include a second travel lane, a right turn lane, and a 14-foot-wide left turn lane in each direction. East/west turnarounds would also be added on either side of the SH 71 and FM 1209 intersection and on the west side of the SH 71 intersection with SH 21.

A project location map is included as **Figures 1** and **2** in **Appendix A.** The project length is approximately 2.27 miles.

2.0 PROJECT DESCRIPTION

2.1 Existing Facility

The existing SH 71 facility consists of two 12-foot-wide travel lanes in each direction with 10-foot-wide outside shoulders and 4-foot-wide inside shoulders. Directions of travel are separated by a grassy depressed median, approximately 68 feet in width. The existing right-of-way (ROW) along SH 71 is approximately 240 feet wide. The existing FM 1209 facility consists of one 12-foot-wide travel lane in each direction. The existing ROW along FM 1209 is approximately 80 feet wide. See **Figures 3.1** and **3.2** in **Appendix A** for existing typical sections.

2.2 Proposed Facility

The proposed project would add a grade separation at FM 1209 and construct new frontage roads along SH 71 while maintaining access to adjacent properties. Access to FM 1209 would be provided via ramps to the anticipated signalized intersection. If completed, the mainlanes of the SH 71 facility would consist of two 12-foot-wide lanes in each direction with 4-foot-wide inside shoulders and 10- to 22-foot-wide outside shoulders. Directions of travel would be separated by a grassy median that would be approximately 64 feet in width.

Each frontage road would consist of two 12-foot-wide travel lanes with 2-foot-wide inside and outside curb and gutter. Ramps would have a 14-foot-wide travel lane with a 4-foot-wide inside shoulder, a 6-foot-wide outside shoulder, and 2-foot-wide curb and gutter on both sides.

Median openings would be removed along SH 71 at the River Oaks Drive, Blue Flame Road, and Stephen F. Austin Boulevard intersections, and farther east just past the Shell gas station near the eastern project limit. Deceleration and acceleration lanes would be added to the median break along SH 71 just west of the CR 206 intersection.

The proposed improvements to FM 1209 at SH 71 include construction of one 12-foot-wide travel lane and a 12-foot-wide left turn lane in each direction. Twenty-four-foot-wide at-grade turnarounds for east/west traffic would be added at the SH 71/FM 1209 intersection, and an east/west turnaround would be added on the west side of the SH 71/SH 21 intersection. A 10-foot-wide shared-use path would be constructed on each side of SH 71 and FM 1209.

See **Figures 3.1** and **3.2** in **Appendix A** for proposed typical sections. The length of the proposed project is approximately 2.5 miles and would require approximately 32.5 acres of additional right-of-way.

3.0 TRAFFIC NOISE ANALYSIS

This analysis was accomplished in accordance with TxDOT's (Federal Highway Administration [FHWA]-approved) *Guidelines for Analysis and Abatement of Roadway Traffic Noise* (2011). Traffic Noise Model version 2.5 (TNM 2.5) was utilized in this assessment.

3.1 Sound and Traffic Noise

Sound from highway traffic is generated primarily from a vehicle's tires, engine, and exhaust. It is commonly measured in decibels and is expressed as "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."

The 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 that are used as one of two means to determine when a traffic noise impact would occur (**Table 1**).

Table 1: FHWA Noise Abatement Criteria

Activity Category	dB(A) 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: FHWA and 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 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.

3.2 Modeled Noise Levels

The FHWA traffic noise modeling software was used to calculate existing and predicted traffic noise levels. The model 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. Traffic data used for the noise analysis are included in **Appendix B**.

Existing and predicted traffic noise levels were modeled at receiver locations (**Table 2** and **Figures 4.1** through **4.4**), which represent the land use activity areas adjacent to the proposed project that might be impacted by traffic noise and would potentially benefit from feasible and reasonable noise abatement.

Table 2: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2040	Change (+/-)	Noise Impact
R1 Residence	B	67	60	63	+3	No
R2 Residence	B	67	57	59	+2	No
R3 Residence	B	67	57	57	-	No
R4 Residence	B	67	61	63	+2	No
R5 Residence	B	67	58	60	+2	No

Table 2: Traffic Noise Levels dB(A) Leq

Representative Receiver	NAC Category	NAC Level	Existing	Predicted 2040	Change (+/-)	Noise Impact
R6 Church (playground)	C	67	59	63	+4	No
R7 Residence	B	67	61	64	+3	No
R8 Residence	B	67	62	66	+4	**Yes**
R9 Residence	B	67	59	60	+1	No
R10 Residence	B	67	65	66	+1	**Yes**
R11 Residence	B	67	64	63	-1	No
R12 Residence	B	67	64	63	-1	No
R13 Residence	B	67	64	65	+1	No
R14 Residence	B	67	64	64	-	No
R15 Residence	B	67	65	67	+2	**Yes**
R16 Residence	B	67	61	64	+3	No
R17 Residence	B	67	58	63	+5	No
R18 Residence	B	67	61	65	+4	No
R19 Residence	B	67	63	67	+4	**Yes**
R20 Residence	B	67	58	62	+4	No
R21 Residence	B	67	63	66	+3	**Yes**
R22 Residence	B	67	61	63	+2	No
R23 Residence	B	67	61	63	+2	No

3.3 Noise Abatement

As indicated in **Table 2**, the proposed project would result in traffic noise impacts and the following noise abatement measures were considered: traffic management, alteration of horizontal and/or vertical alignments, acquisition of undeveloped property to act as a buffer zone, and the construction of noise barriers.

Before any 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 dB(A). To be "reasonable," the abatement measure must be able to reduce the noise level for at least one impacted, first row receiver by at least 7 dB(A) and it must not exceed the cost-effectiveness criterion of $25,000 for each receiver that would benefit by a reduction of at least 5 dB(A).

Traffic management - Control devices could be used to reduce the speed of the traffic; however, the minor benefit of 1 dB(A) per 5 mph reduction in speed does not outweigh the associated increase in congestion and air pollution. Other measures such as time or use restrictions for certain vehicles are prohibited on state highways.

Alteration of horizontal and/or vertical alignments - Any alteration of the existing alignment would displace existing businesses and residences, require additional ROW and not be cost effective/reasonable.

Buffer zone - The acquisition of undeveloped property to act as a buffer zone is designed to avoid rather than abate traffic noise impacts and, therefore, is not feasible.

Noise barriers - This is the most commonly used noise abatement measure. Noise barriers were evaluated for each of the impacted receiver locations.

A noise barrier would not be feasible and reasonable for the following impacted receivers and, therefore, is not proposed for incorporation into the project:

> **R8** – This receiver represents one house near FM 1209 with a driveway facing the roadway, located on SH 71 eastbound frontage road (**Figure 4.1**). A continuous noise wall would restrict access to the residence. A gap in a noise wall would satisfy access requirements. Therefore, a non-continuous noise wall approximately 289 feet in total length and up to 16 feet in height, was modeled along the ROW line. This wall would provide the minimum, feasible reduction of 5 dB(A) for the impacted receiver. It would also meet the noise reduction design goal of 7 dB(A). However, the cost of the wall would be $80,928, or $80,928 per benefited receiver. The cost of the noise wall would exceed the cost effectiveness criteria of $25,000 per benefited receiver.
>
> **R10** – This receiver represents one first row receiver in the Wyldwood RV Park with a single driveway facing the roadway, located on SH 71 eastbound frontage road south of FM 1209 (**Figure 4.4**). A continuous noise wall would restrict access to this residence. A gap in a noise wall would satisfy access requirements. Therefore, a non-

continuous noise wall with one gap for the driveway, approximately 774 feet in total length and up to 20 feet in height, was modeled along the ROW line. This wall would provide the minimum, feasible reduction of 5 dB(A) for the impacted receiver but would not meet the 7 dB(A) noise reduction design goal for the receiver.

R15– This receiver represents one house near Woodlands Drive with a driveway facing the roadway, located on SH 71 westbound frontage road (Figure 4.4). A continuous noise wall would restrict access to this residence. A gap in a noise wall would satisfy access requirements. Therefore, a non-continuous noise wall with one gap for the driveway, approximately 162 feet in total length and up to 20 feet in height, was modeled along the ROW line. This wall would not be sufficient to provide a 5 dB(A) noise reduction or meet the 7 dB(A) noise reduction design goal for the receiver.

R19 – This receiver represents two houses with a driveway facing the roadway, located on SH 71 westbound frontage road (Figure 4.1). A continuous noise wall would restrict access to this residence. A gap in a noise wall would satisfy access requirements. Therefore, a non-continuous noise wall with one gap for the driveway, approximately 379 feet in total length and up to 20 feet in height, was modeled along the ROW line. This wall would not be sufficient to provide a 5 dB(A) noise reduction or meet the 7 dB(A) noise reduction design goal for the receiver.

R21 – This receiver represents one house near River Oaks Drive with a driveway facing the roadway, located on SH 71 westbound frontage road (Figure 4.4). A continuous noise wall would restrict access to this residence. A gap in a noise wall would satisfy access requirements. Therefore, a non-continuous noise wall with one gap for the driveway, approximately 188 feet in total length and up to 20 feet in height, was modeled along the ROW line. This wall would not be sufficient to provide a 5 dB(A) noise reduction or meet the 7 dB(A) noise reduction design goal for the receiver.

