

1 **S.0 SUMMARY**

2 **S.1 DESCRIPTION OF THE PROPOSED PROJECT**

3 The Texas Department of Transportation (TxDOT) and the Federal Highway Administration (FHWA), as
4 Joint Lead Agencies, have prepared a Draft Environmental Impact Statement (Draft EIS) to determine
5 the potential environmental, social, and economic impacts of the proposed US 181 Harbor Bridge
6 Project. The proposed project includes the replacement of the Harbor Bridge and the reconstruction of
7 portions of US Highway 181 (US 181), Interstate Highway 37 (I-37) and the Crosstown Expressway in
8 Corpus Christi, Texas. The Harbor Bridge is located on US 181 approximately one-half mile north of the
9 US 181 and I-37 interchange (see **Figure S-1**). The project limits extend both north-south along US 181
10 and the Crosstown Expressway and east-west along I-37 and include: US 181 at Beach Avenue on the
11 north; Crosstown Expressway at Morgan Avenue on the south; I-37 and Up River Road on the west; and
12 I-37 and Shoreline Boulevard on the east.

13
14 Within the project area, US 181 is a six-lane divided facility with three 12-foot travel lanes in each
15 direction. US 181 along the Harbor Bridge and approaches does not include shoulders. I-37 in the
16 project area is also a six-lane divided facility with three 12-foot travel lanes in each direction with 10-
17 foot shoulders. The proposed project would replace the Harbor Bridge and reconstruct the I-
18 37/Crosstown Expressway interchange but would not add travel lanes to the facilities. Descriptions of
19 the proposed alternatives are found in **Section S.4.2**.

20
21 The proposed project is listed in the Corpus Christi Metropolitan Planning Organization's (MPO)
22 Metropolitan Transportation Plan (MTP) 2010-2035, in the August quarterly revision to the 2013-2016
23 Statewide Transportation Improvement Program (STIP). The project is listed in the 2014 Unified
24 Transportation Program (UTP) under Category 2: Metropolitan and Urban Corridor Projects, Category 6:
25 On-System Structures Replacement and Rehabilitation, Category 7: Metropolitan Mobility &
26 Rehabilitation, and Category 12: Strategic Priority; TxDOT has set aside \$12.6 million under Category 2,
27 \$291 million under Category 6, \$19.2 million under Category 7, and \$310 million under Category 12. A
28 total of \$632,800,000 has been set aside by TxDOT for the proposed project in the UTP. An additional
29 \$100 million has been dedicated by local sources, including the City of Corpus Christi, Nueces County,
30 San Patricio County and the Port of Corpus Christi Authority. The estimated construction cost for the
31 proposed project ranges from \$558 to \$679 million (in 2013 dollars) and the estimated date of
32 completion is 2020.

33 34 **S.2 BACKGROUND AND HISTORY**

35 TxDOT completed the first phase of planning and development for the project in the form of a feasibility
36 study in 2003. This study evaluated whether the current Harbor Bridge was adequate to meet future
37 travel demands, identified the engineering needs for improvements, and proposed a set of preliminary
38 corridor alternatives to address the needs. The Feasibility Study evaluated the preliminary corridor
39 alternatives on the basis of how well each alternative would address the identified needs for the project
40 and the likely environmental and socioeconomic effects that could result. The Feasibility Study

1 identified four initial build alternatives (Blue, Green, Red and Orange), and these alternatives were
2 carried forward for evaluation in this DEIS.

3
4 Once the Feasibility Study was completed in 2003, TxDOT began the schematic development,
5 environmental studies, and public involvement phase of the project, and a Notice of Intent (NOI) to
6 develop this EIS was published in the Federal Register in 2005 to initiate this phase. On March 20, 2007,
7 a revised NOI was published to advise the public that the scope of the study and the study limits
8 described in the original 2005 NOI had been expanded to include potential managed toll lanes. On
9 November 3, 2010, the revised 2007 NOI was rescinded, via a notice in the Federal Register, because
10 TxDOT and FHWA decided to remove tolling from consideration and return the study limits to their
11 original extent. TxDOT and FHWA published a third NOI in the summer of 2011 under which this Draft
12 EIS has proceeded.

13
14 Following publication of the NOI in 2011, TxDOT and FHWA prepared a Coordination Plan in accordance
15 with the requirements of Section 6002 of the Safe, Accountable, Flexible, Efficient Transportation Equity
16 Act: A Legacy for Users (SAFETEA-LU) (23 USC Section 139). This Coordination Plan was circulated to the
17 Cooperating Agencies for review and comment and was formally approved by FHWA in October 2011.

18
19 This Draft EIS is part of the schematic development and environmental phase of the project planning,
20 and continues the study of the preliminary alternatives identified in the Feasibility Study, as well as
21 additional alternatives developed through the formal EIS scoping process. Following review of the Draft
22 EIS by the Cooperating and Participating Agencies and the public and a public hearing, TxDOT and FHWA
23 will prepare a Final EIS and Record of Decision (ROD).

