US 281/US 59 Planning and Feasibility Study – Interstate (I-69C) Evaluation for the TxDOT Corpus Christi and Pharr Districts

US 281 from I-2/US 83 to US 59 and
US 59 from US 281 to I-37

Transportation Planning and Programming Division

October 2013

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List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials
CE	Categorical Exclusion
CR	County Road
DCIS	Design and Construction Information System
EA	Environmental Assessment
EIS	Environmental Impact Statement
FM	Farm-to-Market Road
FT	Foot/Feet
I-69C	Interstate 69 Central
MAP-21	Moving Ahead for Progress in the 21st Century Act
MIN	Minimum
MPH	Miles Per Hour
TxDOT	Texas Department of Transportation
US	United States Highway

Introduction

In support of advancing the development and designation of I-69 in Texas, the Texas Department of Transportation (TxDOT) has conducted a Planning and Feasibility Study – Interstate (I-69C) Evaluation of United States Highway (US) 281 from I-2/US 83[1] to US 59 and US 59 from US 281 to I-37, a distance of approximately 155 miles (**Figure 1**). The study limits encompass portions of Hidalgo, Brooks, Jim Wells, and Live Oak counties in South Texas. With the enactment of the Moving Ahead for Progress in the 21st Century Act (MAP-21), sections of US 281 and US 59 within the study limits may be added to the Interstate System and signed I-69 Central (I-69C) when they meet current Interstate design standards and connect to or are planned to connect to the Interstate System by July 1, 2037. The purpose of the study was to:

- Develop a cohesive program of projects to upgrade US 281 and US 59 within the study limits to meet Interstate design standards.
- Determine the types of environmental documents that would be required to advance the identified projects. These types of documents may include Categorical Exclusions (CE), Environmental Assessments (EA), or Environmental Impact Statements (EIS).
- Prepare a phased program development plan that outlines future individual project implementation based on anticipated funding levels to advance the overall program of projects.

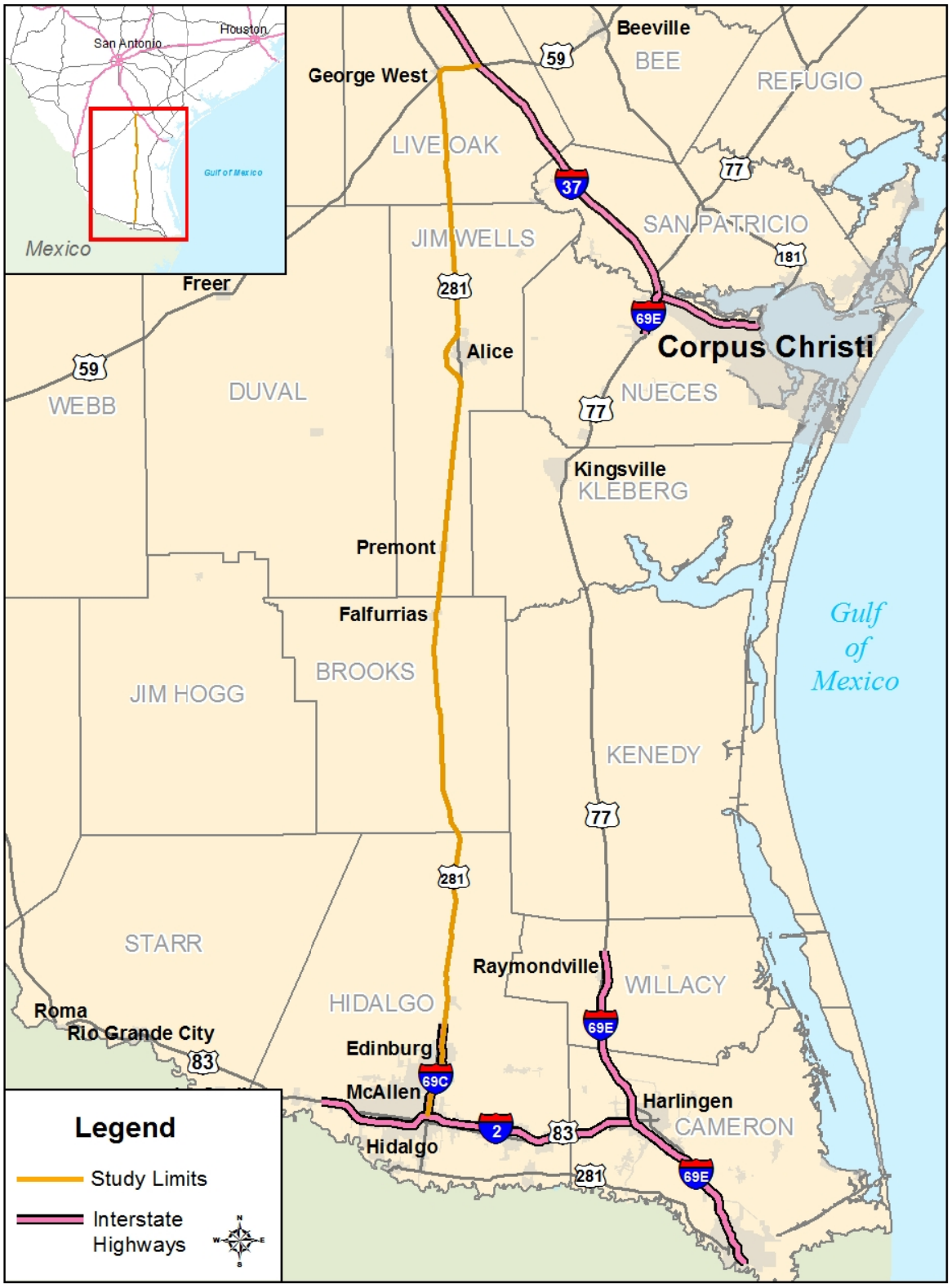
Implementation of the program development plan to extend I-69C north from its current terminus in Edinburg, TX to I-37 is intended to enhance transportation system operations to accommodate growth, maintain mobility, and facilitate the efficient movement of freight. It would also promote public safety, improve emergency evacuations, and support ongoing economic development in the region.