3.4 Noise Impact Contours

To avoid noise impacts that may result from future development of properties adjacent to the project, local officials responsible for land use control programs must ensure, to the maximum extent possible, no new activities are planned or constructed along or within the following predicted (2040) noise impact contours (Table 3).

Table 3: Predicted Noise Impact Contours

Land Use	Impact Contour	Distance from Right-of-way
NAC category B & C	66 dB(A)	100 feet
NAC category E	71 dB(A)	Inside ROW

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 more 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 will be included in the 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. On the date of approval of this document (Date of Public Knowledge), FHWA and TxDOT are no longer responsible for providing noise abatement for new development adjacent to the project.

4.0 REFERENCES

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

Transportation Planning and Programming (TPP) Division, Texas Department of Transportation. Traffic Data (CSJ: 7990-00-014) SH 71 (Main Lanes and Frontage Roads): From SH 130 to SH 21. Memo. March 23, 2017. (Note: The traffic data utilized in the analysis for the existing and future conditions are included in **Appendix B**.)

Appendix A

Figures

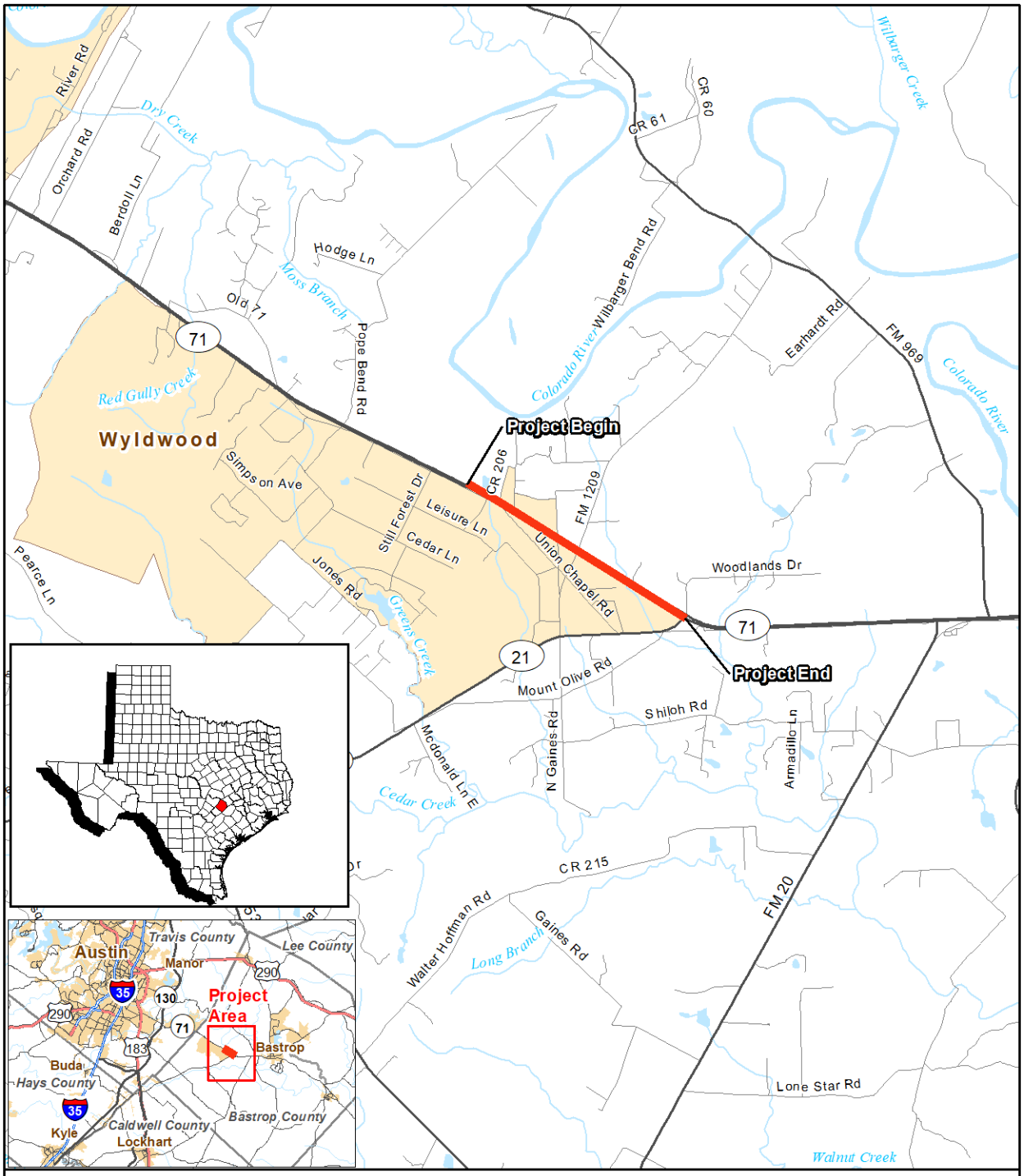


Figure 1
Project Location on County Map
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041

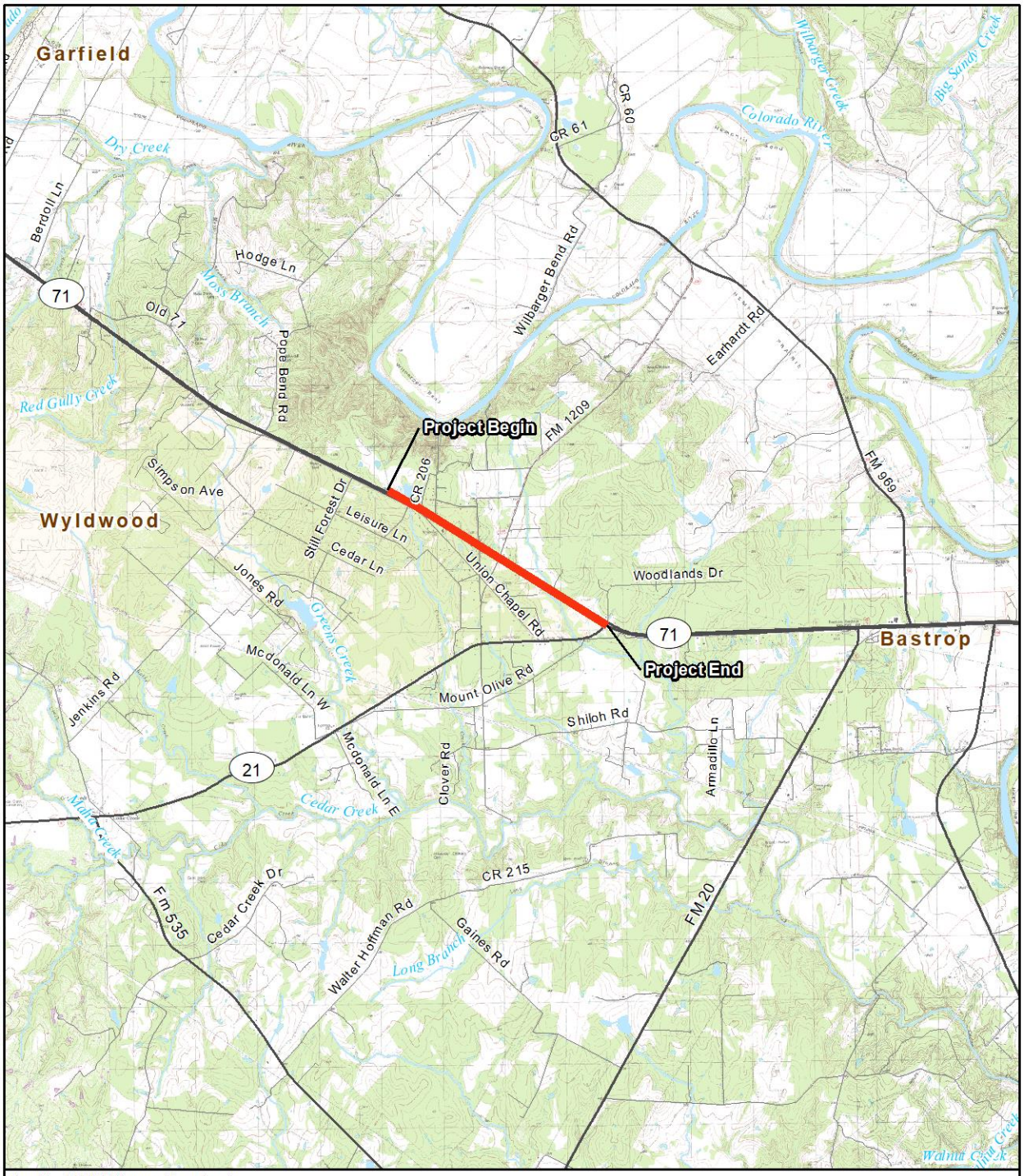
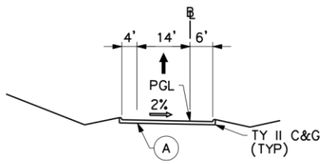
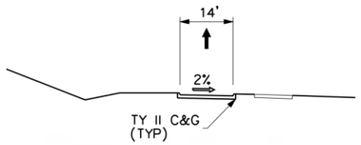


