



Traffic Noise Technical Report

FM 156

From US 81/US 287 to McLeroy Boulevard/

Watauga Road

Tarrant County, Texas

CSJ: 0718-02-045

TxDOT Forth Worth District

April 2018

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 INTRODUCTION

The Texas Department of Transportation (TxDOT) proposes an expansion of Farm-to-Market Road (FM) 156/Blue Mound Road with logical termini extending from US 81/US 287 to McLeroy Boulevard/Watauga Road in Tarrant County, Texas (see **Figure 1** in **Appendix A**). The proposed improvements would have independent utility without the need for additional improvements. The portion of FM 156 under study lies within the cities of Saginaw, Blue Mound and Fort Worth.

The existing facility is a two lane undivided roadway with one 12-foot lane in each direction and variable width shoulders. The existing facility has a typical right of way width of 120 feet. The current posted speed limit for this section of FM 156 is 45 miles per hour (mph) south of Bailey Boswell Road and 55 mph north of Bailey Boswell Road. Average annual daily traffic (AADT) for the facility in 2020 is estimated as 26,550 vehicles per day (vpd), while the 2040 AADT is estimated to be 37,750 vpd.

The Build Alternative would expand the existing facility from two lanes to four lanes with a raised median (see **Figures 2-4** in **Appendix A**). The facility would include 14-foot outside lanes and 12-foot inside lanes with a curb and gutter. Ten-foot wide sidewalks would be included on the outside southbound lane and six-foot wide sidewalks would be included along the outside northbound lane. The proposed facility is designed to have a 45 mph posted speed limit.

Overall, the proposed improvements would extend 3.8 miles and would require the acquisition of 0.45 acres of additional right of way.

2.0 TRAFFIC NOISE ANALYSIS

This traffic noise analysis was conducted in accordance with TxDOT's 2011 *Guidelines for Analysis and Abatement of Roadway Traffic Noise*, which has been approved by the Federal Highway Administration (FHWA).

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 the 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.

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 (see **Table 2-1**).

Table 2-1 Noise Abatement Criteria		
Activity Category	FHWA 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, amphitheatres, 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.

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) (11 dB[A] increase).

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.

3.0 RESULTS OF TRAFFIC NOISE ANALYSIS

The FHWA traffic noise modeling software (TNM2.5) was used to calculate existing and predicted traffic noise levels. The model primarily considers the number, type and speed of vehicles; highway 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.

Existing and predicted traffic noise levels were modeled at receiver locations that represent 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 (see **Plates 1-1** through **1-6** in **Appendix B** and **Table 3-1**).

Table 3-1 Traffic Noise Levels dB(A) Leq						
Representative Receiver	NAC Category	FHWA NAC	Existing 2020	Predicted 2040	Change (+/-)	Noise Impact
R-01 – Activity Area - Path	C	67	63	63	+0	No
R-02 – Residential	B	67	52	53	+1	No
R-03 – Residential	B	67	56	56	+0	No
R-04 – Activity Area - Ballfield	C	67	50	51	+1	No
R-05 – Activity Area - Trail	C	67	52	53	+1	No
R-06 – Outdoor Seating	C	67	55	57	+2	No
R-07 – Residential	B	67	52	54	+2	No
R-08 – Activity Area	C	67	67	67	+0	Yes
R-09 – Activity Area - Trail	C	67	58	58	+0	No
R-10 – Residential	B	67	68	69	+1	Yes
R-11 – Residential	B	67	67	67	+0	Yes
R-12 – Residential	B	67	68	69	+1	Yes
R-13 – Residential	B	67	68	68	+0	Yes
R-14 – Residential	B	67	68	68	+0	Yes
R-15 – Residential	B	67	55	55	+0	No
R-16 – School (Interior)	D	52	30	31	+1	No

Source: FM 156 Noise Study Team 2018; FHWA Traffic Noise Model v2.5.

3.1 Discussion of Noise Abatement Measures

As indicated in **Table 3-1**, the proposed project would result in traffic noise impacts at six representative receivers. 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 percent of impacted, first row receivers by at least 5 dB(A). 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 dB(A), and 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).

Traffic management: control devices could be used to reduce the speed of the traffic; however, the minor benefit of one dB(A) per five miles per hour (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 could displace existing businesses and residences, require additional right of way 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 walls: this is the most commonly used noise abatement measure. Noise walls were evaluated for each of the impacted receiver locations.

R-08: This receiver represents nine impacted receivers at the Creekwood Addition HOA Park located on the west side of FM 156 between Bailey Boswell Road and Hidden Lake Road. The area of the park is 6.07 acres with an average residential lot size calculated at 0.18 acres; therefore 34 receivers were included in the barrier analysis (see **Plate 1-4** in **Appendix B**). A continuous noise wall was modeled at a length of 1,315 feet along the right of way at a height of 10 feet. This noise wall would reduce the noise levels by at least 5 dB(A) for 14 receivers and would reduce noise levels by at least 7 dB(A) for eight impacted first row receivers at a total cost of \$236,702 or \$16,907 per benefitted receiver. The location of the proposed wall is within the Federal Emergency Management Agency (FEMA) 100-year floodplain and floodway, and it would not allow for water movement back and forth across the roadway. Because of the adverse hydraulic impacts, the noise wall is not proposed for incorporation into the project.

3.2 Proposed Noise Walls

Noise walls would be feasible and reasonable for the following receivers and, therefore, are proposed for incorporation into the project (see **Table 3-2** and **Plates 1-1** through **1-6** in **Appendix B**). A determination of the constructability of the proposed noise barriers would be made upon completion of the project design and evaluation of utility relocations. Should the proposed noise walls be constructable, noise wall workshops would be held with the property owners adjacent to the proposed walls to determine whether these walls would be incorporated into the final design of the proposed project.

Table 3-2 Noise Wall Proposal (Preliminary)						
Proposed Noise Wall	Representative Receiver(s)	Total # Benefitted Receivers	Height (feet)	Total Length (feet)	Total Cost*	Cost per Benefitted Receiver
2	R-10 - Grand Central Parkway Neighborhood	6	8	560	\$80,645	\$13,441
3	R-11 & R-12 - The Villages of Chisholm Ridge	22	8	1,100	\$158,411	\$7,201
4	R-13 & R-14 - Highland Station Subdivision	8	10	715	\$128,714	\$16,089

*Minor inconsistencies in total barrier costs are due to rounding of total wall lengths.

Source: FM 156 Noise Study Team 2018.

3.2.2 Barrier 2 – Grand Central Parkway Neighborhood

R-10: This receiver represents seven impacted single-family residences within the neighborhood located on the west side of FM 156 north of Grand Central Parkway. A continuous noise wall was modeled at a length of 560 feet along the right of way at a height of 8 feet (see **Plates 1-5** in **Appendix B**). This noise wall would reduce the noise levels by at least 5 dB(A) for six receivers and would reduce noise levels by at least 7 dB(A) for two first row receivers at a total cost of \$80,645, or \$13,441 per benefitted receiver. This noise wall is proposed for incorporation into the project.

3.2.3 Barrier 3 – The Villages of Chisholm Ridge

R-11 and **R-12:** These receivers represent 25 impacted single-family residences within the Villages of Chisholm Park located on the east side of FM 156 opposite Proposed Barrier 2. A continuous noise wall would restrict access to the subdivision; therefore, two separate noise walls were modeled along the right of way at lengths of 380 and 720 feet at a height of eight feet (see **Plate 1-5** in **Appendix B**). These noise walls would reduce the noise levels by at least 5 dB(A) for 22 receivers and would reduce noise levels by at least 7 dB(A) for three first row, impacted receivers at a total cost of \$158,411, or \$7,201 per benefitted receiver. These noise walls are proposed for incorporation into the project.

3.2.3 Barrier 4 – Highland Station Subdivision

R-13 and **R-14:** These receivers represent eight impacted single-family residences within the Highland Station Subdivision located on the west side of FM 156 north and south of Victoria Drive and Highland Station Drive. A continuous noise wall would restrict access to the subdivision; therefore, three separate noise walls were modeled along the right of way at lengths of 115, 220 and 380 feet at a height

of ten feet (see **Plate 1-5** in **Appendix B**). These noise walls would reduce the noise levels by at least 5 dB(A) for eight receivers and would reduce noise levels by at least 7 dB(A) for five first row, impacted receivers at a total cost of \$128,714, or \$16,089 per benefitted receiver. These noise walls are proposed for incorporation into the project.

