



# Route Study Report

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## US 77 Woodsboro/Refugio

Refugio County, Texas

Contract No. 40-4IDP5004 WA23

December 2018

## 1. Introduction

The Texas Department of Transportation (TxDOT) has conducted a route study along US Highway 77 (US 77) in Refugio County from approximately one mile south of Woodsboro to Lambert Road just north of Refugio. The route study was conducted to help facilitate the future goal of designating this section of US 77 as part of the Interstate 69 (I-69) highway system. In response to Fixing America's Surface Transportation Act (FAST Act) requirements, TxDOT conducted the US 77 Woodsboro/Refugio Route Study where route options were presented and evaluated for impacts and fatal flaws.

Three options were considered for this study:

- Construction of US 77 to interstate standards on new location west of Refugio.
- Upgrade and expand existing US 77 to interstate standards.
- Construction of US 77 to interstate standards on new location east of Refugio.

Numerous analyses were conducted and documented in technical memorandums as part of the study. These documents are located in the project files in TxDOT's Corpus Christi District Office.

### 1.1. *Purpose of the Study*

The US 77 Woodsboro/Refugio Route Study explored several preliminary options for the routing of I-69 while meeting interstate standards and minimizing environmental and community impacts. Preliminary routes were developed following Federal Highway Administration's (FHWA's) Planning and Environmental Linkages process:

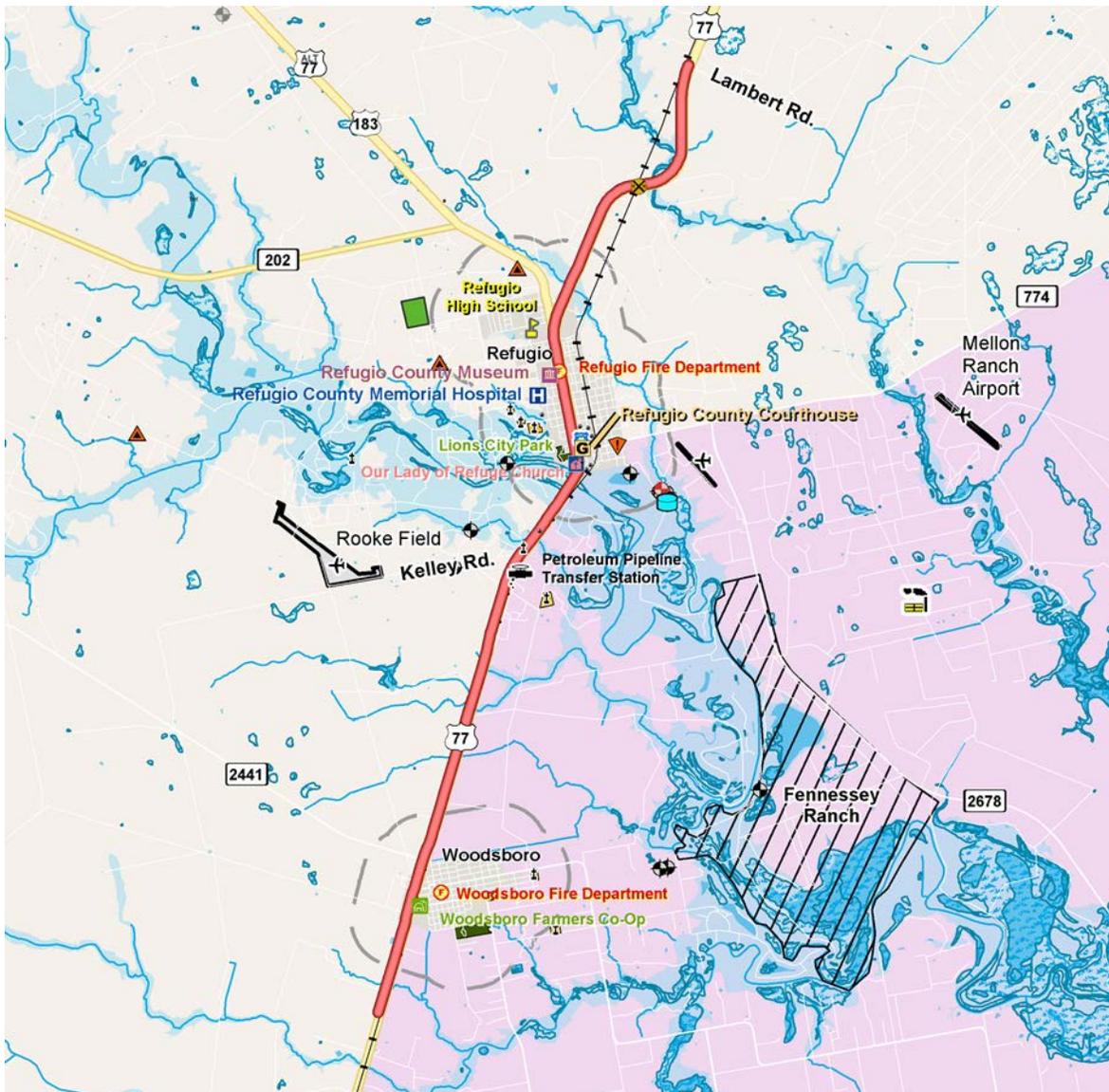
- Define the project's need and purpose.
- Characterize the study area's environmental setting (affected environment), identifying those environmental and planning features that could influence US 77 route option locations.
- Develop, evaluate, and screen US 77 route options, taking into consideration stakeholder and public input and preferences, potential impacts to the environment and the community and estimated costs.
- Identify the recommended route option(s) to be advanced for further detailed design, public review and input, and environmental study.