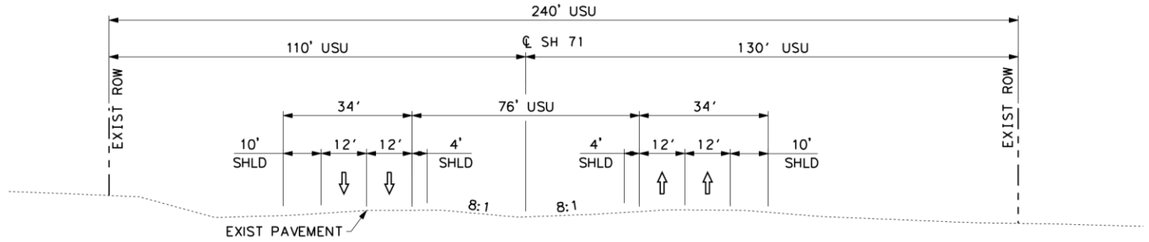
Figure 2
Project Location on Topographic Map
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041



PROPOSED TYPICAL RAMP SECTION



PROPOSED ONE-LANE FRONTAGE

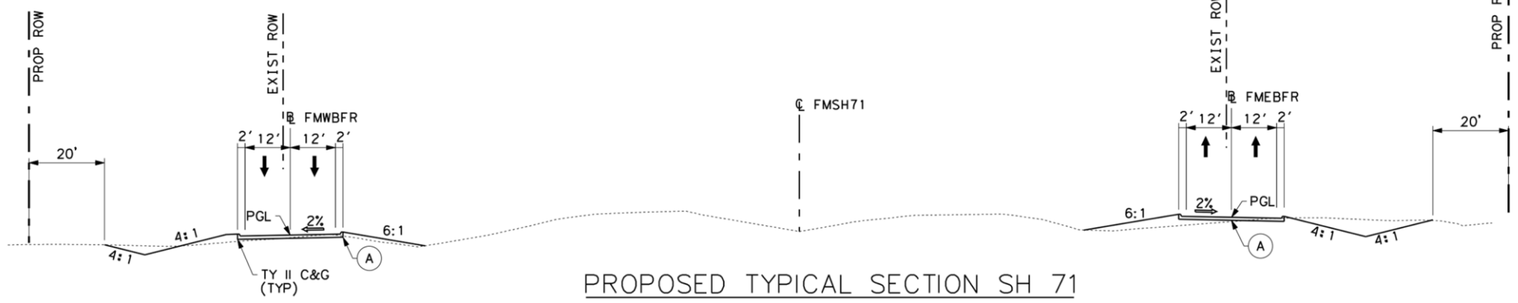


EXISTING TYPICAL SECTION SH 71

STA 1620+00 TO STA 1695+00

MASS FIBER OPTIC UTILITIES AND WATER (EAST OF FM 1209)

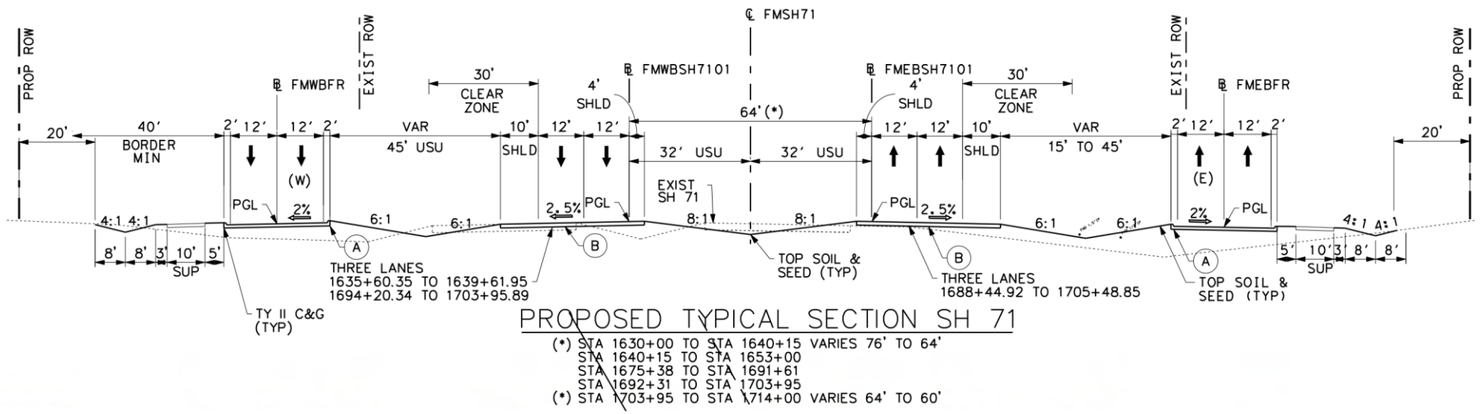
MASS FIBER OPTIC UTILITIES AND WATER (EAST OF FM 1209)



PROPOSED TYPICAL SECTION SH 71

AT FM1209

STA 1620+00 TO STA 1630+00



PROPOSED TYPICAL SECTION SH 71

(*) STA 1630+00 TO STA 1640+15 VARIES 76' TO 64'
STA 1640+15 TO STA 1653+00
STA 1675+38 TO STA 1691+61
STA 1692+31 TO STA 1703+95
(*) STA 1703+95 TO STA 1714+00 VARIES 64' TO 60'

PAVEMENT LEGEND

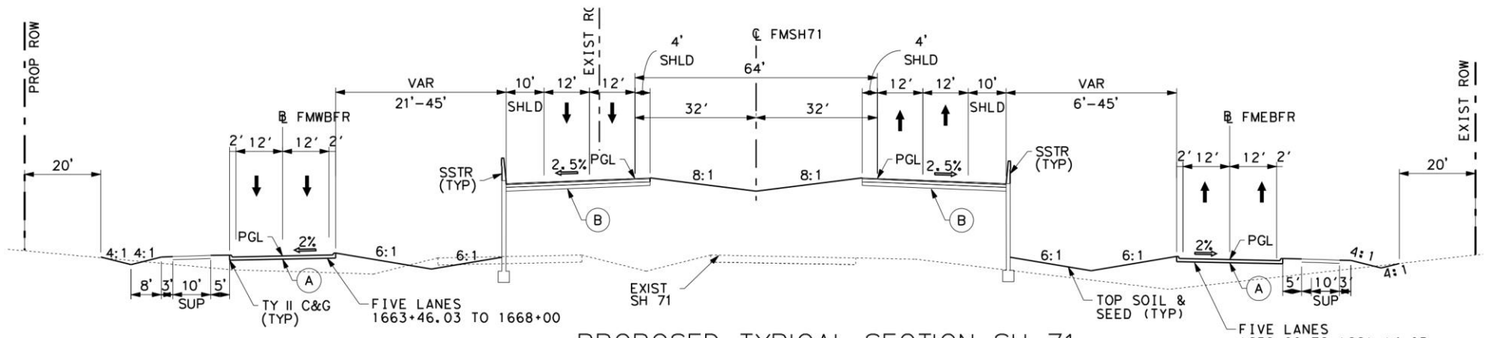
(A)

2" ASPHALT TY D
4" ASPHALT TY B
3" ASPHALT TY B
PRIME COAT
6" FLEX BASE
6" STABILIZED SUBGRADE

(B)

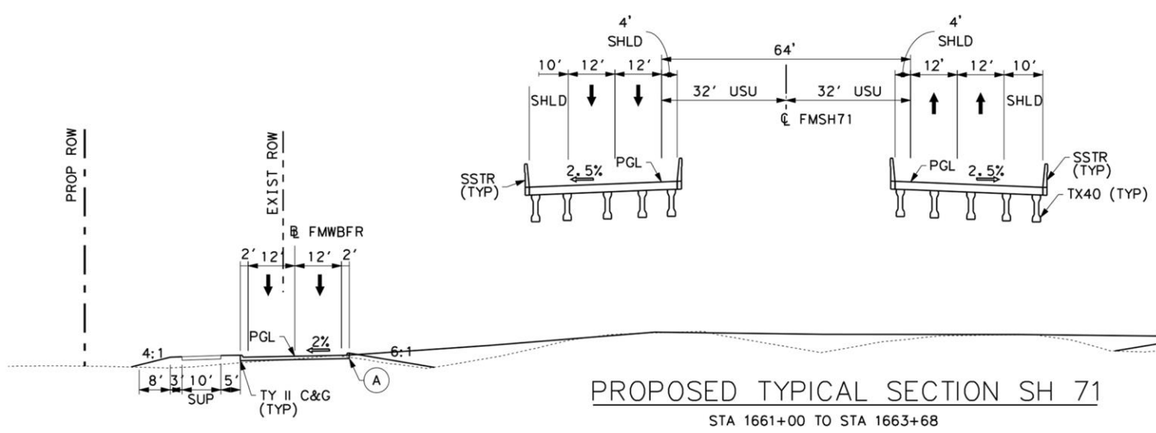
1" PFC UNDERSEAL
1.5" ASPHALT TY D
8" ASPHALT TY B
PRIME COAT
9" FLEX BASE

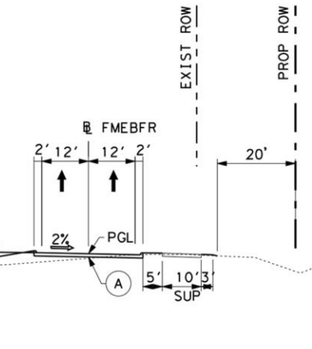
Figure 3.1
Existing and Proposed Typical Sections
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041