4.0 CONCLUSION

Any subsequent project design changes may require a reevaluation of traffic noise impacts and the preliminary noise barrier proposal. 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 (see **Table 4-1**).

Table 4-1 Year 2040 Predicted Noise Impact Contours		
Land Use Category (NAC)	Impact Contour	Distance From Right of Way
B and C	66 dB(A)	90 feet
E	71 dB(A)	30 feet

Source: FM 156 Noise Study Team 2018.

Noise associated with the construction of the proposed 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 would 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 made available to local officials. On the date of approval of this document (Date of Public Knowledge), TxDOT is no longer responsible for providing noise abatement for new development adjacent to the proposed project.

5.0 REFERENCES

Federal Highway Administration. 2004. FHWA Traffic Noise Model (computer software). Version 2.5 LOS1. McTrans: University of Florida. License 65917.

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

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APPENDIX A
FIGURES

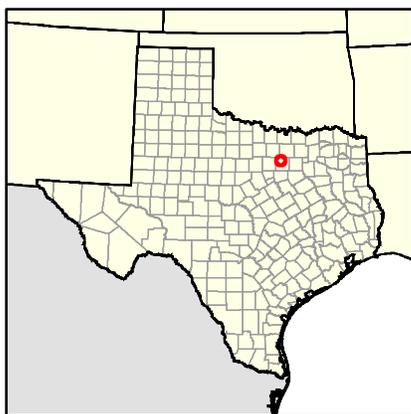
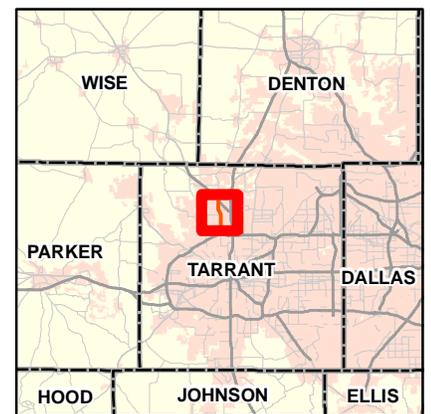


Figure 1
Project Area Location
 FM 156 From US 81/US 287 to
 McLeroy Boulevard/Watauga Road
 Tarrant County, Texas
 CSJ: 0718-02-045