24
25 On January 14, 2013, FHWA and the Federal Transit Administration issued interim joint guidance on
26 implementing Section 1319(b) of the Moving Ahead for Progress in the 21st Century Act (MAP-21),
27 Accelerated Decision-making in Environmental Reviews. Section 1319(b) directs the lead agency, to the
28 maximum extent practicable, to expeditiously develop a single document that consists of a Final EIS and
29 ROD, unless certain conditions exist. Traditionally, and in accordance with the CEQ Regulations (40 CFR
30 1506.10(b)(2)), Final EIS and ROD documents are issued as separate documents with a minimum 30-day
31 period between the Final EIS and ROD. Section 1319(b) directs the lead agency, to the maximum extent
32 practicable, to combine the FEIS and ROD into a single document unless:

- 33
- 34 1. The Final EIS makes substantial changes to the proposed action that are relevant to
35 environmental or safety concerns; or
 - 36 2. There are significant new circumstances or information relevant to environmental concerns and
37 that bear on the proposed action or the impacts of the proposed action.

38
39 FHWA will issue a single Final EIS and ROD document pursuant to Pub. L. 112-141, 126 Stat. 405, Section
40 1319(b) unless FHWA determines statutory criteria or practicability considerations preclude issuance of
41 the combined document pursuant to MAP-21 Section 1319. If this document is approved, the next

1 phase would be the development of final design and the preparation of right of way maps for the
2 alternative selected in the ROD.

3

4 **S.3 NEED AND PURPOSE OF THE PROPOSED PROJECT**

5 The need for the proposed project has been identified from underlying transportation deficiencies with
6 the Harbor Bridge and US 181 in the project area, which include maintaining the long-term operation of
7 a US 181 crossing of the Corpus Christi Ship Channel and safety risks caused by design deficiencies.

8

9 **S.3.1 Maintaining the Long-term Operation of a US 181 Crossing of the Corpus Christi Ship Channel**

10 The Harbor Bridge is a fracture-critical structure, meaning the key structural elements supporting the
11 bridge are not themselves supported by additional and redundant elements. This means that if a key
12 support fails, the bridge would be in danger of collapse. This does not mean the bridge is inherently
13 unsafe, only that the bridge design does not include additional structural members to carry loads in the
14 event of a single member's failure.

15

16 In addition, corrosion is a major factor to overcome in maintaining the structural integrity of the Harbor
17 Bridge. The steel bridge resides in a saltwater environment, requiring routine cleaning and painting to
18 minimize corrosion. The combination of salt-laden air, year-round windy conditions, and warm air
19 temperatures increases the potential for steel corrosion to occur (TxDOT 2012a).

20

21 The structural rehabilitation necessary to extend the service life of the existing Harbor Bridge another 15
22 to 20 years was completed in 2011. Since 1980, maintenance costs have exceeded \$70 million. An
23 analysis by the TxDOT Bridge Division found that extending the service life of the current Harbor Bridge
24 to 2086 would cost an estimated \$279,471,206 in 2012 dollars (or \$401,430,000 using probable 2012
25 net present value) (HDR, Inc. 2012). Periodic major rehabilitation or reconstruction projects will be
26 required to maintain operability beyond the 15 to 20 years of additional service life provided by the
27 2011 rehabilitation. Even with major rehabilitation and repairs, however, the bridge will remain a
28 fracture-critical structure over salt-water.

29

30 **S.3.2 Safety Risks Caused by Design Deficiencies**

31 The current US 181 facility, including the Harbor Bridge, does not meet current FHWA and TxDOT
32 roadway and bridge design standards. Neither the existing Harbor Bridge main span nor the US 181
33 approaches have shoulders, contributing to increased levels of congestion when even minor traffic
34 accidents and breakdowns occur. The lack of shoulders also means the clearance between the travel
35 lanes and the railing on the existing bridge does not meet current standards (TxDOT Roadway Design
36 Manual Figure 3-15).

37

38 The existing US 181 approaches to the Harbor Bridge are on a 5 percent vertical grade that does not
39 meet the current TxDOT standards, which is 4 percent for facilities similar to US 181. Certain ramp
40 lengths within the project limits do not provide sufficient acceleration or deceleration distances to meet

1 current design standards for freeway ramps, and the current configuration of parts of the existing US
2 181 does not meet current design standards for exit ramp spacing.

3
4 Both US 181, including the Harbor Bridge, and I-37 within the project area are designated major
5 hurricane evacuation routes (TxDOT 2011b). Given the design deficiencies outlined above, there would
6 be an increased risk of US 181 becoming unnecessarily congested during an emergency hurricane
7 evacuation due to the lack of shoulders on the Harbor Bridge and approach sections.