PROPOSED TYPICAL SECTION SH 71

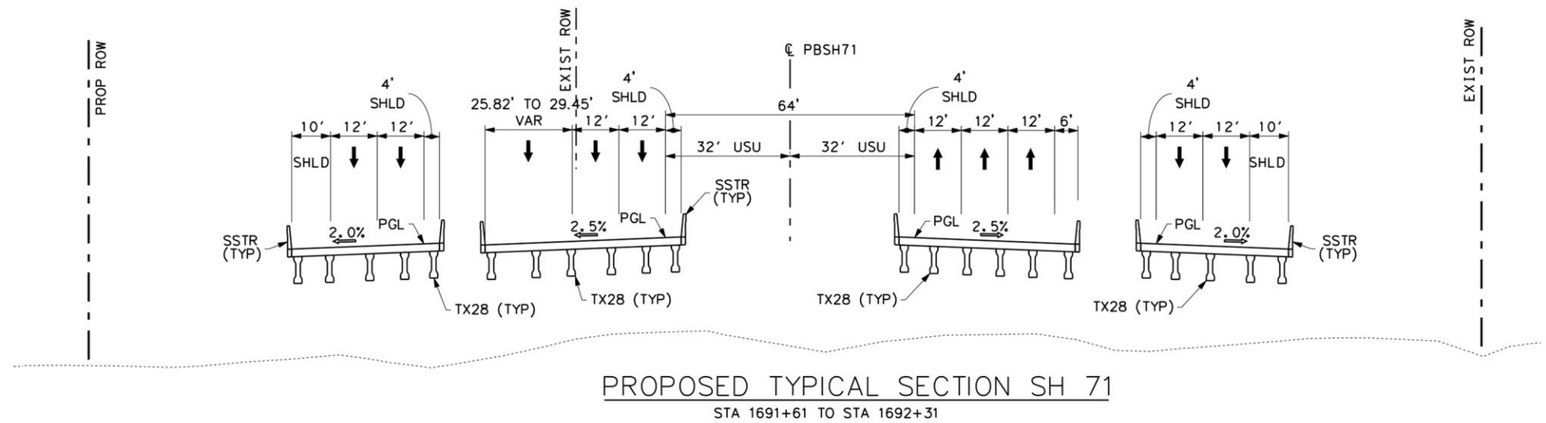
STA 1653+00 TO STA 1661+00
STA 1663+68 TO STA 1675+38





PROPOSED TYPICAL SECTION SH 71

STA 1661+00 TO STA 1663+68



PROPOSED TYPICAL SECTION SH 71

STA 1691+61 TO STA 1692+31

PAVEMENT LEGEND

(A)

2" ASPHALT TY D
4" ASPHALT TY B
3" ASPHALT TY B
PRIME COAT
6" FLEX BASE
6" STABILIZED SUBGRADE

(B)

1" PFC UNDERSEAL
1.5" ASPHALT TY D
8" ASPHALT TY B
PRIME COAT
9" FLEX BASE

Figure 3.2
Proposed Typical Sections
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041

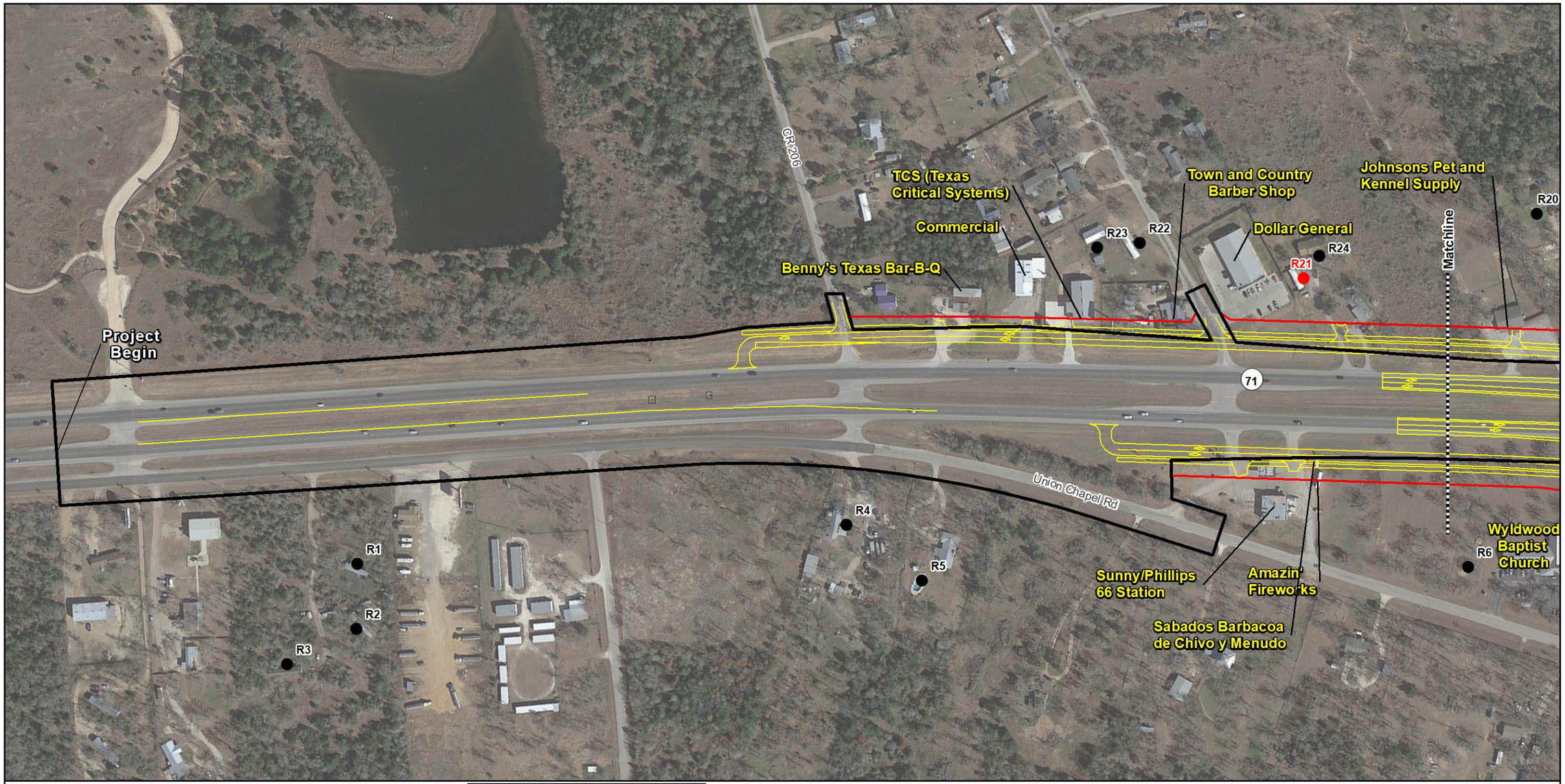


Figure 4.1
Noise Receiver Locations and Land Use
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041