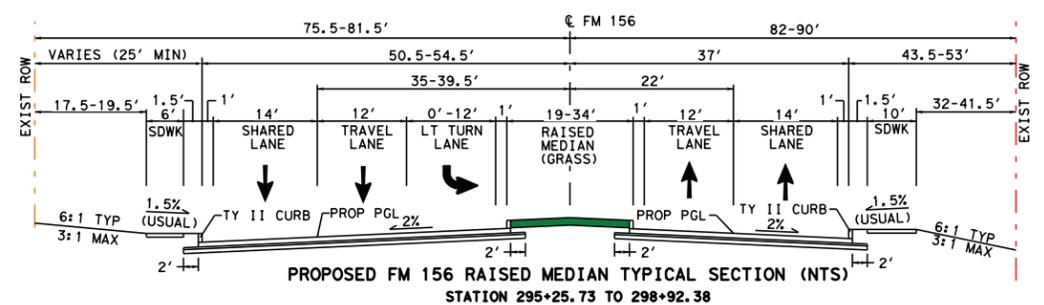
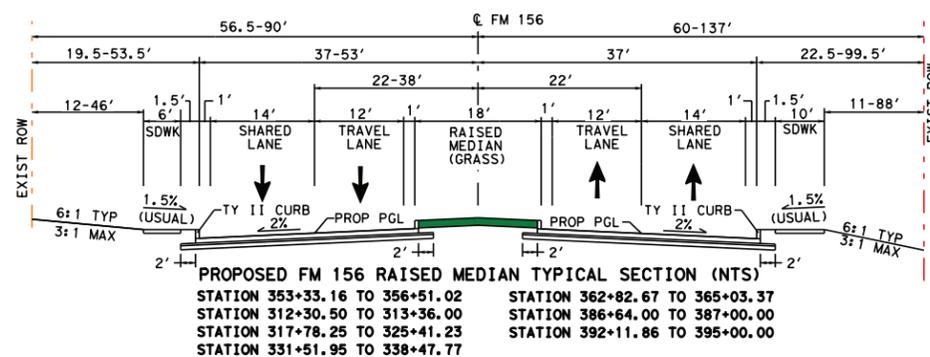
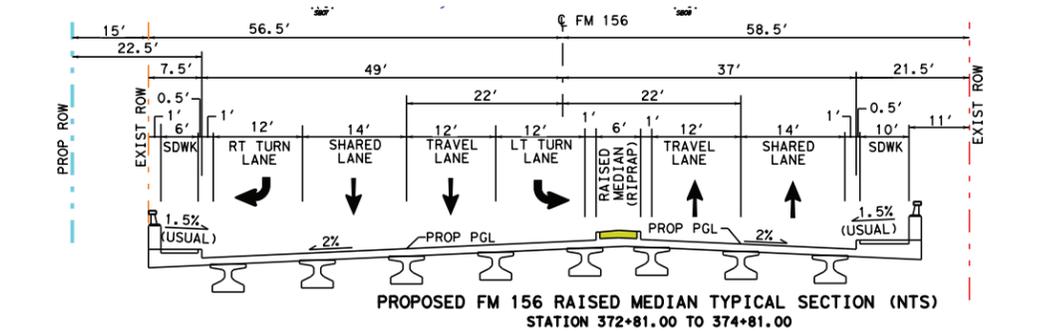
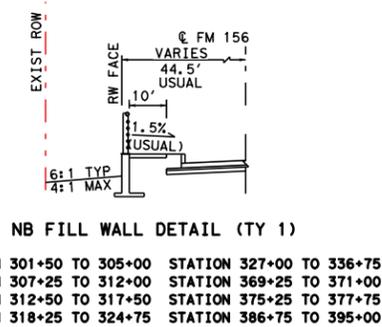
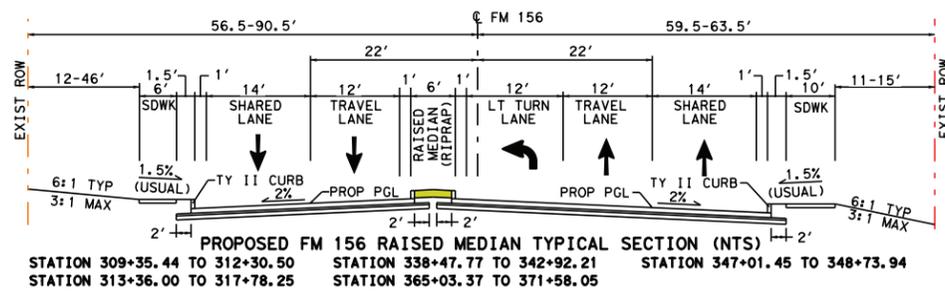
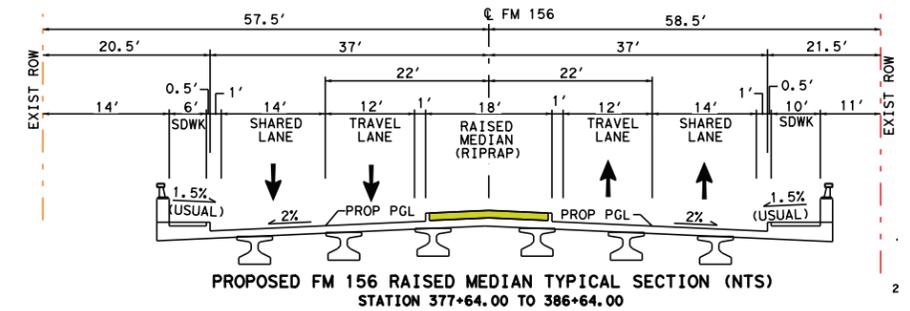
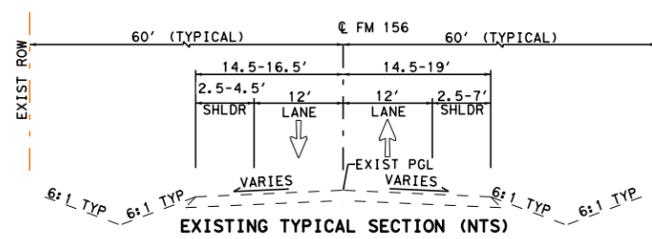
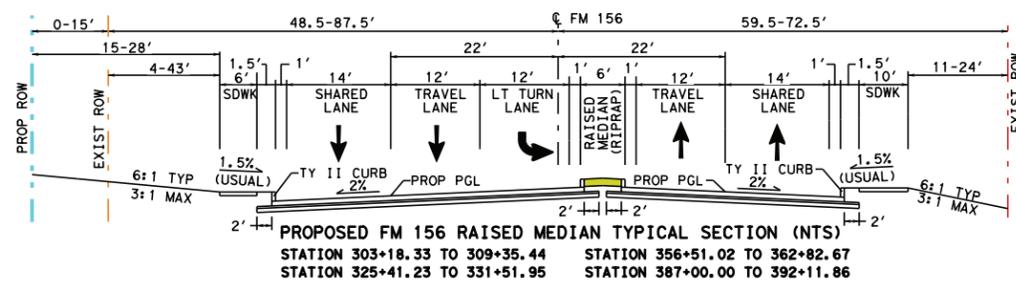
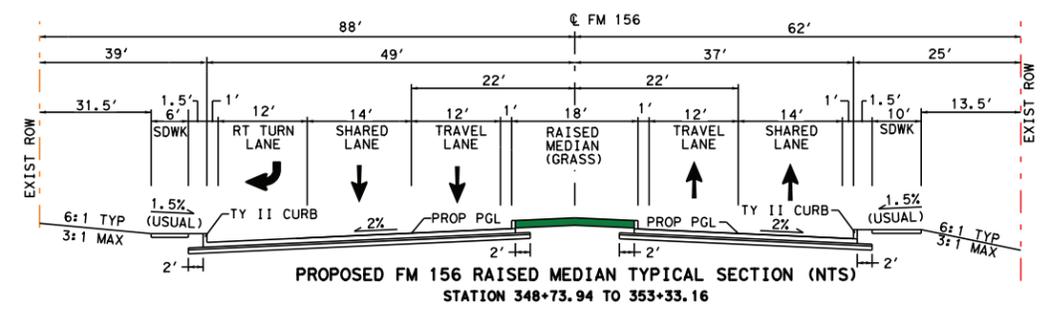
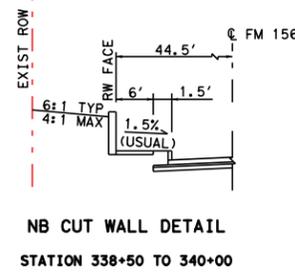
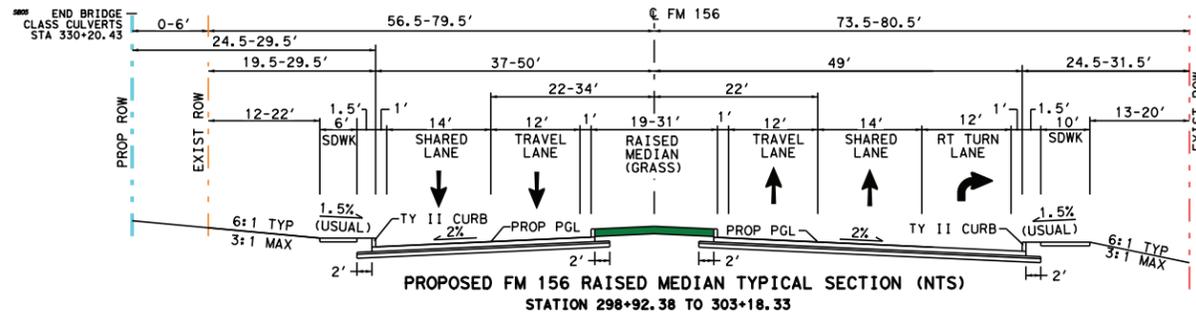
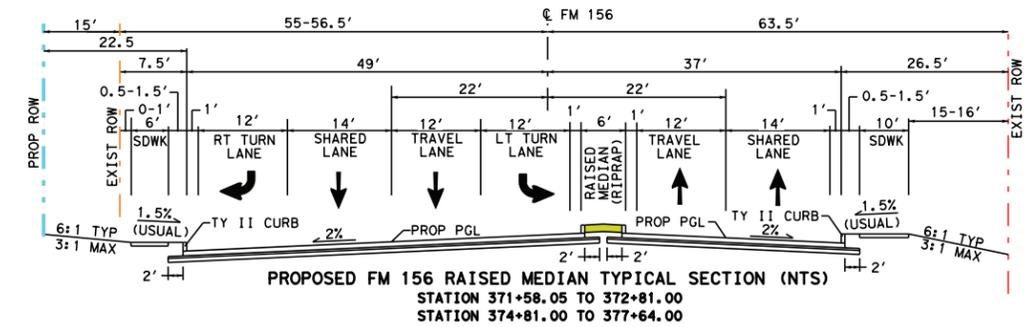
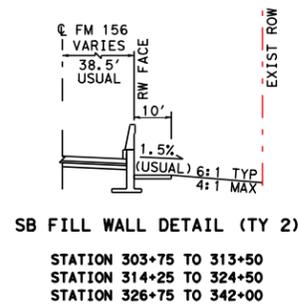
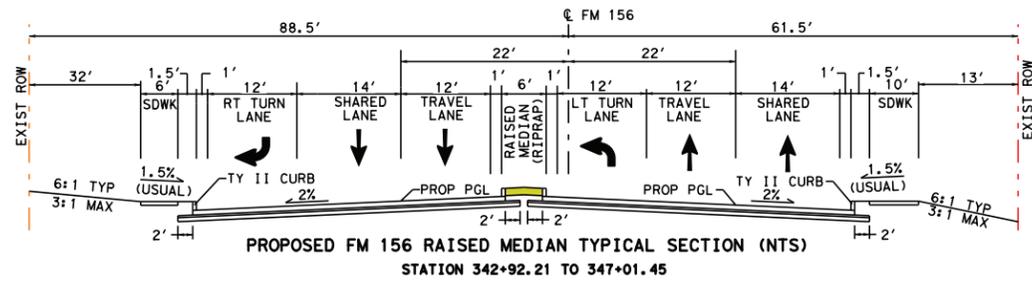