8
9 The purpose of the proposed project is to maximize the long-term highway operability of the US 181
10 crossing of the Corpus Christi Ship Channel and to improve safety for the traveling public, including
11 during hurricane evacuations.

12
13 In addition to the primary purpose outlined above, TxDOT and FHWA seek to achieve the following
14 objectives, to some degree, in implementing the proposed action: 1) Provide the transportation
15 infrastructure to support the economic opportunities in the area; and 2) Consider the connectivity of US
16 181 to the local roadway system and address its effect on adjacent neighborhoods. The following
17 **Section S.4** describes the process for evaluating the preliminary alternatives with respect to whether
18 they would meet the need and purpose of the project and establishes, based on the screening criteria
19 developed for the proposed project, the alternatives that are considered reasonable. Reasonable
20 alternatives are further evaluated regarding how each addresses the project's objectives.

21 22 **S.4 ALTERNATIVES CONSIDERED**

23 **S.4.1 Identification of Reasonable Alternatives**

24 The alternatives analysis was completed in coordination with Cooperating and Participating Federal,
25 state, and local agencies and the public through the formal scoping process. Through this formal
26 scoping process, a preliminary set of alternatives for the replacement of the Harbor Bridge was
27 established (**Figure S-1**). The Draft EIS scoping process began with four preliminary build alternatives
28 (Blue, Green, Red and Orange), the No Build Alternative and a Transportation System
29 Management (TSM) alternative (not depicted on **Figure S-1**).

30
31 In response to comments received at the August 9, 2011, scoping meeting from the public, and
32 Cooperating and Participating agencies, two new build alternatives were added to the preliminary set,
33 the Tunnel Alternative and the West Alternative. Each of the preliminary alternatives if implemented,
34 with the exception of the No Build Alternative and the TSM Alternative, would remove the existing
35 Harbor Bridge and replace it with a new structure.

36
37 These preliminary alternatives were screened using a set of criteria (Measures of Effectiveness)
38 established by TxDOT and FHWA for determining whether each alternative would meet the need and
39 purpose for the project. To meet the first need to maximize the long-term highway operability of the US
40 181 crossing of the Corpus Christi Ship Channel, an alternative would need to reduce the cost and
41 frequency of structure maintenance relative to the existing condition and extend the operational life of

1 the structure well beyond the life of the existing bridge. To meet these criteria, the proposed structure
2 would be designed with non-corrodible building or maintenance materials (such as concrete) and other
3 elements requiring less maintenance over the life of the structure; the bridge would not be designed as
4 a fracture-critical structure; and the design-life of the proposed structure would be 75 to 100 years.

5
6 To meet the second need, improve safety for the public traveling on US 181 and to establish a reliable,
7 long-term hurricane evacuation route, an alternative would need to correct the existing design
8 deficiencies and upgrade the facility to current National Highway System (NHS) standards (23 CFR
9 §625.4) and the standards in TxDOT's Roadway Design Manual and Bridge Design Manual where
10 appropriate. These improvements would include providing shoulders on the bridge and approaches,
11 reducing the vertical grade and horizontal curvature, providing longer ramps where needed and
12 providing adequate spacing between ramps. To serve as a reliable, long-term hurricane evacuation
13 route, the proposed improvements would be designed to meet the State's standards for determining
14 transportation routes for hurricane evacuation in the Corpus Christi area.

15
16 Following this initial screening, four of the build alternatives were determined to meet the need and
17 purpose for the proposed project (Green, Red, Orange and West Alternatives), while three alternatives
18 were not (Blue, Tunnel and TSM Alternatives). No Build Alternative and the TSM Alternative would not
19 provide a reliable, long-term solution because these alternatives would not add shoulders to the existing
20 bridge and would not address other design deficiencies related to safety. Without these more
21 substantive corrections, US 181 under the No Build Alternative or the TSM Alternative would also not
22 satisfy the hurricane evacuation criterion. Therefore, these alternatives would not meet the need and
23 purpose for the proposed project.

24
25 The location of the Blue Alternative, veering out into the Corpus Christi Bay, would increase the
26 likelihood that storm-surge debris could render the highway inoperable after a hurricane, an issue not
27 applicable to the Green, Red, and Orange Alternatives, which span the ship channel. The Tunnel
28 Alternative would not be able to be designed to prevent the possibility of flooding, and implications of a
29 flooded evacuation route include endangerment, loss of human life, and delay in recovery efforts
30 following a hurricane. Therefore, these alternatives would not serve as reliable, long-term hurricane
31 evacuation routes for the Corpus Christi area and would, for that reason, not meet the need and
32 purpose for the project.

33
34 The Green, Red, Orange and West Alternatives would meet the project need and purpose and were
35 carried forward for full consideration in the Draft EIS as reasonable alternatives. The No Build
36 Alternative would not meet the need and purpose for the project but was nonetheless carried forward
37 for comparison with the build alternatives.