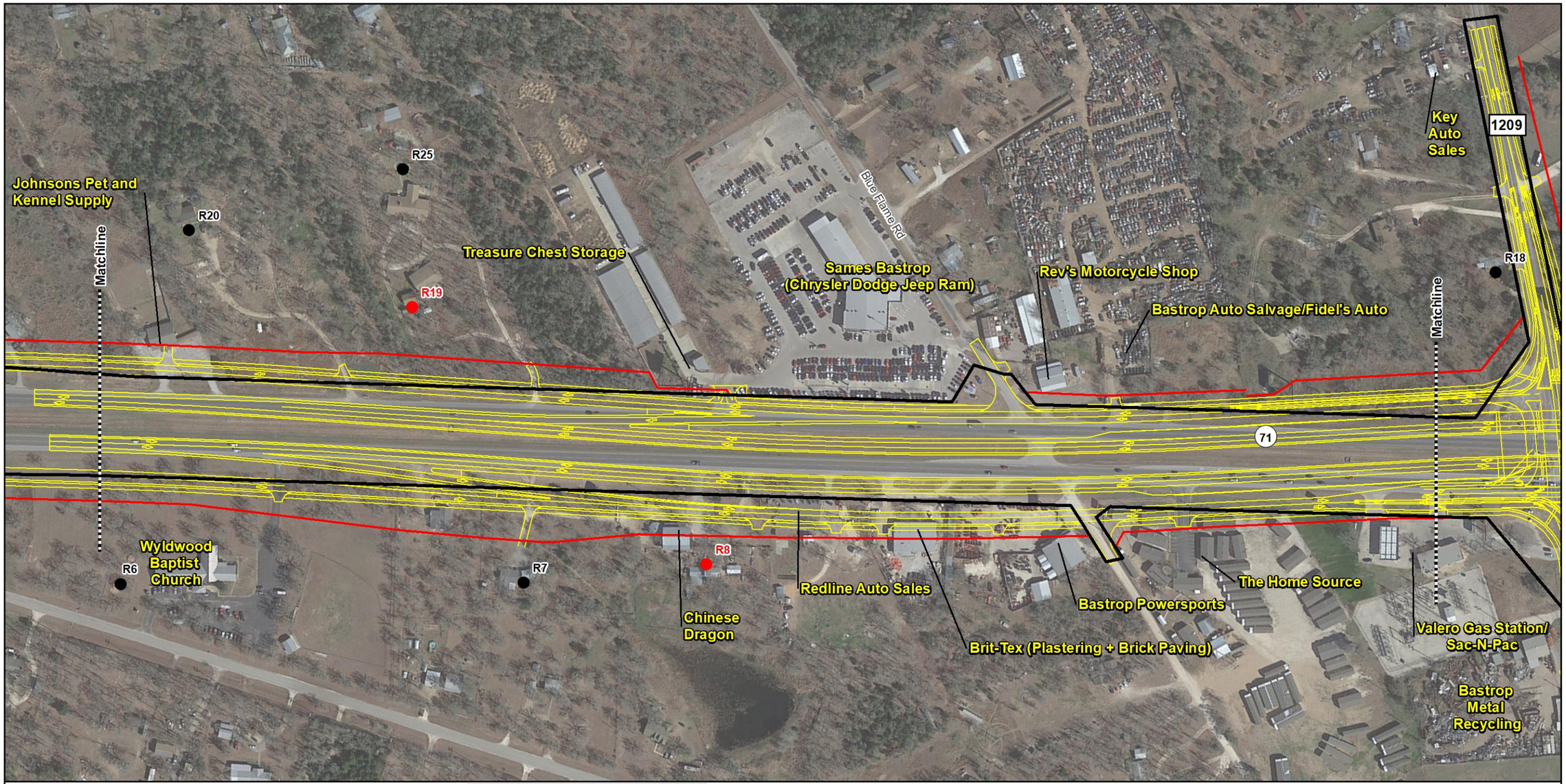


Figure 4.2
Noise Receiver Locations and Land Use
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041

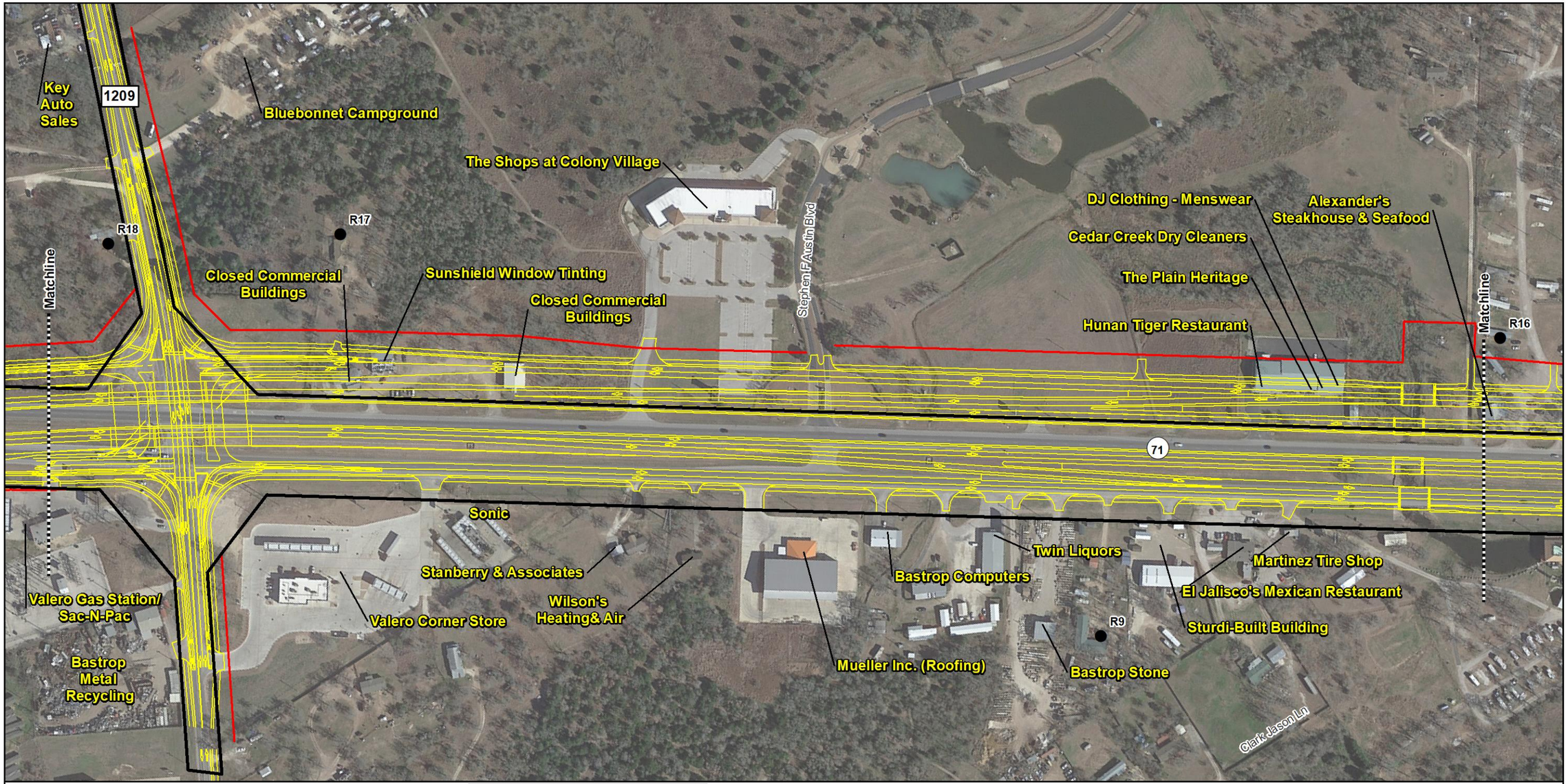


Figure 4.3
Noise Receiver Locations and Land Use
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041

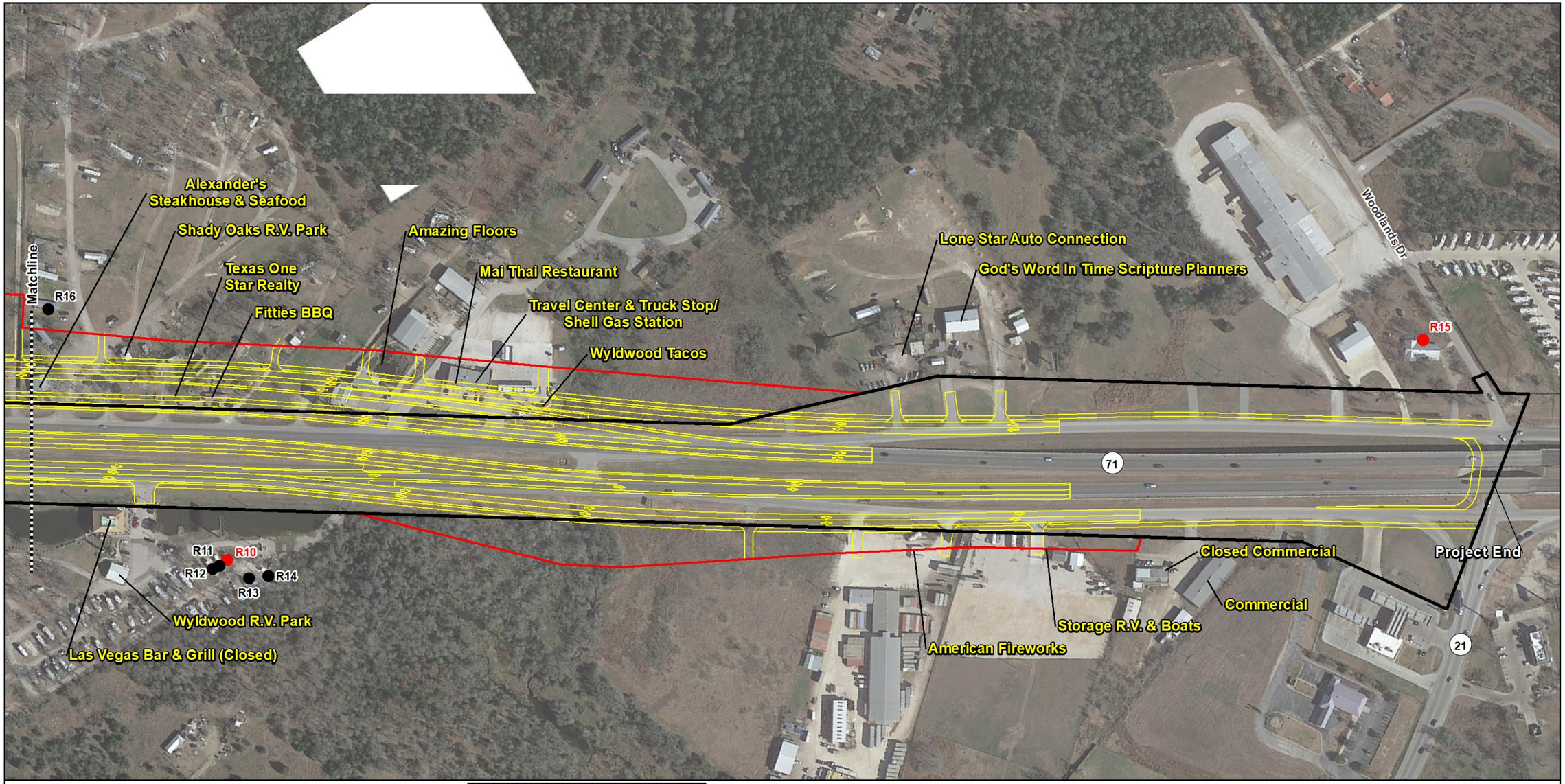


Figure 4.4
Noise Receiver Locations and Land Use
SH 71 from CR 206 to SH 21
Bastrop County, Texas
CSJ: 0265-03-041

Appendix B

Traffic Data

Texas Department of Transportation

MEMO

March 23, 2017

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

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

From: Tammye A. Fontenot
Transportation Analyst, TPP

DRAFT

Subject: Traffic Data
CSJ: 7990-00-014
SH 71 (Main Lanes and Frontage Roads):
From SH 130
To SH 21

Travis and Bastrop Counties

Attached are copies of schematics depicting 2020, 2040 and 2050 anticipated average daily traffic volumes and turning movements along SH 71 from SH 130 to SH 21 for Existing and Proposed Conditions as specified in your request. Also attached are tabulations showing traffic analysis for highway design for the 2020 to 2040 twenty year period and 2020 to 2050 thirty year period for the described limits of the route. Included are tabulations showing data for use in air and noise analysis.