The following sections present the results and findings of the study and culminate with the presentation of a phased program development plan to upgrade US 281 and US 59 within the study limits.

Interstate Design Standards Assessment

The first step of the study involved conducting a highway inventory and Interstate design standards assessment within the study limits to determine which sections of US 281 and US 59 meet or deviate from current Interstate design standards. The results of the assessment revealed that, of the 155 miles of US 281 and US 59 that were assessed, approximately 126 miles do not meet Interstate design standards and would need to be

[1] This Planning and Feasibility Evaluation was initiated prior to the designation of 13.5 miles of US 281 as I-69C beginning at I-2/US 83 in Hidalgo County. The official I-69C designation occurred on May 30, 2013.



US 281/ US 59 Planning and Feasibility Study Interstate (I-69C) Evaluation	Figure 1 US 281/US 59 Study Limits

upgraded in order to be designated as I-69C. The most common type of design deviation on both US 281 and US 59 was the lack of access control. **Table 1** lists the types of deviations from Interstate design standards other than the lack of access control areas that were identified. **Figure 2** identifies the location of each Interstate deviation within the study limits. In addition, this assessment confirmed that there are five ongoing construction projects to upgrade US 281 to meet Interstate design standards. They are generally located north of Edinburg, in Falfurrias, and in Alice. Furthermore, there is an ongoing environmental study to develop a relief route that would meet Interstate design standards in Premont.

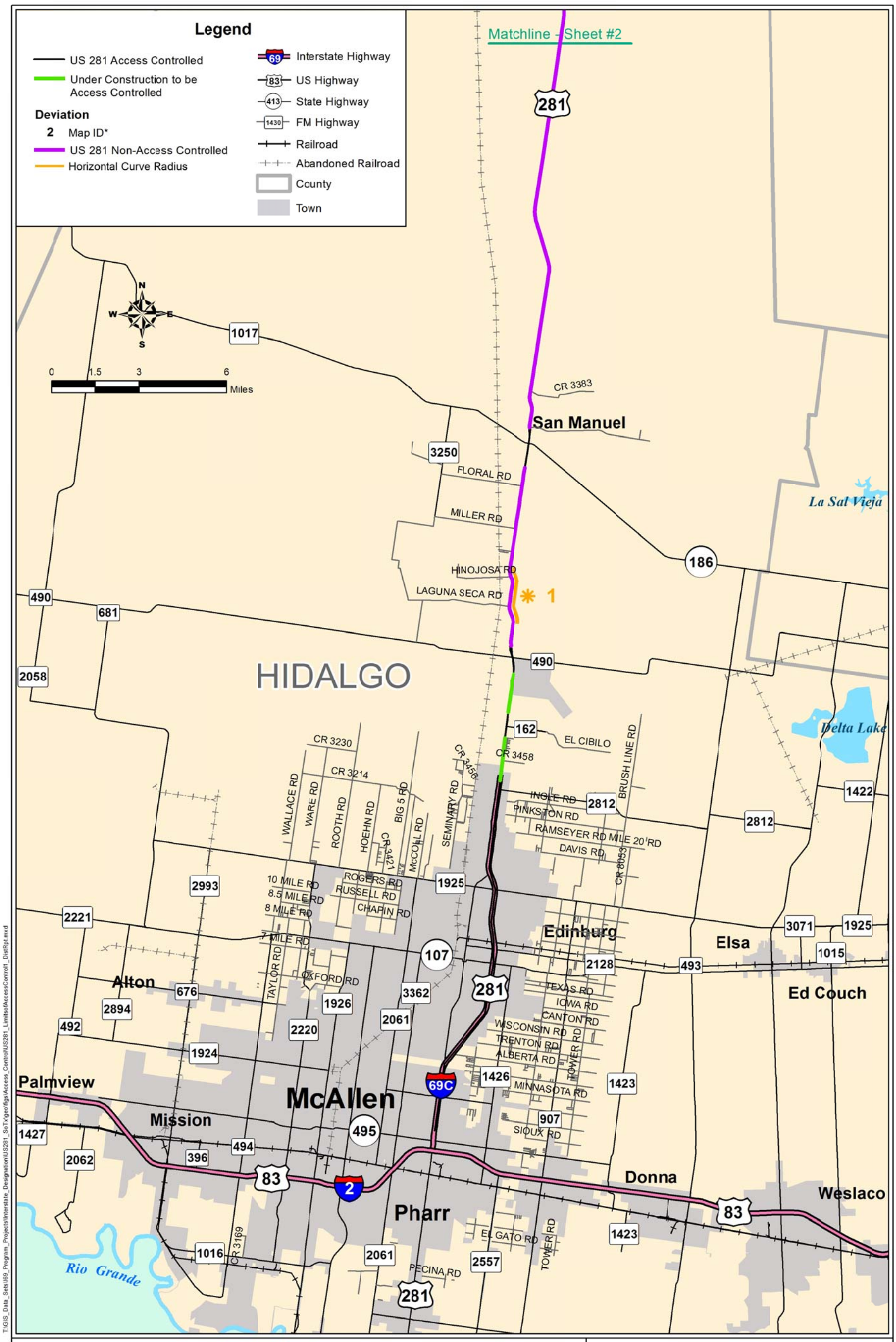
Table 1: Deviations from Interstate Design Standards