FIGURE 2 - 1
EXISTING & PROPOSED TYPICAL SECTIONS

FM 156 From US 81/US 287
to McLeroy Boulevard/Watauga Road

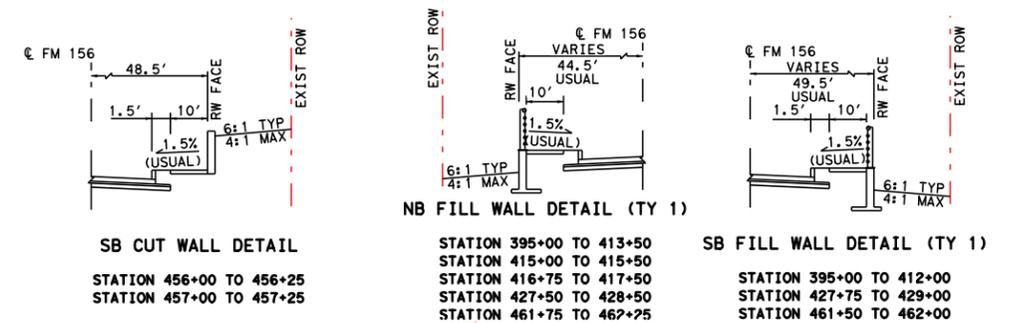
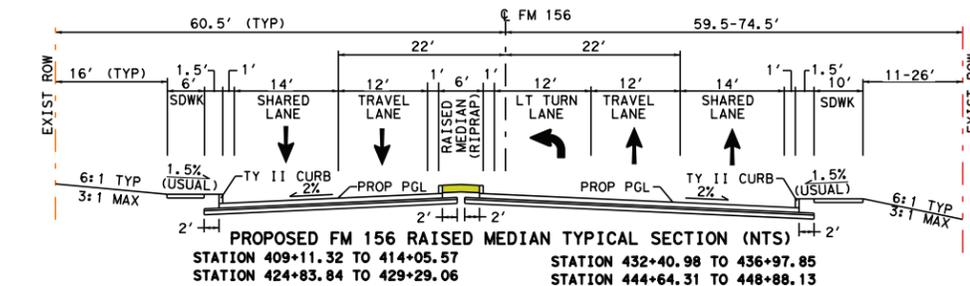
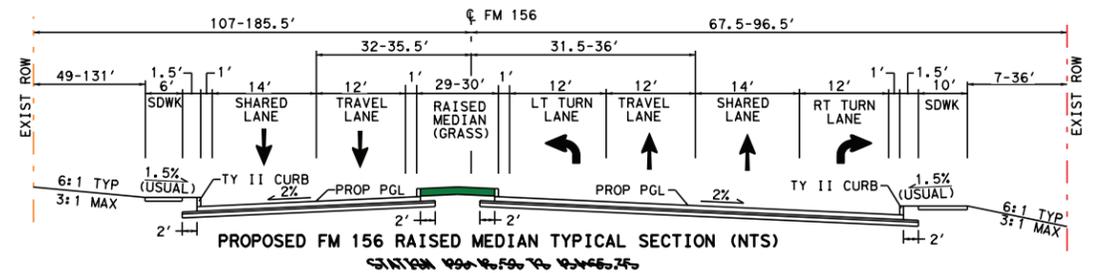
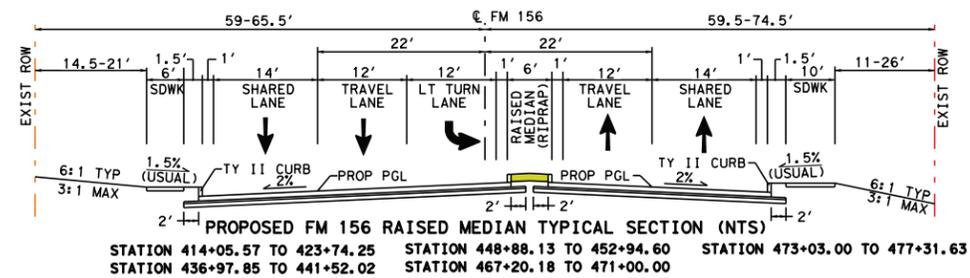
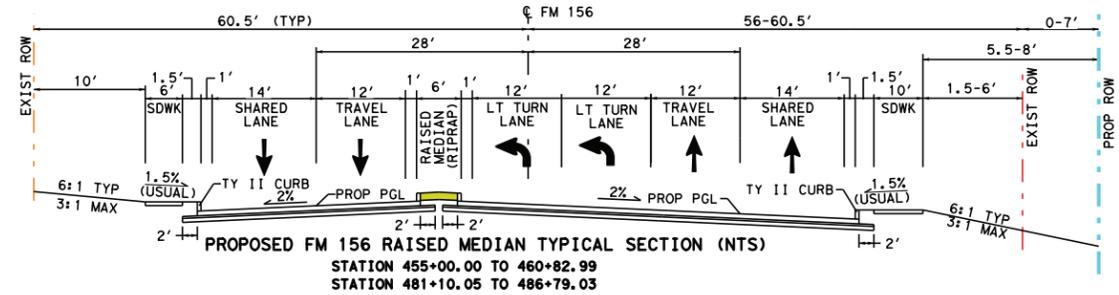
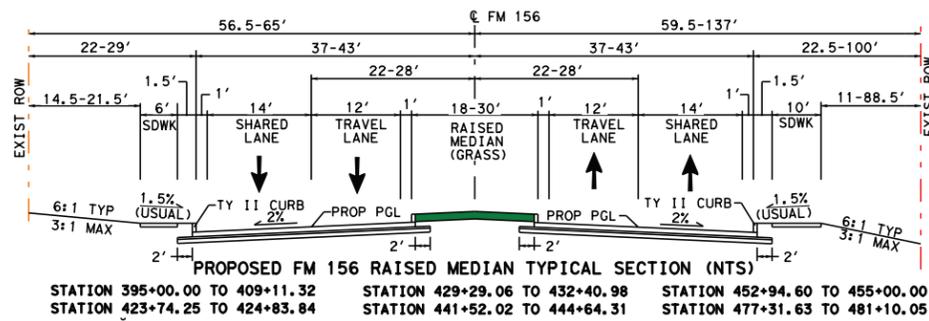
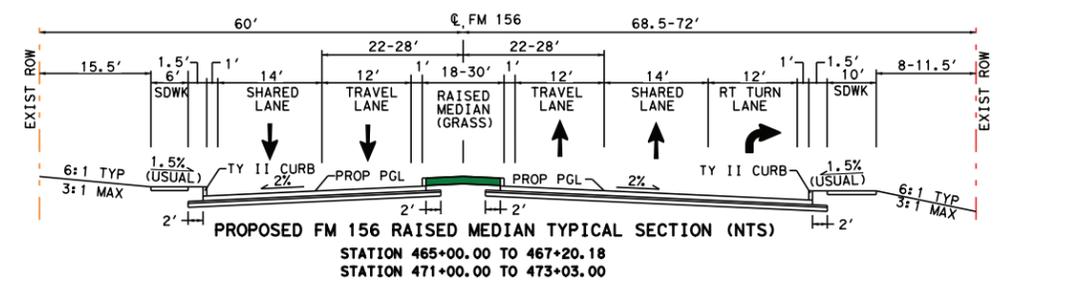
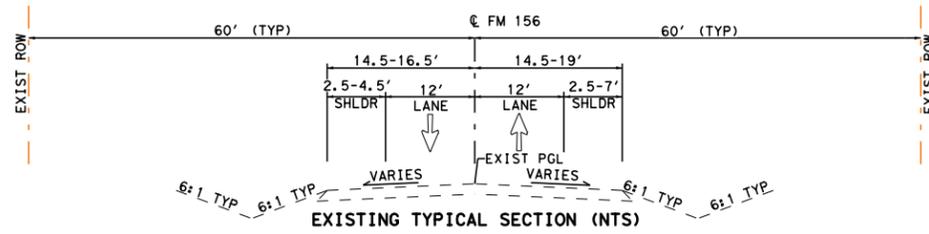
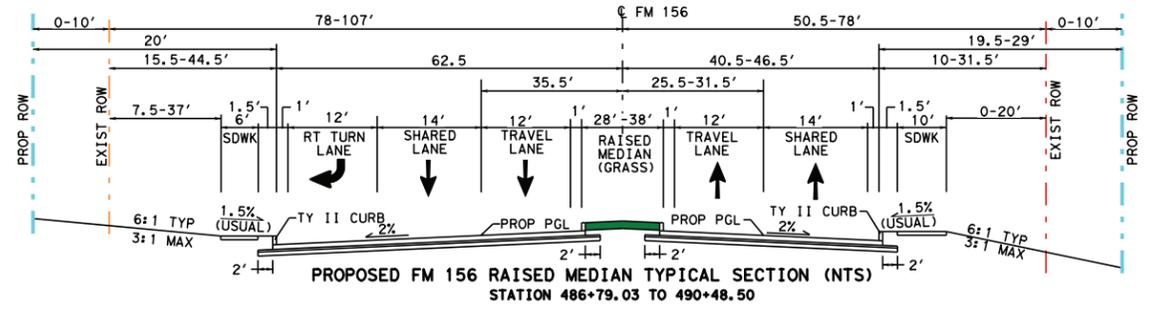
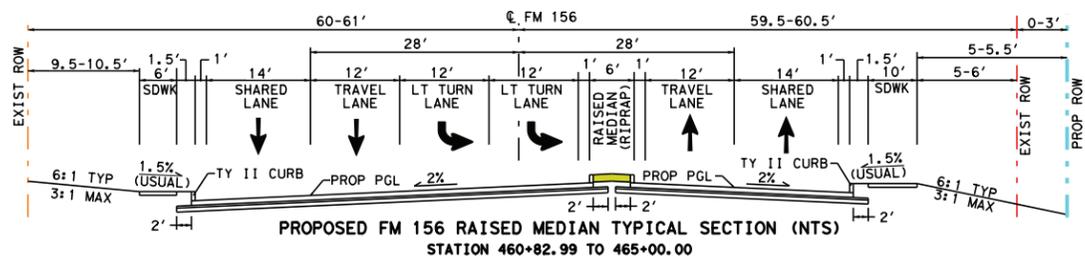