Due to differences in traffic volumes along this route, the main lanes and the frontage roads were separated into multiple sections:

Existing Conditions
Section 1: From SH 130 to Kellam Road
Section 2: From Kellam Road to SH 21

Main Lanes (Proposed Conditions)
Section 1: From SH 130 to Ross Road
Section 2: From Ross Road to SH 21

Frontage Roads (Proposed Conditions)
Section 1: From SH 130 to Norwood Lane
Section 2: From Norwood Lane to SH 21

Please refer to your original memorandum dated September 29, 2016.

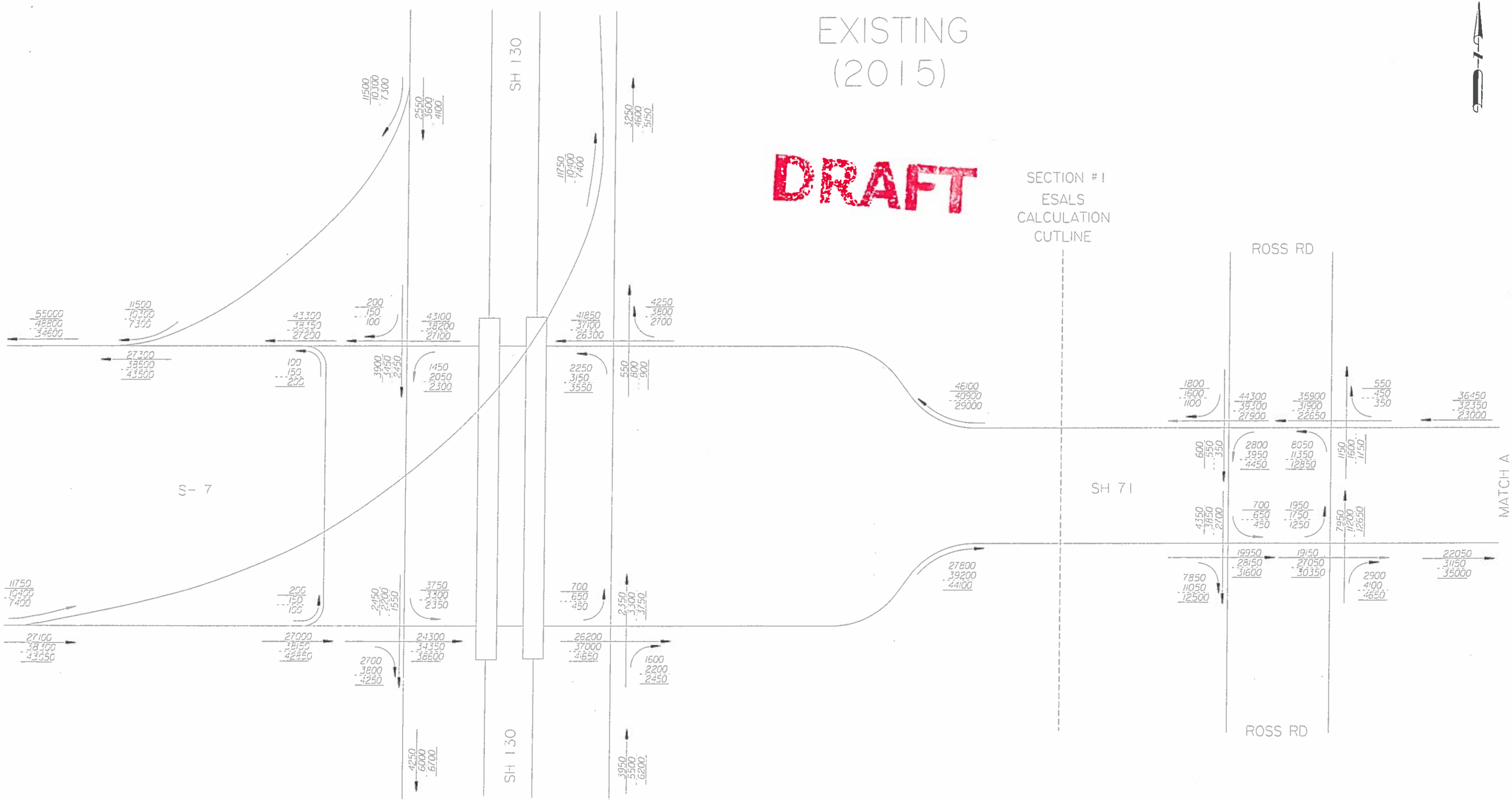
If you have any questions or need additional information, please contact Tammye Fontenot at (512) 486-5108.

Attachments

CC: Carmen Ramos, Planner, Austin District
Design Division

EXISTING (2015)

DRAFT



LEGEND
000 - 2020 ADT
000 - 2040 ADT
000 - 2050 ADT

2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG S-7 FROM SH 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017

EXISTING
(2015)

DRAFT

SECTION #2
ESALS
CALCULATION
CUTLINE

BURC- DR.

DR. SCOTT

NORWOOD LN

MAICIA

SH 71

MATCH B

KELLAM RD

NAVARRO
CREEK RD

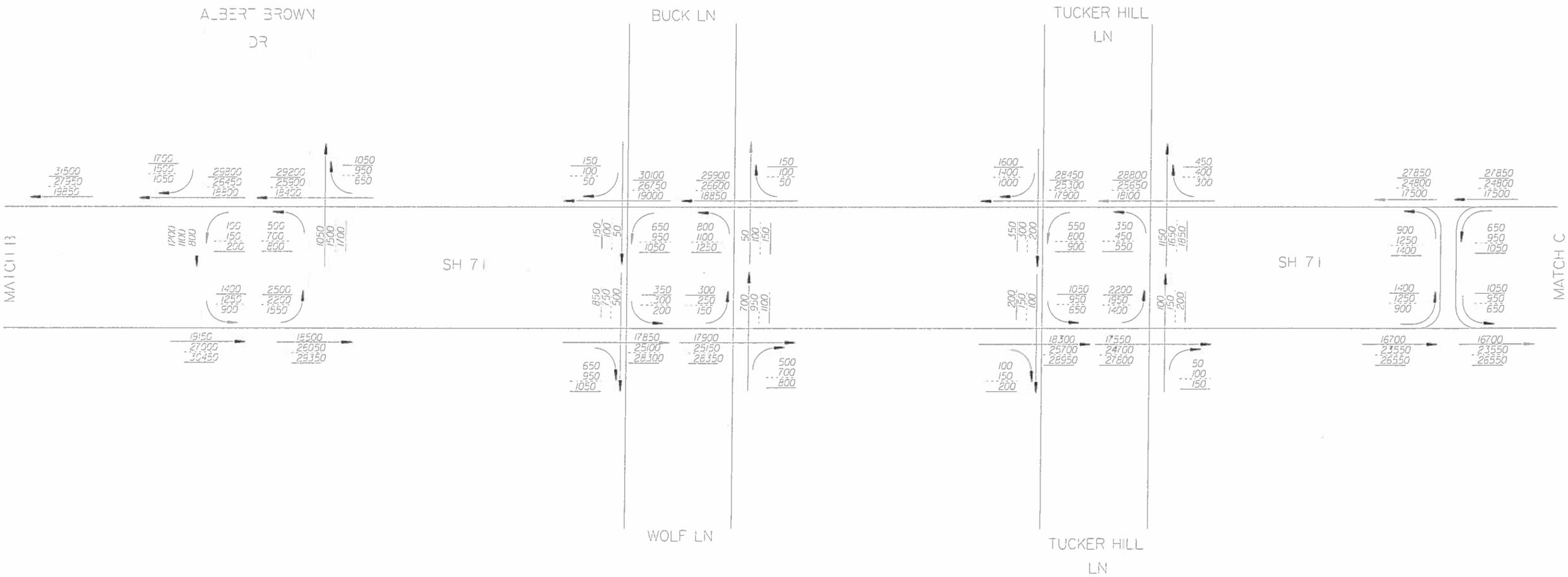
LEGEND
000 - 2020 ADT
000 - 2040 ADT
000 - 2050 ADT