Deviation from Interstate Design Standards	Location	Figure 2 Map ID Number
Horizontal Curve Radius less than 2,050 feet (ft) (min. for 70 miles per hour [mph])	Four curves from Laguna Seca Road to Red Gate Area (just north of Farm-to-Market Road [FM] 490)	1
Median width less than 36 ft without a barrier	From 0.3 mile north of County Road (CR) 405 to 0.3 mile north of FM 1418	2
Design speed less than 70 mph in rural area and insufficient superelevation rates	US 281 Business South to FM 1554 and SH 44 to US 281 Business North (Alice Relief Route)	3
Insufficient stopping sight distance (min. of 730 feet at 70 mph)	Just south of FM 624	4
Insufficient grades (over 3% with a 70 mph design speed)	Just north of FM 624	5

Note: Above table references deviations other than access control.

Development of Conceptual Upgrades

Subsequently, US 281 and US 59 conceptual upgrades were developed to meet current Interstate design standards, as defined in American Association of State Highway and Transportation Officials' (AASHTO) *A Policy on Design Standards – Interstate System, 5th Edition* (AASHTO, 2005). In addition to the Interstate design standards, several other factors were taken into consideration when developing the conceptual upgrades. They included providing adequate roadway capacity, improving safety, maintaining local access, minimizing right-of-way acquisition, salvaging existing roadway infrastructure to manage costs, identifying environmental features to minimize potential impacts, and soliciting public input to understand their transportation needs and priorities.