These planning level decisions will be carried forward into the next phase of project development as the basis for developing the schematic design of the build alternative and for conducting the environmental study process. The goal of the project is to develop and advance a transportation facility that meets interstate standards, has community support, effectively serves Woodsboro and Refugio while improving mobility between Houston, the Port of Corpus Christi and the Rio Grande Valley.

## 1.2. Study Area Description.

A study area defines the limits for which reasonable and feasible alternatives would be identified and analyzed. The limits of the US 77 route study begin one mile south of Woodsboro and extend north to Lambert Road just north of Refugio on US 77 - approximately 9.5 miles. The project limits are shown below in **Figure 1**.

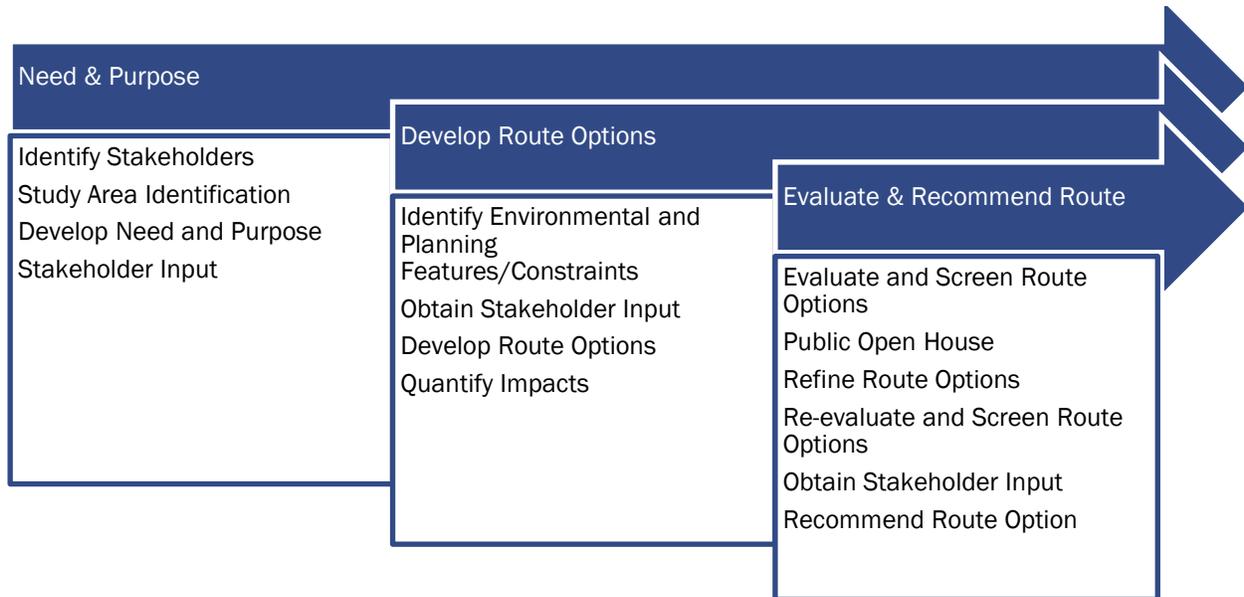
Figure 1: Study Limits



## 2. Study Process

The US 77 Woodsboro/Refugio Route Study process followed a three-step approach beginning with the identification of the need and purpose of the project, the development of route options, and ending with a recommended route – which would then be carried to the next phase of project development. The process included engagement with the public, stakeholders, and local elected officials – consistent with the FHWA planning and environmental linkages provisions. Shown in **Figure 2**, each step feeds into the next step.

Figure 2: Route Study Process



Stakeholder input is important at each stage of the process. A stakeholder working group was formed to provide input to the TxDOT project team regarding development of route options. Refugio County Judge Robert Blaschke provided TxDOT a list of potential people to serve as members of the stakeholder working group. The stakeholder working group was made up of 21 individual stakeholders and Judge Blaschke. Members included elected officials, local business people, representatives from the school districts, fire chiefs, the sheriff, and a hospital representative. A listing of the stakeholder working group members is shown in **Table 1**.

Table 1: Stakeholder Working Group Members		
Brenda Belasquez, Fast Break	Judge Robert Blaschke, Refugio County	Commissioner Gary Bourland, Refugio County
Steve Conner, H E B	Chief Enrique Diaz, Refugio Police Department	Mayor Wanda Dukes, Refugio
Tina Bonam, Refugio Travel Center	Superintendent Melissa Gonzales, Refugio ISD	Sheriff Pinky Gonzales, Refugio County
Mario Hernandez, Stripes (Refugio)	Wes Holmstrom, Cox Holmstrom	Lee Lewis, O'Conner-Braman
Amanda Mendoza, Woodforest Bank	Irene Muguersza, Refugio County Chamber of Commerce	Chief Don Pullin, Refugio Volunteer Fire Department
Dr. J. Tim Rainey	Chief Lee Riemenschneider, Woodsboro Volunteer Fire Department	Mayor Kay Roach, Woodsboro
Andy Rooke, F.B. Rooke and Sons	Superintendent Janice Sykora, Woodsboro ISD	Hoss Whitt, Refugio County Memorial Hospital
Roxann Wiginton, Woodsboro Farmer's Co-Op		

The stakeholder working group met three times during the study (May 31, 2017, April 26, 2018, and October 18, 2018). The stakeholder working group did not meet for approximately a year due to the impacts of Hurricane Harvey. The stakeholder working group was instrumental in identifying project needs, reviewing the need and purpose statement, identifying additional environmental and community constraints to potential routes, reviewing route evaluation criteria, and guiding TxDOT throughout the route study.