38 39 **S.4.2 Description of Reasonable Alternatives**

40 The estimated construction cost, estimated right of way requirements, and other specific design
41 features for each of the Reasonable Alternatives and the No Build Alternative are summarized in **Table**
42 **S.4-1** and described below.

1

Alternative	Bridge Height* (ft)	Alternative Length (mi)	Main Bridge Span Length (ft)	Length of Mainlanes on Structure (mi)	Estimated New Right of Way Required (ac)	Estimated Construction Cost (millions[#])	Estimated Maintenance Cost[^]
Green	207	5.06	1,045	2.93	30.5	\$558	\$19,247,228
Red	216	5.98	1,515	2.76	50.4	\$637	\$27,903,876
Orange	210	6.00	1,208	2.80	49.8	\$630	\$22,249,427
West	206	7.59	1,500	3.42	69.8	\$679	\$27,627,600
No Build	138	NA	600	NA	0.0	NA	\$279,471,206

2 Source: US 181 Harbor Bridge EIS Team 2013

3 *Equates to low-chord elevation necessary to provide 205-foot navigational clearance across the full width of the ship channel
4 in the Inner Harbor

5 ^Maintenance cost estimates based on a 75-year design life

6 #Estimates are in 2013 dollars.

7

8 *S.4.2.1 No Build Alternative*

9 The No Build Alternative would involve taking no action to address the safety and long-term operability
10 problems identified in the need and purpose for the proposed project. Routine maintenance of the US
11 181 facility and the Harbor Bridge structure would continue, including pavement work, structural
12 repairs, painting and other rehabilitation efforts, with maintenance costs estimated at \$279,471,206
13 (see **Table S.4-1**).

14

15 *S.4.2.2 Green Alternative*

16 The Green Alternative would follow the existing US 181 alignment with the location of the new bridge
17 slightly offset to the west of the existing bridge to allow US 181 to remain open to traffic while
18 construction proceeded on the new bridge.

19

20 The Green Alternative would have three 12-foot main lanes in each direction with a median barrier and
21 12-foot inside and 10-foot outside shoulders. This alternative would also include a 10-foot bicycle and
22 pedestrian shared use path separated from the main lanes by a two-foot concrete barrier, extending
23 from east of N. Staples Street on the south to GulfSpray Avenue on the north. Two-lane, one-way
24 frontage roads in each direction would also be included north of the Inner Harbor between Beach
25 Avenue and Breakwater Avenue.

26

27 This alternative would include a new interchange with I-37 with both the northbound I-37 connection to
28 US 181 and the southbound US 181 connection to I-37 being modified relative to the existing facility.
29 The Green Alternative would also include a reconstructed interchange at the Crosstown Expressway and
30 I-37. Substantive changes in access are not proposed relative to the current condition of the
31 interchange, although certain points of access to and from I-37 would be modified.

32

1 S.4.2.3 Red Alternative

2 The Red Alternative would be on a new location alignment west of existing US 181 and the Harbor
3 Bridge. The new bridge would be 1,000 feet to the west of the existing bridge. This alternative would
4 include a reconstructed interchange at I-37 and the Crosstown Expressway, including four direct
5 connector ramps. The estimated construction cost, estimated right of way requirements, and other
6 specific design features are summarized in **Table S.4-1**.

7
8 The Red Alternative would have three 12-foot lanes in each direction with a median barrier and 12-foot
9 inside and 10-foot outside shoulders. This alternative would also include a 10-foot bicycle and
10 pedestrian shared use path on the main span of the bridge and the bridge approaches, separated from
11 main lane traffic by a two-foot concrete barrier, extending from Winnebago Street on the south to
12 Beach Avenue on the north. Two-lane, one-way frontage roads in each direction would also be included
13 north of the Inner Harbor between Beach Avenue and Coastal Avenue.

14
15 The existing Harbor Bridge and the US 181 embankment on both the north and south approaches to the
16 bridge would be removed as part of this proposed alternative. The existing US 181 in this location would
17 be converted to an at-grade boulevard section, improving and widening N. Broadway Street to access
18 the existing surface streets downtown. The Tancahua Street and Carancahua Street bridges over I-37
19 would be reconstructed in their existing locations. The Red Alternative would reconstruct the I-
20 37/Crosstown Expressway interchange, including four direct-connector ramps. Several points of access
21 and the configuration of certain surface streets would be modified including the construction of a
22 frontage road box at the intersection of the US 181/Crosstown Expressway frontage roads with the I- 37
23 frontage roads. This multi-level intersection would include frontage roads in each direction with
24 dedicated right-turn and left-turn lanes.