US 281
Planning and Feasibility Study
Interstate (I-69C) Evaluation

Figure 2
Limits of Access Control and
Deviation from Interstate Standards

Sheet 1 of 4

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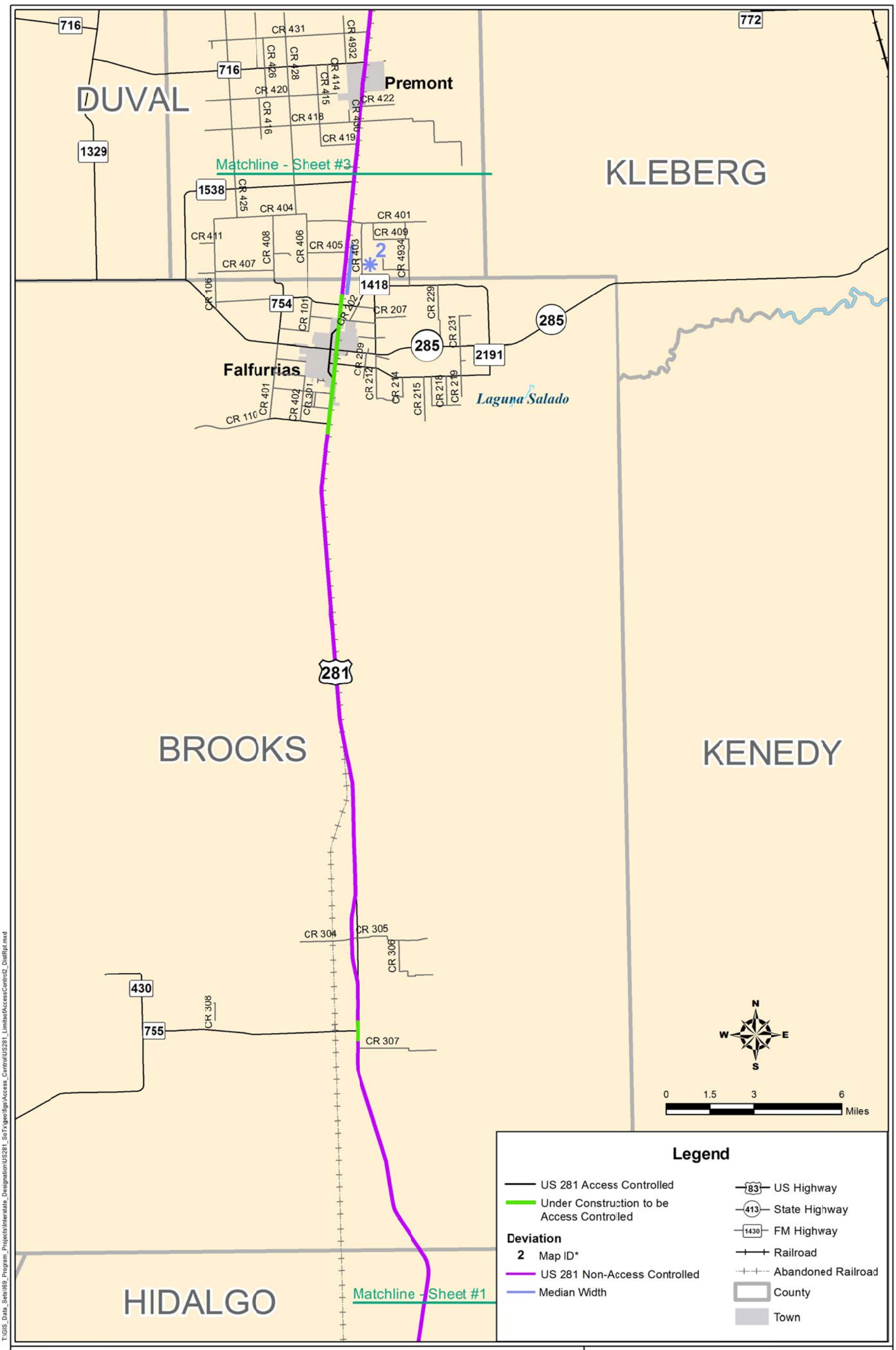