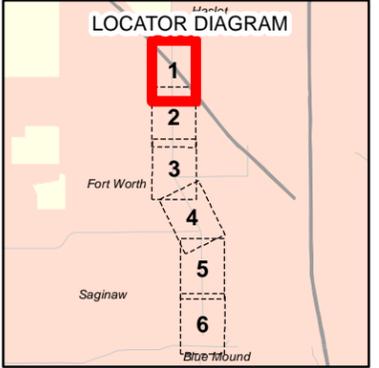
FIGURE 2 - 2
EXISTING & PROPOSED TYPICAL SECTIONS
FM 156 From US 81/US 287
to McLeroy Boulevard/Watauga Road

APPENDIX B

PLATES

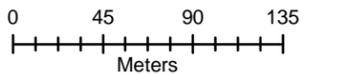
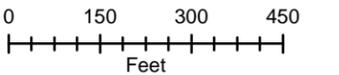
TRAFFIC NOISE STUDIES

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Key to Features

- Benefitted Receiver
- Impacted Receiver
- Non-impacted Receiver
- Proposed Noise Wall
- Streams (NHD)
- Existing ROW
- Proposed ROW
- Existing Drainage Easements

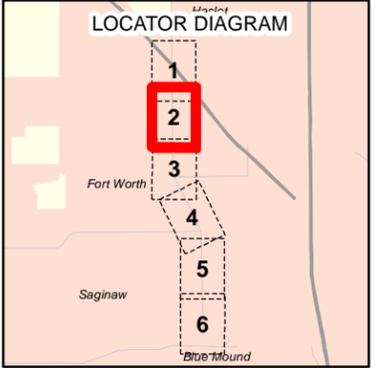


One inch equals 300 ft



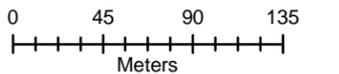
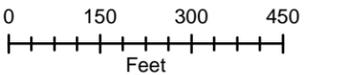
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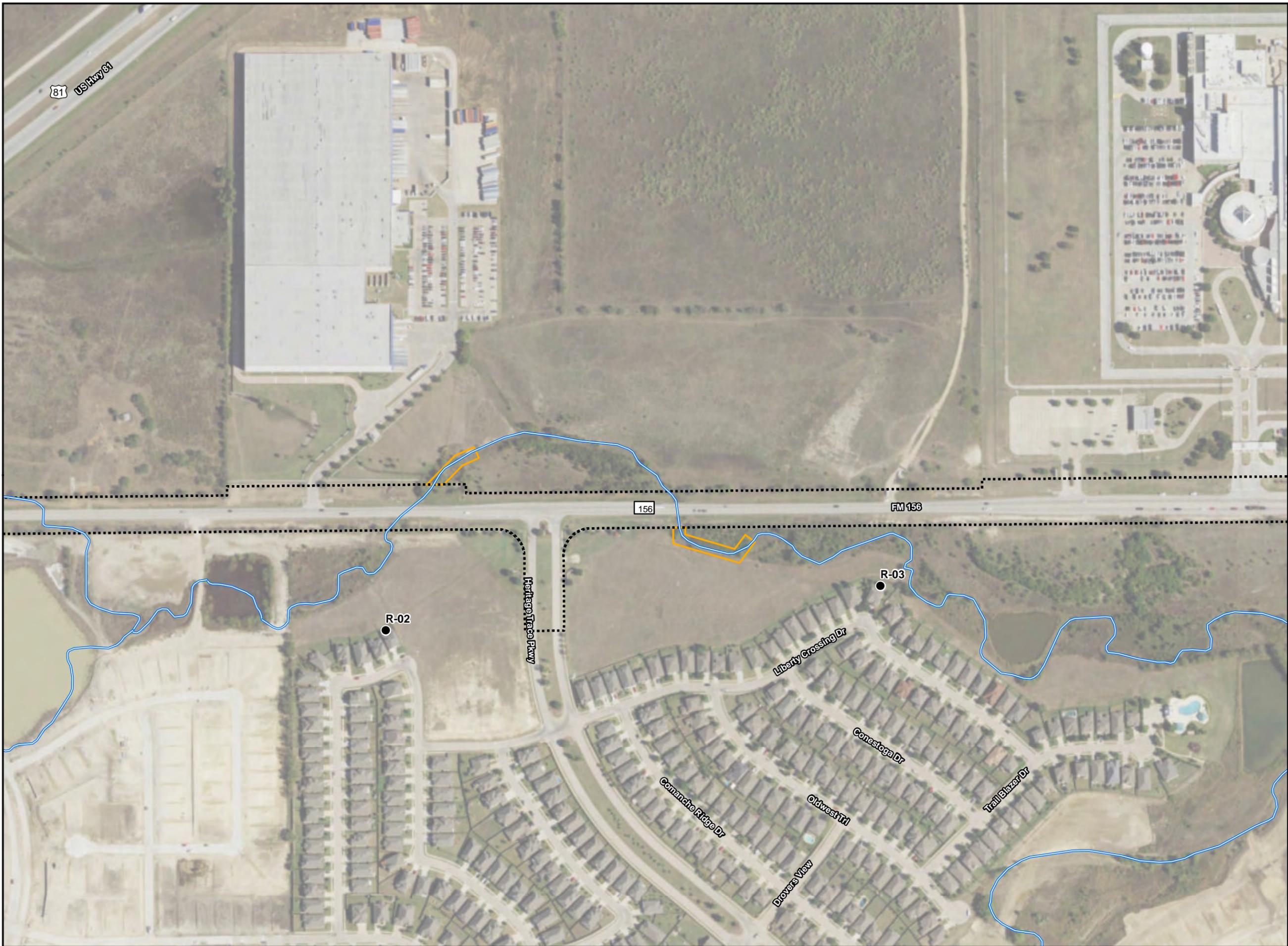


Key to Features

- Benefitted Receiver
- Impacted Receiver
- Non-impacted Receiver
- Proposed Noise Wall
- Streams (NHD)
- Existing ROW
- Proposed ROW
- Existing Drainage Easements

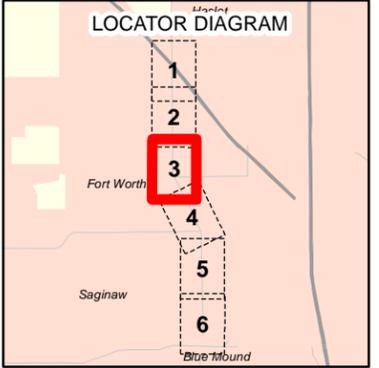


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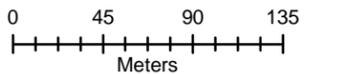
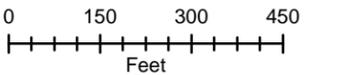
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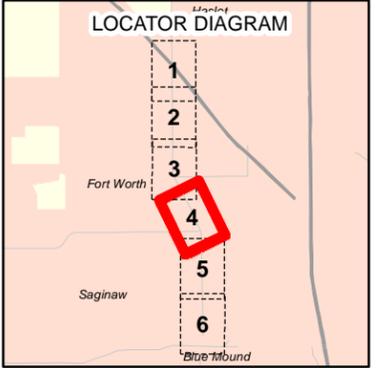