25 26 S.4.2.4 Orange Alternative

27 The Orange Alternative would be on a new location alignment west of existing US 181 and the Harbor
28 Bridge. The location of the new bridge would be offset approximately 100 feet to the west of the
29 existing bridge to allow the existing bridge to remain open to traffic while construction proceeded on
30 the new bridge. This alternative would include a reconstructed interchange at I-37 and the Crosstown
31 Expressway, including four direct-connector ramps. The estimated construction cost, estimated right of
32 way requirements, and other design features are summarized in **Table S.4-1**.

33
34 The Orange Alternative would have three 12-foot lanes in each direction with a median barrier and 12-
35 foot inside and 10-foot outside shoulders. This alternative would also include a 10-foot bicycle and
36 pedestrian shared use path separated from main lane traffic by a two-foot concrete barrier, extending
37 from Winnebago Street on the south to Beach Avenue on the north. Two-lane, one-way frontage roads
38 in each direction would also be included north of the Inner Harbor between Beach Avenue and Elm
39 Street.

40
41 The existing Harbor Bridge and the US 181 embankment on both the north and south approaches to the
42 bridge would be removed as part of this proposed alternative. The existing US 181 would be converted

1 to an at-grade boulevard section, similar to the Red Alternative, improving and widening N. Broadway
2 Street to access the existing surface streets downtown. The Tanchahua Street and Carancahua Street
3 bridges over I-37 would be reconstructed in their existing locations.

4

5 *S.4.2.5 West Alternative*

6 The West Alternative would be on a new location alignment west of existing US 181 and the Harbor
7 Bridge. The new bridge would be approximately a mile and a quarter to the west of the existing bridge.
8 This alternative would include a new interchange at I-37 near Nueces Bay Boulevard and a reconstructed
9 interchange at I-37 and the Crosstown Expressway, including reconstruction of two of the existing direct
10 connector ramps and removing the other two existing direct connector ramps. The estimated
11 construction cost, estimated right of way requirements, and other design features are summarized in
12 **Table S.4-1**.

13

14 The path of the West Alternative runs parallel to and east of Nueces Bay Boulevard from I-37 to the
15 Inner Harbor. North of the harbor, the eastward path of US 181 crosses the U.S. Army Corps of
16 Engineers primary dredged spoils placement area for the ongoing maintenance dredging of the ship
17 channel, a distance of approximately one and a third miles.

18

19 The West Alternative would have three 12-foot lanes in each direction with a median barrier and
20 12-foot inside and 10-foot outside shoulders. This alternative would also include a 10-foot bicycle and
21 pedestrian shared use path separated from main lane traffic by a two-foot concrete barrier, extending
22 from Peabody Avenue at the I-37 westbound frontage road on the south to Gulfspray Avenue on the
23 north.

24

25 The existing Harbor Bridge and the US 181 embankment on both the north and south approaches to the
26 bridge would be removed as part of this proposed alternative. The design would be the same as that for
27 the Red and Orange Alternatives and reference can be made to **Section S.4.2.3** above for a description.

28

29 **S.5 SUMMARY OF ENVIRONMENTAL CONSEQUENCES**

30 Implementation of any of the build alternatives would involve the commitment of natural, human,
31 physical, and fiscal resources. A summary of the impacts of the No Build Alternative and the four
32 reasonable build alternatives is included in **Table S.5-1**.

Table S.5-1 Summary of Impact Comparison by Alternative					
Resource/Evaluation Category	Alternatives				
	Green	Red	Orange	West	No Build
Consistency and Compatibility with Local Land Use Plans and Policies	<ul style="list-style-type: none"> •Inconsistent with future land use and community sustainability planning •Compatible with existing and future neighborhood land use 	<ul style="list-style-type: none"> •Consistent with future land use and community sustainability planning •Incompatible with existing and future neighborhood land use 	<ul style="list-style-type: none"> •Inconsistent with future land use and community sustainability planning •Incompatible with existing and future neighborhood land use 	<ul style="list-style-type: none"> •Inconsistent with future land use and community sustainability planning •Incompatible with existing and future neighborhood land use 	<ul style="list-style-type: none"> •Inconsistent with future land use and community sustainability planning •Compatible with existing and future neighborhood land use
Public Input	<ul style="list-style-type: none"> •Mixed support and opposition expressed by US 181 Harbor Bridge Technical and Citizens Advisory Committees 	<ul style="list-style-type: none"> •Official endorsement by Corpus Christi MPO, City of Corpus Christi, Port of Corpus Christi Authority •Expressed support by US 181 Harbor Bridge Technical Advisory Committee •Mixed support and opposition expressed by US 181 Harbor Bridge Citizens Advisory Committees 	<ul style="list-style-type: none"> •Mixed support and opposition expressed by US 181 Harbor Bridge Technical and Citizens Advisory Committees 	<ul style="list-style-type: none"> •Opposition expressed by the US 181 Harbor Bridge Technical Advisory Committee and Citizens Advisory Committees 	<ul style="list-style-type: none"> •General opposition expressed by the US 181 Harbor Bridge Technical and Citizens Advisory Committees and participants in community meetings
Residential Displacements	15	39	102	13	0
Business Displacements	57	3	10	2	0
Other Displacements	3	4	3	1	0
Economic Impacts (calculated based on construction cost of project using U.S. Bureau of Economic Analysis multipliers).	<ul style="list-style-type: none"> • \$670,535,437 increase in household earnings • 7,674 new jobs (for duration of project) 	<ul style="list-style-type: none"> • \$761,544,606 increase in household earnings • 8,762 new jobs (for duration of project) 	<ul style="list-style-type: none"> • \$757,476,431 increase in household earnings • 8,670 new jobs (for duration of project) 	<ul style="list-style-type: none"> • \$816,784,096 increase in household earnings • 9,349 new jobs (for duration of project) 	<ul style="list-style-type: none"> •No change