US 281
Planning and Feasibility Study
Interstate Evaluation

Figure 2
Limits of Access Control and Deviation from Interstate Standards

Sheet 2 of 4

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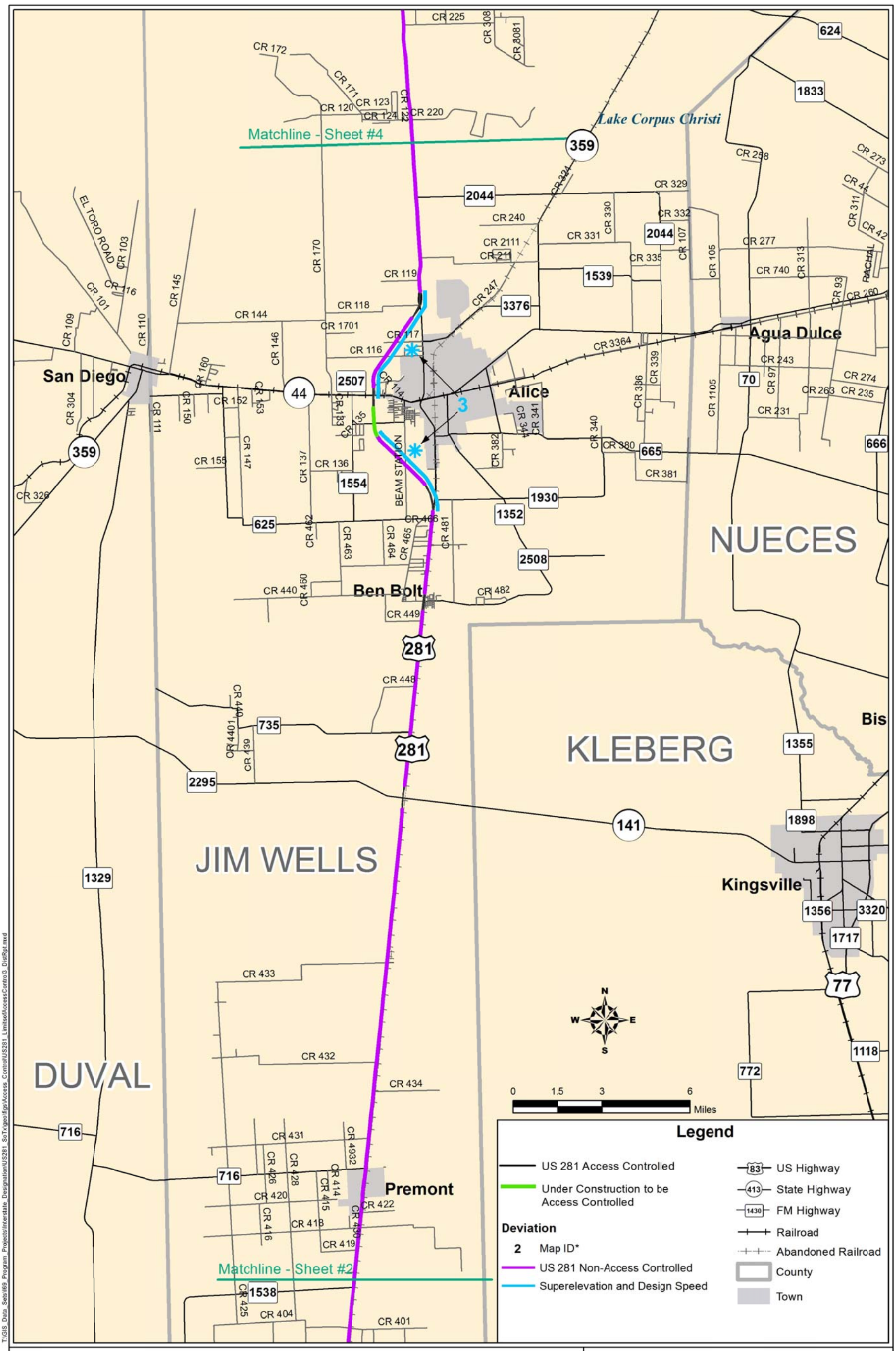
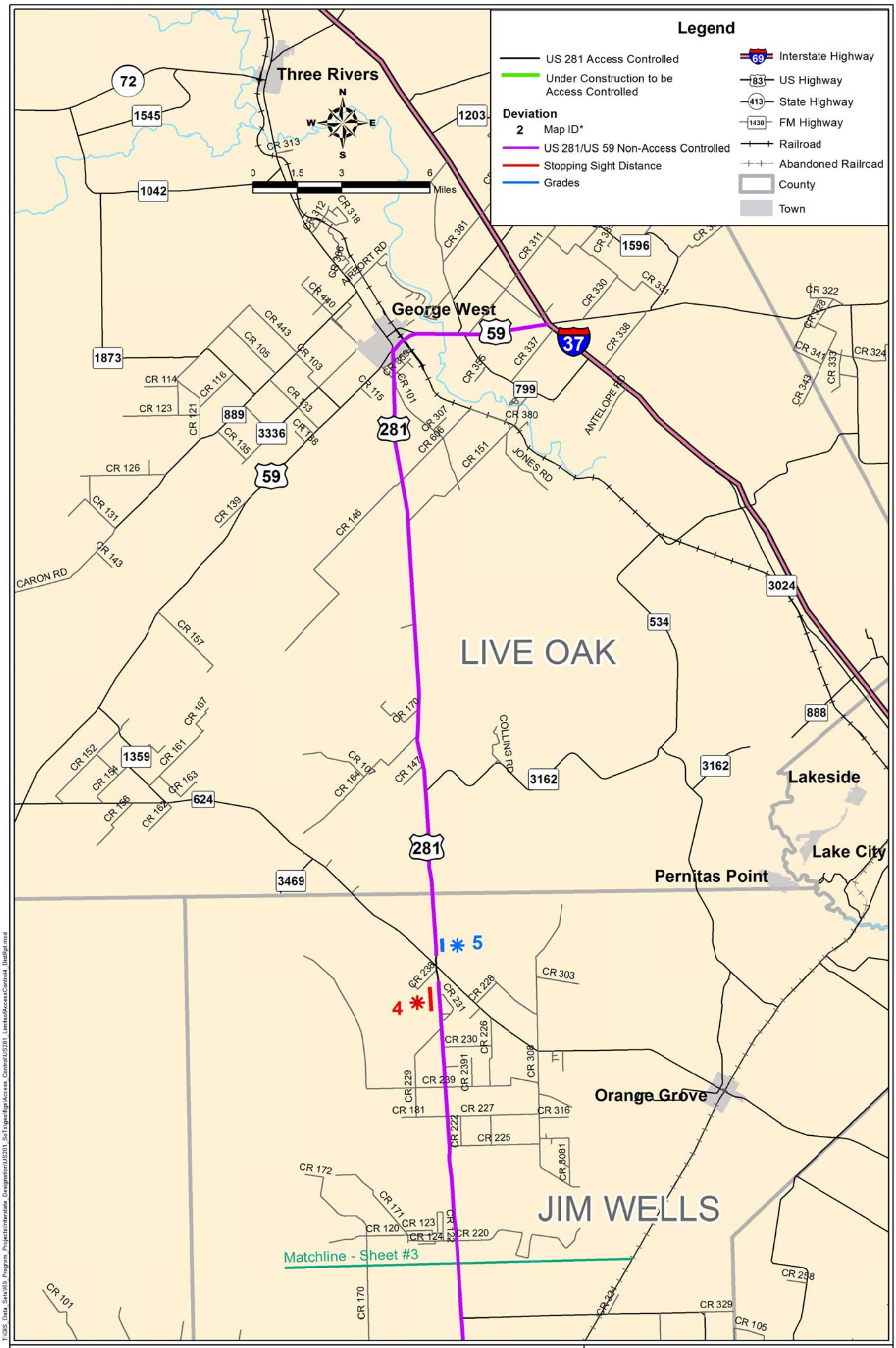