Stakeholder Working Group

## 2.1. *Project Need and Purpose*

The existing US 77 highway facility in Refugio County would be upgraded to an interstate facility as part of the FAST Act. This federal transportation legislation, identified this section of US 77 to be designated as I-69E once it meets the interstate standards as defined by the American Association of State Highway and Transportation Officials (AASHTO) and the FHWA. With the enactment of the FAST Act and input gathered from public engagement activities the project need and purpose were defined as follows:

### 2.1.1. *Needs*

- Section 1105(e) of the Intermodal Surface Transportation Efficiency Act of 1991, as amended, designates High Priority Corridor 18, which includes US 77 from the Rio Grande River to I-37 at Corpus Christi and then to Victoria as future parts of the interstate system. US 77 through Woodsboro and Refugio does not meet interstate design standards.
- As noted in the Texas Freight Mobility Plan (TFMP) (November 2017), Texas' interstates handle the majority of truck traffic, due to their connectivity to major population centers, businesses, logistics centers, marine ports, military installations, international and domestic gateways and inland ports. As such, all of the interstate highways in Texas, including the entire I-69 system in Texas, is included on the Texas Highway Freight Network.

### 2.1.2. *Stakeholder Identified Needs*

- Access to emergency services (i.e., hospital, EMS).
- Bus access to schools located on and near US 77.
- Access to businesses and economic hubs (particularly for trucks entering/exiting the Woodsboro Farmers' Cooperative facility in Woodsboro, especially during peak harvest from mid-June to August)
- Maintain economic viability (concern about small towns being bypassed and losing business).

### 2.1.3. *Project Purpose*

Provide a continuous access-controlled facility that:

- meets interstate design standards;
- improves safety for local and through traffic; and
- improves mobility and connectivity.

### *2.1.4. Refined Need and Purpose Statement*

The need and purpose of the US 77 Woodsboro/Refugio Route Study is to identify US 77 route options that would provide a continuous access-controlled facility that meets interstate standards for future I-69E route designation; improve safety for local through traffic; improve mobility, access, and connectivity; and enhance economic vitality.

Detailed information on the project needs and project purpose can be found in the Purpose and Need Technical Memorandum and in the Needs Assessment Technical Report.

### *2.2. Public Outreach*

In addition to the aforementioned stakeholder working group, TxDOT conducted a robust public engagement program as part of this study to inform the public about the study. A project page was established and maintained on TxDOT's website [txdot.gov](http://txdot.gov). TxDOT also was invited to speak about the study to local elected officials. Presentations were made by TxDOT representatives to the following local elected officials:

- Refugio County Commissioner's Court, March 13, 2018
- Town of Woodsboro Council, June 5, 2018
- Town of Refugio Council, June 12, 2018

TxDOT also met with and presented information about the study to a group of west side Refugio neighborhood residents, also on June 12, 2018. This community provided TxDOT with important information about the neighborhood characteristics and their concerns about the study.

The US 77 Woodsboro/Refugio Route Study included a public Open House held in Refugio on June 21, 2018. The purpose of the Open House was to provide all the information and analysis results to the public in an open forum. This was an opportunity for the public to view the work of the project team and the stakeholder working group sessions and to provide the public an opportunity to comment. Public input received at the Open House was incorporated into the refinement of the route options.



*June 21, 2018 Open House*

### 3. Route Option Development

This route study used a planning level approach to develop feasible route options. This approach identifies corridors that could accommodate the required right-of-way (ROW) and minimizes impacts to key community and environmental features.

To begin developing route options a ROW width is needed. ROW width is the total width of the cross section. A cross section defines the roadway footprint (number of lanes) width and its geometric elements, i.e. width of shoulders or width of medians. ROW width for this study range from 234 feet up to 450 feet, dependent upon location and type of development present. Detailed description of project cross sections can be found in the Engineering Technical Report and in Appendix A of this report.

In addition to ROW width requirements, environmental and community features that are to be avoided by route options should be identified and mapped.

#### 3.1. *Identification of Key Features*

Environmental and community features within the study area were identified and mapped using secondary data and input from the May 2017 and April 2018 stakeholder working group work sessions. Features identified and mapped included resources such as historic sites, floodplains, water bodies, hazardous material sites, utilities, residential and commercial areas, parks, and demographic data. A detailed list of identified features included in this study can be found in the Environmental Technical Report.

#### 3.2. *Develop Preliminary Routes*

Three preliminary route options were developed based on the requirements identified by TxDOT and input received at the stakeholder working group work sessions. These options are described below and are shown on **Figure 3**:

- West Route Option - This route option would continue along existing US 77 through Woodsboro. The route turns west from US 77 at Kelley Road/Exxon Road and later ties back to the existing US 77 alignment at Lambert Road.
- Central Route Option - This route option would continue along the existing US 77 alignment though both Woodsboro and Refugio.
- East Route Option - This route option would extend along existing US 77 through Woodsboro. The route turns east from US 77 north of Toup Road and later ties back to the existing US 77 alignment at Lambert Road.

On the southern section of the study area, all route options follow the existing US 77 alignment widening the ROW to the west from about one mile south of Woodsboro north until Toup Road 2 miles north of Woodsboro. The central and west route options diverge just south of Refugio.