Table S.5-1 Summary of Impact Comparison by Alternative

Resource/Evaluation Category	Alternatives				
	Green	Red	Orange	West	No Build
Community Cohesion and Changes in Access	<ul style="list-style-type: none"> Leaves physical US 181 barrier in place between the Northside neighborhoods and downtown Elimination of northbound exit to Burleson Street reduces access to North Beach Reduction in access from downtown and South Central community Avoids separation of the Washington-Coles and Hillcrest neighborhoods 	<ul style="list-style-type: none"> Separation of the Washington-Coles and Hillcrest neighborhoods affecting the cohesion of the Northside community Elimination of northbound exit to Burleson Street reduces access to North Beach Winnebago Street closure affects Northside mobility for drivers and non-drivers—comparable access replaced along Lake Street 	<ul style="list-style-type: none"> Separation of the Washington-Coles and Hillcrest neighborhoods affecting the cohesion of the Northside community Substantial number of residential displacements; loss of 15% of households in Washington-Coles neighborhood affecting cohesion Elimination of northbound exit to Burleson Street reduces access to North Beach Winnebago Street closure affects Northside mobility for drivers and non-drivers—comparable access replaced along Lake Street 	<ul style="list-style-type: none"> Elimination of northbound exit to Burleson Street reduces access to North Beach; Substantially reduced accessibility to US 181 and I-37 from the Hillcrest neighborhood, affecting hurricane evacuation and routine use Avoids separation of the Washington-Coles and Hillcrest neighborhoods 	<ul style="list-style-type: none"> No direct impacts
Environmental Justice	<ul style="list-style-type: none"> Impacts would not be disproportionately high and adverse 	<ul style="list-style-type: none"> Impacts would not be disproportionately high and adverse 	<ul style="list-style-type: none"> Large number of residential displacement effects and impacts to community cohesion would be disproportionately high and adverse 	<ul style="list-style-type: none"> Reduced accessibility effects to US 181 and I-37 from the Hillcrest neighborhood would be disproportionately high and adverse 	<ul style="list-style-type: none"> No disproportionately high and adverse impacts
Traffic Noise	<ul style="list-style-type: none"> 574 sensitive receivers impacted 	<ul style="list-style-type: none"> 655 sensitive receivers impacted 	<ul style="list-style-type: none"> 587 sensitive receivers impacted 	<ul style="list-style-type: none"> 471 sensitive receivers impacted 	<ul style="list-style-type: none"> None
Air Quality	<ul style="list-style-type: none"> Area is in attainment of EPA’s health-based standards Modeled CO emissions associated with the proposed project would not exceed EPA’s NAAQS for CO 				

Table S.5-1 Summary of Impact Comparison by Alternative					
Resource/Evaluation Category	Alternatives				
	Green	Red	Orange	West	No Build
	•Overall MSAT emissions are expected to decline region-wide in the future				
Tidal Wetlands and Waters of the U.S.	•Permanent impacts of 0.13 acre	•Permanent impacts of 0.25 acre	•Permanent impacts of 0.14 acre	•Permanent impacts of 0.46 acre	•None
Marsh Habitat	•0.32 acre	•0.68 acre	•0.32 acre	•6.68 acres	•None
Essential Fish Habitat	•0.0 acres	•0.42 acre	•0.0 acres	•0.59 acre	•None
Coastal Natural Resource Areas	•Impacts to floodplains and tidal waters	•Impacts to floodplains and tidal waters	•Impacts to floodplains and tidal waters	•Impacts to coastal shore areas, coastal wetlands, floodplains and tidal waters	•None
Cultural Resources	•Adverse effect to the Harbor Bridge system • <i>De minimis</i> impact to SAU&G Depot	•Adverse effect to the Harbor Bridge system	•Adverse effect to the Harbor Bridge system	•Adverse effect to the Harbor Bridge system	•None
Section 4(f) Uses	•Adverse effect to the Harbor Bridge System •Permanent incorporation of 92% of Lovenskiold Park •De minimis impact to SAU&G Depot	•Adverse effect to the Harbor Bridge System •Permanent Incorporation of 45% of Lovenskiold Park •Permanent incorporation of 59% of T.C. Ayers Park	•Adverse effect to the Harbor Bridge System •Permanent Incorporation of 43% of Lovenskiold Park •Permanent Incorporation of 34% of T.C. Ayers Park • <i>De minimis</i> impact to Oveal Williams Senior Center	•Adverse effect to the Harbor Bridge System •Permanent incorporation of 2.83 acres (8%) of Rincon Channel Wetlands Interpretive Overlook	•None
Hazardous Materials	•Would displace gas station with Leaking Petroleum Storage Tank	•Would displace gas station with Leaking Petroleum Storage Tank •Construction within previously identified area with soil and groundwater contamination	•Would displace gas station with Leaking Petroleum Storage Tank •Construction within previously identified area with soil and groundwater contamination	•Would displace gas station with Leaking Petroleum Storage Tank •Would displace two 200,000 gallon aboveground petroleum storage tanks	•None