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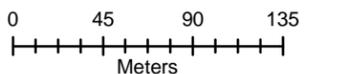
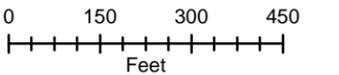
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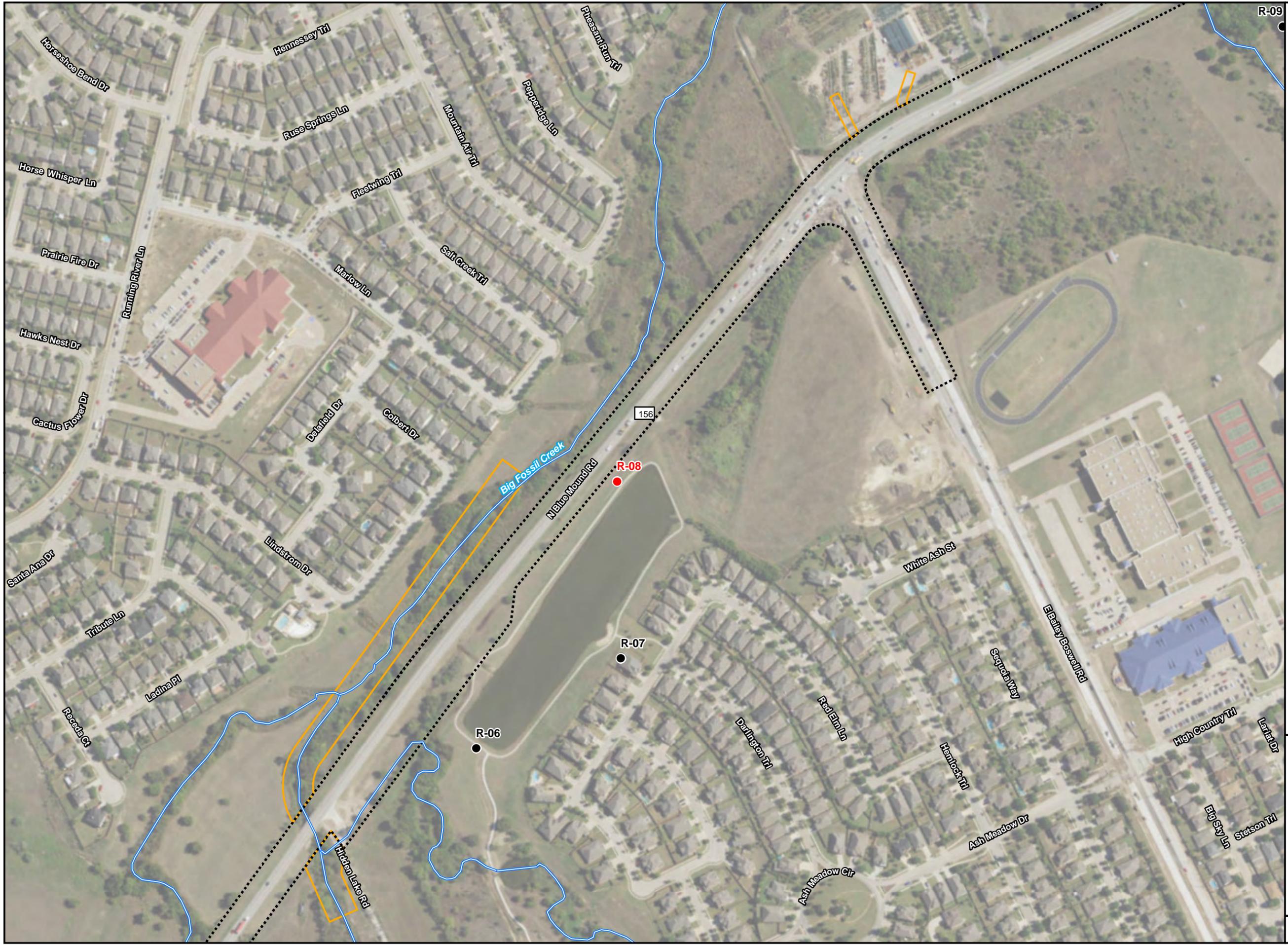


Key to Features

- Benefitted Receiver
- Impacted Receiver
- Non-impacted Receiver
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- Streams (NHD)
- Existing ROW
- Proposed ROW
- Existing Drainage Easements

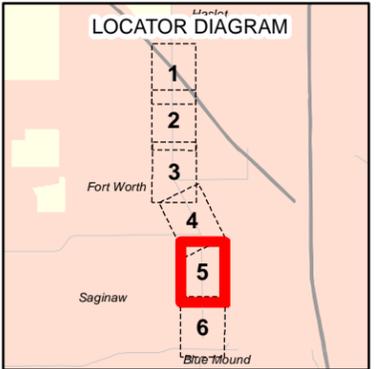


One inch equals 300 ft



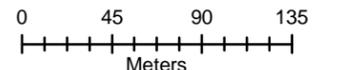
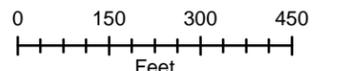
TRAFFIC NOISE STUDIES

FM 156 From US 81/US 287 to
McLeroy Boulevard/Watauga Road
Tarrant County, Texas
CSJ: 0718-02-045



Key to Features

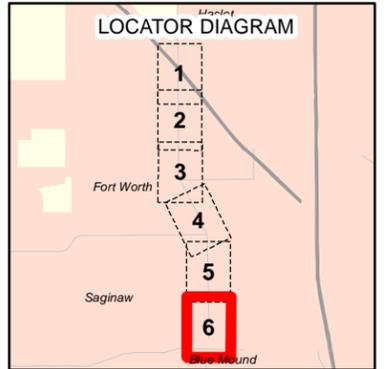
- Benefitted Receiver
- Impacted Receiver
- Non-impacted Receiver
- Proposed Noise Wall
- Streams (NHD)
- Existing ROW
- Proposed ROW
- Existing Drainage Easements



One inch equals 300 ft

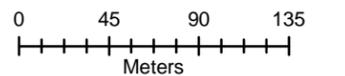
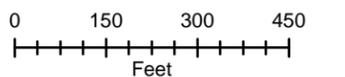
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- Proposed ROW
- Existing Drainage Easements



One inch equals 300 ft





MEMO

May 8, 2018

To: John F. Cordary, Jr., P.E.
Director of Transportation, Planning & Development– Fort Worth District

Thru: Bill McCoy
Right of Way Project Delivery Manager– Fort Worth District

From: Buzz Kyler
Utility Project Manager– Fort Worth District

Subject: **FM 156 Sound Wall Impact**

Project: FM 156 (Blue Mound Road)
Tarrant County
From: US 81/287 Split to Watauga Road
ROW CSJ: 0718-02-050
Constr. CSJ: 0718-02-045

This concerns the constructability and placement of the proposed sound walls within this project. There has been speculation as to the effect of the sound walls being constructed at 1' from the ROW line versus 2' from the ROW line versus basic sound wall constructability. To address this effect of design first, the potential impacts to utilities on this project at the proposed sound wall locations are almost identical whether the sound walls are at 1' or 2' from the ROW. Below are the specific impacts to utilities within this corridor:

Walls	Description	Utility Impacts	Effect on Construction
Sound Wall 2	West side of FM156 Approximate Station 431+10 to 436+65	Longitudinal: OH Electric, 2 OH telecom attached to poles, UG Electric for half the wall length Crossings: UG Electric lines, 6" gasline, telecom handholes containing both fiber and telephone	Due to the location of the sound wall and the overhead electric and the underground utilities, relocation of the power poles is not possible and there is not enough room to accommodate the relocation of the existing utilities due to the widening of FM 156 and no additional right-of-way acquisition.

OUR GOALS

MAINTAIN A SAFE SYSTEM ▪ ADDRESS CONGESTION ▪ CONNECT TEXAS COMMUNITIES ▪ BEST IN CLASS STATE AGENCY

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Sound Wall 3-1	East side of FM156 Approximate Station 429+55 to 436+75	Longitudinal: 6" gasline for entire length of wall Crossings: UG Electric lines, 6" gasline and 4" gasline, 1 UG Fiber line	The location of the sound wall in this area has a high likelihood of impacting or disturbing the buried gas pipeline, waterline and communications ducts, underground electrical and gas pipeline crossing have, but should have sufficient room to be a feasible option. Method of construction of the sound wall will also impact existing utilities.
Sound Wall 3-2	East side of FM156 Approximate Station 437+25 to 441+05	Longitudinal: 6" gasline for entire length of wall Crossings: UG Electric lines, 6" gasline and 4" gasline, 1 UG Fiber line	The location of the sound wall in this area has a high likelihood of impacting or disturbing the buried gas pipeline, waterline and communications ducts, underground electrical and gas pipeline crossing have, but should have sufficient room to be a feasible option.
Sound Wall 4-1	West Side of FM156 Approximate Station 444+90 to 448+60	Longitudinal: OH Electric 8" Wastewater line (1/2 length of wall) UG Electric (1/3 length) UG CATV (1/3 length) Crossings: UG Electric and UG CATV	Due to the location of the sound wall and the overhead electric and the underground utilities, relocation of the power poles is not possible and there is not enough room to accommodate the relocation of the existing utilities due to the widening of FM 156 and no additional right-of-way acquisition.
Sound Wall 4-2	West Side of FM156 Approximate Station 449+15 to 451+35	Longitudinal: OH Electric, 8" Wastewater line Crossings: 2" gasline, UG CATV, UG Electric	Due to the location of the sound wall and the overhead electric and the underground utilities, relocation of the power poles is not possible and there is not enough room to accommodate the relocation of the existing utilities due to the widening of FM 156 and no additional right-of-way acquisition.
Sound Wall 4-3	West Side of FM156 Approximate Station 451+85 to 452+95	Longitudinal: OH Electric, 8" Wastewater line Crossings: 6" gasline, UG CATV, UG Electric	Due to the location of the sound wall and the overhead electric and the underground utilities, relocation of the power poles is not possible and there is not enough room to accommodate the relocation of the existing utilities due to the widening of FM 156 and no additional right-of-way acquisition.