### *3.2.1. West Route Option*

The west route would diverge from the existing US 77 alignment about one mile south of Refugio and would continue west through the extraterritorial jurisdictional (ETJ) area of Refugio. The ETJ is the unincorporated area outside of the city limits in which a city can exercise its authority. The route would tie back to the existing US 77 four (4) miles north of Refugio near Lambert Road. The existing US 77 alignment through Refugio would become US 77 Business.

Key features include:

- ROW includes mix of undeveloped and occupied properties, with potential effects to existing property owners and businesses.
- Six connections to Refugio including to US 183.

### *3.2.2. Central Route Option*

The central route option would involve an upgrade of the existing US 77 through both Woodsboro and Refugio.

Key features include:

- Follows current highway corridor, uses available undeveloped ROW.
- Elevated highway through Refugio to minimize ROW impacts.
- Includes frontage roads to maintain access to adjacent development.
- ROW required includes property acquisition and displacement of residences, businesses and community resources.

### *3.2.3. East Route Option*

The east route option would diverge from the existing US 77 alignment north of Toup Road, then continue through the less developed areas east of Refugio tying back into existing US 77 near Lambert Road four miles north of Refugio. The existing US 77 alignment through Refugio would become US 77 Business.

Key features of the east route option include:

- Passes outside of the ETJ of Refugio.
- ROW includes mostly undeveloped properties.
- Avoids parks, public housing and more densely populated residential areas nearer to the center of town.
- Three connections to Refugio including FM 774 (one additional connection would be possible if Commons Street is extended by Refugio).

### 3.3. *Modified Route Options*

TxDOT received numerous public comments expressing concern about the preliminary route options presented at the June 21, 2018 Open House. In response, TxDOT developed two additional route options described below and shown in **Figure 3**:

- **Modified West Route Option** – Like the west route option, this route option would continue along existing US 77 through Woodsboro. The route turns west from US 77 at Kelley Road/ Exxon Road and later ties back to the existing US 77 alignment at Lambert Road. The alignment was refined so that the route option would pass farther west of Refugio to avoid displacing residences and businesses.
- **Modified East Route Option** – Like the east route option, this route option would extend along existing US 77 through Woodsboro. The route turns east from US 77 north of Toup Road and later ties back to the existing US 77 alignment at Lambert Road. The alignment was refined so that the route option would pass closer to Refugio to provide motorists with better access to the town’s businesses and services.

#### 3.3.1. *Modified West Option*

The west route option originally passed through a residential area and required numerous displacements. After comments received during the Open House on June 21, 2018, this option was developed to pass west of the residential area through rural properties to avoid displacing residents.

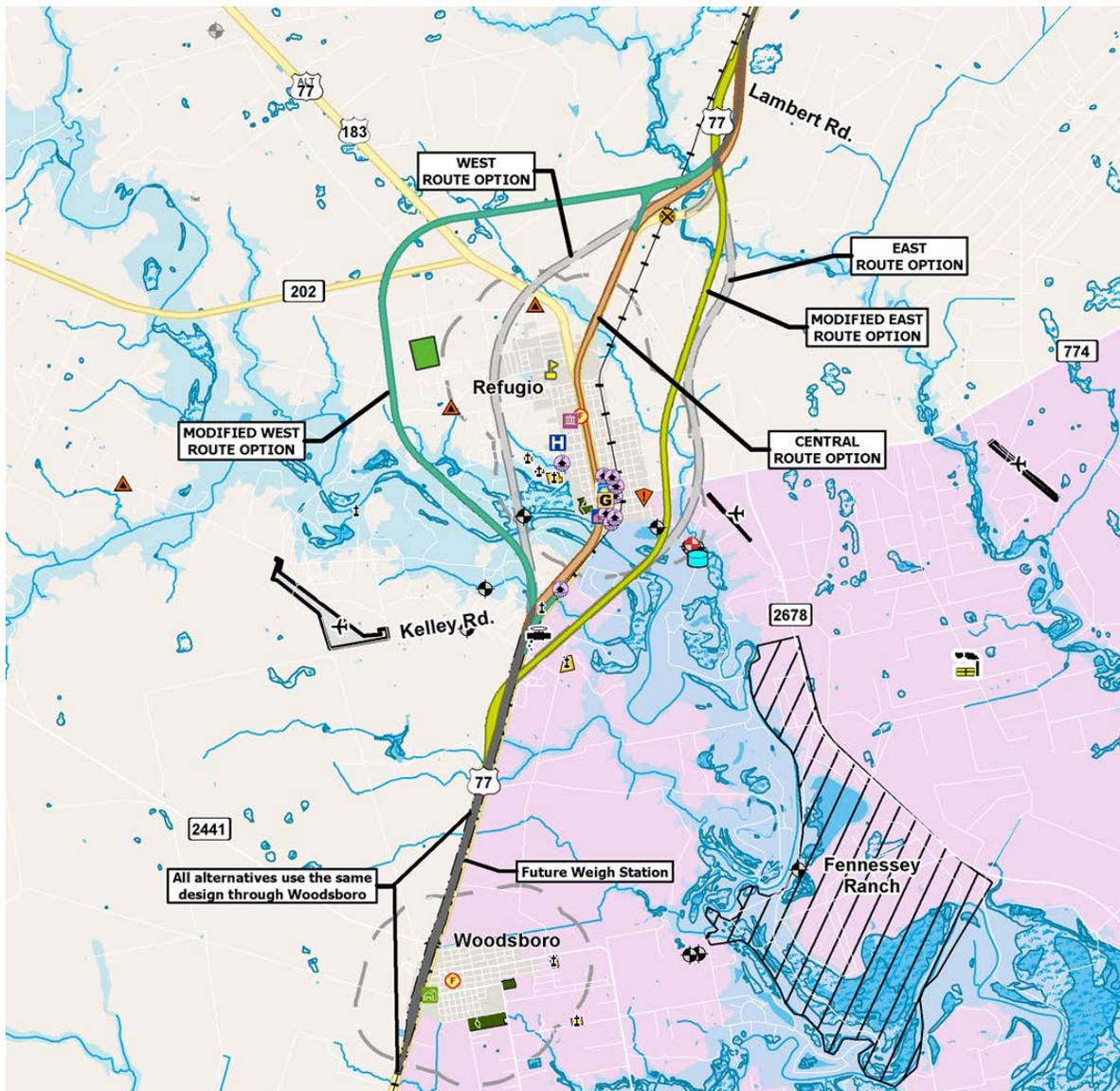
Key features of the modified west route option include:

- Requires ROW to include only undeveloped parcels.
- Travels outside of Refugio ETJ.
- Avoids populated areas and associated displacements.
- Provides access to US 183 and provides connection to Refugio.

#### 3.3.2. *Modified East Option*

The east option alignment was originally placed just outside the ETJ area of Refugio. After comments received during the Open House it was found that it would be desirable to have the highway pass nearer to Refugio businesses and services.

Figure 3: Route Options



#### 4. Route Option Impacts

A route impact matrix was created to compare the advantages and disadvantages of the route options. The route impact matrix compares quantitative characteristics of each route option. However, the purpose of this matrix is not to give scores to each route, but to collect the quantified information for each option and present the information in an easily accessible fashion. This information was provided at the stakeholder working group work sessions to aid in their discussion of the route options and to the public during the Open House.

Engineering and traffic data was included along with geographic information systems (GIS) datasets for potentially sensitive environmental and community resources within the study area. The datasets were used to quantify and compare potential impacts between alternatives. The impacts for the five route options evaluated in this study are tabulated in the Route Option Evaluation Matrices shown in **Figures 4 and 5**.

Figure 4: Route Options Evaluation Matrix – Preliminary Routes

	No Build	West Route	Central Route	East Route
Route Length (miles)	N/A	12.6	12.3	12.4
Preliminary Estimated Construction Cost	N/A	\$583 million	\$534 million	\$466 million
<b>Safety and Mobility</b>				
2040 Traffic Volume Forecast for All Vehicles through Town (Average Daily Traffic [ADT])	36,200	16,100	36,200	17,400
2040 Traffic Volume Forecast for Trucks through Town (ADT/percent)	8,800 (24%)	300 (2%)	8,800 (24%)	300 (2%)
Access to existing US 183 North hurricane evacuation route	Yes	Yes	Yes	Yes
<b>Land Use</b>				
Parcels Traversed	0	111	246	106
New Right-of-Way (acres)	0	521	370	490
Residential Displacements	0	24	11	1
Business Displacements	0	5	37	3
Community Facility Displacements	0	0	1 Mission 1 Fire Station	0
Parks	0	0	0	0
Cultural features	0	0	3 Historic Markers	0
<b>Environmental Effects</b>				
Wetlands* (total acres)	0	22.7	4.7	9.6
Base (100-year) Floodplain (acres)	0	78.4	53.5	71.1
Floodway (acres)	0	42.6	14.5	40.2
Impaired Stream Segment Crossings**	0	1	1	1
Waterway Crossings (feet/acres)	0	9 streams (5,293 ft) 9 ponds (2.1 ac)	8 streams (4,777 ft) 2 ponds (0.6 ac)	6 streams (3,119 ft) 2 ponds (7.6 ac)
GLO Coastal Management Zone	0	0	0	174.9 ac
Critical Habitat	0	0	0	0
Prime Farmland Soil (acres)	0	454.4	0	463.4
Oil and Gas Facilities	0	32 Pipelines 5 Dry Holes 4 Permitted Locations 2 Abandoned Locations 11 Permitted Wells 3 Gas Wells 5 Oil Wells	35 Pipelines 1 Dry Hole 1 Permitted Location 2 Abandoned Locations 9 Permitted Wells 1 Gas Well 4 Oil Wells 1 Oil/Gas Well	43 Pipelines 6 Dry Holes 1 Permitted Location 1 Abandoned Location 7 Plugged Wells 2 Gas Wells 6 Oil Wells 3 Oil/Gas Wells
Hazardous Materials	0	1 Closed Landfill	0	1 Closed Landfill 1 Solid Waste Processor

\*National Wetland Inventory

\*\*Occurring within 5 miles downstream

Figure 5: Route Options Evaluation Matrix – Modified Routes

	West Route (Modified After Open House)	East Route (Modified After Open House)
Route Length (miles)	14.5	12.3
Preliminary Estimated Construction Cost	\$611 million	\$427 million
<b>Safety and Mobility</b>		
2040 Traffic Volume Forecast for All Vehicles through Town (Average Daily Traffic [ADT])	16,100	17,400
2040 Traffic Volume Forecast for Trucks through Town (ADT/percent)	300 (2%)	300 (2%)
Access to US 183 North Hurricane Evacuation Route	Yes	Yes
<b>Land Use</b>		
Parcels Traversed	90	118
New Right-of-Way (acres)	491.2	377.7
Residential Displacements	0	1
Business Displacements	0	0
Adjacent Community Facilities	0	0
Parks	0	0
Cultural features	0	0
<b>Environmental Effects</b>		
Wetlands* (total acres)	5.63	5.64
Base (100-year) Floodplain (acres)	80.0	50.7
Floodway (acres)	40.7	24.9
Impaired Stream Segment Crossings**	1	1
Waterway Crossings (feet/acres)	5 streams (2,192 ft) 0 Ponds (0 ac)	5 streams (2,188 ft) 2 Ponds (4.5 ac)
GLO Coastal Management Zone	0	96.0 ac
Critical Habitat	0	0
Prime Farmland Soil (acres)	403.1	405.6
Oil and Gas Facilities	14 Pipelines 3 Dry Holes 10 Plugged Wells 8 Permitted Wells 3 Gas Wells 4 Oil Wells 2 Oil/Gas Wells	43 Pipelines 4 Dry Holes 3 Permitted Locations 10 Plugged Wells 3 Permitted Wells 2 Gas Wells 4 Oil Wells 2 Oil/Gas Wells
Hazardous Materials	0	1 Closed Landfill 1 Solid Waste Processor