Table S.5-1 Summary of Impact Comparison by Alternative

Resource/Evaluation Category	Alternatives				
	Green	Red	Orange	West	No Build
Visual and Aesthetic Impacts	<ul style="list-style-type: none"> •Least visually intrusive •Most able to convey landmark status (refers to the quality of being a highly recognizable feature, rather than a “historic landmark”) •Most able to contribute to an iconic Corpus Christi skyline 	<ul style="list-style-type: none"> •Visually and aesthetically intrusive in the Northside community •Able to still convey landmark status •Less able to contribute to an iconic Corpus Christi skyline 	<ul style="list-style-type: none"> •Most visually and aesthetically intrusive in the Northside community •Able to convey landmark status •Able to contribute to an iconic Corpus Christi skyline 	<ul style="list-style-type: none"> •Less visually and aesthetically intrusive in the Northside community •Visually and aesthetically intrusive in the Westside community (Oak Park neighborhood) •Least able to convey landmark status •Not able to contribute to an iconic Corpus Christi skyline 	<ul style="list-style-type: none"> •Not visually intrusive •Conveys landmark status •Contributes to iconic Corpus Christi skyline
Construction Phase Effects	<ul style="list-style-type: none"> •Greater user effects (travel delays, alteration of traffic patterns for a longer duration) due to the construction overlap with the existing US 181 alignment 	<ul style="list-style-type: none"> •User effects (travel delays, alteration of traffic patterns) 	<ul style="list-style-type: none"> •User effects (travel delays, alteration of traffic patterns) 	<ul style="list-style-type: none"> •User effects (travel delays, alteration of traffic patterns) •Affects U.S. Army Corps of Engineers ability to fulfill their obligation in the event emergency dredging operations were called for to maintain the ship channel •Potential adverse water quality effects from disturbance of dredged sediments in Upland Confined Placement Area 	<ul style="list-style-type: none"> •None

1 Source: US 181 Harbor Bridge EIS Team 2013

1 Each of the proposed build alternatives would result in the use of one or more properties protected by
 2 FHWA's Section 4(f) regulations. The Federal Department of Transportation Act of 1966 included a
 3 special provision—Section 4(f)— which stipulated that FHWA and other federal agencies within the DOT
 4 cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl
 5 refuges, or historical sites of national, state or local significance unless:

- 6 • There is no feasible and prudent alternative to the use of the land; and
- 7 • The action includes all possible planning to minimize harm to the property resulting from use; or
- 8 • The administration makes a *de minimis* impact determination.

9
 10 If the analysis concludes that there is no feasible and prudent avoidance alternative to the use of Section
 11 4(f) property, then FHWA may approve only the alternative that causes the least overall harm. Because
 12 there is no total avoidance alternative under any of the proposed build alternatives, an analysis of the
 13 alternative that causes the least overall harm was conducted. The factors considered in the analysis of
 14 the least overall harm alternative are defined in FHWA's Section 4(f) regulations at 23 CFR §774.3(c).
 15 The first four factors relate to the net harm that each alternative would cause to Section 4(f) property,
 16 while the remaining three factors take into account any substantial problems the alternatives may have
 17 with issues other than Section 4(f). The results of the detailed evaluation of each of these seven factors
 18 are summarized in **Table S.5-2**.
 19