US 281
Planning and Feasibility Study
Interstate Evaluation

Figure 2
Limits of Access Control and Deviation from Interstate Standards

Sheet 3 of 4



US 281/ US 59
Planning and Feasibility Study
Interstate Evaluation

Figure 2
Limits of Access Control and
Deviation from Interstate Standards

Sheet 4 of 4

Project Identification

The next step in the study process involved identifying the projects that would be needed to upgrade US 281 and US 59 to meet Interstate design standards within the study limits. This task involved defining the limits of individual projects, taking into consideration the types of needed upgrades, their estimated construction cost, and logical termini. An effort was also made to define projects with estimated construction costs that ranged from approximately $50 to $100 million, a range deemed appropriate for a design/build project delivery method.

Anticipated Future Funding Levels

An investigation of construction funding trends over the past 10 years, taking into account inflation, revealed that approximately $36 million has been spent per year to upgrade US 281 and US 59 within the study limits. Recognizing Texas' commitment and ongoing initiative to advance the development and designation of the I-69 system in Texas, it is anticipated that state and federal funding programs at a level of $40 million per year would be available to upgrade the remaining sections of US 281 and US 59 within the study limits to meet Interstate design standards.

Program Development Plan

Table 2 and **Figure 3** present TxDOT's proposed program development plan to phase the upgrade of US 281 and US 59 to meet Interstate design standards in an effort to advance the designation of I-69C within the study limits (**Figure 1**). Based on anticipated future construction funding levels of $40 million per year, a project letting range (i.e., short-term, mid-term, and long-term) was estimated for each project that would be needed to upgrade US 281 and US 59 to meet Interstate design standards within the study limits (**Table 2**). The short-, mid-, and long-term letting ranges are defined in **Table 2**. The total cost for the short-, mid-, and long-term projects are $408,722,682, $589,630,000, and $479,570,000, respectively, for a grand program total of $1,477,922,682 in 2013 dollars.

An objective in developing the letting range was to schedule those remaining projects in the short to mid-term that would extend I-69C north of Edinburg to just north of Alice, a distance of approximately 101 miles, by July 1, 2037. The total construction cost to achieve this objective would be approximately $998 million in 2013 dollars. The anticipated funding levels would be sufficient to advance those projects in that timeframe. Consequently, in accordance with MAP-21, each of these projects from just north of Alice southward may be added to the Interstate System and signed I-69C upon their completion because they are part of a plan to connect to the Interstate System by July 1, 2037.

Approximately 40 miles of US 281 and US 59 within the study limits, classified as "long-term" projects (Table 2), would remain to be upgraded to meet Interstate design standards beyond 2037 for an additional construction cost of approximately $480 million in 2013 dollars.

This program development plan is intended to serve as a starting point for TxDOT to plan and program the development of I-69C and to coordinate its development with the Federal Highway Administration by presenting a framework for phasing and scheduling the continued upgrade of US 281 and US 59 to meet Interstate design standards within the study limits. The program development plan will be updated as the program unfolds and evolves over time.