2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG S- 7 FROM S- 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017

EXISTING
(2015)

DRAFT



LEGEND
000 - 2020 ADT
000 - 2040 ADT
000 - 2050 ADT

2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG S- 7 FROM S- 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017

EXISTING (2015)

DRAFT

POPE BEND RD

FM 1209

WOODLANDS DR

SH 71

SH 21

MAICIIC

POPE BEND RD

FM 1209

SH 71

SH 21

LEGEND
CCC - 2020 ADT
CCC - 2040 ADT
CCC - 2050 ADT

2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG S- 7 FROM SH 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017

PROPOSED
(ULTIMATE - OPTION 2)

DRAFT

MAINLANES
SECTION # 1
ESALS
CALCULATION
CUTLINE

FRONTAGE ROADS
SECTION # 1
ESALS
CALCULATION
CUTLINE

ROSS RD

SH 130

SH 71

S- 7

MATCH A

ROSS RD

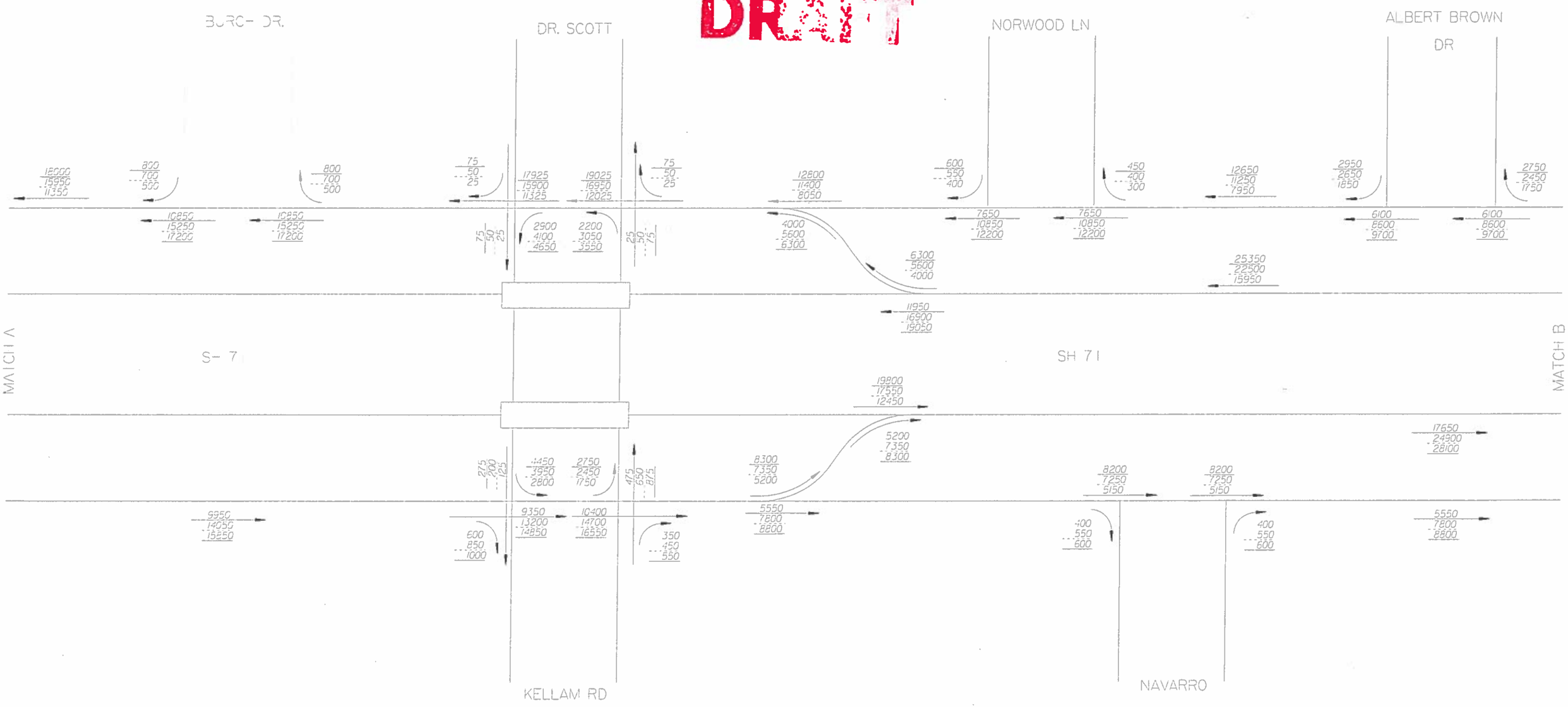
LEGEND
000 - 2020 ADT
000 - 2040 ADT
000 - 2050 ADT

2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG
S- 7 FROM SH 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017

PROPOSED
(ULTIMATE - OPTION 2)

DRAFT



LEGEND
000 - 2020 ADT
000 - 2040 ADT
000 - 2050 ADT

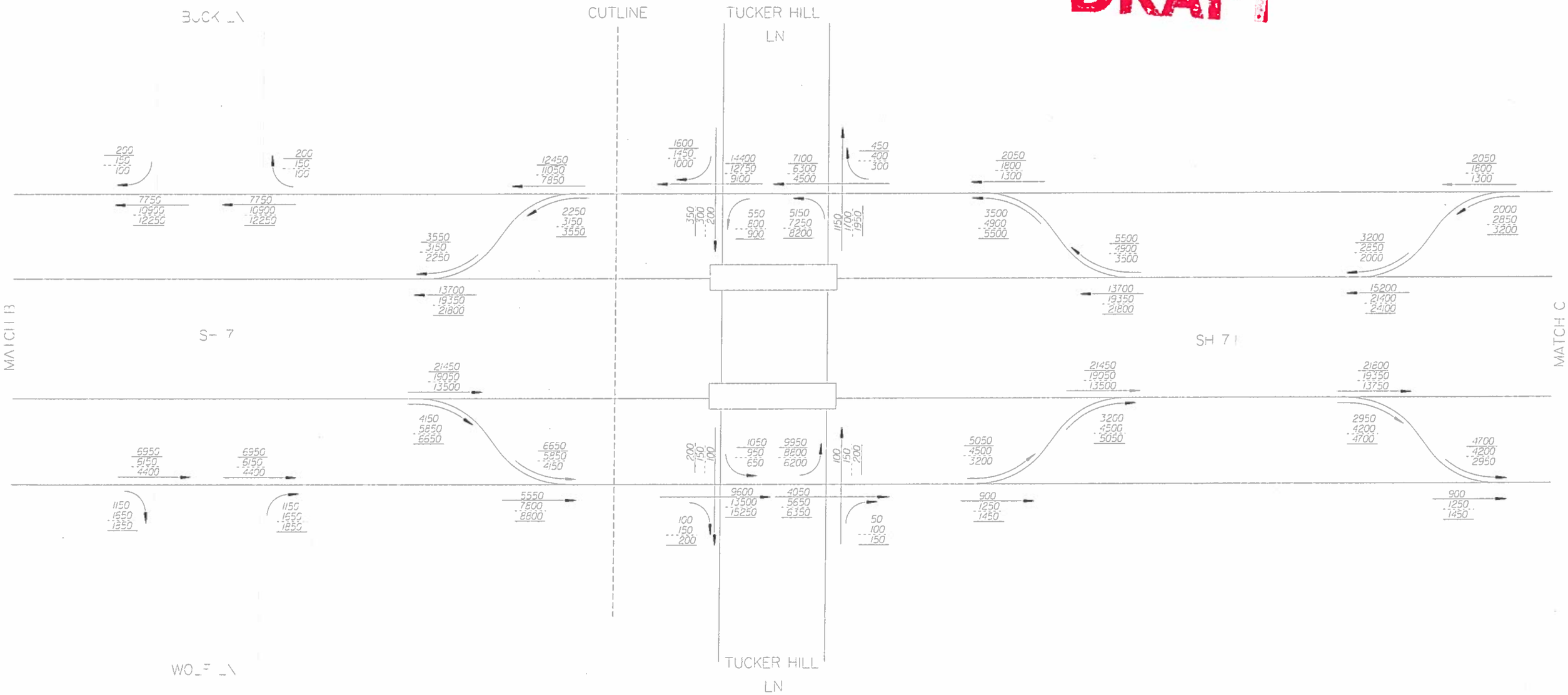
2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG S- 7 FROM SH 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017

PROPOSED
(ULTIMATE - OPTION 2)