Table S.5-2 Summary of Least Overall Harm Analysis				
Least Overall Harm Criteria	Build Alternatives			
	Green	Red	Orange	West
Ability to Mitigate Adverse Impacts to 4(f)	Medium	Medium	Medium	High
Severity of Harm to 4(f) after Mitigation	Medium	Medium	Medium	Medium
Relative Significance of 4(f) Property	Medium	Medium	Medium	High
Views of Officials with Jurisdiction	City of Corpus Christi - favorable toward impacts and conceptual mitigation	City of Corpus Christi - favorable toward impacts and conceptual mitigation	City of Corpus Christi - favorable toward impacts and conceptual mitigation	City of Corpus Christi - less favorable toward impacts and conceptual mitigation
	THC - concurred with effect determination and mitigation	THC - concurred with effect determination and mitigation	THC - concurred with effect determination and mitigation	THC - concurred with effect determination and mitigation
Degree to which the Alternative Meets Need and Purpose and Objectives	Medium	High	Medium	Low
Magnitude of Impacts to Non-4(f)	Medium	Low	High [#]	High

Least Overall Harm Criteria	Build Alternatives			
	Green	Red	Orange	West
Resources After Mitigation				
Cost Comparison	\$558 million	\$637 million	\$630 million	\$679 million

1 Source: US 181 Harbor Bridge EIS Team 2013

2 NOTE: high = TxDOT has the ability to reasonably mitigate the potential effects from the use of the Section 4(f) property;
 3 medium = some of the effects from the use could be offset by mitigation while others could not; low = TxDOT does not have the
 4 ability to reasonably mitigate the effects.

5 #The evaluation in Section 5.6.2.6 presents the Orange Alternative as the alternative with the highest degree of adverse impacts
 6 to non-Section 4(f) resources after mitigation.

7

8 **S.6 IDENTIFICATION OF THE PREFERRED ALTERNATIVE**

9 The Preferred Alternative is the alternative that is determined to be the most favorable alternative after
 10 considering the degree to which it meets the project need and purpose, the impacts to the
 11 environment, and the potential for mitigation. As discussed above, because of the proposed project's
 12 use of one or more properties protected by FHWA's Section 4(f) regulations, special considerations were
 13 also required. First, the project team considered impacts to properties protected by Section 4(f) and
 14 determined that all of the alternatives would result in a use of Section 4(f) property. Then, the team
 15 conducted a least harm evaluation based on the factors set forth in 23 CFR §774.3(c). The balancing of
 16 these considerations leads to the conclusion that the Red Alternative would cause the least overall harm
 17 relative to the other alternatives and is therefore identified as the Preferred Alternative.

18

19 **Table S.6-1** provides a summary of the evaluation of all the factors considered in the comparison of
 20 alternatives for the proposed project, including meeting the need, purpose and objectives of the
 21 proposed project with the least overall harm; and, maximizing engineering considerations. The Red
 22 Alternative best meets the need and purpose and objectives of the proposed project in comparison to
 23 the other alternatives in that it would remove the US 181 barrier from downtown, improving mobility
 24 and access into and out of the SEA District and the downtown area and supporting the City's ability to
 25 implement its long-term community sustainability planning initiatives. The Red Alternative also
 26 preserves much of the existing connectivity to the facility from adjacent neighborhoods relative to the
 27 other build alternatives, including accommodating bicycle and pedestrian modes of travel to and from
 28 the adjacent communities. The Red Alternative also maximizes the engineering considerations and
 29 accommodates the navigational transportation needs of the Port of Corpus Christi. Also, the Red
 30 Alternative was the only alternative to receive official endorsement by Corpus Christi MPO, the City of
 31 Corpus Christi, and the Port of Corpus Christi Authority.

Table S.6-1 Alternative Comparison Summary					
Alternatives	Meets Purpose and Need (Yes/No)	Meets Purpose and Need and Objectives (High/Medium/Low)	Least Overall Harm (Rank 1-5)	Maximizes Engineering Considerations (High/Medium/Low)	Preferred Alternative (Yes/No)
Green	Yes	Medium	2	Low	No
Red	Yes	High	1	High	Yes
Orange	Yes	Medium	3	Medium	No
West	Yes	Low	4	Low	No
No Build	No	NA	5	NA	No

1 Source: US 181 Harbor Bridge EIS Team 2013

2

3 The Preferred Alternative is identified in the Draft EIS, along with the information in support of why it is

4 preferred, to present the public and Cooperating and Participating agencies with the information

5 necessary to review and comment on the proposal. The identification of the Preferred Alternative does

6 not mean that the Joint Lead Agencies have made a decision or that the Preferred Alternative has been

7 selected. By identifying an alternative as preferred, the Joint Lead Agencies are soliciting public and

8 agency comments to help determine if it should be selected or whether perhaps a different alternative

9 should be selected. Cooperating and Participating Agencies and the public will have an opportunity to

10 review and comment on this Draft EIS and the identification of the Preferred Alternative. A public

11 hearing will be held following the review periods mandated in 23 CFR §771.123(h)(i) and 43 TAC

12 §2.103(d). After holding the public hearing and considering the comments received, TxDOT and FHWA

13 will determine whether the preferred Red Alternative should be selected.

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