Reference

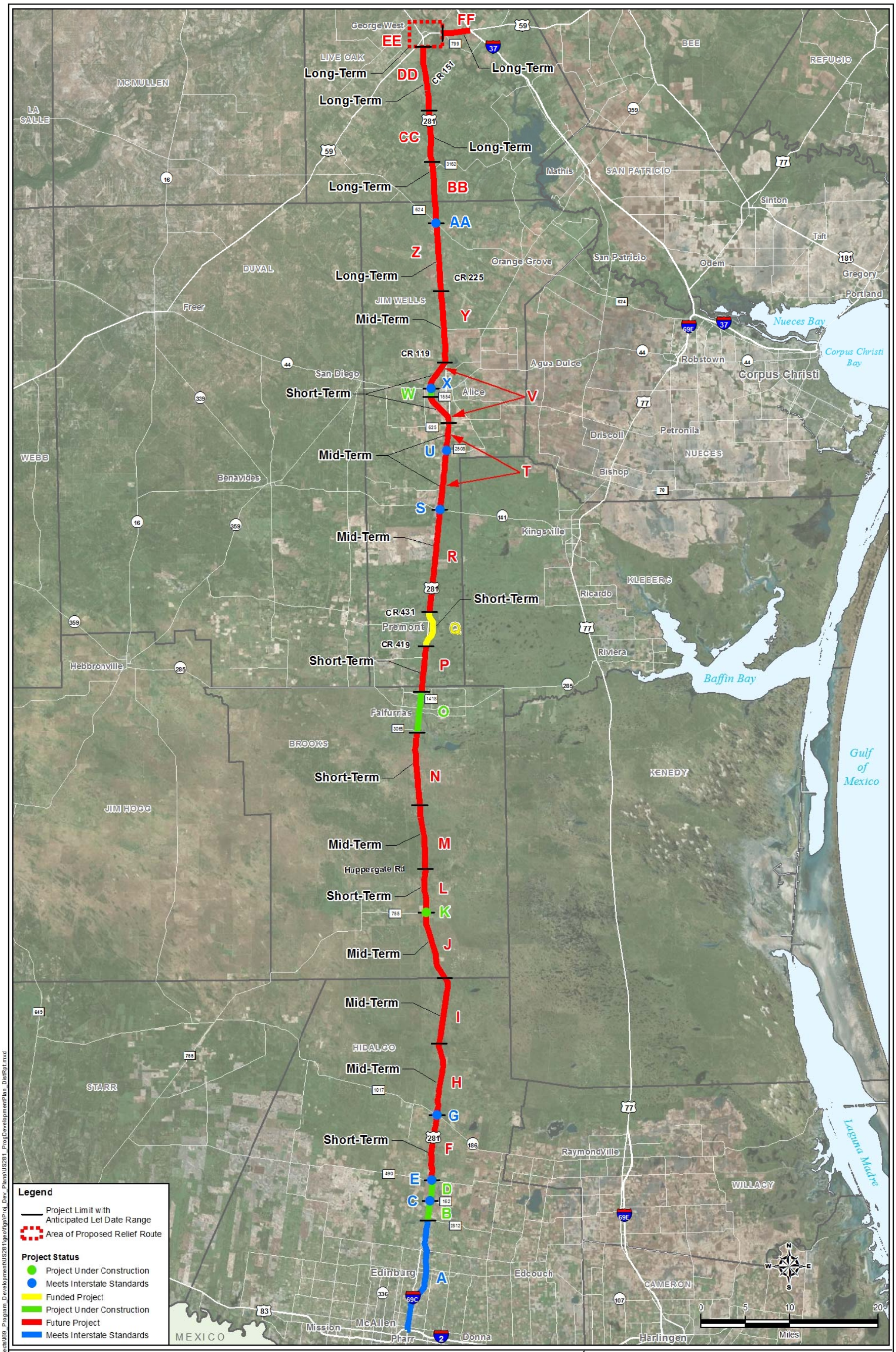
American Association of State Highway and Transportation Officials (AASHTO). 2005. A Policy on Design Standards–Interstate System, 5th Edition.

Table 2. US 281/US 59 Program Development Plan

Figure 3 Map ID	County	CS/CSJ	Project Limits	Project Length (miles)	Description of Work	Projected Environmental Document	Construction Cost Estimate (2013 Dollars)	Committed Funding	Funding Source	Estimated Letting Range*
A	Hidalgo		Section Currently at Interstate Standards (I-2/US 83 to FM 2812)							
B	Hidalgo	0255-07-129	FM 2812 to FM 162	2.173	Construct mainlanes and access roads		N/A Under Construction			
C	Hidalgo		Section Currently at Interstate Standards (FM 162 Overpass)							
D	Hidalgo	0255-07-128	FM 162 to FM 490	2.372	Construct mainlanes and access roads		N/A Under Construction			
E	Hidalgo		Section Currently at Interstate Standards (FM 490 Overpass)							
F	Hidalgo	0255-07	FM 490 to SH 186	6.68	Construct mainlanes, access roads, and overpasses	EA	$73,610,000	TBD	TBD	Short-term
G	Hidalgo		Section Currently at Interstate Standards (SH 186 Overpass)							
H	Hidalgo	0255-06	SH 186 to 8.24 miles north of SH 186	7.68	Construct mainlanes, access roads, and overpasses	EA	$68,510,000	TBD	TBD	Mid-term
I	Hidalgo	0255-06	8.24 miles north of SH 186 to Hidalgo/Brooks county line	7.56	Construct mainlanes, access roads, and overpasses	EA	$61,080,000	TBD	TBD	Mid-term
J	Brooks	0255-05	Hidalgo/Brooks county line to FM 755	7.75	Construct mainlanes, access roads, and overpasses	EA	$86,610,000	TBD	TBD	Mid-term
K	Brooks	0255-05-034	FM 755 Overpass	1.373	Construct overpass at FM 755		N/A Under Construction			
L	Brooks	0255-05 0255-04	FM 755 to Huppergate Road	4.93	Construct mainlanes, access roads, and overpasses	EA	$57,350,000	TBD	TBD	Short-term
M	Brooks	0255-04	Huppergate Road to 8.53 miles south of FM 3066	7.27	Construct mainlanes, access roads, and overpasses	EA	$81,640,000	TBD	TBD	Mid-term
N	Brooks	0255-04	8.53 miles south of FM 3066 to 0.3 mile south of FM 3066	8.21	Construct mainlanes, access roads, and overpasses	EA	$80,350,000	TBD	TBD	Short-term
O	Brooks	0255-04-072 0255-14-001 0255-03-026	Falfurrias (0.9 mile south of FM 3066 to 0.27 mile north of FM 1418)	5.906	Construct mainlanes, access roads, and overpasses		N/A Under Construction			
P	Brooks/ Jim Wells	0255-03 0255-02	0.27 mile north of FM 1418 to CR 419	5.15	Construct mainlanes, access roads, and overpasses	EA	$59,740,000	TBD	TBD	Short-term
Q	Jim Wells	0255-02-050	Premont Relief Route (CR 419 to CR 431)	6.582	Construct relief route at Premont	EA	$59,092,682**	$40,000,000	Prop 14 Reallocation	Short-term
R	Jim Wells	0255-02 0255-01	CR 431 to SH 141	11.84	Construct mainlanes, access roads, and overpasses	EA	$101,420,000	TBD	TBD	Mid-term
S	Jim Wells		Section Currently at Interstate Standards (SH 141 Overpass)							
T	Jim Wells	0255-01 0254-07	SH 141 to FM 2508 and FM 2508 to US 281 Business Route South	9.54	Construct mainlanes, access roads, and overpasses	EA	$100,740,000	TBD	TBD	Mid-term
U	Jim Wells		Section Currently at Interstate Standards (FM 2508 Overpass)							
V	Jim Wells	0254-07	US 281 Business Route South to FM 1554 and SH 44 to US 281 Business Route North	7.22	Construct mainlanes, access roads, and overpasses	EA	$78,580,000	TBD	TBD	Short-term
W	Jim Wells	0254-07-003	FM 1554 overpass to SH 44	1.705	Construct overpass at FM 1554		N/A Under Construction			