DRAFT

FRONTAGE ROADS
SECTION #2
ESALS
CALCULATION
CUTLINE



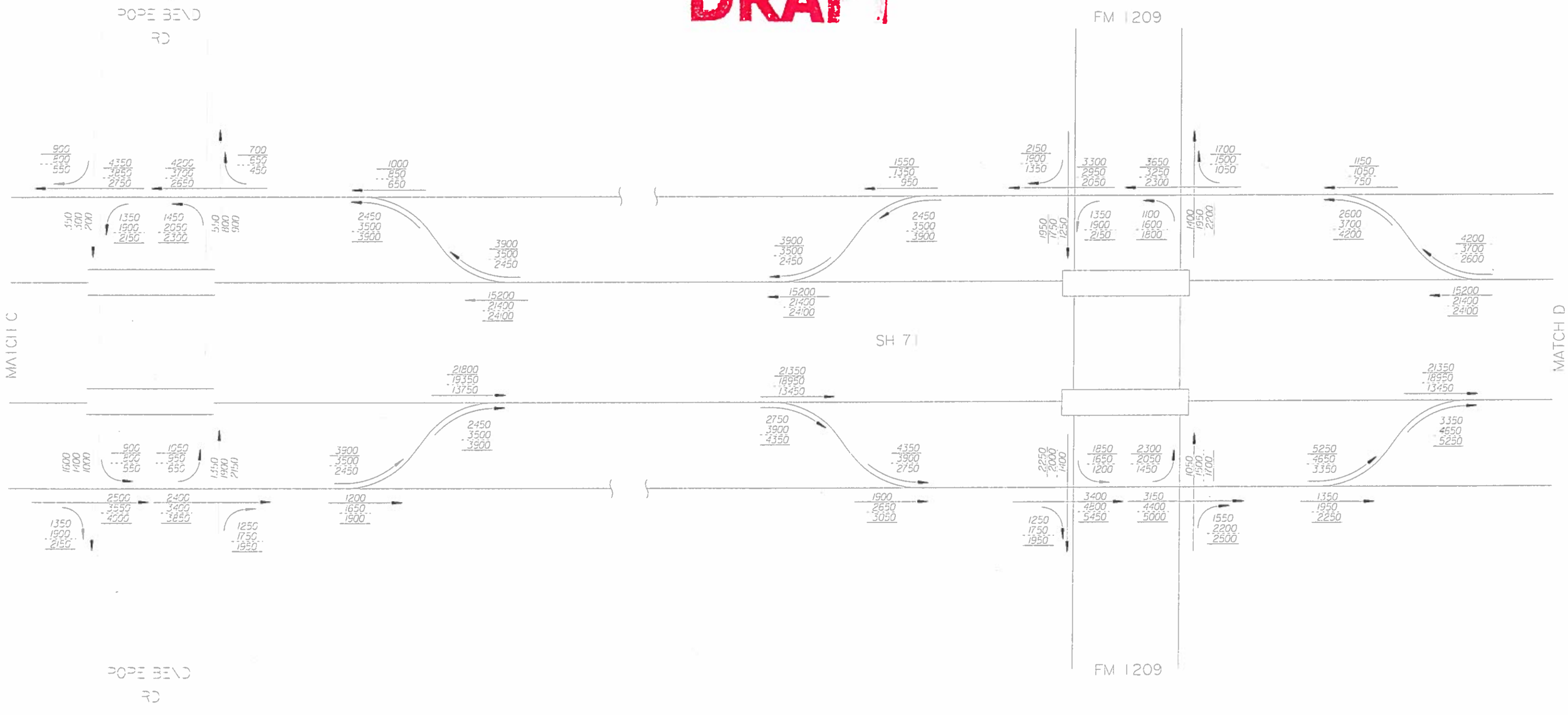
LEGEND
000 - 2020 ADT
000 - 2040 ADT
000 - 2050 ADT

2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG S- 7 FROM SH 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017

PROPOSED
(ULTIMATE - OPTION 2)

DRAFT



LEGEND
000 - 2020 ADT
000 - 2040 ADT
000 - 2050 ADT

2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG S- 7 FROM SH 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017.

PROPOSED
(ULTIMATE - OPTION 2)

DRAFT

VARIABLES
SECTION #2
ESALS
CALCULATION
OUTLINE

WOODLANDS DR

MAICHILD

S- 71

SH 71

SH 21

1150 / 1050 / 750
200 / 150 / 100
2550 / 2300 / 1650
11550 / 10300 / 7300
200 / 150 / 100
1000 / 1400 / 1600
200 / 150 / 100
6300 / 8950 / 10050
650 / 950 / 1050
100 / 150 / 200
1500 / 1400 / 1000
11750 / 10450 / 7400
16800 / 23700 / 26700
16800 / 23700 / 26700
24200 / 34150 / 38450
24650 / 21850 / 15550
24650 / 21850 / 15550
36300 / 32200 / 22900
1250 / 1750 / 1950
1950 / 1750 / 1250
9750 / 8650 / 6050
500 / 450 / 350
350 / 300 / 200
550 / 800 / 900
7350 / 10350 / 11650
1350 / 1950 / 2250
1600 / 2300 / 2600
1750 / 2450 / 2750
1000 / 1400 / 1600
5600 / 7900 / 8900

LEGEND
000 - 2020 ADT
000 - 2040 ADT
000 - 2050 ADT

2020, 2040 AND 2050 ANTICIPATED AVERAGE DAILY TRAFFIC VOLUMES AND TURNING MOVEMENTS AT SPECIFIED POINTS ALONG S- 7 FROM SH 130 TO SH 21
TRAVIS AND BASTROP COUNTIES

TRANSPORTATION PLANNING AND PROGRAMMING DIVISION
MARCH 23, 2017

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

March 23, 2017

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2040	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 (2020 to 2040) Flexible Pavement	S N	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 20 Year Period (2020 to 2040) Rigid Pavement	SLAB
SH 71 Existing Conditions Section 1 From SH 130 To Kellam Rd Travis and Bastrop Counties	56,800	80,100	53 - 47	8.6	7.4	4.9	12,400	30	15,230,000	3	20,357,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	92.6	95.1
Medium Duty	3.3	2.2
Heavy Duty	4.1	2.7

DRAFT

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2050	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 (2020 to 2050) Flexible Pavement	S N	Total Number of Equivalent 18k Single Axle Load Applications One Direction Expected for a 30 Year Period (2020 to 2050) Rigid Pavement	SLAB
SH 71 Existing Conditions Section 1 From SH 130 To Kellam Rd Travis and Bastrop Counties	56,800	90,200	53 - 47	8.6	7.4	4.9	12,500	30	24,530,000	3	32,789,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

March 23, 2017

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2040	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 (2020 to 2040) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Existing Conditions Section 2 From Kellam Rd To SH 21 Travis and Bastrop Counties	42,200	59,600	53 - 47	8.6	8.6	5.7	12,300	40	13,143,000	3	17,581,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	91.4	94.3
Medium Duty	3.9	2.6
Heavy Duty	4.7	3.1

DRAFT

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2050	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 (2020 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Existing Conditions Section 2 From Kellam Rd To SH 21 Travis and Bastrop Counties	42,200	67,100	53 - 47	8.6	8.6	5.7	12,400	30	21,167,000	3	28,314,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

March 23, 2017

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2040	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 (2020 to 2040) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Proposed Mainlanes Section 1 From SH 130 To Ross Road Travis and Bastrop Counties	55,700	78,500	53 - 47	8.6	7.5	5.0	12,400	30	15,129,000	3	20,225,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	92.5	95.0
Medium Duty	3.4	2.2
Heavy Duty	4.1	2.8

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2050	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 (2020 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Proposed Mainlanes Section 1 From SH 130 To Ross Road Travis and Bastrop Counties	55,700	88,500	53 - 47	8.6	7.5	5.0	12,500	30	24,385,000	3	32,597,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

March 23, 2017

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2040	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 (2020 to 2040) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Proposed Mainlanes Section 2 From Ross Road To SH 21 Travis and Bastrop Counties	34,600	48,700	53 - 47	8.6	9.5	6.3	12,200	40	11,870,000	3	15,885,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	90.5	93.7
Medium Duty	4.3	2.8
Heavy Duty	5.2	3.5

DRAFT

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2050	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 (2020 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Proposed Mainlanes Section 2 From Ross Road To SH 21 Travis and Bastrop Counties	34,600	54,900	53 - 47	8.6	9.5	6.3	12,300	40	19,130,000	3	25,601,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

March 23, 2017

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2040	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 (2020 to 2040) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Proposed Frontage Roads Section 1 From SH 130 To Norwood Lane Travis and Bastrop Counties	32,400	45,650	53 - 47	8.6	7.6	5.7	12,000	20	6,808,000	3	8,246,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	92.4	94.3
Medium Duty	3.4	2.6
Heavy Duty	4.2	3.1

DRAFT

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2050	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 (2020 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Proposed Frontage Roads Section 1 From SH 130 To Norwood Lane Travis and Bastrop Counties	32,400	51,400	53 - 47	8.6	7.6	5.7	12,100	20	10,965,000	3	13,280,000	8"

TRAFFIC ANALYSIS FOR HIGHWAY DESIGN

Austin District

March 23, 2017

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2040	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 (2020 to 2040) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Proposed Frontage Roads Section 2 From Norwood Lane To SH 21 Travis and Bastrop Counties	19,800	27,850	53 - 47	8.6	3.4	2.6	11,000	40	1,890,000	3	2,272,000	8"

Data for Use in Air & Noise Analysis

Vehicle Class	Base Year % of ADT	Base Year % of DHV
Light Duty	96.6	97.4
Medium Duty	1.5	1.1
Heavy Duty	1.9	1.5

DRAFT

Description of Location	Average Daily Traffic 2020	Average Daily Traffic 2050	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 (2020 to 2050) Flexible Pavement	S N	Rigid Pavement	SLAB
SH 71 Proposed Frontage Roads Section 2 From Norwood Lane To SH 21 Travis and Bastrop Counties	19,800	31,450	53 - 47	8.6	3.4	2.6	11,100	40	3,048,000	3	3,665,000	8"