\*National Wetland Inventory  
\*\*Occurring within 5 miles downstream

A detailed description of the impacts analysis and results of this study can be found in the Environmental Technical Report.

## 5. Conclusions

TxDOT's preference is to move forward into the environmental and schematic phase with the options noted in sections 5.1 and 5.2.

As TxDOT will likely use federal funding for project construction, an environmental impact analysis would be conducted to comply with the National Environmental Policy Act. This route study provides the basis for the environmental and schematic process.

- Purpose and Need
- Conceptual Build Options and Typical Section
- Public Input
- Environmental and Community Features Identification

Alternatives are developed and evaluated for their potential environmental impacts, both adverse and beneficial. Build alternatives are defined enough to determine basic requirements such as required drainage structures, ROW, relocations and major utility conflicts.

The public plays an important role during the environmental and schematic process. There will be opportunities for the public to provide information to TxDOT, to review documents and alternatives, and to comment on environmental documentation. The environmental document will be prepared describing the purpose and need, alternatives, affected environment, environmental consequences and potential mitigation. TxDOT reviews and considers the feedback it receives from agencies and the public during the process and renders an environmental decision.

The process is expected to take approximately 2-3 years to complete. TxDOT has not made a decision as to when it would start this project development phase.

### 5.1. Woodsboro

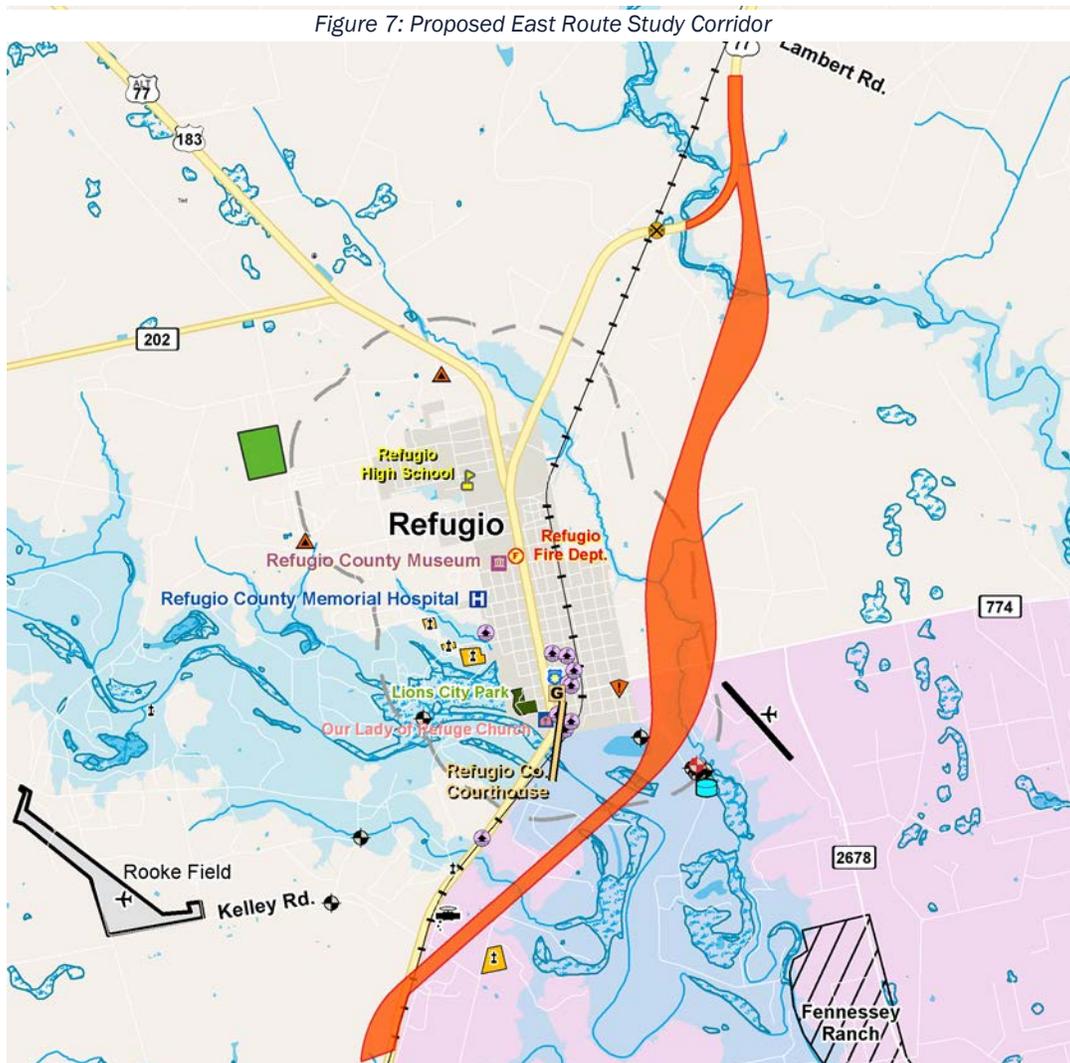
In the Woodsboro area, the study recommendation is to upgrade the existing US 77 facility to interstate standards. This stage could be completed as part of the Refugio project or as a stand-alone project. This option is presented in **Figure 6**.