In accordance with UAR requirements, a minimum of 2 ft. clearance must be maintained for all buried utilities from each other and other roadway features. OH electric facilities require clearances from both the poles and the power lines. Additionally, the vibrations from the installation of drilled shafts can prove to be hazardous to gas and other pressurized utility lines within 5 ft. From an analysis of the 3 different proposed wall areas, wall area 3 appears to be the only feasible option while still having impacts to existing utilities. Wall areas 2 and 4 are not feasible to construct as those corridors do not have sufficient space to adequately relocate all utilities or allow space for utility owners to maintain those facilities without exceptions to TxDOT policies per UAR 21.35. Additionally, any relocation that would be necessary to accommodate the sound walls in these areas would negatively impact other utilities that may not have been impacted otherwise. Lastly, with the addition of the sound walls, the utility corridor would be that much narrower as utilities may not be able to be placed under the numerous proposed sidewalks because of accessibility and maintenance requirements.

The existing utilities are within inches of the existing edge of pavement. There are overhead electric lines on power poles, numerous buried communications, 12" to 48" waterlines, sanitary sewer lines, and high capacity, high pressure gas pipelines that will require relocation to clear the proposed paving and drainage structures. Due to the widening and added capacity of FM 156 within existing right-of-way, with no additional longitudinal right-of-way acquisition and extremely congested corridor of multiple utilities, only proposed sound wall 3 is a feasible option.

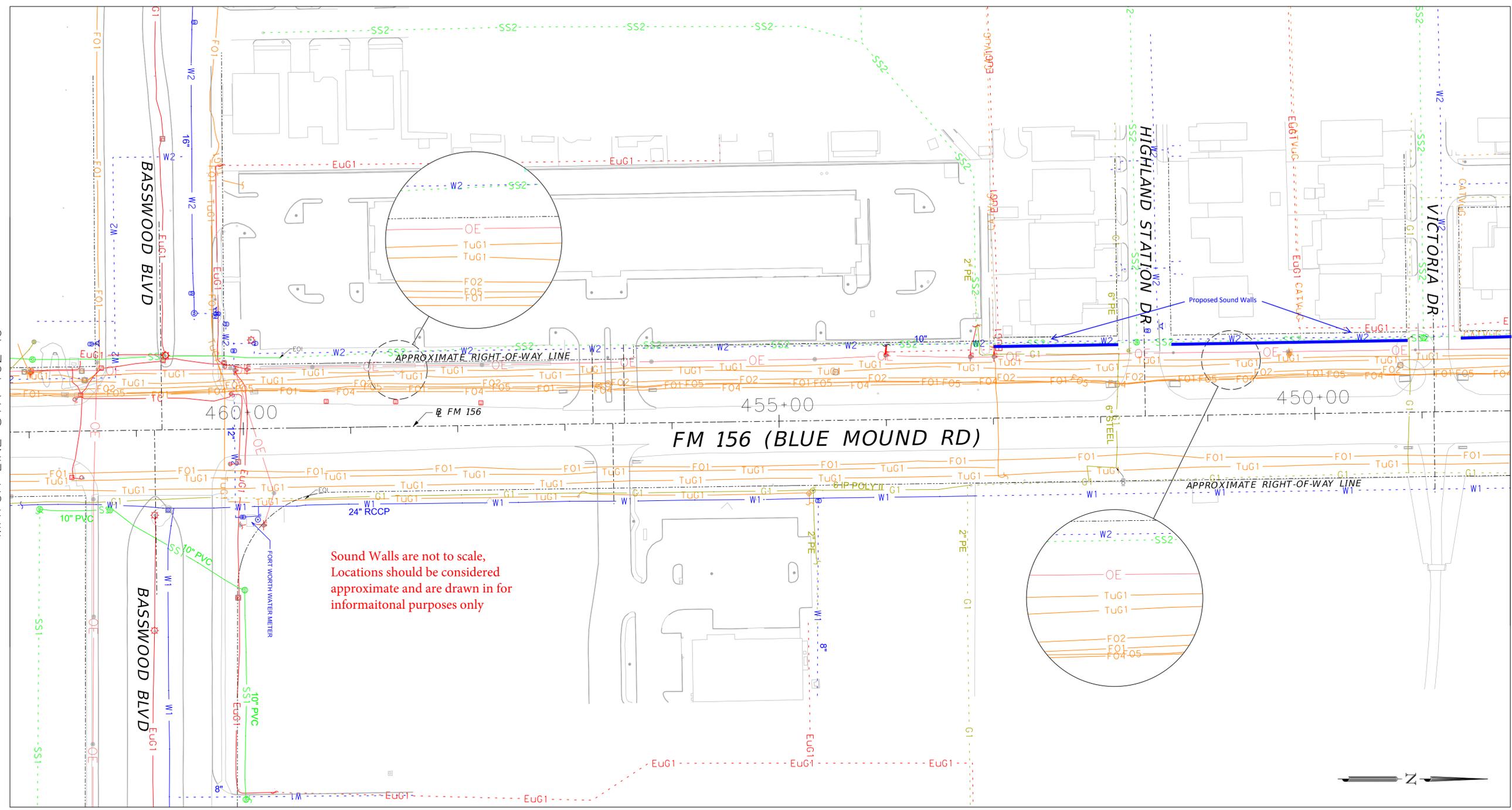
It is our recommendation the sound walls be eliminated from the entire project, or delay the letting of the project and acquire additional right-of-way to accommodate the construction of the new roadway, added sound walls and relocation of existing utilities.

If you have any questions, please contact Buzz Kyler at (817) 370-6952.

CC: Bryan Elkan, P.E., HDR, Inc.

MATCH LINE STA 462+16

MATCH LINE STA 448+16



Sound Walls are not to scale,
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UTILITY CONTACT LIST

- | | | | |
|--------|-----------------------------|----|--|
| F05 | ZAYO | W1 | CITY OF FORT WORTH (COFW) - ASHANTI TURNER - ASHANTI.TURNER@FORTWORTHTEXAS.GOV |
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| F03 | MCI (VERIZON) | W3 | CITY OF SAGINAW - JANICE ENGLAND - (817)232-4640 EXT. 2327 |
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| F01 | AT&T | | |
| TuG1 | AT&T | | |
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| G5 | BARNETT GATHERING, LP | | |
| OE | AMBER PIPELINE | | |
| CATWUG | CHARTER COMMUNICATIONS | | |
| EUG1 | ONCOR ELECTRIC DISTRIBUTION | | |
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- GENERAL NOTES:**
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 7. FIELD INVESTIGATIONS WERE COMPLETED ON 10/30/2015.