Figure 3 Map ID	County	CS/CSJ	Project Limits	Project Length (miles)	Description of Work	Projected Environmental Document	Construction Cost Estimate (2013 Dollars)	Committed Funding	Funding Source	Estimated Letting Range*
X	Jim Wells		Section Currently at Interstate Standards (SH 44 Overpass)							
Y	Jim Wells	0254-07 0254-03	US 281 Business Route North to 1.5 miles south of CR 225	7.90	Construct mainlanes, access roads, and overpasses	EA	$89,630,000	TBD	TBD	Mid-term
Z	Jim Wells	0254-03	1.5 miles south of CR 225 to FM 624	7.46	Construct mainlanes, access roads, and overpasses	EA	$82,730,000	TBD	TBD	Long-term
AA	Jim Wells		Section Currently at Interstate Standards (FM 624 Overpass)							
BB	Jim Wells/ Live Oak	0254-03 0254-02	FM 624 to 1.0 mile north of FM 3162	6.86	Construct mainlanes, access roads, and overpasses	EA	$73,560,000	TBD	TBD	Long-term
CC	Live Oak	0254-02	1.0 mile north of FM 3162 to 2.3 miles south of CR 151	5.97	Construct mainlanes, access roads, and overpasses	EA	$60,850,000	TBD	TBD	Long-term
DD	Live Oak	0254-02 0254-01	2.3 miles south of CR 151 to south of George West	6.47	Construct mainlanes, access roads, and overpasses	EA	$71,450,000	TBD	TBD	Long-term
EE	Live Oak	TBD	US 281 south of George West to US 59 east of George West	3.33	Construct relief route at George West	EA	$70,280,000	TBD	TBD	Long-term
FF	Live Oak	0447-01	US 59 east of George West to I-37	3.27	Construct mainlanes, access roads, and overpasses	EA	$120,700,000	TBD	TBD	Long-term
						Short-term Projects Subtotal	$408,722,682			
						Mid-term Projects Subtotal	$589,630,000			
						Long-term Projects Subtotal	$479,570,000			
						Project Total	**$1,477,922,682**	$40,000,000		

* Short-term projects are estimated to be let in 1 to 10 years, mid-term projects in 11 to 24 years, and long term-projects in 25 or more years. Date ranges are estimates for planning purposes only, are based on anticipated funding, and do not represent actual programmed letting dates. Actual funding is determined by the U.S. Congress and Texas Legislature, and the actual funding will eventually determine the date when the entire program is completed. The Program Development Plan would be regularly updated by TxDOT to reflect changes based upon actual funding and the progress made on the program.
** Program cost estimate for the Premont Relief Route from TxDOT's DCIS.
Note: **Figure 3** depicts each project by Map ID.



US 281/ US 59
Planning and Feasibility Study
Interstate (I-69C) Evaluation

Figure 3
US 281/US 59 Program Development Plan

Microsoft Corporation, Earthstar Geographics LLC, GeoEye, Harris Corporation, NASA, and DigitalGlobe. Bing Maps Aerial. 2013. 1:633,600. generated by Atkins; using ArcMap. <http://www.bing.com/maps> (25 October 2013).

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Note: Proposed projects are described in Table 2.