Figure 6: Proposed Upgrade of Existing US 77 Through Woodsboro



## 5.2. Refugio

In the Refugio area, the study recommendation is that a route be developed to interstate standards within a broader east side corridor. This option also removes from further consideration the Central, West and Modified West options. This recommendation is presented in **Figure 7**.



## 6. References

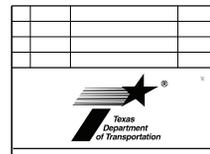
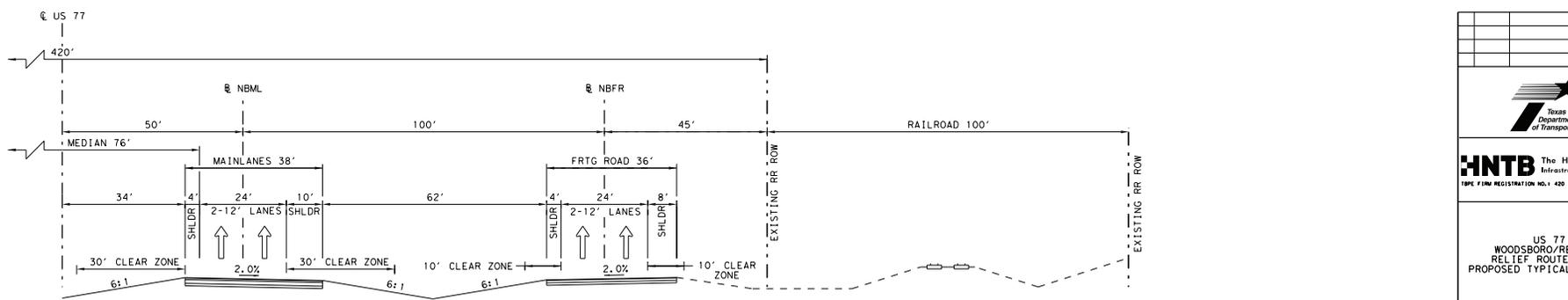
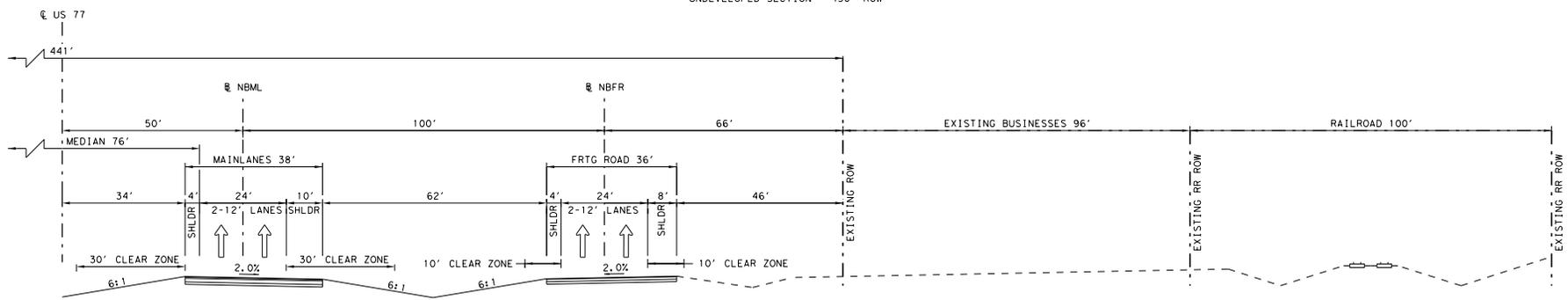
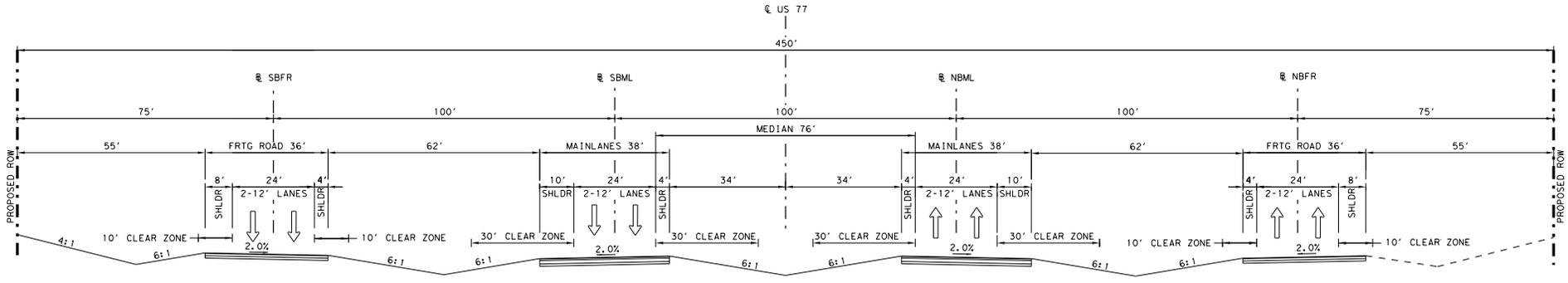
Numerous technical analyses were conducted and documented as part of this route study. These documents are noted below and are located in the project files at TxDOT's Corpus Christi District office.