NO.	DATE	REVISION DESCRIPTION	BY
1	1/05/17	PERMITLET PROVIDED BY CLIENT IS ADDED. ALL OTHER INFORMATION IS UNCHANGED FROM VERSION SUBMITTED 04/21/16 BY MICHAEL S. CRAIN	CV

SHEET 6 OF 18

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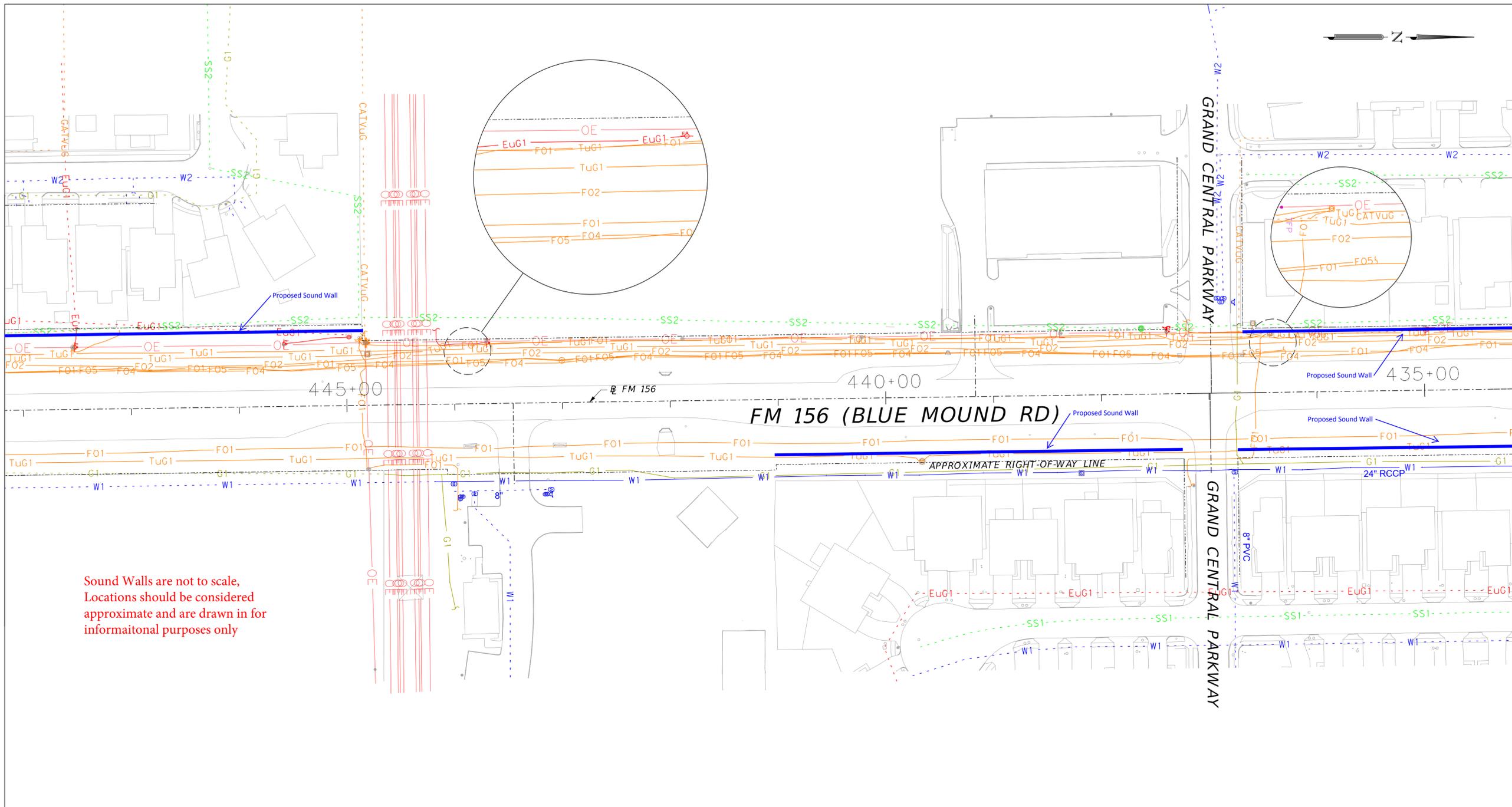
CLIENT: CH2M HILL
SAM#: 35812A
SCALE: 1"=50'
DATE: 1/11/2017
PROJECT MANAGER: ERIC KREINER
PROJECT ENGINEER: MICHAEL CRAIN, CHRIS VILLAR
TECHNICIAN: JOEL CAMPBELL



1/16/2017

32-332P5054/WA4
FM-156
US 81/287 TO WATAUGA RD
SUE QUALITY LEVELS
B, C AND D

FED. RD. DIV. NO.	AID PROJECT NO.		SHEET NO.
6			6
STATE	DIST.	COUNTY	
TEXAS	02	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0718	02	045	FM-156



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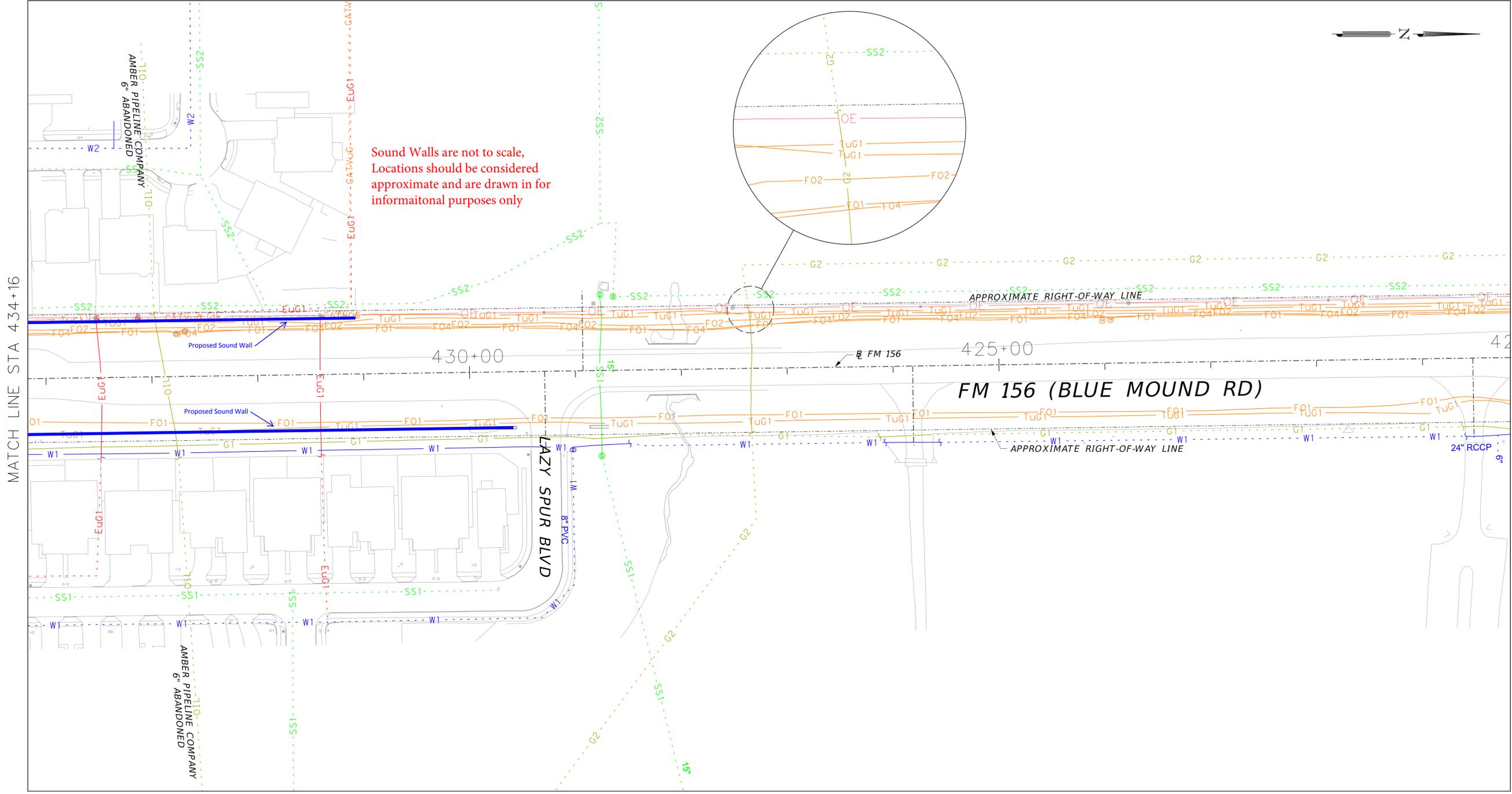
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www.sam.biz

CLIENT: CH2M HILL
SAM#: 35812A
SCALE: 1"=50'
DATE: 1/11/2017
PROJECT MANAGER: ERIC KREINER
PROJECT ENGINEER: MICHAEL CRAIN, CHRIS VILLAR
TECHNICIAN: JOEL CAMPBELL



32-332P5054/WA4
FM-156
US 81/287 TO WATAUGA RD
SUE QUALITY LEVELS
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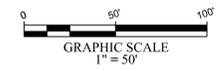
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6			7
STATE	DIST.	COUNTY	
TEXAS	02	TARRANT	
CONT.	SECT.	JOB	HIGHWAY NO.
0718	02	045	FM-156



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MATCH LINE STA 434+16

MATCH LINE STA 420+16



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