- Analysis of Safety Issues Technical Report
- Needs Assessment Technical Report
- Purpose and Need Technical Memorandum
- Design Criteria and Typical Section Technical Memorandum
- Conceptual Route Options Technical Memorandum
- Conceptual Right-of-way and Cost Estimate Technical Memorandum
- Route Option Evaluation Matrix
- Engineering Technical Report
- Environmental Technical Report
- Stakeholder Meetings Summary Reports
- Open House Summary Report

# APPENDIX A

## Typical Sections

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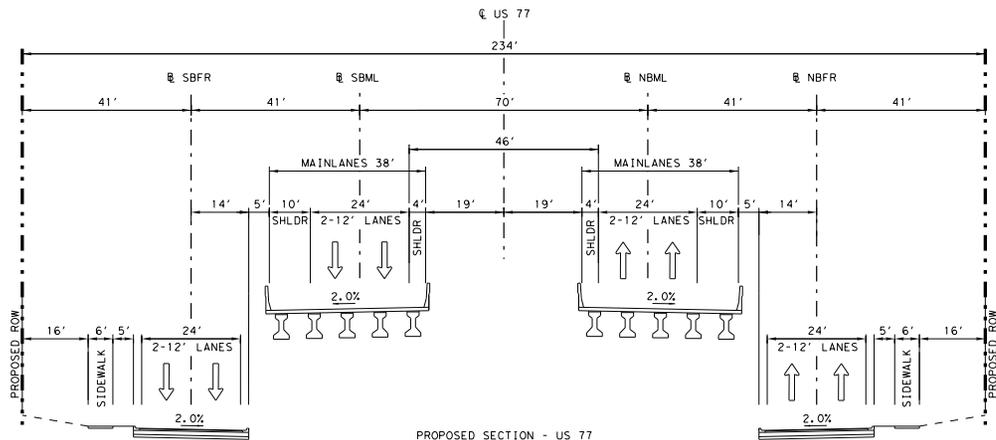
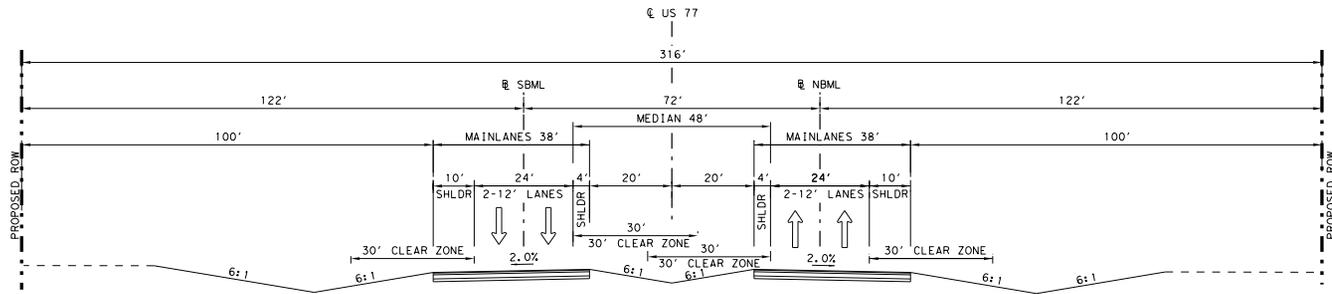
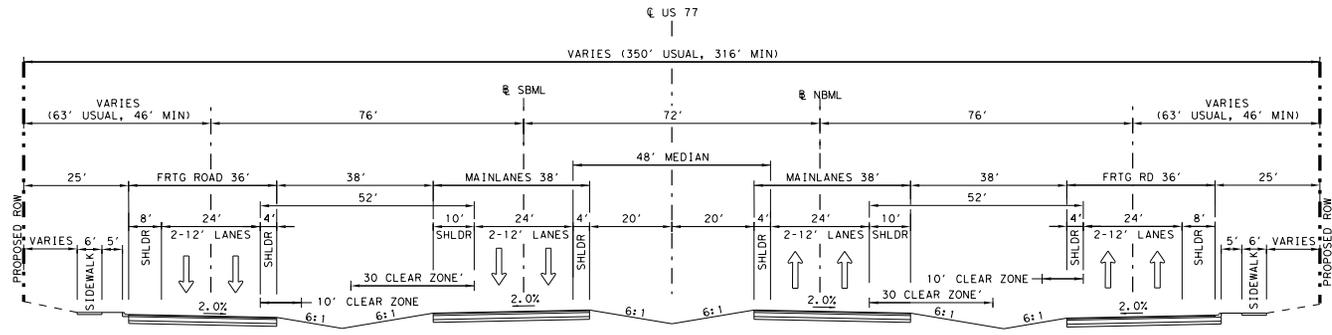
**HNTB** The HNTB Companies  
Infrastructure Solutions  
TYPE F/FM REGISTRATION NO. 1 420

US 77  
WOODSBORO/REFUGIO  
RELIEF ROUTE STUDY  
PROPOSED TYPICAL SECTIONS

STATE		DIST.		COUNTY	
TEXAS		CRP		REFUGIO	
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0371		03		US 77	

SHEET  
NO. 1

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US 77 WOODSBORO/REFUGIO RELIEF ROUTE STUDY PROPOSED TYPICAL SECTIONS			
			SHEET No. 2
STATE	DIST.	COUNTY	
TEXAS	CRP	REFUGIO	
CONT.	SECT.	HIGHWAY NO.	
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